



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
PROPOSED TRANSFER OF OPERATING LICENSE FOR  
VERMONT YANKEE NUCLEAR POWER STATION  
FROM VERMONT YANKEE NUCLEAR POWER CORPORATION TO  
ENTERGY NUCLEAR VERMONT YANKEE, LLC AND ENTERGY NUCLEAR OPERATIONS, INC.  
AND CONFORMING AMENDMENTS  
DOCKET NO. 50-271

1.0 INTRODUCTION

By application submitted under cover of a letter dated October 5, 2001, Vermont Yankee Nuclear Power Corporation ("VYNPC"), Entergy Nuclear Vermont Yankee, LLC ("Entergy Nuclear VY") and Entergy Nuclear Operations, Inc. ("ENO"), requested that the U.S. Nuclear Regulatory Commission (NRC) consent to the transfer of Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station (VY) from VYNPC to Entergy Nuclear VY to possess, and ENO to possess, use and operate, VY.

The application also requested the approval of conforming license amendments to reflect the proposed transfer and was filed pursuant to Sections 50.80 and 50.90 of Title 10 of the Code of Federal Regulations.

The transfer is requested as a result of the Purchase and Sale Agreement ("PSA") signed by VYNPC and Entergy Nuclear VY on August 15, 2001, to purchase VY (see Enclosure 4 of the October 5, 2001, application).

Pursuant to 10 CFR 50.80, no license shall be transferred, directly or indirectly through the transfer of control of the license, unless the Commission shall give its consent in writing. Such action is contingent upon the Commission's determination that the transferee is qualified to hold the license, and that the transfer is otherwise consistent with applicable provisions of law, regulations, and orders of the Commission.

2.0 BACKGROUND

VY is a 510 MWE single unit boiling water reactor located in Vernon, Vermont. On March 21, 1972, VY was issued an operating license which expires on March 21, 2012. VYNPC is the sole owner and operator of VY. Entergy Nuclear VY will own VY, and ENO will operate and maintain

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HIGHLIGHTED AREAS DENOTES PROPRIETARY INFORMATION

VY as agent for Entergy Nuclear VY, pursuant to an Operating Agreement between Entergy Nuclear VY and ENO (see Enclosure 5 of the October 5, 2001, application). The sale and transfer of VY implements VYNPC's decision to divest its nuclear generation assets. Entergy Nuclear VY is a newly formed entity that will be engaged principally in the business of owning all or part of a nuclear power facility and selling electric energy at wholesale in the United States. ENO was formed in February 2000, and is engaged principally in the business of operating nuclear power facilities. The application states that, at the closing of the purchase, VY will be the only asset on the balance sheet of Entergy Nuclear VY and that, as of the date of the application, Entergy Nuclear VY has no liabilities.

Furthermore, the applicants state that upon closing, the following events will occur, as addressed in the PSA:

1. Entergy Nuclear VY will assume title to the facilities (including all equipment, spare parts, fixtures, inventory and other property necessary for the operation and maintenance of VY), will take title to all used and spent nuclear fuel and other licensed nuclear materials at VY, and through its authorized agent, ENO, will assume all responsibility for the operation and maintenance of the plant.
2. All regular employees of VYNPC will be offered employment with ENO.
3. As part of the transaction, VYNPC has entered into a Power Purchase Agreement (PPA) through March 21, 2012 with Entergy Nuclear VY under which VYNPC will purchase energy and capacity from Entergy Nuclear VY at pre-established rates and schedules.
4. At the closing of the sale, VYNPC will transfer the assets of its Qualified and Non-qualified Decommissioning Trust Funds to a trust fund to be established by Entergy Nuclear VY. The amount of the funds transferred is projected by Entergy Nuclear VY to meet NRC minimum funding requirements. If any additional amount is needed in order to satisfy the NRC's funding requirements, this amount will be supplied by Entergy Nuclear VY through an additional deposit of funds, a surety, or a parent or affiliate company guarantee. The responsibility for decommissioning the plant will transfer to Entergy Nuclear VY upon transfer of the NRC license and closing of the sale.

### 3.0 FINANCIAL QUALIFICATIONS ANALYSIS

Entergy Nuclear VY and ENO *do not qualify* as electric utilities under 10 CFR 50.2. In accordance with 10 CFR 50.33(f), a non-electric utility applicant must provide information sufficient to demonstrate its financial qualifications to carry out the activities for which the license is being sought.

Pursuant to 10 CFR 50.33(f)(2), the application states that Entergy Nuclear VY and ENO have assurance of obtaining the funds necessary to cover estimated costs to operate VY as a result of the PPA Entergy Nuclear VY signed with VYNPC. Under the contract, Entergy Nuclear VY will sell 100% of the total energy of VY at fixed prices through March 2012. Table 1 summarizes the average annual prices and terms of the PPA through 2007. After March 2012, Entergy Nuclear VY will pursue other firm contracts or sell any uncommitted power into the market in Vermont and the surrounding area.

**Table 1**  
**Average Annual kWh Price Per the PPA for Years 2002-2007**

<b>Year</b>	<b>Output to Contract</b>	<b>Contract Price (\$/KWh)</b>
2002	100%	42.60
2003	100%	42.00
2004	100%	42.80
2005	100%	39.50
2006	100%	39.00
2007	100%	40.00

As requested by 10 CFR 50.33(f)(3), the application states that Entergy Nuclear VY, is an indirect wholly owned subsidiary of Entergy Corporation, and an indirect wholly owned subsidiary of Entergy Nuclear Holding Company #3. The principal office will be located in Vernon, VT; an additional office will be located in Brattleboro, VT.

ENO is an indirect wholly-owned subsidiary of Entergy Corporation, and a direct wholly-owned subsidiary of Entergy Nuclear Holding Company #2. The principal place of business is located in White Plains, NY.

The corporate structure of these organizations is shown in Enclosure 6 of the October 5, 2001, application.

Entergy Corporation, with its headquarters located in New Orleans, LA, is a U.S. - based global energy company with power production, distribution operations and related diversified services. Entergy Corporation owns, manages or invests in power plants, generating nearly 31,000 megawatts of electricity. Through its subsidiaries (both regulated and non-regulated), Entergy Corporation owns and operates nine nuclear power plants at seven sites - Arkansas Nuclear One Units 1 and 2, Grand Gulf Nuclear Station, River Bend Station, Waterford 3 Steam Electric Station, Pilgrim Nuclear Power Station, Indian Point Nuclear Generating Units Nos. 2 and 3, and the James A. FitzPatrick Nuclear Power Station.

Entergy Corporation distributes energy to more than 2.5 million customers in the U.S. and is also among the top 10 power marketers in the U.S. As of June 30, 2001, Entergy Corporation had total assets of \$21 billion. Entergy Corporation's 10-K's for the past five years are attached as Enclosure 2 to the filing. Also attached as Enclosure 3 are Moody's and S&P's bond ratings for the past three years which demonstrate Entergy Corporation's subsidiary investment-grade bond ratings and Entergy Corporation's most recent S&P's bond ratings.

The application further states that Entergy Nuclear VY, either through a parent or affiliate company, will provide the funds necessary to purchase VY, and that Entergy Corporation has unconditionally guaranteed payment of the purchase price and performance under the PSA, at or prior to closing.

Evaluation

The NRC staff's review of the application sought to evaluate and address the applicants' financial qualifications in a manner that is consistent with the guidance provided in NUREG-1577, Rev. 1, "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance," dated March 1999 (SRP).

The staff reviewed the financial projections provided in the application for:

- reasonableness of estimated operating costs; and
- reasonableness of assumptions used in financial projections.

Estimated Operating Costs

Section III.1 of the SRP states, in part, that, "the reviewer will evaluate...information for reasonableness and will compare it to plants of similar size, design, and location." The NRC staff compared the estimated operating costs provided in the application with historical data contained in NUREG-6577, Supplement 1, "U.S. Nuclear Power Plant Operating Cost and Experience Summaries," dated January 2001. Other boiling water reactors located in the northeast, that were used for this comparison, were Pilgrim 1 and Nine Mile Point 1 (NMP-1). Additionally, the estimated operating costs provided in the application were compared with the historical data for Vermont Yankee provided in NUREG-6577, Supplement 1. Since the data provided in the NUREG is in constant 1999 dollars, the staff adjusted the estimated operating expenses for inflation in order to make these comparisons using the applicant's escalation rate of 3.05% used in calculating the decommissioning funding requirements, which approximates a general estimate of future inflation in the U.S. economy.

Table 2 summarizes the approximate production costs for these facilities as provided in NUREG-6577, Supplement 1, and provides the inflation adjusted estimated operating costs of VY for the years 2002-2007.

**TABLE 2**  
**Approximate Historical Operating Expenses of VY and of Similar Units,**  
**and Discounted Estimated Operating Costs for VY**  
**(\$M in 1999\$ for years 2002-2007)**

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Based on Entergy Nuclear VY's projected expenses, Entergy Nuclear VY and ENO's assertion in the application that they have not identified any design, technical or environmental deficiencies which would adversely impact the continued performance of VY at the same or higher capacity factor, and the performance at the facilities that have been acquired by other Entergy subsidiaries, the NRC staff believes that the applicants' expense projections are in line with historical trends, and are reasonable.

Capacity Factor

The application states that Entergy Nuclear VY and ENO expect to continue to operate VY at or above the 10-year historical performance average of 89% (see Table 3 below). The average capacity factor for the years 1994-1999 per NUREG-1350, Vol. 12 is 88%, which includes a capacity factor of 72% in 1998 that resulted from a 72-day outage. That outage included installation of new ECCS pump suction strainers, and re-coating of the torus.

**Table 3**  
**Projected Capacity Factors for Years 2002-2007**

	2002	2003	2004	2005	2006	2007
Projected Capacity Factor	86.6%	92.6%	88.5%	88.5%	92.6%	88.5%

*(The simple-average capacity factor for the period is 89.5%.)*

Based on VY's current operating performance, ENO's operating experience at other plants, and Entergy Nuclear VY and ENO's assertion as to a lack of deficiencies which would impact the continued performance of VY at the same or higher capacity factor, the NRC staff has no reason to believe that such capacity factors cannot be obtained and, thus, finds the applicants' capacity factor projections to be reasonable.

In support of the claim that there is reasonable assurance of obtaining the necessary funds to operate and maintain VY, the applicants (the transferees) have provided a proprietary Entergy Nuclear VY projected income and expense statement for the period 2002 through 2007.

**Table 4**  
**Projected Income and Expenses 2002 - 2007**  
(\$000's)

	2002	2003	2004	2005	2006	2007
Power Sales - Contract						
Power Sales - Market						
Total Revenue						
Operation & Maintenance						
Fuel						
Administrative & Other						
Total Operating Expenses*						
Interest Expense and Income Taxes						
Net Income/(Loss)						

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\*Note that the "Total Operating Expenses" displayed in Table 4 are as provided in the Application. These values differ from those values presented in Table 2 which were discounted at an annual rate of 3.06% to 1999\$ for analysis purposes.

The sale of power in accordance with Table 4 is anticipated to cover the expected operating and maintenance (O&M) costs of VY and to provide a margin of additional income over and above those costs (e.g. a 10% reduction in the projected capacity factors, as conducted in the sensitivity analysis which follows, would still provide adequate income to cover the expected O&M costs ). Potential increases in revenue due to power uprates or other operating efficiencies are not included. ENO will operate VY at cost and will be reimbursed by Entergy Nuclear VY for its costs according to the terms of an the Operating Agreement between ENO and Energy Nuclear VY.

To augment the revenue from the described power sales at the closing of the purchase, Entergy Nuclear VY (and ENO through Entergy Nuclear VY) will have access to an established, initial line of credit of \$35 million from an affiliate company, Entergy Global Investments, Inc. (EGI). This line of credit will provide working capital and, if necessary, funds for the operation and maintenance of the plant. If revenues and/or retained earnings are sufficient at the end of the sixth year of operation, this line of credit will be reduced to \$20 million. Also, \$35 million will be provided through a line of credit from Entergy International Holdings Ltd. LLC (EIHL), to provide additional financial resources if needed for the safe operation and maintenance of VY, including the costs of nuclear property damage insurance and any retrospective premium pursuant to 10 CFR 140.21. Except as previously described, Entergy Nuclear VY and ENO will not reduce, replace or withdraw these lines of credit without the express consent of the NRC. Further, neither the EGI nor the EIHL lines of credit may be amended without prior approval of the NRC and prior written approval of VYNPC.

To further facilitate the staff's review, the availability of funds to cover fixed operating costs during a four, or six-month shutdown was supplied by the applicants. In the event of an extended shutdown, fixed operating expenses would be paid from retained earnings, as available, or by the funds previously described. The six-month costs are shown in Table 5.

**Table 5**  
**VY Fixed Operating Expenses for 6-Month Plant Shutdown**  
 (\$000's)

	2002*	2003	2004	2005	2006	2007
Total Operating Expenses						
Ongoing Capital Expenditures						
Plant Depreciation						
Variable Outside Goods and Services (25% of 25% of O&M)						
Fuel						
Outage						
Annual Fixed Operating Expenses						
6 Month's Operating Expenses						

Values are for 10 months, which assumes a February 28, 2002 close.

To supplement the plant shutdown scenario provided by the applicant, the NRC staff conducted a sensitivity analysis on values in the projected income statement provided by the applicant. The staff believes that the applicant has made good faith assumptions with regard to expenses, with the values being in line with historical values shown in Table 2, when adjusted for inflation. However, the revenue projections are sensitive to the unit's capacity factor.

The analysis performed assumed a ten percent decrease in the annual capacity factors supplied by the applicant. With all other variables held constant, the staff found that Entergy Nuclear VY would be able to sustain the reduced revenues over the projection period submitted (2002-2007) and would have the financial capability of maintaining the unit in a safe manner.

The revenue projections are also sensitive to market prices. A sensitivity analysis was performed which reduced the market price projections supplied by the applicant, also by 10%. Again, with all other assumptions held constant, the results show that Entergy Nuclear VY would be capable of sustaining such a drop in market prices. This staff assumption is for sensitivity purposes only as the PPA fixes prices through the requisite 5-year forecast period and through March 2012. After that time Entergy Nuclear VY will pursue other firm contracts or sell any uncommitted power into the market in Vermont and the surrounding area.

Until recently, the Reliability Assessment report by the North American Electric Reliability Council (NERC) predicted that the Northeast Power Coordinating Council (United States) (NPCC(US)), which includes the New England states, projected generating margins dropping to 5% by 2007. Near-term (2001-2005) the actual and planned addition of merchant power has stemmed the erosion of dropping margins. However, long-term, generation adequacy will be more difficult to

assess, as it is dependent upon the continued response of merchant power plant developers to construct new generating facilities in areas with declining capacity margins. Related uncertainties such as transmission uncertainties, permits, financing, political and regulatory actions could influence the amount of new generation being built in the next ten years and serve to maintain or increase market prices.

Although these sensitivity analyses indicate lower earnings for Entergy Nuclear VY, if lower capacity or lower market prices are experienced compared to their forecast, Entergy Nuclear VY should still be able to remain financially stable through the use of retained earnings, or either through an associate or affiliate company line of credit, guarantee, or similar financial arrangement to provide additional necessary funds.

The analysis of the data supplied for the five-year projection, along with the sensitivities performed and the additional sources of funding, indicate that adequate assurance exists that the funds to safely operate VY will be available. The NRC staff therefore finds that Entergy Nuclear VY is financially qualified to hold the facility license following the proposed sale. The staff further finds that Entergy Nuclear VY, as a newly-formed entity, has fulfilled its requirements under 10 CFR 50.33(f)(3) "to demonstrate to the Commission the financial qualification of the applicant to carry out, in accordance with regulations in this chapter, the activities for which the permit or license is sought."

Since the NRC staff has determined that Entergy Nuclear VY is financially qualified under 10 CFR 50.33(f) to hold the licenses for VY, and that Entergy Nuclear VY has committed to assume full financial responsibility for funding the safe operation and maintenance of VY, the NRC staff concludes that ENO has satisfied applicable financial qualifications requirements and that there are no problematical financial qualifications issues with regard to ENO.

#### 4.0 DECOMMISSIONING FUNDING ASSURANCE

The NRC has determined that the requirements to provide assurance of decommissioning funding and provision of an adequate amount of decommissioning funding are necessary to ensure the adequate protection of public health and safety. Section 50.33(k) of 10 CFR requires that an application for an operating license for a utilization facility contain information indicating how reasonable assurance will be provided that funds will be available to decommission the facility. Pursuant to 10 CFR 50.7(b), each power reactor licensee must certify that it will provide decommissioning funding assurance in an amount that may be more, but not less, than the amount determined under the formulas in 10 CFR 50.75(c)(1) and (2).

VYNPC currently maintains two decommissioning trusts for VY; one for tax-qualified funds, the other for non-tax qualified funds. The application states that at the closing of the sale VYNPC will transfer the assets of its Qualified and Non-qualified Decommissioning Trust Funds to a trust fund to be established by Entergy Nuclear VY. As of August 30, 2001, the aggregate value of the assets in the Funds totaled \$296.2 million. Between the Effective Date and the Closing, VYNPC will make additional deposits from time to time to the Decommissioning Funds in accordance with FERC and IRS requirements. The amount required at closing to meet the NRC Funding Requirement, assuming a two-percent real rate of growth on the funds until the end of license, is calculated by Entergy Nuclear VY to be \$304 million (see enclosure 10). The NRC staff has verified Entergy Nuclear VY's calculation and accepts this amount as accurate.

Pursuant to Section 6.10 of the PSA, in the event the aggregate value of the Qualified Decommissioning fund and Nonqualified Decommissioning Fund, as of the Closing, is less than the minimum decommissioning amount required by the NRC, VYNPS shall be required to make an additional deposit to the Nonqualified Decommissioning Fund so that the aggregate value is equal to the NRC minimum. However, the additional deposit together with the deposits made between the Effective Date and the Closing, shall not exceed an aggregate amount equal to \$16,777,380 times the number of days between July 1, 2001 and the Closing Date divided by 365. The application further states that if any additional amount is needed in order to satisfy the NRC's funding requirements, this amount will be supplied by Entergy Nuclear VY through an additional deposit of funds, a surety, or a parent or affiliate company guarantee. The responsibility for decommissioning the plant will transfer to Entergy Nuclear VY upon transfer of the NRC license and closing of the sale.

The NRC staff concludes that Entergy Nuclear VY has complied with the requirements in 10 CFR 50.75(b) with respect to the amount of decommissioning funds that Entergy Nuclear VY must certify that it will provide. However, the NRC staff believes that the following condition should be applied as a condition of the order approving the license transfer:

Entergy Nuclear VY is required to provide decommissioning funding assurance of no less than \$304 million, after payment of any taxes, that will be deposited in the decommissioning trust fund or otherwise guaranteed, for VY at the time of VY's license transfer to Entergy Nuclear VY and ENO. Final approval of the applicant as licensee for VY will be contingent upon providing such deposit or guarantee in a form acceptable to the NRC.

#### 5.0 ANTITRUST REVIEW

The Atomic Energy Act does not require or authorize antitrust reviews of post-operating license transfer applications. Kansas Gas and Electric Co., et al. (Wolf Creek Generating Station Unit 1), CLI-99-19, 49 NRC 441 (1999). Therefore, since the transfer application post-dates the issuance of the Vermont Yankee operating license, no antitrust review is required or authorized.

#### 6.0 FOREIGN OWNERSHIP, CONTROL, OR DOMINATION

Sections 103d and 104d of the Atomic Energy Act prohibit the Commission from issuing a license for a nuclear power plant to "any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government." The Commission's regulations at 10 CFR 50.38 contain virtually identical language to implement this prohibition.

The application states that Entergy Nuclear VY is a Delaware Limited Liability Company, with its principal office located in Vernon, VT and with an additional office to be located in Brattleboro, VT. Entergy Nuclear VY is an indirect wholly owned subsidiary of Entergy Corporation, and an indirect wholly owned subsidiary of Entergy Nuclear Holding Company #3.

The application states that ENO is a Delaware corporation with its principal place of business located in White Plains, New York. ENO is a direct wholly owned subsidiary of Entergy Nuclear Holding Company #2 and an indirect wholly owned subsidiary of Entergy Corporation.

The application gives the names of the principal officers of Entergy Nuclear VY and ENO, and represents that all are citizens of the United States. Under the PSA, all regular employees of VYNPC will be offered employment with ENO.

The application also states that Entergy Nuclear VY and ENO are not owned, controlled, nor dominated by an alien, foreign corporation, or foreign government. It also states that in seeking to become the licensed owner and operator of VY, Entergy Nuclear VY and ENO are not acting as the agent or representative of another entity. The NRC staff has no reason to believe otherwise.

## 7.0 TECHNICAL QUALIFICATIONS

*[To be provided by IOLB]*

## 8.0 INSURANCE

The provisions of the Price-Anderson Act (Section 170 of the AEA) and the Commission's regulations at 10 CFR Part 140 require that the current indemnity agreement be modified to reflect Entergy Nuclear VY and ENO as the new licensees of VY.

In accordance with the Price-Anderson Act, the new licensees will also be required to provide primary insurance and participate in the secondary retrospective insurance pool. They will also be required to maintain property insurance as specified in 10 CFR 50.54(w). The information provided in the application concerning financial qualifications demonstrates that Entergy Nuclear VY, the owner, will be able to satisfy applicable insurance requirements for itself and ENO.

Consistent with NRC practice, the staff will require Entergy Nuclear VY and ENO to provide satisfactory documentary evidence that they have obtained the appropriate amount of insurance required of licensees under 10 CFR Part 140 of the Commission's regulations, prior to the issuance of the amended licenses reflecting the new licensees. Because the issuance of the amended licenses is directly tied to the consummation of the proposed transfers, the order approving the transfers will be conditioned essentially as follows:

Before the completion of the transfer of the VY licenses, Entergy Nuclear VY and ENO shall provide the Director of the Office of Nuclear Reactor Regulation satisfactory documentary evidence that they have obtained the appropriate amount of insurance required of licensees under 10 CFR Part 140 of the Commission's regulations.

## 9.0 CONCLUSIONS

The NRC staff has concluded, based upon the information and representations contained in the application and on the considerations in the foregoing discussion, that with the appropriate conditions discussed above, Entergy Nuclear VY and ENO are qualified to be the license holders for VY to the extent requested. And that the transfer of the licenses to Entergy Nuclear VY and ENO is otherwise consistent with the applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

Principal Contributor: T. Bilik

Dated: January 15, 2002