

Enexus MOU Review

Entergy Nuclear Vermont Yankee (ENVY)

Reliability Oversight

For the Joint Fiscal Committee

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Overview & Summary

Following this overview and brief summary, this report consists of a discussion of Chapters 4.1 and 4.2 of the Vermont Yankee Public Oversight Panel Report regarding Entergy's spinoff of Entergy Nuclear Vermont Yankee (ENVY) to Enexus, and an analysis of the MOU between the DPS and Entergy

1. In Chapter 4.1, the Public Oversight Panel specifically stated that the Enexus spinoff would not improve ENVY's reliability and would, in fact be detrimental. And, in Chapter 4.2, the Public Oversight Panel discussed ENVY's reliability in regards to its assessment of the probability of a nuclear power plant having a failure that results in an extended duration outage of 1-year or longer.

1.1. The Public Oversight Panel's Report noted that there have been more than 50 outages at nuclear power plants that have lasted more than 1-year.

1.2. The Panel's analysis impacts the review of Enexus because the cash flow created by the Enexus spinoff is predicated upon all the assumption that all the Enexus nuclear plants continue to operate at a very high level of reliability and does not reflect the probability of a long outage for a single Enexus plant. This premise is in direct conflict with the proposed fleet of nuclear power plants that Entergy envisions spinning off into the Enexus Corporation, because all these plants are older reactors facing aging management and reliability issues.

2. 1 The new MOU implies that the creation of Enexus will improve ENVY's reliability by providing a pool of money for reliability improvements *if those improvements make business sense*. ENVY will require the \$100 million cash pool to address reliability issues related to its condenser. This cash pool does not suffice because the caveat in the MOU states that these improvements will be made *if those improvements make business sense*.

2.2 The additional \$60 million being set aside for decommissioning is identical to the \$60 million already being provided by Entergy and is providing no additional benefit to Vermonters if the creation of Enexus is approved. Left unaddressed by this new MOU is the larger question of who will pay for all decommissioning costs if the money in the fund is depleted and additional work still needs to be performed.

Section 1

Enexus Spinoff Impact Upon ENVY Reliability

In Act 189, the Legislature directed the Vermont Yankee Public Oversight Panel to

“Assess the facility’s operational performance, and the facility’s reliability for continued power production, **giving risk perspectives where appropriate.**” *Act 189, Section 2, Goals and Objectives, (3), Page 3.*
[Emphasis Added]

The Vermont Yankee Public Oversight Panel believed that the possibility of an Entergy spinoff to a wholly new entity named Enexus was such a significant issue to the reliability of Entergy Nuclear Vermont Yankee that the panel devoted two sections of its report to notify the Legislature of “risk perspectives”. The Vermont Yankee Public Oversight Panel specifically said that, “reorganization into ENEXUS has the possibility of negatively affecting reliability.”

“4.1 The Proposed Reorganization under ENEXUS

Entergy has proposed spinning off its merchant plant fleet - the Northern and Midwest plants -into a new corporate entity, ENEXUS. This entity would only have access to the assets of the merchant plants, and not the full resources of Entergy Corporation. Currently, this proposal is on hold, a result of the national economic crisis. The Panel takes no position regarding this proposal. However, the corporate commitments reviewed by the NSA team would likely be modified in this transaction, and organizational relationships would be changed. The reorganization would most certainly modify budget structures, and could result in resource impacts for programs reviewed by NSA. The Panel identifies that reorganization into ENEXUS has the possibility of negatively affecting reliability.” *Public Oversight Panel Report Chapter 4.1, Page 34.*

It should be noted that the Panel’s concerns regarding the possibility of a new corporation named Enexus were over and above the 80-problem areas originally identified in its report to the Legislature. While the Public Oversight Panel took “no position regarding this proposal”, the panel was clear the corporate structure of ENVY would “be modified in this transaction, and organizational relationships would be changed. The reorganization would most certainly modify budget structures, and could result in resource impacts for programs reviewed by NSA.”

Specifically, the Panel said that the Enexus spinoff would:

1. create organizational change,
2. modify budgets,
3. impact promised resources (money previously allocated),
4. and change commitments Entergy had previously made to support Vermont Yankee.

Furthermore, the Panel noted a key weakness in the financial structure plan for Enexus. This weakness is that Entergy assumes that all six of the aging Enexus nuclear reactors will operate without extended outages for the next twenty years. On page 34 of the Oversight Report, the Panel stated,

“4.2 The Possibility of Long Duration Outages

The NSA team did not comment on the possibility of long duration outages. The reliability of an electrical generating plant is clearly reduced if it must shut down for an extended period of time. Forty-one of the 130 nuclear power reactors licensed to operate by the NRC and its predecessor, the Atomic Energy Commission, have experienced outages lasting longer than one year.³⁶ Ten reactors experienced two separate year-plus outages. To illustrate the abnormality of an outage lasting longer than one year, the average duration of a nuclear power reactor refueling outage in 2005 was 38 days, with some outages completed in less than 20 days. VY's most recent refueling outage was completed in November 2008 in slightly over 22 days.” *Public Oversight Panel Report Chapter 4.1, Page 34.*

The point the Public Oversight Panel made was that historically, there is between a 31 percent (41/130) probability and a 39 percent (51/130) probability of any nuclear power plant having an outage that lasts more than one-year. Given that Enexus would own six older nuclear reactors, the probability of at least one of them having a significant outage is highly likely. However, the use of leveraged capital assets in the business structure created for Enexus requires that none of these reactors experience a significant outage; otherwise Enexus will be unable to pay off its debt.

³⁶ Footnote from the Vermont Yankee Public Oversight Panel Report, March 2009: “Several U.S. units closed in the 1990s, some because the expenses of necessary modifications did not seem justified. A number of the closed units would have reached the 40-year mark by now. No U.S. nuclear plants have closed in the last ten years.

Historical data suggests that the assumption that all six aging nuclear power plants will operate reliably without significant outages for 20-more years is questionable. The data indicates that any single nuclear reactor has a 1 percent per year likelihood (39%/40 years) of undergoing a significant outage. Looking forward for the next 20-years means that there is a 20 percent chance that ENVY will encounter a long outage. While ENVY has not had an outage lasting one year or longer, like the recent 15-month outage at Davis Besse in Ohio, Vermont Yankee had a full “9-month outage to replace recirculation piping” in 1986-87. (*Footnote 37, Public Oversight Panel Report Chapter 4.2, Page 35*).

The 1986-87 9-month outage at Vermont Yankee occurred in a much younger plant; one that does not face the aging management issues illuminated at ENVY by the 80-item list. Within the proposed Enexus entity there would be six aging reactors and each one has the same 20 percent chance of a significant shutdown. Statistically speaking, sooner or later one of the six nuclear power plants will most likely experience a significant outage lasting a year or more. Moreover, as the Public Oversight Panel noted, “About half (46.7 percent) of the boiling water reactors licensed to operate in the U.S. have had one or more year-plus outages.” Once again that remains a significant financial issue due to the use of leveraged capital assets in the Enexus scenario, which requires that none of these reactors experience a major unanticipated outage for the very high debt-ratio to work.

Not only did the Public Oversight Panel identify this risk in March 2009, but also Entergy itself has recently acknowledged the same problem. To reduce the credit risk faced by the Enexus ownership of only six aging nuclear plants expected to run reliably for an additional 20-years, Entergy CEO J. Wayne Leonard said that Entergy might consider buying more power plants to add to Enexus. According to a November 4, 2009 *Bloomberg News* story, entitled [Entergy spinoff may buy plants to reduce credit risk](#),

“Enexus Energy Corp., the nuclear electricity producer that Entergy Corp. plans to spin off next year, may look to buy more power plants to reduce the financial and credit risk of relying only on its six reactors. “I expect Enexus will look at all sorts of assets that fit around their portfolio,” Entergy Chief Executive Officer Wayne Leonard said Tuesday in an interview at an industry conference in Hollywood, Florida. “They could

add assets and actually enhance their credit.” *Bloomberg.com: News*, http://www.nola.com/business/index.ssf/2009/11/entergy_spinoff_may_bu_y_plants.html

This strategy of adding additional power plants to the six aging Enexus nuclear plants does not imply that these additions will be nuclear. Coal, gas and oil generation are less prone to extended outages because such plants have less regulations and are not radioactive. According to the Bloomberg article,

“Enexus would find acquisition opportunities should it look to expand beyond nuclear power, said Daniel Seitz, an analyst at Dudack Research Group in New York. "If you're not looking for nuclear assets, you would find some," Seitz said. Nuclear plants are "big cash generators," she said, and not many go up for sale.” *Bloomberg.com: News*, http://www.nola.com/business/index.ssf/2009/11/entergy_spinoff_may_bu_y_plants.html

Even if Enexus is not approved by the State of Vermont, Entergy appears to be considering an alternative strategy to accomplish the same goal without Vermont's approval. According to CEO Leonard, as quoted in the same Bloomberg News article, if Vermont and New York do not approve Enexus, the corporation will attempt to structure an entirely different deal that would leave the six aging nuclear plants with the Entergy name and spin all the other assets and cash out to form a new corporation. CEO Leonard believes such restructuring would achieve the same goal of leveraging the older nuclear plants without the required approval of Vermont, New York, or any other states with these aging nukes. CEO Leonard said,

“Entergy now is awaiting approval from the New York State Public Service Commission. Plants earmarked for the new company are in Michigan, New York, Vermont and Massachusetts. Entergy would have "probably 20 different plans" to choose from as alternatives should New York regulators reject the spinoff, Leonard said.

One option would be to spin off its utility businesses into a separate company, which wouldn't change the ownership of the Enexus plants. Leonard said the parent company would continue to own the plants and would be saddled with debt that Entergy's utilities wouldn't have to take with them. "In the Enexus transaction, we're offering almost \$3 billion of support," Leonard said. "If you did it the other direction, then, from the New York standpoint, they said 'no,' but they only have approval if you

have the change-of-control of those units." *Bloomberg.com: News*
http://www.nola.com/business/index.ssf/2009/11/entergy_spinoff_may_bu_y_plants.html

In addition to the Public Oversight Panel's concerns regarding the aging reactors and the proposed Enexus spinoff, the evidence shows that there are additional concerns regarding the recent MOU between the DPS and Entergy.

Section 2

MOU Fiscal Issues

I believe that the MOU as negotiated between DPS and Entergy is seriously flawed and unenforceable. For those of you who don't know my background, I have more than 38-years of nuclear engineering experience including fiduciary responsibility to a major corporation where more than 400 nuclear employees reported to me from sites around the U.S. Additionally, one of the groups reporting to me designed the first ever nuclear power plant decommissioning project. Key personnel at TLG Engineering, now an Entergy subsidiary and the firm that has undertaken the decommissioning estimate for ENVY, also reported to me, so I am well versed in engineering protocols, nuclear financing, and nuclear power plant decommissioning.

The three major areas that I believe need to be addressed and improved prior to further consideration of the MOU by the State of Vermont are:

1. Decommissioning Funds
2. Working Capital
3. Overall Capitalization

Decommissioning Fund:

Provisions for the decommissioning of Vermont Yankee are vague and do not address the fundamental issue of who will pay the full cost to completely return the Vermont Yankee site to a Greenfield status. The MOU states:

"1.4 Enexus will maintain in full force and effect until the VY Station is decommissioned to a Greenfield State a letter of credit (LoC#1) in the amount of \$60 million less any amount previously drawn down on LoC#1.

LoC#1 shall be available to fund the VY Station's operating expenses following the cessation of operations at the VY Station. Once this financial bridge is accomplished and at least 20% of the balance of the decommissioning trust fund is accessed, any remaining amounts in LoC#1 can be used for decommissioning costs, including storage and management of spent-nuclear fuel and other decommissioning costs including decommissioning the VY Station site to a Greenfield State.”

There are five problems with Paragraph 1.4 of the MOU:

1. The plain reading of this paragraph appears to limit ENVY’s liability at \$60,000,000 above what will be escrowed in the Decommissioning Fund.
2. The key question of who pays for any and all decommissioning costs above and beyond what is escrowed in the fund is not addressed in this agreement. Given that the party to the agreement is a Limited Liability Corporation (LLC) and the parent company has a junk bond rating, this is a considerable risk for the State of Vermont to assume.
3. The previous agreement stated that excess decommissioning funds would be shared 50/50 between Entergy and the people of Vermont. This paragraph appears to allow those funds to be spent on storage of spent fuel rather than be returned to the people of Vermont.
4. The NRC has been quite specific that spent fuel funds may not be comingled with other decommissioning efforts, yet this paragraph seems to allow those funds to move back and forth.
5. The paragraph does not address in what year the \$60,000,000 in funds are denoted. For example, is that \$60 Million in 2009 dollars or 2032 dollars?

The January 10, 2007 TLG Services report entitled, *Decommissioning Cost Analysis for the Vermont Yankee Nuclear Power Station*, is the most definitive current decommissioning cost estimate for ENVY. The TLG report lists many possible scenarios to dismantle Vermont Yankee. All decommissioning scenarios that begin with the end of service in 2032 estimate that it will cost \$53,998,000 (\$54 Million) just for the first year’s costs after the plant is shut down. So, while at first glance the

\$60,000,000 (\$60 Million) that Entergy has guaranteed in its MOU appears to be adequate for the first year's decommissioning requirements, a careful reading of the TLG report shows that all costs have been calculated in 2006 dollars.

Thus, the \$53,998,000 does not reflect the true costs in 2032 that must be escalated over 26 years by 4 percent per year. The true cost of ENVY's decommissioning expenses for the first year are at least \$150,000,000 (\$150 Million) in 2032 dollars, which is far less than the \$60,000,000 (\$60 Million) provided in the proposed MOU. The people of the State of Vermont are not protected by an adequate financial backstop if this agreement is approved.

Working Capital

Provisions in the new MOU for adequate working capital remain as nonexistent as they did in the old MOU. Specifically, Paragraph 1.1 and 1.2 of the MOU state:

“1.1 No later than the date on which the transactions described in Entergy VY's petition, summarized above, close, Enexus shall enter into a loan agreement with EVY providing EVY with working capital in the amount of \$100 million (the "Working Capital Facility")...

1.2 The Working-Capital Facility described in paragraph 1.1 above may be used by EVY for cost-justified and economic non-safety projects for VY Station such as critical reliability projects.”

These two paragraphs taken together are meaningless for the following reasons:

1. The Public Oversight Panel identified the need for Entergy to replace its condenser. This project alone will drain the Working Capital Fund, leaving no money for the other critical reliability projects and the remainder of the 80-item list.
2. The MOU does not state which year's dollars the \$100,000,000 dollars are denoted. A \$100,000,000 capital improvement in 2012 is a \$200,000,000 capital improvement in 2022. The older the plant becomes, the less the Working Capital Fund will be worth. As the plant ages, the value of the fund will decrease due to inflation. Therefore, there will be less money available exactly when the funds

- are most needed.
3. The provision that improvement be *cost justified* is unenforceable. There is no provision for any group or any agency, other than ENVY itself to determine whether or not money should be invested in ENVY.
 4. One would expect that even without this agreement, ENVY would already make *cost justified* decisions because they are a for-profit entity. Paragraph 1.2 therefore contributes nothing to the reliability of Vermont Yankee.

Overall Capitalization

Provisions in the proposed MOU do not reduce the risk of Enexus being undercapitalized, and in fact allow for the junk bond rating without penalty for the next four years until at least 2014. One of the reasons Reuters had said Enexus is such a bad deal is this junk bond rating. Specifically, Paragraph 1.5 states:

1.5 If Enexus has not obtained and maintained in place a credit rating one notch below investment grade (e.g., Standard & Poor's BB+), or higher, from at least one rating agency by January 1, 2014, Enexus shall furnish a letter of credit ("LoC#2") issued by a financial institution rated A or higher by S&P or a similar rating from another rating agency or similar and appropriate credit quality from a nationally respected credit rating agency, to EVY in the amount of \$50 million. This letter of credit, LoC#2, may be utilized by EVY to provide cost-justified, economic financial support to EVY.

Thus, Enexus may be two notches below investment grade (i.e. junk bond) in 2014 and the only penalty it would face would be that corporation must secure a Letter of Credit for \$50,000,000 (\$50 Million) in 2014 dollars "to provide cost-justified, economic financial support to EVY". Yet, as stated above, the assessments of which improvements to ENVY are *cost justified* are ENVY's alone to make. Therefore, this provision is unenforceable and contributes nothing to the long-term reliability of Vermont Yankee for the people of Vermont.

Conclusion

The MOU as negotiated between the Department of Public Service and Entergy does nothing to address the underlying weakness of the Enexus spinoff. The new corporation

remains an over leveraged junk bond company. Furthermore, the MOU does not improve the reliability of Vermont Yankee, and will, most likely, reduce ENVY's reliability. Finally, the MOU still fails to protect the people of the State of Vermont for the financial risks of decommissioning the reactor especially in light of the recent Department of Health notice of radiation contamination in the stormwater system. Radiation contamination, including Cobalt 60, Tritium, Strontium 90, and Cesium 137, escalated the cost of decommissioning Connecticut Yankee (CY) by \$481 Million above and beyond what was in the decommissioning fund. CY was decommissioned from 1997 to 2007. The courts determined that the excess cost of decommissioning should belong to the ratepayers, since they had benefitted from CY's power.

With the existing agreement between Vermont and Entergy, Vermont is contractually committed to ENVY, an LLC that is backed by a corporation with tangible assets (Entergy). Under the proposed new agreement, Vermont would replace those tangible assets with an MOU backed by junk bonds and an underfunded corporation (Enexus).