The Windham Region Experience with the Closure of Vermont Yankee

The Windham Regional Commission (WRC) is a political subdivision of the State of Vermont that is composed of town-appointed commissioners from the 23 towns of Windham County, 3 towns in Bennington County, and 1 town in Windsor County in the southeastern corner of the state. In the absence of county government, the WRC is an essential link between local, state and federal government. Our mission is to assist towns with effective local governance and to work collaboratively with them to address regional issues. We are the host region to the Vermont Yankee Nuclear Power Station.

Decommissioning Project Description and Scope
The Vermont Yankee (VY) Nuclear Power Station is located on the Connecticut River in the Town of Vernon in the extreme southeast corner of the State of Vermont. The power station site is approximately 125 acres in size. Vernon is bordered by Franklin County, Massachusetts to the south and by Cheshire County, New Hampshire along and across the Connecticut River to the east.

The boiling water reactor became operational in 1972 and was owned and operated by the Vermont Yankee Nuclear Power Corporation, which was a public utility. It was originally constructed to produce 500 megawatts of electricity, but was later uprated to produce 620 megawatts. In 2002 the plant was purchased by Entergy Nuclear Vermont Yankee, thereby becoming a merchant plant rather than a public utility. Merchant plants are funded by private investors and sell power into a wholesale electricity market rather than directly to retail customers. In August, 2013 Entergy Nuclear Operations announced it would cease operations and close VY during the fourth quarter of 2014 due to economic factors and filed a letter with the Nuclear Regulatory Commission (NRC) on September 23, 2013 stating its intention to permanently cease power operations. It filed its Post Shutdown Decommissioning Activities Report, its decommissioning activities plan, with the NRC on December 14, 2014 and ceased operation fifteen days later on December 29th.

VY reported in December 2011 that it had 623 employees, with 167 of those residing in Massachusetts, 210 in New Hampshire, and 238 in Vermont. Eight employees lived elsewhere. The majority of employees resided in
the three adjoining counties of Windham County, Vermont, Cheshire County, New Hampshire, and Franklin County, Massachusetts.

In January 2019, ownership of VY was transferred from Entergy to NorthStar for the purpose of decommissioning and site restoration after receiving approvals from the Nuclear Regulatory Commission and the Vermont Public Utility Commission. The approvals for transfer of ownership were conditioned upon a decommissioning plan, related budget and financial assurances. Except for the small portion of the site that will be used for dry cask used fuel storage, NorthStar has committed to complete the radiological decommissioning and site restoration by December 2030. Entergy had originally planned to put the plant into a SAFSTOR condition for a period, after which the decommissioning would be completed by 2068.

Please note that the WRC has no fiscal ties to VY as we have no taxation authority. This fact may or may not be relevant to the context of other jurisdictions that do have direct fiscal ties to a plant. Current or future negotiating positions related to property valuation and taxation were never a concern for us, though understanding the plant’s post-closure taxation assumptions was important to estimate the potential fiscal impacts to the Town of Vernon and the State of Vermont. It is our hope that having direct fiscal ties to a facility will not weaken community resolve to understand and plan for resilience in the face of an eventual closure, but we understand anecdotally that these ties may cause some reluctance. If anything, that reluctance should underscore the importance of understanding what the impacts of a plant closure will be and how they can be mitigated.

**Issues, Impacts, and Key Take Aways**

The following information is largely excerpted from a white paper titled “When People and Money Leave (and the Plant Stays) – Lessons Learned from the Closure of the Vermont Yankee Power Station: A Tri-Region Experience.” It was produced with funding from the U.S. Department of Commerce Economic Development Administration and the Brattleboro Development Credit Corporation, with technical expertise and support contributed by the Windham Regional Commission, Brattleboro Development Credit Corporation, Franklin County Regional Council of Governments and Southwest Region Planning Commission.

**Early, ongoing, and neutral engagement in state regulatory processes enabled the host region to understand what the impacts would be when the plant would eventually close, for whatever reason that might be, and to develop evidence-based policy positions.**

The WRC actively engaged in Vermont Public Utility Commission (formerly Public Service Board) dockets related to VY, but it did so from a neutral position as to whether or not the plant should continue operation. The context here is important. VY was controversial from the outset, both locally and within the states it bordered. The WRC adopted a neutral position so it could promote conversation among all sides. Importantly, it also meant that while the focus of most parties in PUC dockets was on the continued operation of the plant, the WRC was in the position to ask what happens when the plant ceases to operate. To that end it was able to look at the evidence presented by all parties about the socioeconomic impacts of the plant on the region (employment, income, taxes, charitable contributions, etc.) as well as how the plant owners intended to decommission the plant and restore the site when it did shut down. Based upon this evidence the WRC was able to develop policy positions as to what would be in the region’s best interest when the plant eventually
ceased operations for whatever reason in order to mitigate the socioeconomic impacts and to restore the plant site to industrial reuse as soon as possible. It also meant the WRC had knowledge of and understood information introduced into the record that described in considerable detail:

- how many people the plant employed
- in what communities they lived
- employee average salaries
- beneficiaries of charitable contributions
- plant owner assumptions about taxes to be paid post-closure and the basis for value assessment
- plant owner assumptions about decommissioning, site restoration, and site restoration standards
- plant owner assumptions about the decommissioning trust and the management thereof, and
- the corporate structure of the plant owner and how that structure related to decommissioning responsibilities, including financial responsibilities.

The information, knowledge and policy base developed by the WRC over several years and through several dockets enabled it to:

- provide foundational information for a post-VY closure analysis conducted in 2011-12 before the announced closure of the plant;
- have an established position as to what was in the best socioeconomic and orderly redevelopment interests of the region immediately upon the announcement by Entergy of its intent to close the plant;
- provide detailed information about what communities would be most affected to its counterparts in Massachusetts and New Hampshire, as well as to state and federal elected officials and policymakers;
- present a detailed policy position and related rationale to state policymakers to establish a clear understanding of what the host region’s needs and expectations would be of any negotiations between the state and the plant owner; and
- establish a clear policy basis for comments on VY’s Post Shutdown Decommissioning Activities Report and related Site Assessment, which were submitted to the NRC.

The larger lesson is that any host community should build its knowledge base about the physical and socioeconomic role of a major employer in that community and what that employer intends to do if and when it ceases operation.

Nuclear power station host communities may want to meet with plant operators to see what information they might share. They can also research other information such as Decommissioning Cost Estimates, generic environmental impact statements prepared by the NRC, and other public filings with federal and state regulators.

In our rural area, the greatest impacts have been the out-migration of employees and their families, and the loss of their disproportionately high incomes circulating in the local economy.

It should be noted that when a nuclear power station closes, many of the employees will be able to find work elsewhere within the nuclear industry if not within the same company. This is not to say that there will not be employment impacts when a plant closes. There will be direct, indirect and induced employment impacts. However, unlike the shutting of a manufacturing facility, mine, distribution center or other large employer
where the majority of those being laid off may have limited mobility, many of the professional employees employed by a nuclear plant will be recruited to move elsewhere. In a rural economy, these employees likely earned considerably greater income than their fellow local workers who did not work for the power station. The annual pay of a Vermont Yankee worker was approximately $105,000, which is two and a half times greater than the average pay in the region (about $40,000 in 2010). While VY accounted for only about .7 percent of employment in the Tri-Region area, it accounted for 1.8 percent of the regional payroll.

Don’t assume you will have access to plant employees through the employer, or the ability to directly communicate with those employees.

Because of the nature of the work, and the qualifications and clearances required, nuclear power plant workers are in high-demand within the industry. Employees are likely to be offered very significant incentives to stay working at the plant through the closure. They are then likely to be offered similar positions at a different location within the company, or to stay within the industry but with a different company and at a new location. This is obviously good news for the employee, but the plant owner’s interests in retaining its skilled workforce may confound efforts to retain these highly-skilled STEM (science, technology, engineering, mathematics) workers in the area. A region planning to replace the lost jobs should consider planning for more jobs than those being lost with the plant closure due to the much higher than average wages of plant workers. To replace the lost wages will likely require more jobs at a lower wage level. Workers may also be eligible for Trade Adjustment funding for job retraining through the Department of Labor. These funds often carry a requirement that the training be for jobs paying at least 80% of the wages of the job lost.

Understand the role of the plant in the local community and culture, and what the implications of the loss of that employer mean.

There is a need to look beyond employment and income and related effects to also understand the role of employees, spouses and children in the community and civic life, financial and in-kind contributions to charitable organizations, and the role the employer in organizing civic activities (fairs, parades, community picnics, etc.). To what extent was the employer responsible for organizing and convening civic activities that might otherwise be the purview of local civic organizations? To what extent is the employer tied to the way the community identifies itself? Underlying the numbers of employees, spouses and children are relationships. These employees and their families are neighbors, family and friends. They are children in schools, coaches on soccer and baseball fields, volunteers in fire departments, customers in stores, contributors to local causes, and households in neighborhoods. Closure mitigation planning should seek to minimize disruption to these relationships, or the effects of the loss of these relationships, throughout the social fabric of communities.

If you have already developed a comprehensive economic development strategy (CEDS), or other economic development plan in which you have confidence, pursue it.

At the risk of stating the obvious, if you have a federally-approved economic development strategy in place before the closure, or other well thought out economic development plan, you’ve already got a path to follow. Ideally, it should contain planning to mitigate the economic and decommissioning impacts expected after the
closure. If it doesn’t, the economic development plan or strategy should still provide a foundation for action assuming it reflects other economic development assets to be built upon. While the announcement of a closure may create a greater sense of urgency, it likely won’t necessitate a need for a change in the direction of the strategy unless that strategy is dependent upon the continued operation and existence of the plant. Economic development strategies should not be overly focused upon one business, industry or sector, but should instead focus on the development of a broad economic base. The Windham Region developed its CEDS with the assumption that VY would, at some point, close. This assumption was largely based on myriad possible regulatory decisions, but also knowledge that maintenance issues could impact continued operation decisions. The fortunes of nuclear energy changed dramatically over a very brief period of time (since 2013) when the availability of cheap natural gas made the continued operation of older nuclear plants in deregulated power markets economically less-viable. This is within the 5 year update cycle of a CEDS. Would the Windham Region CEDS have assumed the possible closure of VY in the absence of regulatory uncertainty? Perhaps not, but it is our suggestion that communities which host power stations of any sort/fuel consider the place of that facility in the local economy, and how the potential closure of that facility could inform the economic development strategy for the area. The energy sector is particularly volatile at this time for a variety of reasons (economic output and energy demand, fuel surpluses, exploration technologies, regulations and incentives, etc.).

When it comes to a nuclear plant, how it chooses to decommission will have a major impact on the rate of change.

The graphs below demonstrate changes in employment under two different decommissioning scenarios. These are graphs provided by Entergy Vermont Yankee in a Vermont Public Service Board docket, which show the employment profiles under DECON and SAFSTOR. DECON refers to prompt decommissioning while SAFSTOR refers to deferred decommissioning. The NRC allows decommissioning to be deferred up to 60 years. With SAFSTOR, after a brief ramp up to button up the plant, the workforce would quickly drop further to about 50 people. VY is currently transitioning into SAFSTOR and as was mentioned previously, the number of employees will ramp down to approximately 24 staff, primarily to provide security.

With DECON or prompt decommissioning, the station initially employs a larger workforce, which then dissipates more slowly over approximately ten years. Economic impact studies provided by Entergy in the docket suggested that DECON provides a stronger buffer against overall job loss than SAFSTOR.
The more gradual falloff of economic activity associated with DECON offers the region social, economic and fiscal benefits that SAFSTOR does not. Previously, when nuclear power stations operated by public utilities would cease operations, they would go the DECON route as it was less expensive and costs could be passed along to ratepayers. The graphic below presented by Entergy at a meeting of the Nuclear Decommissioning Citizens Advisory Panel shows the intended post-closure staff transition. Entergy was actually able to speed up its wet fuel management campaign, which was completed in 2018, which meant it could reach the Dry Fuel Management staffing levels more quickly. Now that the transfer of ownership has been completed between Entergy and NorthStar, decommissioning activities are underway (some actually began before the ownership transfer). NorthStar will be using a series of contractors to execute the decommissioning and site restoration work.

Support for and opposition to the plant does not go away with a plant’s closure.

Positions of opposition to or support for the plant do not evaporate with its closure. If anything positions may harden. Zenia Kotval and John Mullin explore this in their study of the impacts of the closure of Yankee Rowe ([https://works.bepress.com/john_mullin/18/](https://works.bepress.com/john_mullin/18/)). Economic development and planning entities will want to transcend these differences by providing the most objective and defensible information possible and, hopefully, guide the community towards actions that will mitigate or buffer impacts and build up the community and its economic resilience.

There may be a tendency to look for a solution at the plant site.

It is not uncommon for any community to assume that the solution that will help mitigate the impacts of the closure of a major employer and tax generator lies within the site of the business that is closing. This may be a logical approach when the business in question occupies a site and facility that is easily and quickly transferable and adaptable to another use. This is not the case with a nuclear plant. Assume the site will not be available for redevelopment within a time horizon that will mitigate closure impacts. A possible exception could be a situation where the plant site is extraordinarily large. Precedent indicates that spent fuel storage on the site of the dismantled plant will preclude redevelopment. At a minimum, assume that the site will not be available for redevelopment for a period of at least 10 years after the intent to cease operations is announced. It will take at least this long to complete the dismantlement of the facility. And as was mentioned above, NRC decommissioning rules allow a plant to remain in SAFSTOR for 60 years. There’s also the practical reality that the community likely does not own and does not control the site.
There may be a tendency and temptation to look for a single big solution to replace what is lost (e.g., employees, income, tax revenue) that can stymie progress to be had through a series of smaller solutions.

Whether the goal is to replace employees, population, taxes, or all of the above, the region or community may be inclined to pursue a single big solution that fills the holes left by the closure. This can divert essential energy and effort away from solutions that are more likely to be realized. Particularly in rural areas, the likelihood of replacing the plant with an employer that would hire a similar number of employees at similar wages and which might be assessed at a similar value is low. *This is not to say a community shouldn’t have big aspirations.* But it should be conscious of the extent to which it might pursue the improbable perfect in lieu of the achievable good. Quickly identify other important economic clusters and find ways to strengthen them. Especially with the closure of a nuclear power plant, it is unlikely that the region will find relevant replacement positions for nuclear scientists and engineers. These employees will probably leave the region and take their incomes and spending with them. Finding ways to enhance and strengthen other clusters can help to stem the loss of dollars from the overall regional economy.

There is no dedicated funding stream to assist communities with the economic impact mitigation of nuclear plant closures. You’ll need to piece together other federal, state and local resources.

Since the closure, the region has been fortunate to find support from the U.S. Economic Development Administration to explore opportunities to mitigate the economic impacts of the closure of VY. There are no federal funds dedicated to mitigating the impacts of nuclear plant closure, however. There is some evidence that Congressional earmarks had been used by host communities in the past to support mitigation strategies, but the era of earmarks is over for at least the time being. Unless and until a closure mitigation fund is created, economic development planners will need to rely upon existing programs. These include those offered through the U.S. Economic Development Administration, the U.S. Department of Agriculture (Rural Development), and the U.S. Department of Housing and Urban Development (HUD).

There is no national model for economic impact mitigation.

There are currently no consistent models for negotiating financing for the mitigation of the economic impacts of the closure of nuclear power plants. It is important that the host community or region is able to understand and articulate how it will be impacted, and to develop strategies to address those impacts. It is very important to share that information early and often with the plant, the public and with policymakers, even if they may not be particularly receptive of that information at first. All three audiences will have an equally important role in ensuring balanced economic recovery planning.

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