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Power Plant of the Week - Schiller Station

Jim Bride December 8, 2013

The Schiller Station is owned by Public Service New Hampshire (PSNH) and is named after Avery Schiller, a dominant figure in PSNH management who helped shape the modern PSNH over a career spanning from 1924 through 1970. The plant is located in Portsmouth, NH along the Piscataqua River, just north of the I-95 bridge connecting Maine and New Hampshire. If you are able to take your eyes off the road, you can see the plant pretty clearly from the bridge. PSNH, a subsidiary of Northeast Utilities, is unique among New England investor owned utilities in that PSNH still owns generation that is part of the rate base. The Schiller Station is one of three major fossil fuel plants in the PSNH generating portfolio.

Currently, there are three active units (Units 4-6) at Schiller which were brought online in the early to mid 1950s. Units 4 & 6 have dual fuel capabilities (residual oil & low sulfur coal) and Unit 5 burns biomass. Unit 5 was retrofitted to burn wood chips, woody biomass, and wood waste products in the mid-2000s and entered service in late 2006. PSNH created a special entity for Unit 5 called Northern Wood Power and it appears that this venture has been an operational and financial success for PSNH and the local forest products industry.



Photo of Schiller Station. Photo Credit: PSNH obtained via Flickr

The Schiller Station has seen its share of controversy lately as coal generation has become rather unpopular in New England. The Board of Selectmen of Elliot, ME voted in June 2013 to petition the U.S. Environmental Protection Agency (EPA) to conduct a detailed study of the plant's emissions.

Elliot, ME is directly across the Piscataqua from Portsmouth, NH. The basis of Elliot, ME's request to EPA lies in Section 126 of the Clean Air Act, which allows for residents of a downwind state to request EPA involvement in review of emissions from a facility in an upwind state if the environmental regulators in the upwind state are perceived to be ineffectively dealing with emissions violations. The petition by Elliot, ME is focused on the potential of the Schiller Station to exceed the National Ambient Air Quality Standards (NAAQS) for Sulfur Dioxide (SO_x) and does not rely on an actual dataset that proves a violation. The Sierra Club has been actively involved in the efforts of Elliot, ME.

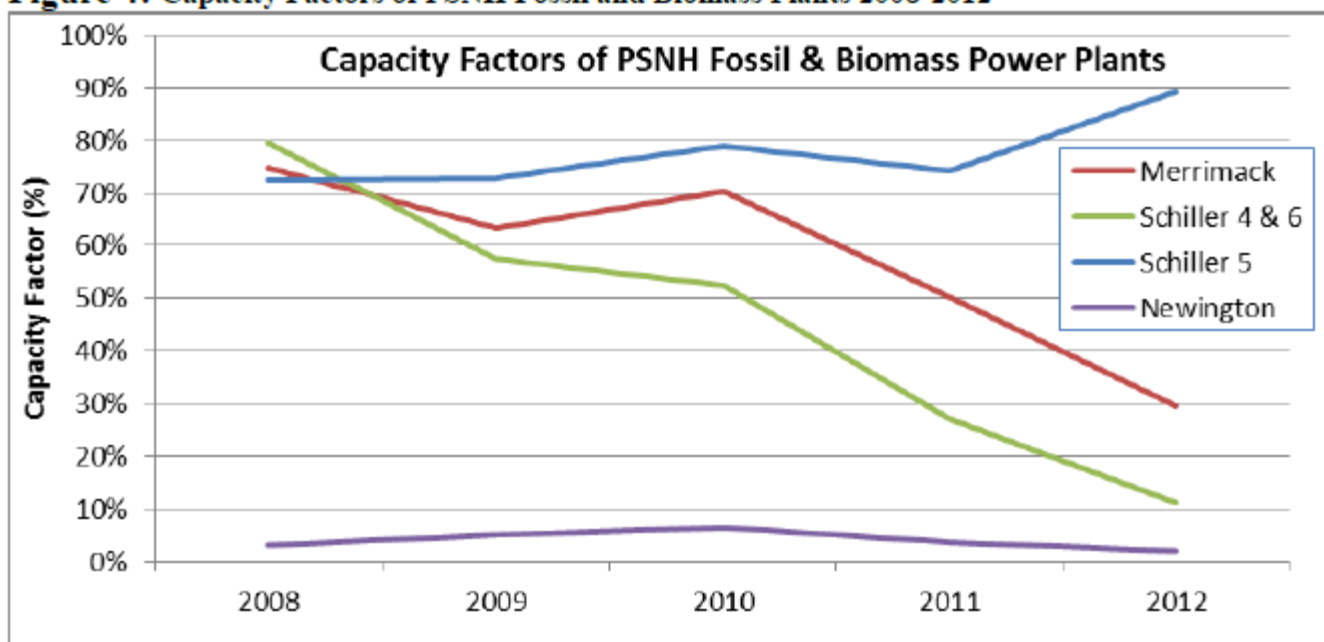
Although the Schiller Station does have legacy pollution issues (like every old fossil fuel generator), it has been upgraded with modern pollution controls such as electrostatic precipitators (to remove particulates) and Selective Non-Catalytic Reduction controls to reduce Nitrogen Oxide (NO_x) emissions. Although Schiller does not have controls for SO_x, they manage SO_x emissions by purchasing low sulfur coal. Buying low sulfur coal is a common compliance strategy for older coal plants in the U.S. Northeast as the added cost for low sulfur coal is typically much less than the cost to install SO_x controls. Although Units 4 and 6 at the Schiller Station are currently compliant with EPA regulations, its unclear if they will be able to survive past the compliance deadline for the new Mercury and Air Toxics (MATs) standards that will take effect by 2015.

Environmentalists often target the water intake and discharge permits of older fossil fuel plants and the Schiller Station is no exception. Although Schiller is in compliance with its National Pollution Discharge Elimination System (NPDES) permit issued by EPA under the Clean Water Act (CWA), the current permit dates from 1990. The CWA mandates that NPDES permits be updated every five years, but in practice this has proven to be unattainable and unrealistic for environmental regulators with limited resources. Once adequate permits and compliance limits are set for many facilities, the permits continue in perpetuity despite exceeding their statutory expiration. In 2012, the Sierra Club and "Our Children's Earth Foundation" sued the EPA to compel them to update the NPDES permit for the Schiller Station.

Despite all the recent bluster regarding pollution issues, actual emissions from Units 4 and 6 at Schiller have declined substantially over the last few years due to changes in the ISO-NE power market. These units can't pollute if they don't run and low natural gas prices have made coal/oil fired units like these uneconomic. The graphic below is taken from NH Public Utility Commission (NH PUC) IR 13-020 which was an investigation and report on PSNH's ownership of generation

assets. The graphic shows the utilization of various PSNH generating assets. Note how Schiller Units 4 & 6 continue to see their run hours reduced while Schiller Unit 5 (biomass) has consistently delivered capacity factors near 80%.

Figure 4: Capacity Factors of PSNH Fossil and Biomass Plants 2008-2012



(Source: SNL Data Services)

NH PUC IR 13-020, Report on Investigation into Market Conditions, Default Service Rate, Generation Ownership, and Impacts on Competitive Electricity Market. page 15

NH PUC IR 13-020 has some great data points regarding the Schiller Station. Due to the declining utilization of this plant, PSNH is does not have any active contracts for coal supply. They are taking delivery of delayed shipments associated with an expired contract and working down the coal pile at the site. The economics of Units 4 & 6 are currently highly challenged and these units are resulting in losses for PSNH. Unit 5, powered by biomass, is currently profitable and derives revenue from the sale of electricity, RECs, and Production Tax Credits (PTCs). The PTCs will expire in approximately 2017 and major changes to the biomass eligibility standards for the MA and CT Renewable Portfolio Standards may have an adverse effect on the REC income stream for Unit 5.

Nonetheless, Unit 5 has been a financial success through the present time as evidenced by the valuation analysis in IR 13-020 and its capacity factor near 80%.

Schiller Station is similar to many older coal and oil fired generating assets in the U.S. Northeast. Although Units 4 and 6, are needed during extreme heat and peak winter temperature driven load spikes, they are dormant for much of the year. Given the ghastly economics of Units 4 & 6 in the current ISO-NE power market and the looming MATs compliance deadline, its unlikely that these units will be in operation at the end of this decade. Although environmentalists are attacking this plant on several fronts, economics will seal its fate and this may be hastened by the potential for NH PUC to order PSNH to divest its generation assets. At this point, its unclear in NH PUC will go that route, but if they do it will not bode well for continued operation of Units 4 & 6. Unit 5 will probably soldier on so long as it continues to remain profitable.

TagsPSNH, Schiller Station, Elliot, Coal, Oil, ISO-NE, Northern Wood Power, NH PUC IR 13-020

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