

MCNEIL GENERATING STATION, BURLINGTON, VERMONT

The Joseph C. McNeil Generating Station of the Burlington Electric Department (BED), located in Burlington, Vermont, has a nominal capacity of 50 MWe and has operated since 1984. This plant is the largest U.S. utility-owned plant burning wood. When built, it was the largest dedicated wood-fired electric generating station in the world. Plant operation has been successful, although New England Power Pool (NEPOOL) economic dispatch procedures have limited the operations. The plant was retrofitted in 1989 to burn natural gas, either alone or in combination with wood. The plant has cycled and switched fuels, as demanded by fuel prices, fuel availability, and NEPOOL's requirements. It has had to start up as often as 210 times annually. Between 1990 and 1994, about two-thirds of the fuel requirements were supplied by wood and one-third by gas. In 1995, about 7% of the energy input was from natural gas, and in 1996 through 1998 virtually all the fuel burned was wood, except for the use of gas during startup. During 1997 and 1998 the plant ran at a CF of about 35%.

Vital Statistics

Design capacity, net MWe	50			
Configuration	Traveling grate stoker boiler			
Fuels	Wood wastes:	Forest residues Mill residues Urban residues		
	Natural gas (when economical)			
Year	1995	1996	1997	1998*
Net generation, MWh/yr	136,000	137,000	155,000	155,000
Annual CF, %	31.0	31.1	35.4	35.4
Net heat rate, Btu/kWh	13,714-14,125			
Thermal efficiency, HHV, %	24.2-24.9			

*Projected in December 1998.

History

During the 1970s, most of the power supply for Burlington came from the Moran Generating Station, which consisted of three 1950s-vintage, 10-MW stoker coal-fired units. Electric load growth, the aging of the Moran station, and outdated emission controls prompted BED to examine ways to provide additional generating capacity to meet the city's needs. Studies were conducted, and wood fuel scored high on all counts: locally