

1.4 Identification of Agents and Contractors

The design of the Lungmen NPS is the responsibility of a group that includes General Electric Nuclear Energy (GENE), Stone & Webster (S&W), and Mitsubishi Heavy Industries (MHI). Taiwan Power Company (TPC) maintains control and oversight of the design engineering process.

1.4.1 GE Nuclear Energy (GENE)

GE has engaged in the development, design, construction, and operation of boiling water reactors since 1955. Table 1.4-1 lists the GE reactors completed, under construction, or on order. As can be seen, GE has substantial experience, knowledge, and capability to design, manufacture, and furnish technical assistance for the installation and startup of reactors.

1.4.2 Stone & Webster (S&W)

S&W, as a full service engineer-constructor, provides complete project management, design, engineering, quality assurance, construction, construction management, startup, testing, operations support, and contract maintenance services to nuclear power utilities across the United States. S&W also has extensive international nuclear experience in engineering, design, project management, and construction for a large number of varied assignments (see Table 1.4-2). S&W has been involved in nuclear power work for more than 50 years demonstrating strength, financial stability, industry leadership, and construction innovation.

1.4.3 Mitsubishi Heavy Industries (MHI)

MHI is responsible for providing the turbine-generator and related auxiliary systems, including the related control systems and instrumentation.

Table 1.4-1 Commercial Nuclear Reactors Completed, Under Construction, or in Design by General Electric

Station	Utility	Rating (MWe)	Year of Order	Year of Low Power License
Dresden 1	Commonwealth Edison	207	1955	1959
Humboldt Bay	Pacific G&E	70	1958	1962
KHAL	Germany	15	1958	1961
Garigliano	Italy	150	1959	1964
Big Rock Point	Consumers Power	72	1959	1963
JPDR	Japan	11	1960	1963
KRB	Germany	237	1962	1967
Tarapur 1	India	190	1962	1967
Tarapur 2	India	190	1962	1969
GKN	Holland	52	1963	1968
Oyster Creek	JCP&L	640	1963	1969
Nine Mile Point	Niagara Mohawk	610	1963	1969
Dresden 2	Commonwealth Edison	794	1965	1969
Pilgrim	Boston Edison	670	1965	1972
Millstone 1	NUSCO	652	1965	1970
Tsuruga	Japan	340	1965	1970
Nuclenor	Spain	440	1965	1971
Fukushima 1	Japan	439	1966	1971
BKW KKM	Switzerland	306	1966	1972
Dresden 3	Commonwealth Edison	794	1966	1971
Monticello	Northern States	548	1966	1970
Quad Cities 1	Commonwealth Edison	789	1966	1972
Browns Ferry 1	TVA	1067	1966	1973
Browns Ferry 2	TVA	1067	1966	1974
Quad Cities 2	Commonwealth Edison	789	1966	1972
Vermont Yankee	Vermont Yankee	515	1966	1972
Peach Bottom 2	Philadelphia Electric	1065	1966	1973
Peach Bottom 3	Philadelphia Electric	1065	1966	1974
FitzPatrick	PASNY	821	1968	1974
Shoreham	LILCO	820	1967	1984

Table 1.4-1 Commercial Nuclear Reactors Completed, Under Construction, or in Design by General Electric (Continued)

Station	Utility	Rating (MWe)	Year of Order	Year of Low Power License
Cooper	Nebraska PPD	778	1967	1974
Browns Ferry 3	TVA	1067	1967	1977
Limerick 1	Philadelphia Electric	1100	1967	1984
Limerick 2	Philadelphia Electric	1100	1967	1988
Hatch 1	Georgia Power	786	1967	1974
Fukushima 2	Japan	762	1967	1975
Brunswick 1	Carolina P&L	821	1968	1977
Brunswick 2	Carolina P&L	821	1968	1974
Duane Arnold	Iowa ELP	545	1968	1974
Fermi 2	Detroit Edison	1093	1968	1987
Hope Creek 1	PSE&G	1067	1969	1984
Chinshan 1	Taiwan	610	1969	1978
Caorso	Italy	822	1969	1977
Hatch 2	Georgia Power	786	1970	1978
La Salle 1	Commonwealth Edison	1078	1970	1982
La Salle 2	Commonwealth Edison	1078	1970	1983
Susquehanna 1	Pennsylvania P&L	1050	1967	1982
Susquehanna 2	Pennsylvania P&L	1050	1968	1984
Chinshan 2	Taiwan	610	1970	1979
Hanford 2	WPPSS	1100	1971	1983
Nine Mile Point 2	Niagara Mohawk	1100	1971	1987
Grand Gulf 1	Mississippi P&L	1250	1971	1982
Fukushima 6	Japan	1135	1971	1979
Tokai	Japan	1135	1971	1977
River Bend 1	Gulf States	940	1972	1985
Perry 1	Cleveland Electric	1205	1972	1981
Laguna Verde1	Mexico	660	1972	1988
Leibstadt	Switzerland	940	1972	1984
Kuosheng 1	Taiwan	992	1972	1981
Kuosheng 2	Taiwan	992	1972	1982

Table 1.4-1 Commercial Nuclear Reactors Completed, Under Construction, or in Design by General Electric (Continued)

Station	Utility	Rating (MWe)	Year of Order	Year of Low Power License
Clinton 1	Illinois Power	950	1973	1986
Cofrentes	Spain	975	1973	1985
Laguna Verde 2	Mexico	660	1973	1994
Kashiwazaki - Kariwa 6	Japan	1300	1987	1996
Kashiwazaki - Kariwa 7	Japan	1300	1987	1997
Lungmen 1	Taiwan	1300	1996	
Lungmen 2	Taiwan	1300	1996	

Table 1.4-2 Representative Stone & Webster Nuclear Projects

Client/Plant	Net MW	Type	S&W Responsibility
ALCO Products, Inc.			
Army Package Power Reactor	2.5	-	Engineering and Construction
Alabama Power Company			
Farley 1 (Dothan, AL)	830	PWR	Operational Engineering Services
Arizona Public Service Co.			
Palo Verde 1 (Wintersburg, AZ)	1,270	PWR	Engineering Support
Palo Verde 2 (Wintersburg, AZ)	1,270	PWR	Engineering Support
Palo Verde 3 (Wintersburg, AZ)	1,270	PWR	Engineering Support
Baltimore Gas & Electric Co.			
Calvert Cliffs 1 (Lusby, MD)	850	PWR	Operational Engineering Services
Calvert Cliffs 2 (Lusby, MD)	850	PWR	Operational Engineering Services
Boston Edison Co.			
Pilgrim 1 (Plymouth, MA)	670	BWR	Operational Engineering Services
Carolina Power & Light			
Robinson 2 (Hartville, SC)	665	PWR	Operational Engineering Services
Brunswick 1 (Southport, NC)	790	BWR	Operational Engineering Services
Brunswick 2 (Southport, NC)	790	BWR	Operational Engineering Services
Shearon Harris (New Mill, ND)	900	PWR	Operational Engineering Services
Carolinas Virginia Nuclear Power Association, Inc.			
Carolinas - Virginia Prototype	17	PWR	Engineering, Design, and Construction Liaison
Cleveland Electric Illuminating Co.			
Perry 1 (North Perry, OH)	1,205	BWR	Engineering Support
Perry 1 (North Perry, OH)	1,205	BWR	Engineering Support
Commonwealth Edison Co.			
Dresden 1 (Morris, IL)	207	BWR	Operational Engineering Services
Zion 1 (Zion, IL)	1,040	PWR	Operational Engineering Services
Zion 2 (Zion, IL)	1,040	PWR	Operational Engineering Services
Lasalle 1 (Seneca, IL)	1,078	BWR	Operational Services
Lasalle 2 (Seneca, IL)	1,078	BWR	Operational Services
Commonwealth Edison Co. and IOWA-Illinois Gas & Electric Co.			
Quad-Cities 1 (Cordova, IL)	789	BWR	Operational Engineering Services

Table 1.4-2 Representative Stone & Webster Nuclear Projects (Continued)

Client/Plant	Net MW	Type	S&W Responsibility
Quad-Cities 2 (Cordova, IL)	789	BWR	Operational Engineering Services
Connecticut Yankee Atomic Power Co.			
Haddam Neck (Haddam Neck, CT)	575	PWR	Engineer/Constructor/Operational Engineering Services
Consumers Power Co.			
Palisades (South Haven, MI)	740	PWR	Operational Engineering Services
Midland 1 (Midland, MI)	530	PWR	Engineering Support
Midland 2 (Midland, MI)	805	PWR	Engineering Support
Big Rock Point (Charlevoix, MI)	67	BWR	Operational Engineering Services
Detroit Edison Co.			
Enrico Fermi 2 (Newport, MI)	1,075	BWR	Engineering Support
Duquesne Light Co.			
Beaver Valley 1 (Shippingport, PA)	810	PWR	Engineer/Constructor/Operational Engineering Services
Beaver Valley 2 (Shippingport, PA)	833	PWR	Engineer/Construction Manager
Duquesne Light Co. and U.S. Department of Energy			
Shippingport (Shippingport, PA)	90	PWR	Engineer
Florida Power & Light Company			
St. Lucie 1 (St. Lucie, FL)	839	PWR	Operational Engineering Services
St. Lucie 2 (St. Lucie, FL)	839	PWR	Operational Engineering Services
Turkey Point 3 (Turkey Point, FL)	666	PWR	Operational Engineering Services
Turkey Point 4 (Turkey Point, FL)	666	PWR	Operational Engineering Services
Florida Power Corporation			
Crystal River 3 (Red Level, FL)	825	PWR	Operational Engineering Services
Georgia Power Co.			
Vogtle 1 (Waynesboro, GA)	1,100	PWR	Engineering Support
Vogtle 2 (Waynesboro, GA)	1,100	PWR	Engineering Support
GPU Nuclear Corporation			
Oyster Creek (Lacy, NJ)	610	BWR	Operational Engineering Services
Three Mile Island 1 (Londonderry, PA)	786	PWR	Operational Engineering Services
Gulf States Utilities Co.			
River Bend 1 (St. Francisville, LA)	936	BWR	Engineer/Constructor

Table 1.4-2 Representative Stone & Webster Nuclear Projects (Continued)

Client/Plant	Net MW	Type	S&W Responsibility
Houston Lighting & Power Co.			
South Texas Project 1(Palacios, TX)	1,250	PWR	Engineering Support
South Texas Project 2 (Lalacios, TX)	1,250	PWR	Engineering Support
Illinois Power			
Clinton (Clinton, IL)	930	BWR	Engineering Support/Construction Manager
Iowa Electric Light & Power Co.			
Duane Arnold (Palo, IA)	538	BWR	Operational Engineering Services
Jersey Central Power & Light Co.			
Oyster Creek (Forked River, NJ)	620	BWR	Operational Engineering Services
Kansas Gas & Electric			
Wolf Creek (Burlington, KS)	1,150	PWR	Engineering Support
Long Island Lighting Co.			
Shoreham (Brookhaven, NY)	820	BWR	Engineer/Construction Manager
Louisiana Power & Light Co.			
Waterford 3 (Taft, LA)	1,165	PWR	Engineering Support
Maine Yankee Atomic Power Co.			
Maine Yankee (Wiscasset, ME)	860	PWR	Engineer/Constructor/Operational Engineering Services
Mississippi Power & Light			
Grand Gulf (Port Gibson)	1,250	BWR	Engineering Support
Nebraska Public Power District			
Cooper (Brownsville, NB)	764	BWR	Operational Engineering Services
New York Power Authority			
Indian Point 3 (Indian Point, NY)	965	PWR	Operational Engineering Services
James A. FitzPatrick (Scriba, NY)	780	BWR	Engineer/Construction Manager/ Operational Engineering Services
Niagara Mohawk Power Corp.			
Nine Mile Point 1 (Scriba, NY)	610	BWR	Constructor
Nine Mile Point 2 (Scriba, NY)	1,080	BWR	Engineer/Constructor
Northeast Utilities			
Millstone 1 (Waterford, CT)	660	BWR	Operational Engineering Services
Millstone 2 (Waterford, CT)	875	PWR	Operational Engineering Services

Table 1.4-2 Representative Stone & Webster Nuclear Projects (Continued)

Client/Plant	Net MW	Type	S&W Responsibility
Millstone 3 (Waterford, CT)	1,150	PWR	Engineer/Constructor
Northern States Power Co.			
Monticello (Monticello, MN)	536	BWR	Operational Engineering Services
Prairie Island 1 (Red Wing, MN)	503	PWR	Operational Engineering Services
Prairie Island 1 (Red Wing, MN)	500	PWR	Operational Engineering Services
Omaha Public Power District			
Fort Calhoun 1 (Fort Calhoun, NB)	478	PWR	Operational Engineering Services
Pacific Gas & Electric Co.			
Diablo Canyon 1 (Avila Beach, CA)	1,073	PWR	Engineering Support
Diablo Canyon 2 (Avila Beach, CA)	1,087	PWR	Engineering Support
Pennsylvania Power & Light Co.			
Susquehanna 1 (Berwick, PA)	1,032	BWR	Engineering Support
Susquehanna 2 (Berwick, PA)	1,038	BWR	Engineering Support
Philadelphia Electric Co.			
Peach Bottom 2 (Peach Bottom, PA)	1,100	BWR	Operational Engineering Support
Peach Bottom 3 (Peach Bottom, PA)	1,100	BWR	Operational Engineering Support
Limerick 1 (Pottstown, PA)	1,055	BWR	Engineering Support
Limerick 2 (Pottstown, PA)	1,055	BWR	Engineering Support
Portland General Electric Co.			
Trojan (Prescott, OR)	1,130	PWR	Operational Engineering Services
Public Service Co. of Colorado			
Fort St. Vrain (Platteville, CO)	330	HTGR	Operational Engineering Services
North Atlantic Energy Service Corp.			
Seabrook (Seabrook, NH)	1,150	PWR	Operational Engineering Services
Public Service Electric & Gas Co.			
Salem 1 (Salem, NJ)	1,106	PWR	Operational Engineering Services
Salem 2 (Salem, NJ)	1,106	PWR	Operational Engineering Services
Hope Creek (Lower Alloways, NJ)	1,031	BWR	Operational Engineering Services
Rochester Gas & Electric			
Ginna (Rochester, NY)	470	PWR	Engineering Support
Sacramento Municipal Utility District			
Rancho Seco (Clay Station, CA)	913	PWR	Operational Engineering Services

Table 1.4-2 Representative Stone & Webster Nuclear Projects (Continued)

Client/Plant	Net MW	Type	S&W Responsibility
South Carolina Electric & Gas			
Summer (Parr, SC)	885	PWR	Engineering Support
Southern California Edison and San Diego Gas & Electric Co.			
San Onofre 1 & 2 (San Clemente, CA)	436	PWR	Operational Engineering Services
San Onofre 3 (San Clemente, CA)	1,080	PWR	Engineering Support
Tennessee Valley Authority			
Browns Ferry 1 (Decatur, AL)	1,065	BWR	Engineering Support
Browns Ferry 2 (Decatur, AL)	1,065	BWR	Engineering Support
Browns Ferry 3 (Decatur, AL)	1,065	BWR	Engineering Support
Sequoyah 1 (Daisy, TN)	1,148	PWR	Engineering Support
Sequoyah 2 (Daisy, TN)	1,148	PWR	Engineering Support
Watts Bar 1 (Spring City, TN)	1,177	PWR	Engineering Support
Watts Bar 2 (Spring City, TN)	1,177	PWR	Engineering Support
Tennessee Valley Authority, Commonwealth Edison Co., and DOE			
Clinch River Breeder Reactor Plant (Oak Ridge, TN)	350	LMFBR	Construction Management/ Quality Assurance
Texas Utilities Generating Co.			
Comanche Peak 1 (Glen Rose, TX)	1,150	PWR	Engineer, Construction Support
Comanche Peak 2 (Glen Rose, TX)	1,150	PWR	Engineer, Construction Support
Toledo Edison Co.			
Davis-Besse 1 (Oak Harbor, OH)	877	PWR	Engineering Support/Operational Engineering Services
Union Electric			
Callaway (Fulton, MO)	1,125	PWR	Engineering Support
Vermont Yankee Nuclear Power Corp.			
Vermont Yankee (Vernon, VT)	504	BWR	Operational Engineering Services
Virginia Power			
North Anna 1 (Minerial, VA)	915	PWR	Engineering/Constructor/ Operational Engineering Services
North Anna 2 (Minerial, VA)	915	PWR	Engineering/Constructor/ Operational Engineering Services
Surry 1 (Gravel Neck, VA)	781	PWR	Engineering/Constructor/ Operational Engineering Services

Table 1.4-2 Representative Stone & Webster Nuclear Projects (Continued)

Client/Plant	Net MW	Type	S&W Responsibility
Surry 2 (Gravel Neck, VA)	781	PWR	Engineering/Constructor/ Operational Engineering Services
Washington Public Power Supply System			
WNP-2 (Richland, WA)	1,112	BWR	Engineering Support
Wisconsin Electric Co.			
Point Beach Unit 1	485	PWR	Operational Engineering Services
Point Beach Unit 2	485	PWR	Operational Engineering Services
Wisconsin Public Service Corp.			
Kewaunee (Carlton, WI)	503	PWR	Operational Engineering Services
Yankee Atomic Electric Co.			
Yankee (Rowe, MA)	167	PWR	Engineer/Constructor