

# High Voltage Bus Systems Worldwide Experience List

January 2016



No.	Project Name	Customer & Location	Order Date	Voltage Rating (kV)	Equipment Provided (kV)	Current Rating (A)	BIL Rating (kV)	Number of Circuits	Phase Length (m)	Notes
1	Hudson Switching Station	PSE&G; New Jersey, USA	1972	242	242	1600	900	1	414	Buried system from transformer to air bushings
2	Midtown Substation	New Orleans Public Service; LA, USA	1973	115	145	2000	550	1	138	Suspended in existing air insulated substation
3	Vista Substation	Southern California Edison; CA, USA	1973	242	242	2500	900	1	276	Installed vertically in transmission line tower
4	Duke Power	Duke Power; North Carolina, USA	1974	242	242	3800	900	2	1554	Transformer connections Installed in concrete trench
5	Lynchburg	AEP; Indiana, USA	1975	138	145	1250	550	2	1455	Buried connections from Alstom GIS
6	Ellensburg	Bonneville Power; Washington, USA	1975	550	550	3000	1425	1	576	Buried connection to transmission line
7	El Sol Substation	Arizona Power Service; AZ, USA	1975	230	242	2000	900	1	255	Transmission line connection in open trench
8	Trafalgar Substation	Ontario Hydro; Canada	1975	230	242	3000	900	10	1584	Exit circuits from BBC GIS to transmission lines
9	Arsenal Substation	Duquesne Light; Pennsylvania, USA	1976	145	242	3000	650	2	479	Exits from Westinghouse GIS
10	Claireville Substation	Ontario Hydro; Ontario, Canada	1976	230	242	3000	900	8	3480	Exit circuits from ITE & Alstom GIS
11	Station 23	Rochester Gas & Electric; NY, USA	1976	145	145	1600	650	1	36	Exits from Westinghouse GIS
12	Enco Substation	Gulf States Utilities; Louisiana, USA	1978	242	242	2000	900	2	221	Exit circuits from Westinghouse GIS
13	Miami Fort Substation	Cincinnati Gas & Electric; Ohio, USA	1977	362	362	2000	1050	1	186	Exit circuits from Westinghouse GIS
14	Spy Run Extension	AEP; Indiana, USA	1977	138	145	2000	650	1	126	Buried connections from Westinghouse GIS
15	Joshua Falls Line Station	AEP; Indiana, USA	1978	145	145	2000	750	3	1638	Exit circuits from Alstom GIS
16	Joshua Falls Line Station	AEP; Indiana, USA	1978	145	145	3000	650	1	165	Exit circuits from Alstom GIS
17	Lingan Station	Nova Scotia Power; Nova Scotia, Canada	1978	242	242	2000	900	5	783	Connections to Toshiba & Westinghouse GIS
18	Revelstoke HPP	B.C. Hydro; British Columbia, Canada	1979	550	550	4000	1550	2	1830	Inclined tunnel from underground powerhouse
19	Rowville Substation	State Electrical Commission; Melbourne, Australia	1979	550	550	3000	1800	1	940	Transmission line crossing, including spare phase of GIL
20	Merivale Substation	Ontario Hydro; Ontario, Canada	1979	230	242	3000	900	1	199	Exit circuit from Alstom GIS
21	West Wharton	Dept. of Transportation New Jersey, USA	1980	242	242	3000	900	2	67	Two phase installation with Westinghouse GIS
22	Revelstoke HPP	B.C. Hydro; British Columbia, Canada	1980	242	242	3000	900	2	330	Connects Mitsubishi GIS to overhead lines
23	Nuclear Unit 5 & 6	Korea Electric Power Co.; Korea	1980	362	362	1600	1050	6	2214	Exit circuits from Hitachi GIS
24	Hudson Switching Station	PSEG; New Jersey, USA	1980	242	242	2000	900	1	549	Second buried circuit from transformer to bushing

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25	Mitsubishi Tap	Bonneville Power; Washington, USA	1980	550	550	3000	1425	1	24	Tap extension to Mitsubishi GIS
26	Wayne Substation	Detroit Edison / EPRI; Michigan, USA	1981	362	362	2000	1050	1	543	Buried three in one test loop
27	Waltz Mill	U.S. Department of Energy; USA	1981	1200	1200	5000	2175	1	90	Above ground, single phase test loop
28	Guri Dam	Edelca; Venezuela	1981	800	800	1200	1925	5	855	Connects transformers to overhead lines
29	Lingan Substation	Nova Scotia Power; Nova Scotia, Canada	1981	242	242	3000	900	3	750	Exit circuits from Toshiba GIS
30	Nuclear Unit 7 & 8	Korea Electric Power Co.; Korea	1981	362	362	2500	1175	6	3441	Exit circuits from Hitachi GIS
31	Claireville Substation	Ontario Hydro; Ontario, Canada	1982	242	242	3000	900	1	435	Exit circuits from Alstom GIS
32	Robert Moses Dam	New York Power Authority; NY, USA	1983	362	362	2075	1300	2	150	Projects horizontally through face of dam
33	Rowville Substation II	Victoria State Electrical Commission; Australia	1984	550	550	3000	1800	1	705	Second transmission line crossing circuit
34	Waltz Mill	U.S. Department of Energy; USA	1984	1200	1200	5000	2175	1	330	Semi-flexible single phase test loop
35	Balsam Meadows PSPP	Southern California Edison; California, USA	1984	242	242	1200	900	1	1239	Installed in 300m vertical shaft
36	Harspranget Hydro	Swedish State Power Board; Sweden	1985	420	550	630	1300	1	333	Installed in vertical shaft
37	Mass. Street Substation	City of Seattle; Washington, USA	1986	242	242	2000	900	3	300	Connects Mitsubishi GIS to air insulated substation
38	Golden Hills Substation	New England Electric; MA., USA	1986	362	362	3000	1050	1	60	Exit circuits from Mitsubishi GIS
39	Grand Coulee Dam	U.S. Bureau of Reclamation; WA, USA	1986	242	242	1200	900	1	45	Exit circuits from Mitsubishi GIS
40	Midtown Substation	New Orleans Public Service; LA, USA	1986	242	242	3000	900	4	300	Exit circuits from Mitsubishi GIS
41	Sycamore Cogen	Sycamore Cogeneration; California, USA	1986	242	242	2000	900	5	1080	Connects Hitachi GIS to transformers
42	Midway Sunset Cogen	Midway Sunset Cogen; California, USA	1987	242	242	2000	900	4	1140	Installed in covered trench
43	Merivale Substation	Ontario Hydro; Ontario, Canada	1987	242	242	2000	900	1	240	Exit circuits from BBC GIS
44	Hawthorne Substation	Ontario Hydro; Ontario, Canada	1988	550	550	4000	1800	1	1479	Air insulated substation crossing
45	Harbor Cogen	Southern California Edison; CA, USA	1988	242	242	200	900	1	270	Air insulated substation crossing
46	Golden Hills Substation	New England Electric; Massachusetts, USA	1988	145	145	3000	900	1	60	Exit circuit from Mitsubishi GIS
47	Dunwoodie Substation	Con Edison of New York; New York, USA	1988	362	362	4000	1050	2	194	Addition of Mitsubishi GIS to existing ITE GIS
48	Lingan Substation	Nova Scotia Power; Nova Scotia, Canada	1988	242	242	2000	900	1	30	Exit circuits from Mitsubishi GIS

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49	Midtown Substation	New Orleans Public Service; LA, USA	1988	242	242	3000	900	1	150	Exit circuits from Mitsubishi GIS
50	Archer Substation	Hawaiian Electric; Hawaii, USA	1988	145	145	2000	650	2	54	Connects to 3-in-1 Mitsubishi GIS
51	Paddock Substation	Wisconsin Light & Power; WI, USA	1988	115	145	3000	550	4	133	Exit circuits from Mitsubishi GIS
52	Paddock Substation	Wisconsin Light & Power; WI, USA	1988	362	362	3000	1050	3	125	Exit circuits from Mitsubishi GIS
53	Golden Hills Substation	New England Electric; Massachusetts, USA	1988	121	145	3000	650	1	43	Connect ITE GIS to new Mitsubishi GIS
54	Golden Hills Substation	New England Electric; Massachusetts, USA	1988	362	362	3000	1050	1	44	Connect Mitsubishi GIS to ITE GIS and add cable
55	Talkha Substation	Egyptian Electric Authority; Egypt	1989	242	242	3000	900	17	2667	Exit circuits from Merlin Gerin GIS
56	Ocean State Cogen Plant	New England Electric; Rhode Island, USA	1989	362	362	3000	1050	3	196	Adds Hitachi GIS to existing air substation
57	Snyder Hill Substation	US Bureau of Reclamation; AZ, USA	1989	145	145	1200	550	5	198	Exit circuits from Mitsubishi GIS
58	East Garden City	New York Power Authority; NY, USA	1989	362	362	3000	1050	8	310	Exit circuits from Hitachi GIS
59	Smithburg Substation	Jersey Central Power & Light; NJ, USA	1989	242	242	3000	900	4	131	Turnkey extension to ITE GIS with Mitsubishi GIS
60	Enco Substation	Exxon Refinery; Louisiana, USA	1989	242	242	2000	900	2	67	Extension to existing ITE substation with ABB GIS
61	Waddell Substation	U.S. Bureau of Reclamation; AZ, USA	1990	242	242	3000	900	6	273	Exit circuits for Mitsubishi GIS
62	Guri Hydro	Edelca; Venezuela	1990	1200	1200	1200	2175	2	348	Vertical connections from transformers
63	Decatur Substation	Nevada Power; Nevada, USA	1990	242	242	1200	900	3	420	Overhead line connections in air insulated substation
64	Bellingham Cogen	Westinghouse; Massachusetts, USA	1990	362	362	1200	1050	6	900	Exit circuits for ABB GIS
65	Dunwoodie Substation	Con Edison of New York; New York, USA	1990	362	362	4000	1050	2	170	Extension of ITE GIS with Mitsubishi GIS
66	Hawthorne Substation	Ontario Hydro; Ontario, Canada	1990	550	550	4000	1800	1	1600	Installed in trench to cross air insulated substation
67	Seabrook Station	New Hampshire Yankee; NH, USA	1990	362	362	3000	1050	3	245	Turn-key replacement of existing ITE GIS bus
68	Teesside Power Station	Enron; United Kingdom	1990	275	242	3000	1050	10	5463	Connect ABB GIS to transformers
69	Claireville Substation	Ontario Hydro; Ontario, Canada	1991	550	550	4000	1800	7	1677	Exit circuits from ABB and Alstom GIS
70	Claireville Substation	Ontario Hydro; Ontario, Canada	1991	250	362	4000	900	1	2330	Exit circuits from ABB GIS
71	Milton Substation	Ontario Hydro; Ontario, Canada	1991	550	550	4000	1800	4	1200	Exit circuits from existing Alstom GIS
72	Manchester Street Power Station	PG&E; Rhode Island, USA	1992	145	145	2000	550	7	412	Exit circuits from Mitsubishi GIS
73	Dunwoodie Substation	Con Edison of New York; New York, USA	1992	362	362	4000	1050	1	70	Connection between ITE & Mitsubishi GIS

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74	Tianshengqiao	South China Electric Power Corp.; China	1992	550	550	2000	1550	1	50	Transformer to air bushing connection
75	Topolobampo	CFE; Mexico	1992	230	242	2000	900	5	345	ABB GIS to transformers and transmission lines
76	Castle Peak Station	China Light & Power; Hong Kong	1993	420	550	4000	1425	2	485	Extension to existing Alstom GIS & Reyrolle bus
77	Iwilei Substation	Hawaiian Electric; Hawaii, USA	1993	138	145	300	650	1	50	Connect 3-in-1 Mitsubishi GIS to transformers
78	IREQ Test Facility	Hydro Quebec; Quebec, Canada	1994	80	145	500	400	1	90	Replacement of Alstom bus circuit
79	Substation 9002 / Power Plant 8	SCECO Central; Saudi Arabia	1994	380	550	1200	1425	3	6800	Connects step-up transformers to ABB GIS
80	Teesside Power Station	Enron; United Kingdom	1995	275	242	3000	1050	1	18	Repair to transformer connection
81	Brooklyn Navy Yard	Parsons Main; New York, USA	1995	145	145	2000	650	3	215	Exit circuits from Mitsubishi GIS
82	Muara Tawar	PLN; Indonesia	1995	550	550	800	1550	1	601	Connect transformer to air insulated substation
83	Exxon Substation	Exxon Refinery; Louisiana, USA	1995	230	242	2000	900	7	312	Extension of existing ITE GIS with ABB GIS
84	Substation 9002 / Power Plant 8	SCECO Central; Saudi Arabia	1995	380	550	1200	1425	2	373	Connect new transformers into existing CGIT circuits
85	Ward Hill Substation	New England Electric; Massachusetts, USA	1996	345	362	4000	1050	3	33	Connect Mitsubishi GIS to overhead lines
86	Seabrook Station	New Hampshire Yankee; New Hampshire, USA	1996	345	362	3000	1050	1	313	Turn-key replacement of existing ITE GIS station bus
87	Substation 9001	SCECO Central; Saudi Arabia	1996	380	550	4000	1425	4	392	Connect ABB GIS to overhead lines
88	Aguas Buenas	PREPA; Puerto Rico, USA	1997	230	242	2000	900	7	468	Exit circuits from Mitsubishi GIS
89	Ghazlan Power Plant	SCECO East; Saudi Arabia	1997	380	550	1200	1550	6	639	Mitsubishi GIS to overhead lines
90	Ghazlan Power Plant	SCECO East; Saudi Arabia	1997	380	550	2000	1550	4	2224	Mitsubishi GIS to GSU transformers
91	Serrano Substation	Southern California Edison; CA, USA	1997	230	550	4000	900	2	1356	Turn-key replacement of existing ASEA GIS bus
92	Serrano Substation	Southern California Edison; CA, USA	1997	550	550	2000	1550	7	1262	Turn-key replacement of existing ASEA GIS bus
93	Serrano Substation	Southern California Edison; CA, USA	1997	230	242	2000	900	6	893	Turn-key replacement of existing ASEA GIS bus
94	Penuelas Power Station	Enron; Puerto Rico, USA	1997	230	242	3000	900	1	452	Connect transformer to transmission line
95	Tewksbury Substation	New England Electric; Massachusetts, USA	1998	345	362	3000	1050	2	46	Addition of Mitsubishi GIS to existing ITE GIS
96	Ling Ao NPP Units 1 & 2	Ling Ao Nuclear Power Co.; China	1998	550	550	2000	1550	2	3008	Connect generator step-up transformers to ABB GIS
97	Serrano Substation 3AA	Southern California Edison; California, USA	1999	230	550	4000	1050	1	560	Add Mitsubishi GIS & CGIT Circuit to ASEA GIS

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98	Serrano Substation	Southern California Edison; CA, USA	2000	550	550	4500	1550	1	476	Replace existing ASEA GIS with Mitsubishi GIS
99	Woburn Substation	Boston Edison; Massachusetts, USA	2000	345	550	2000	1175	3	115	Connect Mitsubishi GIS to transmission lines
100	Baxter Wilson Power Plant	Entergy; Mississippi, USA	2000	550	550	4500	1550	1	1252	Turn-key supply of CGIT connected to transmission line
101	Sterlington Substation	Entergy; Louisiana, USA	2000	550	550	1750	1550	1	438	Turn-key expansion of ITE GIS with new ABB GIS
102	Bethlehem Power Plant	Conectiv; Pennsylvania, USA	2001	550	550	2000	1550	2	1085	Turn-key supply of VA TECH GIS and CGIT bus
103	Seven Mile	BC Hydro; British Columbia Canada	2001	230	242	2500	1050	3	156	Replace existing ITE GIS with Mitsubishi GIS & CGIT
104	Serrano Substation	Southern California Edison; CA, USA	2002	230	242	2000	900	7	551	Replace of existing ASEA GIS with Mitsubishi GIS
105	Valley Substation	Southern California Edison; CA, USA	2002	550	550	4000	1550	2	505	Extension to existing ASEA GIS with two new circuits
106	Choctaw Gas Generation	Tractebel; Mississippi, USA	2002	550	550	1200	1550	4	467	Exit circuits from ABB GIS
107	Golden Hills Substation	National Grid; Massachusetts, USA	2002	121	145	3000	650	1	27	Turn-key replacement of ITE bus
108	Seabrook Station	FP&L Energy; New Hampshire, USA	2002	345	550	-	1050	1	6	Replace existing arresters with ABB SF6 arresters
109	Seabrook Station	FP&L Energy; New Hampshire, USA	2003	345	550	-	1050	3	18	Turn-key replacement of ITE CCVT's with trench VT's
110	Glen Carlyn Substation	Dominion Virginia Power; Virginia, USA	2003	230	242	3000	900	2	15	Extension of existing BBC GIS with Mitsubishi GIS
111	Miguel Substation	San Diego Gas & Electric; CA, USA	2003	550	550	3000	1550	4	740	Exit circuits from Mitsubishi GIS
112	Plumtree Substation	Northeast Utilities; Connecticut, USA	2004	345	362	3000	1050	7	600	Exit circuits and main bus for Mitsubishi GIS
113	Norwalk Substation	Northeast Utilities; Connecticut, USA	2004	345	362	3000	1050	3	981	Exit circuits and main bus for Mitsubishi GIS
114	Serrano Substation	Southern California Edison; CA, USA	2004	550	550	3000	1550	2	265	Replacement of existing ASEA bus
115	Orimulsion Power Plant	Zhangjiang Orimulpower; China	2004	550	550	3150	1550	2	579	Exit circuits for Toshiba GIS
116	Kudankulam Nuclear Power Plant	Nuclear Power Corporation; India	2004	220	242	2000	1050	2	1188	Tunnel installation from GIS to transformers
117	Seabrook Station	FP&L Energy; New Hampshire, USA	2004	345	550	-	1050	1	6	Replace existing arresters with ABB SF6 arresters
118	Valley Substation	Southern California Edison; CA, USA	2004	115	145	2000	650	1	34	Extension to existing ASEA GIS with new circuit
119	Bath County Hydro	Dominion Virginia Power; Virginia, USA	2004	550	550	3000	1800	6	610	Replace BBC GIS & gas insulated bus
120	Ward Hill substation	National Grid; Massachusetts, USA	2005	345	362	4000	1050	8	610	Exit bus from Mitsubishi substation
121	Wachusett Substation	National Grid; Massachusetts, USA	2005	345	362	4000	1050	7	909	Exit bus from Mitsubishi substation

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122	Wachusett Substation	National Grid; Massachusetts, USA	2005	123	145	4000	550	7	675	Exit bus from Mitsubishi substation
123	Valley Substation	Southern California Edison; CA, USA	2005	115	550	6000 4000	550	5	648	(2) circuits of 6000A main bus, (4) 4000A exit circuits
124	St. Antoine Substation	ITC; Michigan, USA	2005	145	145	3000	650	6	279	Exit bus from Mitsubishi substation replacing ITE
125	Bayamon Substation	PREPA; Puerto Rico, USA	2005	115	242	2000	550	2	114	Substation extension between Mitsubishi and VA Tech GIS
126	Laxiwa Hydropower Station	Huanghe Laxiwa Hydropower Station; Quinhai Prov. China	2005	800	800	4000	2100	2	2928	800 kV installation at 208M vertical in side mountain shaft
127	Palo Seco Substation	PREPA; Puerto Rico, USA	2005	123	145	2000	550	8	1743	Transformer and OHL exit circuits for ABB GIS
128	Arsenal Street Substation	Dequesne Light; Pennsylvania, USA	2005	345	362	3000	1050	4	189	Replacement of Westinghouse GIS substation with Mitsubishi GIS and CGIT
129	Seven Mile - Stage II	BC Hydro; British Columbia Canada	2005	230	242	2500	1050	3	156	Replace ITE GIS with Mitsubishi GIS & CGIT
130	Taylor Street Substation	ComEd; Illinois, USA	2005	345	362	3000	1050	4	127	Extension of existing Alstom GIS with new Mitsubishi GIS
131	Caniff Substation	ITC; Michigan, USA	2005	145	145	3000	650	6	321	Exit bus from Mitsubishi substation replacing ITE
132	Mt. Vernon Station	Metro North Railway; New York, USA	2006	145	242	2000	650	2	20	Retrofit single phase transformer connections
133	Valley Hybrid GIS	Southern California Edison; California, USA	2006	550	550	4000	1550	2	37	(12) sections of CGIT bus within Mitsubishi hybrid GIS
134	PP9 Block C&D	Saudi Electricity Company; COA, SAU	2006	380	550	1250	1550	4	9198	Expansion of existing PP9 plant. GIS to transformers
135	Claireville Substation	Hydro One; Ontario, Canada	2006	242	362	4000 6000	900	14	3243	Replace 6000A main bus & new exit circuits
136	Midtown	ITC; Michigan, USA	2006	145	242	2000 3000	650	8	454	Exit bus from Mitsubishi substation
137	Qurayyah 2 Power plant	Saudi Electricity Company; COA, Saudi Arabia	2007	380	550	3150 2500	1425	14	12132	4 GIL line crossing circuits, 5 steam circuits, and 5 GIB circuits for ABB substation
138	Grand Teton 2	Nevada Power Company; Nevada, USA	2007	242	242	2000	900	3	421	Unique application of GIL for low profile AIS substation
139	Glenbrook	Northeast Utilities; Connecticut, USA	2007	123	362	4000	550	2	869	Turnkey installation, standalone GIL
140	Norwalk Extension	Northeast Utilities; Connecticut, USA	2007	362	362	3150	1050	6	564	Expansion GIS bus for existing MEPPI substation
141	PP9 Block F	Saudi Electricity Company; COA, SAU	2007	380	550	1250	1550	3	1558	Expansion of existing PP9 plant. GIL to transformers
142	New Jersey Transit Substation	New Jersey DOT; New Jersey, USA	2007	242	242	2000	900	1	26	Retrofit of old Westinghouse equipment for new circuit breaker
143	Rancho Vista Substation	Southern California Edison; California, USA	2007	550	550	3000 4000 6000 7500	1550	6	715	Transformer, main bus, and exit bus for Mitsubishi substation

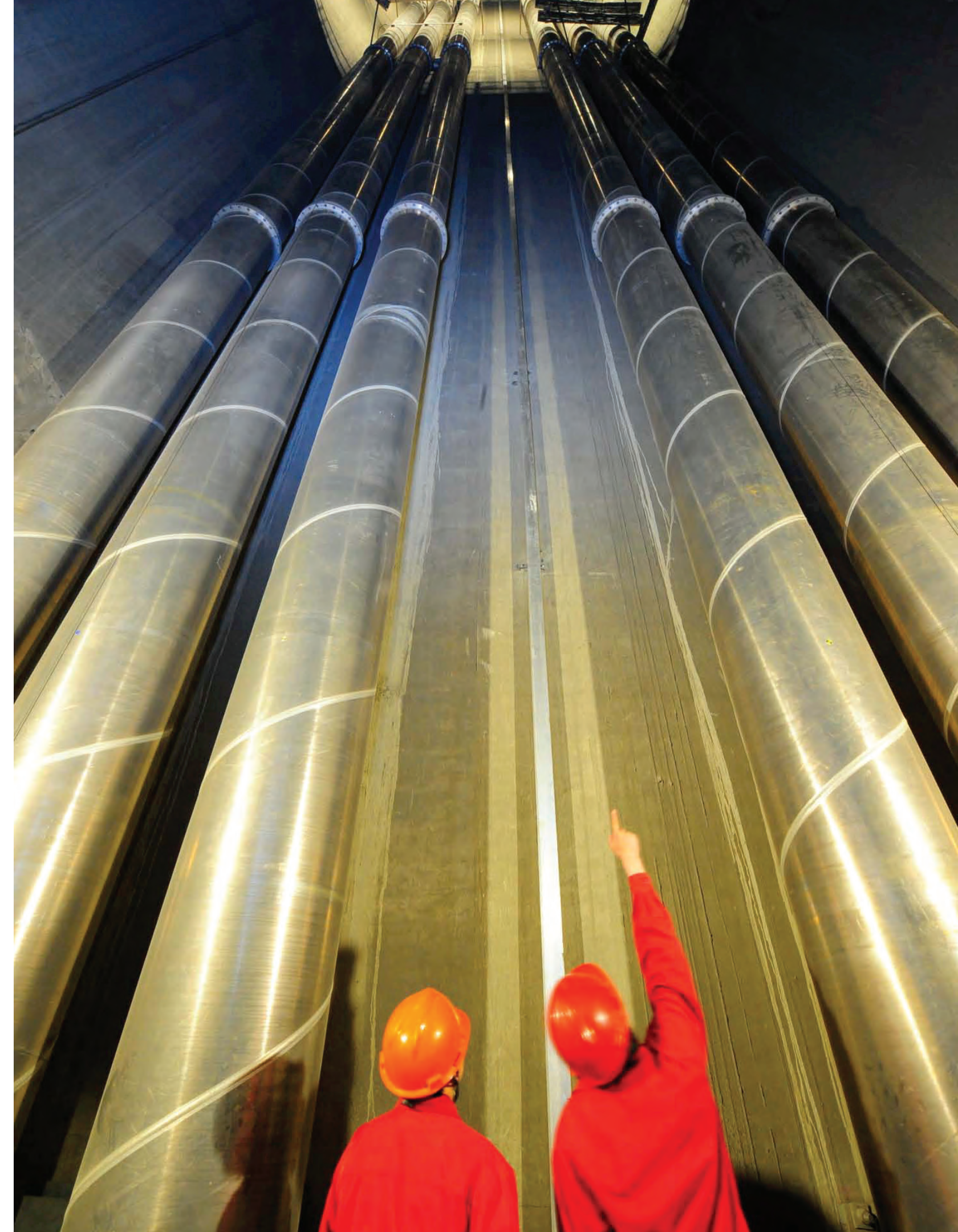
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144	Rancho Vista Substation	Southern California Edison; California, USA	2007	245	550	3000 4000 6000 7500	900	10	1483	Transformer, main bus, and exit bus for Mitsubishi substation
145	Ling Ao NPP Units 3&4	CNPEC; China	2007	550	550	4000	1550	2	3196	Connect GSU transformers to ABB GIS
146	Wakefield	National Grid; Massachusetts, USA	2007	123	145	4000	550	11	650	Exit bus from Mitsubishi substation
147	Wakefield	National Grid; Massachusetts, USA	2007	362	362	4000	1050	7	669	Exit bus from Mitsubishi substation
148	Cathedral Square	BC Hydro; British Columbia, Canada	2008	253	242	2000	900	1	62	Exit bus connecting existing Mitsubishi GIS to new transformer
149	Revelstoke Hydro Unit #5	BC Hydro; British Columbia, Canada	2008	550	550	4000	1550	3	496	Expansion of existing CGIT main bus for new generator
150	Glen Carlyn Substation	Dominion Virginia Power; Virginia, USA	2008	230	242	3000	900	9	313	Exit and crossing bus for Mitsubishi substation
151	Cherrywood Substation	Hydro One; Ontario, Canada	2008	550	550	4000	1800	2	3253	GIL connecting new incoming lines to existing AIS
152	Claireville Substation	Hydro One; Ontario, Canada	2008	550	550	4000	1550 1800	6	335	2 exit circuits and breaker connecting bus for existing substation
153	Milton Substation	Hydro One; Ontario, Canada	2008	550	550	4000 6000 8000	1550 1800	10	918	Supply of 4 exit circuits, main bus, and breaker connecting bus for existing substation
154	Seabrook Station	NextEra Energy; New Hampshire, USA	2008	345	362	3000	1050	5	325	Expansion of existing substation including interfaces to ITE eqpt.
155	Hongyanhe NPP	CNPEC; China	2008	550	550	2000	1550	4	4194	Connect generator step-up transformers to ABB GIS
156	Golden Hills Substation	National Grid; Massachusetts, USA	2009	345	362	4000	1050	1	61	Re-routing existing CGIT equipment
157	Rabigh V	Saudi Electricity Company; COA, SAU	2009	550	550	1250	1550	2	30	Emergency bus supply
158	Mica Dam HPP	BC Hydro; British Columbia, Canada	2009	550	550	4000	1550	3	3563	3 inclined circuits between GIS and underground power house.
159	Taishan NPP	CNPEC; China	2009	550	550	3150	1550	2	4263	Connection between GIS and transformers
160	Nuozhadu HPP	Hydro Lancang; China	2009	550	550	4000	1550	3	3177	207 meter vertical installation between GIS and line bushings
161	Sanmen NPP	SMNPC; China	2010	550	550	2500	1550	2	1473	Connection between GIS and transformers
162	West Farnum Substation	National Grid; Rhode Island, USA	2010	362	362	4000	1050	9	2218	Exit bus from Mitsubishi substation
163	Wachusett Substation	National Grid; Massachusetts, USA	2010	362	362	4000	1050	2	238	Exit bus from Mitsubishi substation
164	Radnor Heights	Dominion Virginia Power; Virginia, USA	2011	230	242	3000	900	6	95	Exit bus from Mitsubishi substation
165	Northern Avenue	Nstar; Massachusetts, USA	2011	121	242	3000	900	6	131	Exit bus from Mitsubishi substation
166	Electric Avenue	Nstar; Massachusetts, USA	2011	121	242	3000	900	6	131	Exit bus from Mitsubishi substation



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167	Carver Street	Nstar; Massachusetts, USA	2011	121	242	3000	900	8	296	Exit bus from Mitsubishi substation
168	Hawkins Street	Nstar; Massachusetts, USA	2011	121	362	3000	900	8	110	Exit bus from Mitsubishi substation
169	Hohhot PSPP	Three Gorges Hydro Development Corp; China	2011	550	550	3150	1550	1	1091	Inclined tunnel GIL from underground powerhouse to OHL bushings
170	Heartland	Altalink; Alberta, Canada	2011	550	800	4000	1800	2	1370	GIL line crossing (rated for -50°C)
171	Qurayyah 2 Power plant	Saudi Electricity Company; COA, SAU	2012	380	550	3150	1425	1	417	GIL Sections
172	Cato Substation	ITC; Michigan, USA	2012	145	145	3000	650	6	135	Exit bus from Mitsubishi substation
173	Mystic Street	Nstar; Massachusetts, USA	2012	121	242	3000	550	1	7	Exit bus from Mitsubishi substation, internally mounted CT in pothead
174	Scotia Street Side A	Nstar; Massachusetts, USA	2012	121	362	3000	550	2	54	Exit bus from Mitsubishi substation; Emergency order; delivered in 2 weeks
175	Toronto Main Transformer Station	Hydro One; Ontario, Canada	2012	170	145	2000	750	2	175	GIB connecting a transformer to a dead tank circuit breaker
176	Alberhill Substation	Southern California Edison; California, USA	2012	550	550	3000 4000 6000 7500	1550	6	2025	Exit bus from Mitsubishi substation
177	Shurton	National Grid, UK	2012	420	550	4000	1425	8	1390	Exit bus from Mitsubishi substation
178	Mount Storm Substation	Dominion Virginia Power; WV, USA	2012	550	550	5000	1550	7	923	Exit bus from Mitsubishi substation
179	Scotia Street Side B	Nstar; Massachusetts, USA	2012	121	362	3000	550	2	54	Exit bus from Mitsubishi substation
180	Branchburg Switching Station	PSE&G; New Jersey, USA	2013	242	362	4000	1050	1	582	GIL located inside AIS given insufficient space for more AIS
181	Power Plant #9 Block C&D	Saudi Electricity Company; COA, SAU	2013	420	550	1200	1425	4	179	Cable termination tank for GIB diversion
182	Abha East	Saudi Electricity Company; COA, SAU	2013	380	550	3150	1425	1	101	Connection from transformer to GIS eqpt.
183	Al-Kharj S/S 9003	Saudi Electricity Company; COA, SAU	2013	380	550	1250	1425	1	91	Connection from transformer to GIS eqpt.
184	Hail S/S 9030	Saudi Electricity Company; COA, SAU	2013	380	550	1250	1425	1	21	Connection from reactor to air bushings
189	Kingston St.	Nstar; Massachusetts, USA	2014	345	362	3000	1050	4	462	Exit bus from Mitsubishi substation
190	SEC Transformer Adapters	Saudi Electricity Company; COA, SAU	2014	380	550	1250	1425	11	237	Multiple transformer to cable sealing tanks
191	Jeddah	Saudi Electricity Company; COA, SAU	2014	380	550	1250	1425	1	6	Connection from transformer to GIS eqpt.
192	South Aziziah	Saudi Electricity Company; COA, SAU	2014	380	550	1250	1425	1	7	Connection from transformer to GIS eqpt.
193	Qurayyah 2 Power plant	Saudi Electricity Company; COA, SAU	2012	380	550	3150	1425	1	906	GIL Sections

No.	Project Name	Customer & Location	Order Date	Voltage Rating (kV)	Equipment Provided (kV)	Current Rating (A)	BIL Rating (kV)	Number of Circuits	Phase Length (m)	Notes
194	Brambleton Substation	Dominion Virginia Power; Virginia, USA	2015	550	550	3000	1800	6	890	Exit bus from Mitsubishi substation
195	Haiyang NPP	CPIC; China	2014	550	550	2500	1675	2	1807	Connect generator step-up transformers to GIS
196	Lufeng	CNPEC; China	2014	550	550	2500	1675	2	3841	Connect generator step-up transformers to GIS
197	Jinzhong	CSG; China	2014	500	550	3200	1675	3	1326	Connection between GIS and air bushings
198	Seafood Way Substation	Nstar; Massachusetts, USA	2015	121	242	3000	550	10	235	Exit bus from Mitsubishi substation
199	Lauchstown Substation	PPL; Pennsylvania, USA	2015	550	550	4000	1550	3	462	Exit bus from Mitsubishi substation
200	Ghazlan Power Plant	Saudi Electricity Company; COA, SAU	2015	380	550	1200	1550	1	173	Existing GIL to step up transformer
201	Seabrook Station	FP&L Energy; New Hampshire, USA	2015	345	550	3000	1050	3	18	Replacement of ITE CCVT's with trench VT's
202	Seabrook Station	FP&L Energy; New Hampshire, USA	2015	345	550	3000	1050	3	18	Replacement of ITE CCVT's with trench VT's
203	Hongyanhe NPP	CNPEC; China	2015	550	550	2000	1675	2	4338	Connect generator step-up transformers to GIS
204	Ghazlan Power Plant	Saudi Electricity Company; COA, SAU	2015	380	550	1200	1550	1	138	Existing GIL to step up transformer
205	Ghazlan Power Plant	Saudi Electricity Company; COA, SAU	2015	380	550	1200	1550	2	104	Existing GIL to step up transformer
206	Highland Park Substation	Exelon; Illinois, USA	2015	145	145	3000	650	1	541	GIL located inside restricted space AIS
207	Cambridge Substation	Nstar; Massachusetts, USA	2015	121	242	3000	550	4	315	Exit bus from Mitsubishi substation
208	Qurayyah Power plant	Saudi Electricity Company; COA, SAU	2015	380	550	2500	1550	1	60	Replace existing TBT to GIL
209	Huangdeng HPP	Hydro Lancang; China	2015	550	550	4000	1675	2	2063	194 meter vertical installation between GIS and line bushings
210	Bruce / Richview	Hydro One; Ontario, Canada	2015	250	242	3000	1050	4	1884	Air insulated substation bypass
211	PP9	Saudi Electricity Company; COA, SAU	2015	380	550	1500	1550	1	15	Transformer to cable sealing termination
212	Lingan	Nova Scotia Power; Nova Scotia, Canada	2015	242	242	2000	900	1	15	Retrofit of GIL to Mitsubishi GIS

Total Supplied Length by Equipment Size Through December 2015							
System Voltage (kV)	115/172	242/300	362	550	800	1200	Total
Single Phase Meters	9,393	34,370	24,435	109,809	5,153	768	183,928
Percent of Total	5.11%	18.69%	13.29%	59.70%	2.80%	0.42%	100.00%





**High Voltage Bus Systems**

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