New Service Queue Update
07/01/2014 – 08/01/2015

(Study reports located at: http://www.pjm.com/planning.aspx)

System Impact Studies Completed

Merchant Transmission (MTX) Projects

Queue Number	Project Name	TO
AA1-030	Zion-Zion Energy Center	ComEd
AA1-088	Timblin-Trade City 115kV	DL
AA1-089	USAP-Woodville 138kV	DL
Z2-017	Bristers Ox 500kV	Dominion
X3-028	Breed 345kV	AEP
Y3-092	Erie West 345kV	Penelec

Long Term Firm Transmission Service (LTF) Projects

Queue Number	Path Name	MW
Y2-044	NYIS-PJM	83
Y2-082	MECS-PJM	1200
Y3-032	MECS-PJM	250
Z1-019	NYIS-PJM	600
Z1-043	AMIL-PJM	260
Z1-070	AMIL-PJM	1045
Z2-063	PJM-WEC	90
Z2-065	CPLE-PJM	55
Z2-066	CPLE-PJM	55
Z2-067	CPLE-PJM	55

Long Term Firm Transmission Service (LTF) Projects

Queue Number	Path Name	MW
Z2-078	DUK-PJM	90
Z2-111	PJM-WEC	300
AA1-001	AMIL-PJM	78
AA1-002	MECS-PJM	65
AA1-003	CIN-PJM	575
AA1-004	CIN-PJM	225
AA1-005	CIN-PJM	550
AA1-051	PJM-WEC	100
AA1-052	PJM-IPL	400
AA1-053	PJM-MEC	700

Long Term Firm Transmission Service (LTF) Projects

Queue Number	Path Name	MW
AA1-054	PJM-CIN	700
AA1-055	PJM-AMIL	1100
AA1-058	CPLE-PJM	6
AA1-071	MEC-PJM	72
AA1-074	PJM-MECS	300

Generation Projects

By Transmission Owner

ACE Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-075	natural gas	7.5	7.5	ACE
Y2-110	natural gas	40	40	ACE
Z2-004	biomass	10	10	ACE
Z2-082	methane	0.3	0	ACE
Z2-083	natural gas	74	74	ACE

AEP Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-007	methane	6	6	AEP
AA1-013	natural gas	10	10	AEP
AA1-014	natural gas	5	5	AEP
AA1-032	Other	45	0	AEP
AA1-121	Storage	0	2	AEP
AA1-125	solar	7.6	20	AEP
AA1-128	storage	0	10	AEP
Y2-045	natural gas	6	6	AEP
Y2-058	natural gas	668	762	AEP
Y2-086	biomass	62.5	62.5	AEP

AEP Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Y3-038	coal	36	36	AEP
Y3-039	natural gas	20	20	AEP
Y3-040	natural gas	20	20	AEP
Y3-106	hydro	7	7	AEP
Y3-119	wood	7	19	AEP
Z1-051	nuclear	83	102	AEP
Z1-063	storage	0	6	AEP
Z1-064	storage	0	4	AEP
Z1-094	storage	0	6	AEP
Z2-042	wind	23.3	180	AEP

AEP Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z2-048	natural gas	20	20	AEP
Z2-112	natural gas	64.5	97	AEP
Z2-113	solar	2.3	4.6	AEP
Z2-114	solar	2.5	5	AEP
Z2-115	solar	1.25	2.5	AEP
Z2-116	solar	1.3	2.6	AEP

APS Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-112	methane	4	7.2	APS
Y2-054	natural gas	13.7	13.7	APS
Y2-080	natural gas	1065	1065	APS
Y3-109	natural gas	19.9	19.9	APS
Z1-015	natural gas	26	0	APS
Z1-055	natural gas	10	10	APS
Z1-056	natural gas	6	6	APS
Z1-088	hydro	5	0	APS
Z1-089	hydro	5	0	APS
Z1-113	natural gas	5	12	APS

APS Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z2-013	wind	7	0	APS
Z2-030	solar	7.6	20	APS
Z2-038	solar	7.6	19.9	APS
Z2-039	hydro	2.82	0	APS
Z2-040	hydro	3.5	0	APS
Z2-064	natural gas	600	651	APS
Z2-085	hydro	1.5	1.5	APS
Z2-105	natural gas	19.9	19.9	APS
Z2-106	natural gas	19.9	19.9	APS

ATSI Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-006	methane	0.8	0.8	ATSI
Y2-053	natural gas	35	35	ATSI
Z1-093	storage	0	6	ATSI
Z2-028	natural gas	800	800	ATSI

BGE Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-081	solar	2	3	BGE

COMED Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Y2-103	natural gas	360	360	ComEd
Y3-013	natural gas	90	0	ComEd
Z1-127	natural gas	20	20	ComEd
Z2-090	storage	0	4	ComEd

CPP Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z1-035	wind	2.34	18	CPP

DAYTON Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z1-097	natural gas	30	0	Dayton
Z2-029	coal	20.5	20.5	Dayton

DEOK Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-126	solar	7.6	20	DEOK
Y3-073	coal	50	50	DEOK
Z1-079	natural gas	513	513	DEOK

DOMINION Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-072	solar	2.1	3.1	Dominion
Z1-036	wind	39	300.3	Dominion
Z1-086	natural gas	1630	1681	Dominion
Z2-027	solar	14	20	Dominion
Z2-043	solar	14	20	Dominion
Z2-044	solar	8.4	12	Dominion
Z2-088	solar	30.4	80	Dominion
Z2-099	solar	5.9	8.5	Dominion

DPL Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-025	solar	3.7	0	DPL
AA1-026	solar	3.7	0	DPL
AA1-027	solar	3.7	0	DPL
AA1-028	solar	3.7	0	DPL
AA1-059	solar	4.3	6	DPL
AA1-084	natural gas	10	0	DPL
AA1-091	storage	0	2	DPL
AA1-102	solar	37.5	0	DPL
AA1-107	biomass	15.9	19.9	DPL
AA1-110	solar	4	6	DPL

DPL Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-127	solar	2.3	6	DPL
AA2-130	methane	2	2	DPL
Z1-076	solar	5.32	14	DPL
Z1-077	solar	3.8	10	DPL
Z1-081	solar	2.28	6	DPL
Z1-103	solar	4.162	0	DPL
Z2-073	solar	3.36	5	DPL
Z2-074	solar	4.03	6	DPL
Z2-075	solar	3.7	5.5	DPL
Z2-076	solar	3.99	6	DPL

DPL Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z2-077	solar	3.99	6	DPL
Z2-096	solar	7.07	10	DPL
Z2-097	solar	3.54	5	DPL

JCPL Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z2-102	solar	4.94	13	JCPL
Z2-109	storage	0	20	JCPL

METED Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z1-114	natural gas	4	6	ME
Z2-026	natural gas	800	800	ME

ODEC Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z2-012	solar	7.6	20	ODEC

PECO Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Y2-064	natural gas	19	65.5	PECO

PENELEC Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-037	hydro	5.26	5.26	PENELEC
AA1-131	natural gas	5	8	PENELEC
Y2-087	wind	19.55	150.4	PENELEC
Y3-062	wind	2.4	18.7	PENELEC
Z1-038	natural gas	19.9	19.9	PENELEC
Z1-042	wind	9.2	46	PENELEC
Z1-066	storage	0	10.4	PENELEC
Z1-069	wind	13.3	70	PENELEC
Z1-087	hydro	40	40	PENELEC
Z1-091	natural gas	19.9	19.9	PENELEC

PENELEC Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z1-092	natural gas	19.9	19.9	PENELEC
Z1-105	natural gas	19.9	19.9	PENELEC
Z1-110	natural gas	19.9	19.9	PENELEC
Z2-011	natural gas	19.9	19.9	PENELEC
Z2-014	wind	5.25	0	PENELEC
Z2-103	natural gas	1	1	PENELEC
Z2-104	natural gas	1.6	1.6	PENELEC
Z2-108	storage	0	18	PENELEC

PEPCO Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z1-052	natural gas	44.5	64.5	PEPCO
Z2-060	natural gas	116	33	PEPCO

PPL Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z1-090	natural gas	381	381	PPL
Z2-009	wind	6.7	52	PPL
Z2-046	natural gas	900	1050	PPL
Z2-101	wind	8.78	67.5	PPL
Z2-107	storage	0	10	PPL

PSEG Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
AA1-019	solar	2.7	7.3	PSEG
AA1-073	natural gas	3.9	5.6	PSEG
AA1-105	storage	0	2	PSEG
AA2-099	natural gas	32	0	PSEG
AA2-125	natural gas	504	580.08	PSEG
Z1-058	natural gas	36	23	PSEG
Z1-059	natural gas	18	23	PSEG
Z1-109	natural gas	208	208	PSEG
Z1-116	natural gas	725	785	PSEG
Z2-001	solar	2.7	7.1	PSEG

PSEG Transmission Zone

Queue Number	Fuel Type	MWC (FTIR/FTWR)	MWE (NFTIR/NFTWR)	TO
Z2-002	natural gas	56	71	PSEG
Z2-062	methane	3	0	PSEG
Z2-089	natural gas	509	568	PSEG

Network Upgrades
07/01/2014 – 08/01/2015

ACE Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4296	The SCULL #2-MILL #2 138 kV line: In order to mitigate the overloads, the relay settings should be adjusted at Mill 138 kV bus. The new emergency rating will be 270 MVA. The estimated cost is $5,000, and will take 8 hours to complete.	0.01	Y1-077
n4297	Rebuild the BL England - Middle Tap 138 kV line. The new emergency rating will be 286 MVA.	19.50	Y1-077
n4298	Rebuild the BL England – Merion 138 kV line. The new emergency rating will be 286 MVA.	4.10	Y1-077

AEP Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4602	Install two circuit breakers (Millbrook Park)	1.11	X4-025
n4603	Install revenue metering (Millbrook Park)	0.13	X4-025
n4604	Relocate Distribution facilities for T-line Clearance (Millbrook Park)	0.39	X4-025
n4239	05Millbr - Replace 138kV breaker H with a 40kA breaker	0.55	X4-025
n4240	05Millbr - Replace 138kV breaker O with a 40kA breaker	0.55	X4-025
n4029	Install a new 69 kV single breaker interconnection switching station laid out to facilitate future conversion to operation in a ring bus configuration with at least 3 breakers. Associated disconnect switches, bus work, and 69 kV revenue metering will also be required.	3.20	X3-023
n4030	New Switching Station: Protection and Relaying Cost: Carrier Option	0.42	X3-023
n4031	New Switching Station: Protection and Relaying Cost: Carrier Option	0.36	X3-023
n4032	Carrier Option: Expand the existing Willard station to facilitate modification into a station initially operated as a 3-breaker ring bus, but physically laid out for eventual expansion to a breaker and a half configuration. 69 kV revenue metering and associated equipment will also need to be installed. Estimated Cost (2013 Dollars): $ 4,213,400 (Willard)	4.21	X3-023

AEP Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4033	Fiber Optic Option: Expand the existing Willard station to facilitate modification into a station initially operated as a 3-breaker ring bus, but physically laid out for eventual expansion to a breaker and a half configuration. 69 kV revenue metering and associated equipment will also need to be installed. Estimated Cost (2013 Dollars): $ 4,745,100 (Willard)	4.75	X3-023
n4034	Willard Station Carrier Option: Protection and Relaying Cost	0.29	X3-023
n4605	Modify Baker 345 kV Station Relay Settings	0.05	X2-006
n4259	Adjust Mountaineer relay trip limit or install new relay package on the Mountaineer - Belmont 765 kV line.	0.30	Z1-079
n4279	Three – 345 kV breaker string (Breed)	2.76	X3-028
n4280	Dual – 345 kV revenue metering (Breed)	0.68	X3-028
n4349	Reconductor or rebuild AEP portion of the University Park - Olive 345 kV line. Also upgrade risers and relays (University Park - Olive 345kV)	45.00	W4-005
n4408	Construct new 3 breaker 138 kV Switching Station including revenue metering and SCADA	12.41	Z2-042
n4409	Line Protection and Controls for new Substation	0.33	Z2-042

AEP Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4410	Line Protection and Controls for Jackson Ferry Station	0.04	Z2-042
n4411	Line Protection and Controls for Peak Creek Station	0.15	Z2-042
n4505	Perform a sag study on the Z2-042 - Claytor 138 kV line.	0.04	Z2-042
n4512	Perform a sag study on the X2-052 Tap - Dumont 345 kV line.	0.06	Y2-103
n4246	Modify relay settings (East Side Lima Station)	0.01	T131
n4247	Modify relay settings (Lincoln Station)	0.37	T131
n4248	Modify relay settings (North Delphos Station)	1.80	T131
n4249	Modify relay settings (Sterling Station)	0.89	T131
n4250	Revenue Metering (Revenue Metering)	0.27	T131

AEP Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4575	Line protection and controls at the Stone Coal Gap 34.5 kV station will need to be upgraded.	0.16	AA1-007
n4576	Line protection and controls at the Mount Union 34.5 kV station will need to be upgraded.	0.10	AA1-007
n4577	Install new metering at the PCC	0.08	AA1-007

APS Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4302	Relocate Loop to 4-Breaker Ring Bus for Y2-080. Remove the existing loop to the 3-breaker ring bus for T-174 so that the 3-breaker ring bus can be expanded to a 4-breaker ring bus per Y2-080. Install a new loop to this expanded ring bus. (Rhodes Lane)	3.73	Y2-080

ATSI Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4387	Build new 345kV five-breaker ring bus substation to interconnect project Z2-028	11.91	Z2-028
n4388	Loop in new 345kV five-breaker ring bus substation to Highland - Mansfield and Highland - Sammis 345kV lines: each approximately 900 ft. in length, utilizing steel pole structures	7.30	Z2-028
n4389	Upgrade Highland 345kV substation line relaying to new Z2-028 interconnection bus	0.21	Z2-028
n4390	Install approximately 1.23 miles of fiber from Z2-028 interconnection substation to Highland 345kV substation	0.11	Z2-028
n4316	Remove overdutied 138kV circuit breaker 432-B-23 at W. LORAIN and rework the 138kV line	0.15	Y3-092

BGE Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n3154	Reconfigure Conastone 500 kV sub	10.00	T107

COMED Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4348	Perform sag study of the transmission line to mitigate sag limitations to achieve full conductor thermal capability (O51 - Wilton Center (line11212))	16.70	W4-005
n4509	Reconductor the Hennepin Tap - Oglesby Tap 138 kV line.	16.40	T143
n4263	Reconductor the Loretto - Wilton Center 'B' 345 kV line.	8.00	Z1-070
n4264	Reconductor the Loretto - Wilton Center 'B' 345 kV line.	6.00	Z1-070
n4274	Mitigate the sag limitations on the conductor and upgrade 345kV CB 1-2 at TSS 974 Zion EC	3.20	J293

DEOK Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4254	Reconductor the Todhunter - Nickel 138 kV line.	1.50	Z1-079
n4473	Build new 345 kV line to connect Z1-079 to new 345kV substation (Foster-Todhunter)	2.95	Z1-079
n4474	Build new 3 breaker 345kV ring bus substation along the Foster-Todhunter line (Foster-Todhunter)	5.54	Z1-079
n4251.1	Replace Todhunter 138kV breaker 911 from 63kA to 80kA	0.49	Z1-079
n4251.10	Replace Todhunter 138kV breaker 939 from 63kA to 80kA	0.49	Z1-079
n4251.11	Replace Todhunter 138kV breaker 937 from 63kA to 80kA	0.49	Z1-079
n4251.12	Replace Todhunter 138kV breaker 945 from 63kA to 80kA	0.49	Z1-079
n4251.13	Replace Todhunter 138kV breaker 941 from 63kA to 80kA	0.49	Z1-079
n4251.2	Replace Todhunter 138kV breaker 915 from 63kA to 80kA	0.49	Z1-079

DEOK Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4251.3	Replace Todhunter 138kV breaker 917 from 63kA to 80kA	0.49	Z1-079
n4251.4	Replace Todhunter 138kV breaker 921 from 63kA to 80kA	0.49	Z1-079
n4251.5	Replace Todhunter 138kV breaker 923 from 63kA to 80kA	0.49	Z1-079
n4251.6	Replace Todhunter 138kV breaker 927 from 63kA to 80kA	0.49	Z1-079
n4251.7	Replace Todhunter 138kV breaker 929 from 63kA to 80kA	0.49	Z1-079
n4251.8	Replace Todhunter 138kV breaker 933 from 63kA to 80kA	0.49	Z1-079
n4251.9	Replace Todhunter 138kV breaker 935 from 63kA to 80kA	0.49	Z1-079
n4376	A reactive deficiency of 122.76MVAr was identified in accordance with attachment H of PJM manual 14a - Generator Reactive Deficiency Mitigation Process (Zimmer 345kV)	30.00	Y3-073
n4501	SVC: 120.24 MVAR (lagging) -84.82 MVAR (leading)	30.00	Y3-073

DL Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4322	Beaver Valley substation–replace the Crescent 138kV (Z-29) breaker with a 3000A, 63kA breaker. Replace the primary protection as the Crescent and Racoon substation to coordinate with the protection system of the replaced breaker	0.61	Y3-103

DOMINION Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4258	Raise ten towers and replace wavetraps (Rawlings - Carson)	4.14	Z1-086
n4265	New three breaker ring bus (Winfall/Chowan)	6.00	Z1-036
n4292	New 33MVA 115/34.5KV #2 Kelford transformer and add transfer trip capability	3.10	Z2-043
n4293	Build distribution line 1500 feet of overhead conductor (Kelford)	0.20	Z2-043
n4294	New 33MVA 115/34.5kV transformerand associated equipment including transfer trip capability (Whitakers)	3.10	Z2-044
n4295	Reconductor distribution line 1200 feet of overhead conductor and replace line reclosure 330R5 (Whitakers)	0.20	Z2-044
n4300	Build new three breaker ringbus (Rodgers Road)	18.07	Z1-086
n4346.1	Replace Clifton 230kV 201182 breaker from 50kA to 63kA.	0.34	Z2-060
n4346.2	Replace Clifton 230kV XT2011 breaker from 50kA to 63kA.	0.34	Z2-060

DOMINION Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4476	Loop line #2131 into (Perquimans)	1.68	Z1-036
n4477	Transfer trip transmitter (Winfall)	0.03	Z1-036
n4478	Transfer trip transmitter and receiver (Mackeys)	0.05	Z1-036
n4513	Install trasmission line to split the existing line and connect new interconnection substation (Rawlings - Carson)	8.09	Z1-086
n4557	Transfer trip transmitter and receiver (Trowbridge)	0.06	Z1-036
n4558	Transfer trip transmitter (Earleys)	0.04	Z1-036
n4299	Build new three breaker ringbus (Tarboro-Everetts)	0.87	Z2-088
n4407	Upgrade relay at remote substations (Edgecomb, Everett, and Tarboro)	0.19	Z2-088
n4506	Build new three breaker ringbus (AA1-063A)	4.20	AA1-063A

DOMINION Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4507	Upgrade transmission line split the existing line and connect new interconnection substation (Carolina - Seaboard)	0.60	AA1-063A
n4508	Upgrade relay to accommodate new generation and interconnection substation (Boykins - Carolina)	0.50	AA1-063A
n4551	Re-conductor distribution circuit#320 to three phase 477MCM AL (Everetts)	0.30	AA1-067
n4552	Transfer trip scheme with IC (Everetts)	0.40	AA1-067
n4553	Re-conductor distribution circuit#320 to three phase 477MCM AL (Everetts)	0.05	AA1-067
n4502	Build new three breaker ringbus (AA1-134)	4.00	AA1-134
n4503	Install transmission structures to split the existing line and connect new interconnection substation (Sunbury - Winfall)	1.00	AA1-134
n4504	Upgrade relay to accommodate new generation and interconnection substation (Winfall - Suffolk)	0.60	AA1-134
n4485	Install transmission structures to cut in new interconnection substation (Fentress - Sligo)	2.30	AA1-139

DOMINION Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4486	Build oversite and protection to accommodate new generation and interconnection substation (AA1-139)	0.50	AA1-139
n4496	Upgrade relay to accommodate new generation and interconnection substation (Fentress - Shawboro)	0.06	AA1-139

DPL Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4599	Install OPGW on circuit 6727 from the Church Substation to the new Y3-033 substation constructed by the Interconnection Customer pursuant to Option to Build (a distance of 15 miles). Replace approximately 30 structures.	5.60	Y3-033
n4267	Engineering and design related activities required to construct a four position 69 kV ring bus at the Stockton substation with provisions for a fifth position, inclusive of a terminal position for the Z1-076 queue project.	4.10	Z1-076
n4268	Reconfigure Line 6712 to accommodate the new line terminal positions at the Stockton substation.	0.35	Z1-076
n4269	Construct a 69 kV terminal position on the 69 kV ring bus constructed as part of the Z1-076 queue project at the Stockton Substation	1.50	Z1-076
n4600	Replace relays at the Church 69 kV Substation.	0.17	Y3-033
n4352	Construct a three-position 138 kV ring bus at a new location. Substation would include two bus positions for termination of Line 13714 and one position for interconnection to AA1-107.	3.70	AA1-107
n4353	Reconfigure Line 13714 to accommodate the new line terminal positions at the new substation between Kings Creek Substation and Pocomoke Substation.	0.60	AA1-107
n4367	Construct a three-switch tap structure substation by cutting the Bayview-Kellam 69 kV circuit.	0.50	Z2-012
N4592	Replace Keeney AT50 (Keeney 500/230kV Xfmr)	15.00	Z1-083

DPL Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4574	Cut the West Cambridge-Vienna 69 kV circuit and loop it into and out of the new substation to be constructed by the Interconnection Customer as part of Option to Build. (Final tie-in work)	1.30	X3-015

ITCI Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4378	Cut in work at Segreto Substation for the Palisades to Segreto 345 Transmission line	0.05	T94
n4386	Cut in work at Segreto Substation for the Covert to Segreto 345 Transmission line	0.05	T94

JCPL Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
N4458	Readington Sub - Replace 230 kV bus tie breaker (MU), affiliated CT's and disconnects	0.41	Z1-083
N4555	Whippany Sub, Roseland terminal - replace disconnects, bus Conductor, primary and backup relaying. (Whippany-Roseland 230kV)	0.34	Z1-083
N4579	Replacement of terminal end conductor on the Glen Gardner Terminal at Chester	0.05	Z1-083
N4580	Replacement of terminal end conductor on the West Wharton terminal at Chester and the Chester terminal at West Wharton	0.15	Z1-083
N4586	Greystone-Whippany J 230kV line reconductor 8 Miles with 1590 ACSS	17.41	Z1-083
N4587	Whippany Sub Q 230kV line Terminal - replace 1590 ACSR bus conductor	0.04	Z1-083
N4588	Greystone Sub and West Wharton Sub - Replace terminal end SS conductor.	0.07	Z1-083
n4381	Revise relay and metering settings to connect Z2-109 (South River)	0.02	Z2-109

METED Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4391	Install 3rd transfomer, and add 69 kV bus and assciated equipments at N. temple	8.49	Z2-026
n4392	Expand N.temple 230 kV to a breaker and half bus configuration and its assoctiated work	14.99	Z2-026

PECO Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
N4581	A total of 4 disconnect switches would need to be replaced at 2 different substations. (Chichester-Eddystone 230kV line)	0.80	Z1-083

PENELEC Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4287	Install 34.5kV tap, radio controlled switch and associated equipment (North Meshoppen 34.5kV, Tunkahannock 34.5kV)	0.10	Z1-038
n4288	RTU programming for connection to FirstEnergy SCADA and relay support for generation installation (North Meshoppen 34.5kV, Tunkahannock 34.5kV)	0.02	Z1-038
n4289	Install transfer trip relaying at North Meshoppen substation on the Tunkhannock 34.5kV line. Install 34.5kV PT and sync relaying on the Tunkhannock 34.5kV line circuit breaker.	0.15	Z1-038
n4290	Install transfer trip relaying at Tunkhannock substation on the North Meshoppen 34.5kV line. Install 34.5kV PT and sync relaying on the North Meshoppen 34.5kV line circuit breaker.	0.08	Z1-038
n4291	34.5kV recloser work at distribution pole NMT – 164A (North Meshoppen 34.5kV)	0.15	Z1-038
n4317.2	Install one 345 kV breaker at the Erie West 345 kV	1.68	Y3-092
n4317.4	Install a fiber on the new Leroy Center - Erie West 345 kV line	4.32	Y3-092
n4321	Expand 345kV bus and install two new 345kV breakers for new line exit at Erie West 345kV substation	3.89	Y3-092
n4344	Provide revenue metering equipment.	0.10	Z1-110

PENELEC Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4345	Add a new 34.5kV line exit at Grover substation for Z1-110 19.9MW injection. (Grover)	0.58	Z1-110
n4368	Oxbow 34.5 kV Line Tap The proposed attachment of this project will be made by a tap connection from the Oxbow – Lenox 34.5 kV line near or at pole LK-247. From this point, Transmission Owner will install one (1) span of new 34.5 kV line to a SCADA-controlled, motor-operated switch, located on a new pole, that will be installed, owned and maintained by Transmission Owner. From that point, Transmission Owner will extend a one (1) span radial line to a new meter pole to be installed, owned and maintained by Developer. Transmission Owner will install, own and maintain Revenue Metering Equipment at aforementioned Developer meter pole.	0.15	Z1-091
n4369.1	Lenox 34.5 kV Substation Add sync check relaying to 34.5kV Oxbow line breaker (including one PT). Add conduit to Developer provided DTT transmitter cabinet on this exit to send breaker status to De	0.18	Z1-091
n4369.2	RTU programming for connection to the FirstEnergy SCADA and relay support for the generation installation	0.01	Z1-091
n4370	Milan 34.5kV Line Tap for Z1-092	0.16	Z1-092
n4371	Athens 34.5 KV Substation Install sync check (including one PT) and line relaying for 34.5kV Milan line due to Z1-092 Developer generation interconnect.	0.17	Z1-092
n4372	East Sayre 34.5 KV Substation Install sync check (including one PT) and line relaying due to Z1-092 Developer generation interconnect.	0.18	Z1-092
n4373	Thomas Avenue 34.5 KV Recloser Location Install sync check and direct transfer trip relaying due to Z1-092 Developer generation interconnect.	0.19	Z1-092
n4374	Milan 34.5 KV Recloser Location Install sync check and direct transfer trip relaying due to Z1-092 Developer generation interconnect.	0.19	Z1-092

PENELEC Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4375	RTU programming for connection to FirstEnergy SCADA and relay support for Interconnection Customer generation installation	0.01	Z1-092
n4382	34.5kV tap, radio controlled switch, and associated equipment (Canton 34.5kV)	0.12	Z2-011
n4383	Install transfer trip transmitter and sync check relaying on the 34.5kV West Leroy line exit at the Canton 34.5kV substation	0.16	Z2-011
n4384	RTU programming for interconnection to the FirstEnergy SCADA and relay support for the generation installation	0.02	Z2-011
n4385	34.5kV recloser work at pole # CWL-30 (Canton 34.5kV)	0.03	Z2-011
n4481	Tx Line Loop Niles Valley-Potter 115kV, Loop to 3-Breaker Ring Bus Install a loop, approx. 200' in length, consisting of two 3-way deadend structures and rebuild of adjacent H-frame structures (rebuild outside suspension assemblies by installing 138kV horizontal post insulators).	0.37	Z1-069
n4482	Z1-069 Interconnection Substation Construct Z1-069 115kV three breaker ring bus interconnection substation.	6.14	Z1-069
n4483	Adjust remote relaying settings.	0.59	Z1-069
n4492	Tx Line Loop Niles Valley-Potter 115kV (Potter)	0.37	Z1-069

PENELEC Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4493	Z1-069 Interconnection Substation Construct Z1-069 115kV three breaker ring bus interconnection substation.	6.14	Z1-069
n4494	Adjust remote relaying settings. (Various (Potter, Tiogo))	0.59	Z1-069
n4479	Remote relaying setting changes (Meyersdale North)	0.01	Z2-108
n1576.2	Sammis - Wylie Ridge - 3000A Wave Trap	0.07	T127
n4242	Mansfield SS: Upgrade carrier equipment for 115kV Niles Valley line exit & 115kV Everts Drive line exit due to T121 interconnection station.	0.21	T121
n4243	Evert Drive SS: Add transfer trip to existing carrier relaying on 115kV Mansfield line exit due to T121 interconnection station.	0.03	T121
n4244	Farmers Valley SS: Add transfer trip to existing carrier relaying on 115kV Potter line exit due to T121 interconnection.	0.03	T121
n4331	Upgrade primary & backup line relaying & carrier relaying on the 115kV Potter (future T121 interconnect) line exit.	0.66	T121
n4332	Upgrade carrier equipment and install DTT on the 115kV Niles Valley line. Utilize existing equipment on Everts Drive (future Mainesburg) line to receive breaker status from Mainesburg breaker.	0.26	T121

PENELEC Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4333	Install anti-islanding scheme to transmit breaker open status of the Mansfield 115kV line breaker.	0.16	T121
n4334	Install anti-islanding scheme to transmit breaker open status of the Potter 115kV line breaker.	0.13	T121

PEPCO Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4303	Attachment Facilities (Switchyard) - To be built along Pepco ROW. Final location to be determined by the Developer.	20.30	X3-087
n4304	Two four bay dead end structures to cut feeders 23080, 23082, 23081 and 23083 to be built inside new switchyard.	0.70	X3-087
n4305	Non-Direct Network Upgrades (Remote End Relay & Telecom) at Burches Hill and Talbert Substations	1.90	X3-087
n4306	The rehabilitation work will include: replacing damaged cables and insulators, replacing/reinforcing existing tower members, and remedial work on existing foundations. The work will start from the nearest transmission structure (1085NA) to Burches Hill Substation and end at the proposed location of Mattawoman switching station (about 2.7 miles).	0.60	X3-087
n4307	Installation of New Riser Structure: A new riser structure needs to be installed, where feeder 23080 stops close to Burches Hill substation, to make the transition from an overhead line to underground to extend the feeder to Burches Hill Substation. Based on additional study and input from system protection and system operation, a 230kv line disconnect switch and supporting structure will also be needed	0.88	X3-087
n4308	Replacement of existing 24 count skywrap OPGW with 96 count OPGW: The existing 24 count skywrap OPGW on feeder 23080 needs to be replaced with 96 count OPGW between Burches Hill Substation and Talbert Substation (4.26 miles).	0.75	X3-087
n4309	Construct underground portion of the transmission line from tower number N1085NA to the Burches Hill Substation	16.20	X3-087

PPL Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4270	Build new transmission tap from the Jackson-Peckville 69kV line to the Z1-098 customer facility.	1.70	Z1-098
n4272	Install new transfer trip equipment for the Z1-098 project. (Lackwanna)	0.27	Z1-098
n4273	Install new transfer trip equipment for the Z1-098 project. (Pocono)	0.23	Z1-098
n4397	Build a new 69kV Attachment line from the Harwood-East Hazelton line to the POI for Z2-009.	2.48	Z2-009
n4398	Replace protective relaying and control equipment at Harwood to support the interconnection of Z2-009.	0.15	Z2-009
n4399	Build new 500kV lead line to connect Z2-046 (Lackawanna-Susquehanna)	2.50	Z2-046
n4400	Build new 500kV substation to connect Z2-046 (Lackawanna-Susquehanna)	30.00	Z2-046
n4401	Tie in new 500kV substation built to connect Z2-046. (Lackawanna-Susquehanna)	4.85	Z2-046
n4402	Installation of fiber optic line to support new substation for Z2-046 (Lackawanna-Susquehanna)	3.60	Z2-046

PPL Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4403	Modification of protection system at Lackawanna to connect the new 500kV switchyard built for Z2-046 (Lackawanna)	0.15	Z2-046
n4404	Modification of protection system at Susquehanna to connect the new 500kV switchyard built for Z2-046	0.15	Z2-046
N4589	Add 2nd circuit on Susquehanna-Jenkins 230kV line for 22 miles, tie to Jenkins-Acahela 230kV line, so it becomes Susquehanna-Acahela 230kV. Install a CB at Susquehanna for termination.	25.00	Z1-083
n4393	Rebuild 4.5 miles of the condutor using 556 ACSR, remove 110 structures, install 55 new conductors, remove 24,000ft of (3) 336 MCM 30/7 ACSR. (Lackawanna-East Carbondale)	13.50	Z2-107
n4394	Modify SCADA, alarm, Alarm Management System, perform system checks and testing at Lackawanna substation in support of Z2-107 (Lackawanna-East Carbondale)	0.15	Z2-107

PSEG Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
n4275	Install a new 3 breaker ring bus on the S-2271 line (Z1-109 Sub)	16.60	Z1-109
n4276	Reconductor the VFT - Warinanco 230 kV line	36.40	Z1-109
n4277	Construct new bay at Metuchen substation and install 2 breakers for a new position to connect the Z1-116 generator	4.00	Z1-116
n4278	Reconductor the Warinanco - Aldene 230 kV line	65.70	Z1-116
N4450	Reconductor 1590 ACSS (Athenia-Clifton B 230kV)	0.81	Z1-083
N4451	Reconductor 1590 ACSS (Athenia-Clifton K 230kV)	0.82	Z1-083
N4452	New circuit, Restricted by river 3500 kcmil (Athenia-Saddlebrook)	93.60	Z1-083
N4459	Reconductor 1590 ACSS (CedarGrove-Clifton B 230kV)	5.60	Z1-083
N4460	Reconductor 1590 ACSS (CedarGrove-Clifton K 230kV)	5.58	Z1-083

PSEG Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
N4461	Reconductor 1590 ACSS (CedarGrove - Roseland Y 230kV)	13.24	Z1-083
N4462	Reconductor 1590 ACSS (CedarGrove - Williams 230kV)	13.76	Z1-083
N4466	Reconductor with 3500 kcmil, circuit has 10 inch pipe (Maywood-Saddlebrook 230kV)	16.67	Z1-083
N4469	Replace transmission line (Roseland-Readington 230kV)	142.71	Z1-083
N4471	Reconductor 1590 ACSS (Williams - Roseland F 230kV)	0.57	Z1-083
n4487.1	Replacing Tosco 5110 230kV CB1 breaker from 63kA to 80kA (Woodbridge)	0.16	Z1-116
n4487.2	Replacing Tosco 5110 230kV CB2 breaker from 63kA to 80kA (Woodbridge)	0.16	Z1-116
n4488	Install two current limiting reactors at Tosco (GIS) 230 kV (Woodbridge)	0.08	Z1-116
N4526	Reconductor 1590 ACSS (Bridgewater-MiddleSex 230kV)	12.98	Z1-083

PSEG Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
N4534	Replace Bus 2 w/ 1590 AAC 61 str (Engineering position 4TH at Athenia)* & Reconductor 3000 kcmil (Athenia-E.Rutherford 138kV)	20.20	Z1-083
N4535	Replace Disconnect 2 Switches at Athenia (Engineering position 11H)* & Reconductor 1590 ACSS (Athenia-Bellville 138kV)	12.00	Z1-083
N4541	Reconductor 1590 ACSS (CookRd-W.Clade D 230kV)	17.87	Z1-083
N4546	New parallel underground circuit* (Maywood-New.Milford 230kV)	86.97	Z1-083
n4550	Reconductor 1590 ACSS* (Roseland-W.Calder D 230kV)	5.61	Z1-083
N4554	Reconductor 1590 ACSS* (Roseland-W.Calder G 230kV)	5.89	Z1-083
N4582	New parallel underground line (Essex-Essex PAR 230kV)	12.00	Z1-083
N4583	Reconductor with 3000 kcmil copper cable (EssexPAR-McArthur 230kV)	23.91	Z1-083
N4584	Reconductor with 3000 kcmil copper cable (McArthur-Stanter 230kV)	30.60	Z1-083

PSEG Transmission Zone

Upgrade ID	Description	Cost Estimate	Driver
N4585	Reconductor 1590 ACSS* (Fanwood-NewDoverRd 230kV)	8.64	Z1-083
N4590	Reconductor 1590 ACSS (Hudson-PenhornY 230kV)	2.80	Z1-083
N4591	New circuit 3500 kcmil (Hudson-Hudson 1 230kV)	4.88	Z1-083
N4593	Reconductor with 3000 kcmil (LeoniaT-BergenFi 230kV)	21.73	Z1-083
N4594	Reconductor 1590 ACSS* (NewDoverRd-PearsonAV 230kV)	8.77	Z1-083
n4595	Reconductor 1590 ACSS* (Sewaren-WoodbridgeO 230kV)	8.21	Z1-083
n4301	Construct new bay at Deans substation and install (2) 500 kV breakers for a new position to connect the X1-078 converter station.	20.00	X1-078