

Annex

Annex 3a List of IPP

IPPs, which is defined as power generation companies (GenCos) that have been licensed by Nigeria Electricity Regulatory Commission (NERC) for supplying electricity on the national grid, that were not those placed under former Power Holding Company of Nigeria (PHCN), so called Successor GenCos, and that do not manage any power station constructed by Nigeria Integrated Power Project (NIPP), are listed in the below table.

No.	Licensee	Licence Type & Location
1	Ethiope Energy Limited 267, Trans Amadi Industrial Layout, Port Harcourt, Rivers State.	Generation on-grid, 2,800MW at Ekoken and Orior-Osemwode, Uhumwode, Edo
2	Mabon Limited 29 Sanusi Fafunwa Street, VI, Lagos	Generation on-grid - 39MW (Hydro) at Dadin Kowa Dam, Gombe
3	Bresson A.S Nigeria Limited Nigeria Reinsurance Bld, 8 th floor, Plot 784A, Herbert Macaulay Way, Abuja	Generation on-grid - 90MW at Magboro, Ogun
4	First Independent Power Company Limited 6A, Abana St, Old GRA, PH, Rivers State	Generation on-grid, 95MW at Eleme, Rivers State
5	First Independent Power Company Limited 6A Abana St, Old G.R.A PH, Rivers State	Generation on-grid, 150MW at Omoku, Rivers State.
6	First Independent Power Company Limited } 6A, Abana St, Old GRA, PH, Rivers State	Generation on-grid, 136MW at Trans-Amadi, Rivers State.
7	Hudson Power Station Limited 13 Agoro Odiyan Street, VI, Lagos State	Generation on-grid, 150MW at Warawa, Ogun State.
8	The Shell Petroleum Development Company of Nigeria Limited The Shell Industrial Area, Rumubiakani, Port Harcourt	Generation on-grid, 650MW (Afam VI) at Afam, Rivers State.
9	Agbara Shoreline Power Company Limited 46, Industrial Ave, Ilupeju, Lagos State.	Generation on-grid-100MW at Agbara, Lagos State.
10	Transcorp Power Limited Ughelli Station Complex, KM 27 Effurun/Patani Road, P.M.B. 6, Ughelli, Delta State.	Generation on-grid, 942MW, at Ughelli, Delta State
11	Nigerian Agip Oil Company Limited Plot PC 23, Engineering Close, VI, Lagos.	Generation on-grid, 480MW at Okpai, Delta State.
12	Ibom Power Company Limited Plot 67c Bennet Bassey Street, Ewet Housing Estate, Uyo, Akwa Ibom.	Generation on-grid, 190MW at Ikot Abasi, Akwa Ibom State.
13	Notore Power Limited Notore Ind. Complex, Onne, Rivers State.	Generation on-Grid, 50MW at Onne, Rivers State.
14	DIL Power Plc , Alfred Rewane Rd, P.M.B. 40032, Falomo, Lagos.	Generation on-Grid, 135MW at Obajana, Kogi State.
15	Paras Energy & Natural Res Development Limited 6, Bauchi Road, Apapa, Lagos.	Generation on-grid, 96MW at Ogijo, Ogun State.
16	Knox J&L Energy Solutions Limited No 15, Mahatma Ghandi St, Asokoro, Abuja.	Generation on-grid, 1000MW at Ajaokuta, Kogi State.
17	Eleme Petrochemical Company Limited Eleme Petrochemical Complex, PH, Rivers State	Generation on-grid, 135MW at Eleme Petrochem Complex, Port Harcourt, Rivers State.
18	MBH Power Limited No. 10 ACME Road, Opp funmec Filling Station, Ogba Ind. Estate, Ikeja, Lagos	Generation on-Grid, 700MW at Ikorodu, Lagos State.
19	Azura Power West Africa Limited Alsec Nominees Ltd, St, Nicholas House, 10th Floor, Catholic Mission, Ikoyi, Lagos State.	Generation On-grid, 500 MW at Ihovbor Benin, Edo State.

No.	Licensee	Licence Type & Location
20	Zuma Energy Nigeria Limited Zuma House, Plot 26, Sector Centre, Gudu Dist., Abuja	Generation On-Grid, 400MW Ohaji Egbema, Owerri, Imo State.
21	Century Power Generation Limited Africa Re Building, 4 th Floor, Plot 1679, Karimu Kotun Street, Victoria Island, Lagos State.	Generation On-Grid, 495MW at Okija, Anambra State.
22	Energys Nigeria Limited Plot 884, William Close, Omole Phase II, Estate, Isheri-Ikeja, Lagos State.	Generation On-Grid, 10MW wind farm at Ado- Ekiti, Ekiti State.
23	JBS Wind Power Limited 5 Quthing Close, Off Kolda St, Wuse 2, Abuja.	Generation On-Grid, 100MW wind farm at Maraban Pushit, Mangu, Plateau State.
24	Fortune Electric Power Company Limited 4, Buzi Close, Off Amazon St., Maitama, Abuja, FCT.	Generation On-Grid, 500MW at Odukpani, Cross River State.
25	Supertek Electric Limited No. 2, Misratah Street, Off Parakou St, Wuse 2, Abuja.	Generation On-Grid, 500MW at Ajaokuta, Kogi State.
26	Chevron Nigeria Limited 2, Chevron Drive, Lekki Peninsula P.M.B. 12825, Lagos, Lagos State	Generation On-Grid, 289MW, at Agura, Lagos State
27	Ikot Abasi Power Project Limited 10, Olugun Agbaje St, VI, Lagos, Lagos State	Generation On-Grid, 250MW, at Ikot Abasi, Akwa Ibom State.
28	Qua Iboe Power Plant Limited C/O Banwo & Ighodalo, 98 Awolowo Road, South- West Ikoyi, Lagos	Generation On-Grid, 575MW, at QIT, Eket, Akwa Ibom State.
29	Yellowstone Electric Power Limited 4 th Floor, The Octagon, 13A AJ Marinho Drive, Victoria Island, Lagos State.	Generation On-Grid, 350MW, at Ajaokuta, Kogi State.
30	Anjeed Kafanchan Solar Limited Imam House, New Nigeria Building 3 rd Floor Ahmadu Bello way, Kaduna	Generation On-Grid, 100MW Solar Plant at Kafanchan, Kaduna State
31	KVK Power (Nigeria) PVT Limited T3, Lake Victoria, Lake View Homes. Phase II, Kado, Abuja	Generation On-Grid , 100MW Solar Plant at Yabo, Sokoto State
32	Aluminium Smelter Company of Nigeria Plc Ikot Abasi, Ikot Ibasi LGA, Akwa Ibom State	Generation On-Grid, 360MW at Ikot Abasi, Akwa Ibom State
33	Itobe I Coal Power Limited Block A, Flat 1, Olympia Estate, Kaura District, Abuja	Generation On-Grid, 300MW Coal Plant at Itobe, Ofu, Kogi State
34	Itobe II Coal Power Limited Block A, Flat 1, Olympia Estate, Kaura District, Abuja	Generation On-Grid, 300MW Coal Plant at Itobe, Ofu, Kogi State
35	Itobe III Coal Power Limited Block A, Flat 1, Olympia Estate, Kaura District, Abuja	Generation On-Grid, 300MW Coal Plant at Itobe, Ofu, Kogi State
36	Itobe IV Coal Power Limited Block A, Flat 1, Olympia Estate, Kaura District, Abuja	Generation On-Grid, 300MW Coal Plant at Itobe, Ofu, Kogi State
37	Oma Power Generation Company Limited 7 Mary Slessor Street, Off Udo Udoma Crescent, Asokoro, Abuja	Generation On-Grid, 1,080MW at Orgwu-Ogwe, UKwa West, Abia State
38	PAN Africa Solar Limited No 1, Okoduwa Crescent, Off Dillon St, Along Naval Camp Site, Kirikiri Ind Layout, Lagos State	Generation On-Grid, 75MW Solar Plant at Kankia, Katsina State.
39	Turbine Drives Limited NO 2B, Anambra Crescent, Off Nile Street, Maitama, Abuja	Generation On-Grid, 500MW at Ajaokuta, Kogi State.
40	Nigeria Solar Capital Partners Limited 4 th Floor, Adamawa Plaza, Off Shehu Shagari Way, CBD Abuja	Generation On-Grid, 100MW Solar Plant at Ganjuwa, Bauchi State.
41	Proton Energy Limited 24, Idejo Street, Victoria Island, Lagos State	Generation On-Grid, 150MW at Ogorode, Delta State.

No.	Licensee	Licence Type & Location
42	LR-Aaron Power Limited No 41A Eupharates, Maitama, Abuja, Nigeria	Generation On-Grid, 100MW Solar Plant at Gwagwalada, Abuja
43	Sinosun Investment Limited Plot 3016 Onex Way, Zone F04, Mpape District, Abuja	Generation On-Grid , 100MW Solar at Jibiya, Katsina State
44	Anambra State Independent Power Limited Plot 3016 Onex Way, Zone F04, Mpape District, Abuja, Nigeria	Generation On-Grid, 528MW at Onitsha, Anambra State
45	Lafarge Africa Plc 27B, Gerrard Road, Ikoyi, Lagos State	Generation On-Grid, 260MW at Ewekoro, Ogun State
46	Azikiel Power Limited 16 Nun Street, Off Danube Stree, Maitama, Abuja	Generation On-Grid, 500MW at Obunagha, Yenagoa, Bayelsa State
47	Middle Band Solar One Limited Leadership House 1, Rahman Adebayo, Street, Lekki Phase 1, Lagos	Generation On-Grid, 100MW Solar Plant at Lokoja, Kogi State
48	Motir Dusable Power Investment Limited 17B, Kwame Nkrumah Crescent, Asokoro, Abuja	Generation On-Grid 300MW solar-powered IPP at Umuagu, Udi, Enugu State
49	Nova Solar 5 Farm Power Limited 43 Usuma Street, Off Gana Street, Maitama, Abuja	Generation On-Grid, 100MW solar powered plant at Kankiya, Katsina State
50	Kingline Development Nigeria Limited No 10B Oluwale Street, Off Chef Collins, Lekki Phase I, Lagos State	Generation On-Grid, 550MW at Omotosho, Ore, Ondo State
51	Nova Scotia Power Development Limited No 15 Buchanan Crescent, Off Aminu Kano Crescent, Wuse II, Abuja	Generation On-Grid, 80MW Solar-powered IPP at Katangar Lafiya, Dutse, Jigawa State
52	Enerlog Limited No. 2B Anambra Crescent, off Mississippi Street, Maitama, Abuja	Generation On-Grid, 100MW at Gwagwalada
53	Afrinergia Power Limited No.5 Quthing Close, off Kolda Link, Wuse II, Abuja.	Generation On-Grid, 50MW Solar-powered IPP at Onyi, Kokona, Nasarawa State.
54	CT Cosmos Limited No. 14 Atbara Street, Off Cairo Street, Wuse II, Abuja	Generation On-Grid. 70MW Solar-powered IPP at Panyam, Mangu Local Government, Plateau State.
55	North South Power Company Limited lot No.1386, Tigris Crescent, Maitama, Abuja, Nigeria	Generation On-Grid, 300MW Solar-Powered Plant at Shiroro Hydro Electric Complex, Niger State
56	Avensol Solar Limited No 33 Parakou Crescent, Off Aminu Crescent, Wuse II, Abuja	Generation On-Grid, 100MW Solar-Powered Plant at Keffi, Nasarawa State
57	Obax Benin Power and Petrochemical Company Limited Obax Centre, Ologbo Town, Benin City, Edo State	Generation On-Grid, 389.6MW at Ologbo, Edo State
58	Geogrid Lightec Limited Novel House, Plot 3 Otunba Jobi Fele Way, Alausa, Lagos State	Generation On-Grid, 30MW at Cadbury, Agidingbi, Lagos
59	Access Quint Solar Nigeria Limited No 11 Sumbo Jibowu Street, Ikoyi, Lagos State	Generation On-Grid, 50MW at Manchok, Kaura, Kaduna
60	Oriental Renewable Solutions Limited Plot 397 Muhammadu Buhari Way CBD, Abuja	Generation On-Grid, 50MW at Dutse, Jigawa
61	EN Consulting and Projects Limited No 84 Kwame Nkrumah, Asokoro, Abuja	Generation On-Grid, 50MW at Birnin Yero Road, Igabi, Kaduna
62	Abeokuta IPP Limited Plot 1059 Abagbon Close, off Ologbun Agbaje Street, Victoria Island, Lagos	Generation On-Grid, 150MW at Ajindo Oba Village, Ewekoro, Ogun

No.	Licensee	Licence Type & Location
63	Waltersmith Petroman Oil Limited 18 Keffi Street, Lagos	Generation On-Grid, 300MW at Ohaji-Egbema, Imo
64	First Independent Power Company Limited 12 Circular Road, Presidential Estate, Port Harcourt, Rivers State	Generation On-Grid 360MW at Okoloma-Afam, Rivers
65	CECUSAFA Limited No 4 Mokin Street, Ijapo Estate, Akure, Ondo	Generation On-Grid 50MW at Uso, Owo, Ondo
66	Amber Energy & Power Development Company Limited No 40 Aiguobasimwin Crescent, Benin City, Edo	Generation On-Grid 100MW at Obayantor, Ikpoba, Edo
67	MGIG Independent Power Generating Company Limited No 20 Park Lane, Apapa, Lagos	Generation On-Grid 528MW gas-fired floating power plant at Adiabo, Calabar, Cross River State.
68	Banji Power Generation Limited No 2 Cassandra Street, Off Usuma Street, Maitama, Abuja	Generation On-Grid- 100MW at Mbaaku, Mbasombo Gwer East, Benue
69	Jolomi Engineering Services Limited No 22 Mabiaku Road, Warri, Delta	Generation On-Grid- 500MW at Ughelli, Delta
70	Orocevam Limited No 15 Akpoaisi Street, Sapele, Delta	Generation On-Grid – 150MW at Paiko, Paikaro, Niger
71	BCS Energy Nigeria Limited Suites B14-B20, Boya Plaza, Ebute Street, Wuye, Abuja	Generation On-Grid- 1000MW at Geregu, Kogi
72	Nigerian Agip Oil Company Limited 41/ 42 Aguiyi Ironsi Street, Maitama, Abuja	Generation On-Grid- 450MW at Okpai Phase II, Delta
73	Pacific Energy Company Limited No 16A, Justice Sowemimo, Street, Asokoro, Abuja	Generation On-Grid- 1,500MW at Ajebandele, Ondo State.
74	Cummins Power Generation Nigeria Limited 21 Adeniyi Jones Avenue, Ikeja, Lagos	Generation On-Grid- 150MW at Ogbele-Ahoda, Port Harcourt, Rivers
75	Anambra Gas Fired IPP Company Limited Evarist House, Awka, Anambra	Generation On-Grid – 100MW at Ugbenu, Awka North, Anambra

Annex 3b Invoices to Distribution Companies (DisCos) and Payment from DisCos

(1) October 2016 – September 2017

2016 Oct

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	4.75	1.53	32.2%
BENIN	3.56	0.72	20.2%
EKO	3.85	1.30	33.7%
ENUGU	3.91	1.00	25.6%
IBADAN	4.55	1.37	30.0%
IKEJA	4.84	1.30	26.9%
JOS	1.76	0.26	15.0%
KADUNA	3.62	0.50	13.8%
KANO	3.14	0.45	14.3%
PH	2.83	0.00	0.0%
Total	36.80	8.42	22.9%

2016 Nov

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.01	2.00	40.0%
BENIN	2.90	0.72	24.8%
EKO	3.58	1.43	40.0%
ENUGU	3.83	1.00	26.1%
IBADAN	4.63	1.32	28.5%
IKEJA	4.43	1.53	34.4%
JOS	1.72	0.26	15.0%
KADUNA	3.09	0.50	16.2%
KANO	2.52	0.00	0.0%
PH	2.58	0.72	27.8%
Total	34.29	9.47	27.63%

2016 Dec

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	4.68	2.09	44.7%
BENIN	3.32	0.75	22.6%
EKO	3.62	1.18	32.5%
ENUGU	3.59	1.10	30.7%
IBADAN	4.58	0.50	10.9%
IKEJA	3.96	0.00	0.0%
JOS	1.73	0.00	0.0%
KADUNA	2.81	0.50	17.8%
KANO	2.05	0.41	20.0%
PH	3.11	0.00	0.0%
Total	33.45	6.53	19.5%

2017 Jan

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.37	1.50	28.0%
BENIN	3.66	1.50	41.0%
EKO	4.86	1.94	40.0%
ENUGU	3.73	1.10	29.5%
IBADAN	5.48	1.72	31.5%
IKEJA	4.87	1.95	40.0%
JOS	2.18	0.33	15.0%
KADUNA	2.93	0.40	13.7%
KANO	3.13	0.50	16.0%
PH	3.57	0.71	20.0%
Total	39.77	11.66	29.3%

2017 Feb

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	4.90	2.45	50.0%
BENIN	3.30	0.98	29.8%
EKO	4.41	1.76	40.0%
ENUGU	4.00	1.45	36.3%
IBADAN	5.00	1.87	37.5%
IKEJA	4.08	1.63	40.0%
JOS	1.88	0.33	17.7%
KADUNA	3.16	0.60	19.0%
KANO	2.49	0.40	16.0%
PH	3.07	0.74	24.0%
Total	36.28	12.22	33.7%

2017 Mar

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.57	2.51	45.0%
BENIN	3.24	1.09	33.8%
EKO	4.84	1.94	40.0%
ENUGU	4.53	1.40	30.9%
IBADAN	4.91	1.88	38.2%
IKEJA	4.44	1.78	40.0%
JOS	2.22	0.33	15.0%
KADUNA	3.88	0.64	16.4%
KANO	3.18	0.50	15.7%
PH	3.03	0.73	24.0%
Total	39.84	12.79	32.1%

2017 Apr

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.33	2.40	45.0%
BENIN	3.33	1.13	33.8%
EKO	4.55	1.82	40.0%
ENUGU	3.33	1.30	39.0%
IBADAN	5.07	2.04	40.3%
IKEJA	4.25	1.70	40.0%
JOS	2.00	0.34	17.0%
KADUNA	3.43	0.65	18.9%
KANO	2.64	0.40	15.2%
PH	2.94	0.71	24.0%
Total	36.88	12.49	33.9%

2017 May

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.23	2.09	40.0%
BENIN	3.75	1.28	34.0%
EKO	5.11	1.53	29.9%
ENUGU	3.79	1.20	31.6%
IBADAN	5.37	2.04	38.0%
IKEJA	4.58	1.83	40.0%
JOS	2.13	0.36	17.0%
KADUNA	3.55	0.65	18.3%
KANO	2.87	0.40	13.9%
PH	3.24	0.78	24.0%
Total	39.63	12.16	30.7%

2017 Jun

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.43	1.09	20.0%
BENIN	3.36	1.34	40.0%
EKO	5.49	2.19	40.0%
ENUGU	3.48	1.20	34.5%
IBADAN	5.61	1.98	35.3%
IKEJA	4.50	1.80	40.0%
JOS	2.38	0.36	15.0%
KADUNA	3.21	0.50	15.6%
KANO	2.88	0.00	0.0%
PH	3.13	0.78	25.0%
Total	39.46	11.24	28.5%

2017 Jul

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.64	0.50	8.9%
BENIN	3.83	1.57	41.0%
EKO	4.66	1.86	40.0%
ENUGU	3.92	1.20	30.6%
IBADAN	5.68	1.90	33.4%
IKEJA	4.73	1.89	40.0%
JOS	2.59	0.40	15.4%
KADUNA	2.82	0.30	10.6%
KANO	3.01	0.00	0.0%
PH	3.59	0.00	0.0%
Total	40.48	9.63	23.8%

2017 Aug

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.37	1.50	28.0%
BENIN	3.66	1.50	41.0%
EKO	4.86	1.94	40.0%
ENUGU	3.73	1.10	29.5%
IBADAN	5.48	1.72	31.5%
IKEJA	4.87	1.95	40.0%
JOS	2.18	0.33	15.0%
KADUNA	2.93	0.40	13.7%
KANO	3.13	0.50	16.0%
PH	3.57	0.71	20.0%
Total	39.77	11.66	29.3%

2017 Sep

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.19	1.50	28.9%
BENIN	4.09	1.43	35.0%
EKO	4.77	1.67	35.0%
ENUGU	3.42	1.20	35.1%
IBADAN	5.50	1.76	32.0%
IKEJA	4.87	1.95	40.0%
JOS	2.21	0.26	11.9%
KADUNA	2.87	0.50	17.4%
KANO	2.95	0.50	17.0%
PH	3.33	0.00	0.0%
Total	39.20	10.77	27.5%

2016 Oct-2017 Sep

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	62.46	21.15	33.9%
BENIN	42.01	14.02	33.4%
EKO	54.60	20.57	37.7%
ENUGU	45.24	14.25	31.5%
IBADAN	61.85	20.10	32.5%
IKEJA	54.41	19.30	35.5%
JOS	25.00	3.57	14.3%
KADUNA	38.30	6.14	16.0%
KANO	34.00	4.06	11.9%
PH	37.99	5.88	15.5%
Total	455.85	129.03	28.3%

(2) October 2017 – October 2018 (Data of June 2018 - missing)

2017 Oct

(Unit Account: NGN billion)			
DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.68	2.00	35.2%
BENIN	4.34	1.33	30.7%
EKO	5.14	2.05	40.0%
ENUGU	3.61	1.20	33.2%
IBADAN	5.82	1.73	29.8%
IKEJA	4.96	0.50	10.1%
JOS	2.47	0.27	10.9%
KADUNA	3.44	0.50	14.6%
KANO	3.19	0.00	0.0%
PH	3.70	0.30	8.1%
Total	42.34	9.89	23.4%

2017 Nov

(Unit Account: NGN billion)			
DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.93	2.00	33.7%
BENIN	4.19	1.29	30.7%
EKO	5.47	2.24	41.0%
ENUGU	3.87	1.30	33.6%
IBADAN	6.15	1.75	28.5%
IKEJA	4.81	1.92	40.0%
JOS	2.56	0.33	13.0%
KADUNA	3.20	0.45	14.1%
KANO	3.15	0.00	0.0%
PH	3.47	0.50	14.4%
Total	42.79	11.79	27.5%

2017 Dec

(Unit Account: NGN billion)			
DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.35	0.37	5.9%
BENIN	4.54	0.00	0.0%
EKO	5.76	2.30	40.0%
ENUGU	4.77	1.00	21.0%
IBADAN	6.74	0.80	11.9%
IKEJA	5.80	0.00	0.0%
JOS	2.72	0.00	0.0%
KADUNA	3.85	0.00	0.0%
KANO	3.58	0.00	0.0%
PH	4.36	0.00	0.0%
Total	48.47	4.48	9.2%

2018 Jan

(Unit Account: NGN billion)			
DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.66	1.05	18.6%
BENIN	4.63	0.00	0.0%
EKO	5.07	0.00	0.0%
ENUGU	4.10	1.20	29.2%
IBADAN	6.03	0.00	0.0%
IKEJA	5.26	0.00	0.0%
JOS	2.48	0.23	9.1%
KADUNA	3.59	0.00	0.0%
KANO	3.02	0.00	0.0%
PH	3.48	0.00	0.0%
Total	43.31	2.48	5.7%

2018 Feb

(Unit Account: NGN billion)			
DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.19	1.99	32.2%
BENIN	3.80	1.01	26.5%
EKO	5.23	2.09	40.0%
ENUGU	3.75	1.00	26.6%
IBADAN	5.89	1.94	32.8%
IKEJA	5.59	2.64	47.2%
JOS	2.27	0.23	9.9%
KADUNA	3.30	0.00	0.0%
KANO	3.03	0.50	16.5%
PH	3.76	0.00	0.0%
Total	42.81	11.39	26.6%

2018 Mar

(Unit Account: NGN billion)			
DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.87	2.40	34.9%
BENIN	4.19	1.11	26.5%
EKO	6.01	2.41	40.0%
ENUGU	4.05	0.80	19.7%
IBADAN	6.08	1.15	19.0%
IKEJA	6.38	2.55	40.0%
JOS	2.25	0.23	10.0%
KADUNA	3.66	0.30	8.2%
KANO	3.34	0.67	20.1%
PH	3.37	0.60	17.9%
Total	46.21	12.21	26.4%

2018 Apr

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.71	2.69	40.0%
BENIN	4.57	1.21	26.5%
EKO	6.01	2.40	40.0%
ENUGU	3.67	1.00	27.3%
IBADAN	6.05	0.96	15.8%
IKEJA	6.17	2.47	40.0%
JOS	1.95	0.20	10.3%
KADUNA	3.46	0.00	0.0%
KANO	3.57	0.65	18.2%
PH	3.23	0.54	16.7%
Total	45.38	12.11	26.7%

2018 May

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.37	1.60	25.1%
BENIN	4.35	1.26	29.1%
EKO	5.35	2.14	40.0%
ENUGU	3.93	0.80	20.3%
IBADAN	6.07	1.52	25.0%
IKEJA	6.00	2.40	40.0%
JOS	2.04	0.15	7.3%
KADUNA	3.72	0.86	23.1%
KANO	3.47	0.62	18.0%
PH	3.17	0.65	20.4%
Total	44.47	12.00	27.0%

2018 Jul

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.28	2.00	32.0%
BENIN	4.74	1.35	28.0%
EKO	5.77	2.31	40.0%
ENUGU	3.98	1.20	30.0%
IBADAN	6.45	1.96	30.0%
IKEJA	6.37	2.55	40.0%
JOS	2.19	0.20	9.0%
KADUNA	3.78	0.50	13.0%
KANO	3.33	0.60	18.0%
PH	3.52	0.63	18.0%
Total	46.41	13.29	28.6%

2018 Aug

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.99	2.00	33.0%
BENIN	4.64	1.32	28.0%
EKO	5.46	1.99	36.0%
ENUGU	3.91	0.50	13.0%
IBADAN	6.29	0.82	13.0%
IKEJA	6.20	2.00	32.0%
JOS	2.05	0.20	10.0%
KADUNA	3.55	0.30	8.0%
KANO	3.31	0.35	11.0%
PH	3.18	0.64	20.0%
Total	44.58	10.12	22.7%

2018 Sep

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	5.82	2.20	37.8%
BENIN	4.14	1.32	31.9%
EKO	4.92	1.72	35.0%
ENUGU	3.75	0.80	21.3%
IBADAN	5.40	1.98	36.7%
IKEJA	5.92	2.37	40.0%
JOS	1.92	0.24	12.5%
KADUNA	3.54	0.30	8.5%
KANO	3.28	0.70	21.3%
PH	3.14	0.70	22.3%
Total	41.83	12.33	29.5%

2018 Oct

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	6.54	1.80	27.5%
BENIN	4.25	1.21	28.5%
EKO	5.73	2.01	35.0%
ENUGU	3.98	1.20	30.2%
IBADAN	5.66	0.68	12.0%
IKEJA	6.48	2.59	40.0%
JOS	2.09	0.19	9.1%
KADUNA	4.11	0.50	12.2%
KANO	3.53	0.50	14.2%
PH	3.36	0.67	20.0%
Total	45.72	11.35	24.8%

2017 Oct-2018 Oct (Data of 2018 Jun., missing)

(Unit Account: NGN billion)

DisCo	Invoice to DisCo	Payment from Discos	Performance Ratio
ABUJA	74.39	22.10	29.7%
BENIN	52.39	12.42	23.7%
EKO	65.90	23.66	35.9%
ENUGU	47.38	12.00	25.3%
IBADAN	72.65	15.29	21.1%
IKEJA	69.92	21.98	31.4%
JOS	26.99	2.46	9.1%
KADUNA	43.18	3.71	8.6%
KANO	39.79	4.59	11.5%
PH	41.74	5.22	12.5%
Total	534.33	123.44	23.1%

Annex 3c Invoices from Generation Companies (GenCos) and Payment to GenCos

(1) October 2016 – September 2017

2016 Oct

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	1.64	0.36	22.0%
JEBBA (Mainstream)	3.15	0.69	22.0%
SHIRORO (North South Power)	3.08	0.68	22.0%
EGBIN	6.70	1.47	22.0%
UGHELLI TRANSCORP (DELTA)	4.65	1.02	22.0%
SAPELE (POWER) STEAM	0.81	0.18	22.0%
GEREGU	1.58	0.35	22.0%
OLORUNSOGO	2.43	0.53	22.0%
OMOTOSHO ELECTRIC	2.66	0.58	22.0%
ALAOJI NIPP	0.54	0.12	22.0%
GEREGU (POWER) NIPP	1.02	0.22	22.0%
ODUKPANI (CALABAR) NIPP	0.61	0.13	22.0%
OLORUNSOGO (POWER) NIPP	1.04	0.23	22.0%
OMOTOSHO GEN CO. NIPP	1.99	0.44	22.0%
SAPELE (OGORODE) NIPP	1.23	0.27	22.0%
IHOVOR	0.40	0.09	22.0%
GBARAIN NIPP	0.68	0.15	22.0%
IBOM	0.35	0.08	22.0%
OMOKU	0.34	0.08	22.0%
Rivers IPP	0.00	0.00	0.0%
SHELL (AFAM VI)	0.24	0.05	22.0%
AGIP (OKPAI)	3.83	0.84	22.0%
Total	38.97	8.55	21.9%

2016 Dec

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.78	0.54	19.3%
JEBBA (Mainstream)	2.76	0.53	19.3%
SHIRORO (North South Power)	2.46	0.48	19.3%
EGBIN	3.70	0.72	19.3%
UGHELLI TRANSCORP (DELTA)	4.14	0.80	19.3%
SAPELE (POWER) STEAM	0.79	0.15	19.3%
GEREGU	1.62	0.31	19.3%
OLORUNSOGO	2.00	0.39	19.3%
OMOTOSHO ELECTRIC	2.00	0.39	19.3%
ALAOJI NIPP	0.39	0.08	19.3%
GEREGU (POWER) NIPP	1.34	0.26	19.3%
ODUKPANI (CALABAR) NIPP	0.45	0.09	19.3%
OLORUNSOGO (POWER) NIPP	0.00	0.00	0.0%
OMOTOSHO GEN CO. NIPP	1.08	0.21	19.3%
SAPELE (OGORODE) NIPP	1.08	0.21	19.3%
IHOVOR	1.05	0.20	19.3%
GBARAIN NIPP	0.32	0.06	19.3%
IBOM	0.00	0.00	0.0%
OMOKU	0.78	0.15	19.3%
Rivers IPP	0.00	0.00	0.0%
SHELL (AFAM VI)	1.78	0.34	19.3%
AGIP (OKPAI)	3.81	0.74	19.3%
Total	34.35	6.65	19.3%

2016 Nov

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.11	0.58	27.4%
JEBBA (Mainstream)	2.76	0.76	27.4%
SHIRORO (North South Power)	2.85	0.78	27.4%
EGBIN	4.41	1.21	27.4%
UGHELLI TRANSCORP (DELTA)	3.81	1.04	27.4%
SAPELE (POWER) STEAM	0.67	0.18	27.4%
GEREGU	1.37	0.38	27.4%
OLORUNSOGO	2.18	0.60	27.4%
OMOTOSHO ELECTRIC	2.00	0.55	27.4%
ALAOJI NIPP	1.13	0.31	27.4%
GEREGU (POWER) NIPP	1.02	0.28	27.4%
ODUKPANI (CALABAR) NIPP	1.11	0.30	27.4%
OLORUNSOGO (POWER) NIPP	0.00	0.00	0.0%
OMOTOSHO GEN CO. NIPP	1.03	0.28	27.4%
SAPELE (OGORODE) NIPP	1.16	0.32	27.4%
IHOVOR	1.13	0.31	27.4%
GBARAIN NIPP	0.11	0.03	27.4%
IBOM	0.00	0.00	0.0%
OMOKU	0.45	0.12	27.4%
Rivers IPP	0.00	0.00	27.4%
SHELL (AFAM VI)	1.48	0.41	27.4%
AGIP (OKPAI)	3.84	1.05	27.4%
Total	34.64	9.47	27.3%

2017 Jan

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.55	0.80	31.6%
JEBBA (Mainstream)	2.52	0.80	31.6%
SHIRORO (North South Power)	2.15	0.68	31.6%
EGBIN	3.39	1.07	31.6%
UGHELLI TRANSCORP (DELTA)	3.23	1.02	31.6%
SAPELE (POWER) STEAM	0.71	0.22	31.6%
GEREGU	1.90	0.60	31.6%
OLORUNSOGO	1.91	0.60	31.6%
OMOTOSHO ELECTRIC	2.03	0.64	31.6%
ALAOJI NIPP	0.49	0.15	31.6%
GEREGU (POWER) NIPP	0.68	0.21	31.6%
ODUKPANI (CALABAR) NIPP	1.19	0.38	31.6%
OLORUNSOGO (POWER) NIPP	0.15	0.05	31.6%
OMOTOSHO GEN CO. NIPP	0.84	0.27	31.6%
SAPELE (OGORODE) NIPP	0.70	0.22	31.6%
IHOVOR	0.77	0.24	31.6%
GBARAIN NIPP	0.40	0.13	31.6%
IBOM	0.00	0.00	0.0%
OMOKU	0.77	0.24	31.6%
Rivers IPP	0.00	0.00	0.0%
SHELL (AFAM VI)	2.43	0.77	31.6%
AGIP (OKPAI)	3.71	1.17	31.6%
Total	32.50	10.26	31.57%

2017 Feb

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.42	0.82	34.0%
JEBBA (Mainstream)	2.33	0.79	34.0%
SHIRORO (North South Power)	1.84	0.62	34.0%
EGBIN	3.46	1.18	34.0%
UGHELLI TRANSCORP (DELTA)	4.33	1.47	34.0%
SAPELE (POWER) STEAM	0.64	0.22	34.0%
GEREGU	2.13	0.72	34.0%
OLORUNSOGO	2.02	0.69	34.0%
OMOTOSHO ELECTRIC	2.29	0.78	34.0%
ALAOJI NIPP	0.91	0.31	34.0%
GEREGU (POWER) NIPP	1.06	0.36	34.0%
ODUKPANI (CALABAR) NIPP	1.43	0.49	34.0%
OLORUNSOGO (POWER) NIPP	0.09	0.03	34.0%
OMOTOSHO GEN CO. NIPP	1.43	0.49	34.0%
SAPELE (OGORODE) NIPP	1.11	0.38	34.0%
IHOVOR	1.64	0.56	34.0%
GBARAIN NIPP	1.09	0.37	34.0%
IBOM	0.39	0.13	34.0%
OMOKU	0.45	0.15	34.0%
Rivers IPP	0.00	0.00	0.0%
SHELL (AFAM VI)	2.61	0.89	34.0%
AGIP (OKPAI)	3.72	1.26	34.0%
Total	37.38	12.69	33.96%

2017 Apr

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.81	0.86	30.7%
JEBBA (Mainstream)	2.51	0.77	30.7%
SHIRORO (North South Power)	1.40	0.43	30.7%
EGBIN	4.04	1.24	30.7%
UGHELLI TRANSCORP (DELTA)	4.23	1.30	30.7%
SAPELE (POWER) STEAM	0.44	0.14	30.7%
GEREGU	2.93	0.90	30.7%
	0.00		
OLORUNSOGO	2.75	0.84	30.71%
OMOTOSHO ELECTRIC	2.67	0.82	30.71%
ALAOJI NIPP	0.54	0.17	30.71%
GEREGU (POWER) NIPP	1.27	0.39	30.71%
ODUKPANI (CALABAR) NIPP	3.08	0.95	30.71%
OLORUNSOGO (POWER) NIPP	0.10	0.03	30.71%
OMOTOSHO GEN CO. NIPP	1.67	0.51	30.71%
SAPELE (OGORODE) NIPP	1.78	0.55	30.71%
IHOVOR	1.52	0.47	30.71%
GBARAIN NIPP	0.55	0.17	30.71%
IBOM	0.69	0.21	30.71%
OMOKU (FIPL)	0.79	0.24	30.71%
TRANS AMADI (FIPL)	0.00	0.00	0.00%
SHELL (AFAM VI)	1.41	0.43	30.71%
AGIP (OKPAI)	4.23	1.30	30.71%
Total	41.42	12.72	30.71%

2017 Mar

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	3.04	0.88	28.8%
JEBBA (Mainstream)	2.71	0.78	28.8%
SHIRORO (North South Power)	2.10	0.61	28.8%
EGBIN	4.65	1.34	28.8%
UGHELLI TRANSCORP (DELTA)	4.78	1.38	28.8%
SAPELE (POWER) STEAM	0.11	0.03	28.8%
GEREGU	2.19	0.63	28.8%
OLORUNSOGO	2.59	0.75	28.8%
OMOTOSHO ELECTRIC	3.04	0.88	28.8%
ALAOJI NIPP	1.34	0.39	28.8%
GEREGU (POWER) NIPP	1.13	0.32	28.8%
ODUKPANI (CALABAR) NIPP	2.16	0.62	28.8%
OLORUNSOGO (POWER) NIPP	0.14	0.04	28.8%
OMOTOSHO GEN CO. NIPP	1.89	0.54	28.8%
SAPELE (OGORODE) NIPP	2.21	0.64	28.8%
IHOVOR	1.29	0.37	28.8%
GBARAIN NIPP	1.11	0.32	28.8%
IBOM	0.80	0.23	28.8%
OMOKU	0.67	0.19	28.8%
Rivers IPP	0.00	0.00	0.0%
SHELL (AFAM VI)	2.20	0.63	28.8%
AGIP (OKPAI)	4.22	1.22	28.8%
Total	44.39	12.79	28.8%

2017 May

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.60	0.75	28.7%
JEBBA (Mainstream)	2.45	0.70	28.7%
SHIRORO (North South Power)	0.57	0.16	28.7%
EGBIN	4.91	1.41	28.7%
UGHELLI TRANSCORP (DELTA)	4.82	1.38	28.7%
SAPELE (POWER) STEAM	0.83	0.24	28.7%
GEREGU	3.29	0.94	28.7%
OLORUNSOGO	2.90	0.83	28.7%
OMOTOSHO ELECTRIC	2.53	0.73	28.7%
ALAOJI NIPP	1.28	0.37	28.7%
GEREGU (POWER) NIPP	1.20	0.34	28.7%
ODUKPANI (CALABAR) NIPP	3.17	0.91	28.7%
OLORUNSOGO (POWER) NIPP	0.42	0.12	28.7%
OMOTOSHO GEN CO. NIPP	1.19	0.34	28.7%
SAPELE (OGORODE) NIPP	1.32	0.38	28.7%
IHOVOR	1.66	0.48	28.7%
GBARAIN NIPP	0.22	0.06	28.7%
IBOM	0.78	0.22	28.7%
OMOKU (FIPL)	1.06	0.30	28.7%
		0.00	
TRANS AMADI (FIPL)	0.00	0.00	0.00%
SHELL (AFAM VI)	3.04	0.87	28.7%
AGIP (OKPAI)	4.25	1.22	28.7%
Total	44.48	12.77	28.7%

2017 Jun

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	1.68	0.42	25.3%
JEBBA (Mainstream)	1.85	0.47	25.3%
SHIRORO (North South Power)	1.39	0.35	25.3%
EGBIN	6.49	1.64	25.3%
UGHELLI TRANSCORP (DELTA)	5.91	1.50	25.3%
SAPELE (POWER) STEAM	0.57	0.15	25.3%
GEREGU	4.05	1.02	25.3%
OLORUNSOGO	3.02	0.76	25.3%
OMOTOSHO ELECTRIC	2.80	0.71	25.3%
ALAOJI NIPP	0.52	0.13	25.3%
GEREGU (POWER) NIPP	1.57	0.40	25.3%
ODUKPANI (CALABAR) NIPP	2.13	0.54	25.3%
OLORUNSOGO (POWER) NIPP	1.82	0.46	25.3%
OMOTOSHO GEN CO. NIPP	1.48	0.37	25.3%
SAPELE (OGORODE) NIPP	0.84	0.21	25.3%
IHOVOR	1.47	0.37	25.3%
GBARAIN NIPP	0.20	0.05	25.3%
IBOM	0.67	0.17	25.3%
OMOKU (FIPL)	1.11	0.28	25.3%
TRANS AMADI (FIPL)	0.00	0.00	0.0%
SHELL (AFAM VI)	0.94	0.24	25.3%
AGIP (OKPAI)	4.14	1.05	25.3%
Total	44.65	11.29	25.3%

2017 Aug

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.06	0.63	30.6%
JEBBA (Mainstream)	3.04	0.93	30.6%
SHIRORO (North South Power)	3.44	1.05	30.6%
EGBIN	7.67	2.35	30.6%
UGHELLI TRANSCORP (DELTA)	6.34	1.94	30.6%
SAPELE (POWER) STEAM	0.88	0.27	30.6%
GEREGU	2.52	0.77	30.6%
AFAM IV-V	0.00	0.00	0.0%
OLORUNSOGO	2.39	0.73	30.6%
OMOTOSHO ELECTRIC	2.12	0.65	30.6%
ALAOJI NIPP	0.52	0.16	30.6%
GEREGU (POWER) NIPP	1.22	0.37	30.6%
ODUKPANI (CALABAR) NIPP	0.99	0.30	30.6%
OLORUNSOGO (POWER) NIPP	1.10	0.34	30.6%
OMOTOSHO GEN CO. NIPP	1.08	0.33	30.6%
SAPELE (OGORODE) NIPP	0.82	0.25	30.6%
IHOVOR	0.92	0.28	30.6%
GBARAIN NIPP	0.25	0.08	30.6%
IBOM	0.10	0.03	30.6%
OMOKU (FIPL)	1.02	0.31	30.6%
TRANS AMADI (FIPL)	0.28	0.09	30.6%
SHELL (AFAM VI)	1.29	0.40	30.6%
AGIP (OKPAI)	4.11	1.26	30.6%
Total	44.15	13.52	30.6%

2017 Jul

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	1.50	0.36	23.9%
JEBBA (Mainstream)	2.39	0.57	23.9%
SHIRORO (North South Power)	2.80	0.67	23.9%
EGBIN	6.57	1.57	23.9%
UGHELLI TRANSCORP (DELTA)	6.27	1.50	23.9%
SAPELE (POWER) STEAM	0.83	0.20	23.9%
GEREGU	3.48	0.83	23.9%
OLORUNSOGO	2.48	0.59	23.9%
OMOTOSHO ELECTRIC	2.37	0.57	23.9%
ALAOJI NIPP	0.66	0.16	23.9%
GEREGU (POWER) NIPP	1.36	0.33	23.9%
ODUKPANI (CALABAR) NIPP	1.49	0.36	23.9%
OLORUNSOGO (POWER) NIPP	1.28	0.31	23.9%
OMOTOSHO GEN CO. NIPP	1.21	0.29	23.9%
SAPELE (OGORODE) NIPP	1.01	0.24	23.9%
IHOVOR	1.17	0.28	23.9%
GBARAIN NIPP	0.47	0.11	23.9%
IBOM	0.66	0.16	23.9%
OMOKU (FIPL)	1.01	0.24	23.9%
TRANS AMADI (FIPL)	0.23	0.05	23.9%
SHELL (AFAM VI)	1.90	0.45	23.9%
AGIP (OKPAI)	4.14	0.99	23.9%
Total	45.26	10.83	23.9%

2017 Sep

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.52	0.66	26.3%
JEBBA (Mainstream)	2.69	0.71	26.3%
SHIRORO (North South Power)	3.06	0.80	26.3%
EGBIN	4.28	1.13	26.3%
UGHELLI TRANSCORP (DELTA)	6.38	1.68	26.3%
SAPELE (POWER) STEAM	0.63	0.17	26.3%
GEREGU	2.67	0.70	26.3%
AFAM IV-V	0.22	0.06	26.3%
OLORUNSOGO	2.48	0.65	26.3%
OMOTOSHO ELECTRIC	2.25	0.59	26.3%
ALAOJI NIPP	0.63	0.17	26.3%
GEREGU (POWER) NIPP	1.13	0.30	26.3%
ODUKPANI (CALABAR) NIPP	1.35	0.35	26.3%
OLORUNSOGO (POWER) NIPP	1.46	0.38	26.3%
OMOTOSHO GEN CO. NIPP	1.23	0.32	26.3%
SAPELE (OGORODE) NIPP	0.97	0.26	26.3%
IHOVOR	0.97	0.25	26.3%
GBARAIN NIPP	0.16	0.04	26.3%
IBOM	0.53	0.14	26.3%
OMOKU (FIPL)	0.76	0.20	26.3%
TRANS AMADI (FIPL)	0.53	0.14	26.3%
SHELL (AFAM VI)	2.38	0.63	26.3%
AGIP (OKPAI)	4.09	1.08	26.3%
Total	43.36	11.41	26.3%

Oct. 2016 – Sep. 2017

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	27.71	7.66	27.7%
JEBBA (Mainstream)	31.16	8.50	27.3%
SHIRORO (North South Power)	27.14	7.31	26.9%
EGBIN	60.29	16.32	27.1%
UGHELLI TRANSCORP (DELTA)	58.91	16.03	27.2%
SAPELE (POWER) STEAM	7.91	2.14	27.0%
GEREGU	29.73	8.16	27.5%
AFAM IV-V	0.22	0.06	26.3%
OLORUNSOGO	29.15	7.97	27.3%
OMOTOSHO ELECTRIC	28.78	7.88	27.4%
ALAOJI NIPP	8.94	2.50	27.9%
GEREGU (POWER) NIPP	13.98	3.79	27.1%
ODUKPANI (CALABAR) NIPP	19.15	5.42	28.3%
OLORUNSOGO (POWER) NIPP	7.59	1.98	26.1%
OMOTOSHO GEN CO. NIPP	16.12	4.40	27.3%
SAPELE (OGORODE) NIPP	14.22	3.91	27.5%
IHOVOR	13.98	3.90	27.9%
GBARAIN NIPP	5.55	1.57	28.3%
IBOM	4.97	1.37	27.6%
OMOKU (FIPL)	9.22	2.52	27.3%
Rivers IPP	0.00	0.00	27.3%
TRANS AMADI (FIPL)	1.05	0.28	27.0%
SHELL (AFAM VI)	21.72	6.11	28.2%
AGIP (OKPAI)	48.09	13.17	27.4%
Total	485.56	132.96	27.4%

(2) October 2017 – October 2018 (Data of June 2018 - missing)

2017 Oct

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.39	0.53	22.2%
JEBBA (Mainstream)	2.84	0.63	22.2%
SHIRORO (North South Power)	2.35	0.52	22.2%
EGBIN	4.53	1.00	22.2%
UGHELLI TRANSCORP (DELTA)	5.44	1.21	22.2%
SAPELE (POWER) STEAM	0.83	0.18	22.2%
GEREGU	3.21	0.71	22.2%
AFAM IV-V	0.48	0.11	22.2%
OLORUNSOGO	2.75	0.61	22.2%
OMOTOSHO ELECTRIC	2.68	0.60	22.2%
ALAOJI NIPP	1.07	0.24	22.2%
GEREGU (POWER) NIPP	1.32	0.29	22.2%
ODUKPANI (CALABAR) NIPP	2.59	0.57	22.2%
OLORUNSOGO (POWER) NIPP	1.19	0.26	22.2%
OMOTOSHO GEN CO. NIPP	1.50	0.33	22.2%
SAPELE (OGORODE) NIPP	1.73	0.38	22.2%
IHOVOR	1.11	0.25	22.2%
GBARAIN NIPP	0.61	0.14	22.2%
IBOM	0.34	0.07	22.2%
OMOKU (FIPL)	0.72	0.16	22.2%
TRANS AMADI (FIPL)	0.74	0.17	22.2%
SHELL (AFAM VI)	2.97	0.66	22.2%
AGIP (OKPAI)	4.19	0.93	22.2%
Total	47.59	10.55	22.2%

2017 Dec

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.90	0.24	8.3%
JEBBA (Mainstream)	2.31	0.19	8.3%
SHIRORO (North South Power)	1.58	0.13	8.3%
EGBIN	9.06	0.75	8.3%
UGHELLI TRANSCORP (DELTA)	7.14	0.59	8.3%
SAPELE (POWER) STEAM	0.00	0.00	0.0%
GEREGU	4.41	0.36	8.3%
AFAM IV-V	0.77	0.06	8.3%
OLORUNSOGO	2.78	0.23	8.3%
OMOTOSHO ELECTRIC	2.83	0.23	8.3%
ALAOJI NIPP	0.00	0.00	0.0%
GEREGU (POWER) NIPP	1.56	0.13	8.3%
ODUKPANI (CALABAR) NIPP	2.63	0.22	8.3%
OLORUNSOGO (POWER) NIPP	1.74	0.14	8.3%
OMOTOSHO GEN CO. NIPP	1.52	0.13	8.3%
SAPELE (OGORODE) NIPP	2.16	0.18	8.3%
IHOVOR	1.07	0.09	8.3%
GBARAIN NIPP	0.34	0.03	8.3%
IBOM	0.84	0.07	8.3%
OMOKU (FIPL)	0.25	0.02	8.3%
RIVERS IPP (FIPL)	0.56	0.05	8.3%
TRANS AMADI (FIPL)	0.60	0.05	8.3%
AZURAPOWER (NAIRA)	0.03	0.00	8.3%
SHELL (AFAM VI)	3.01	0.25	8.3%
AGIP (OKPAI)	4.16	0.34	8.3%
Total	54.24	4.48	8.3%

2017 Nov

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.63	0.77	29.2%
JEBBA (Mainstream)	2.60	0.76	29.2%
SHIRORO (North South Power)	1.81	0.53	29.2%
EGBIN	5.62	1.64	29.2%
UGHELLI TRANSCORP (DELTA)	6.89	2.01	29.2%
SAPELE (POWER) STEAM	0.22	0.07	29.2%
GEREGU	3.54	1.03	29.2%
AFAM IV-V	0.54	0.16	29.2%
OLORUNSOGO	2.74	0.80	29.2%
OMOTOSHO ELECTRIC	2.72	0.80	29.2%
ALAOJI NIPP	0.11	0.03	29.2%
GEREGU (POWER) NIPP	1.46	0.43	29.2%
ODUKPANI (CALABAR) NIPP	2.33	0.68	29.2%
OLORUNSOGO (POWER) NIPP	1.63	0.48	29.2%
OMOTOSHO GEN CO. NIPP	1.26	0.37	29.2%
SAPELE (OGORODE) NIPP	2.07	0.60	29.2%
IHOVOR	1.04	0.30	29.2%
GBARAIN NIPP	0.40	0.12	29.2%
IBOM	0.60	0.17	29.2%
OMOKU (FIPL)	0.58	0.17	29.2%
TRANS AMADI (FIPL)	0.73	0.21	29.2%
SHELL (AFAM VI)	2.31	0.67	29.2%
AGIP (OKPAI)	4.16	1.22	29.2%
Total	47.97	14.02	29.2%

2018 Jan

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.87	0.36	12.6%
JEBBA (Mainstream)	2.39	0.30	12.6%
SHIRORO (North South Power)	1.80	0.23	12.6%
EGBIN	5.59	0.71	12.6%
UGHELLI TRANSCORP (DELTA)	7.23	0.91	12.6%
SAPELE (POWER) STEAM	0.00	0.00	0.0%
GEREGU	3.53	0.45	12.6%
AFAM IV-V	0.73	0.09	12.6%
OLORUNSOGO	2.46	0.31	12.6%
OMOTOSHO ELECTRIC	2.25	0.28	12.6%
ALAOJI NIPP	0.00	0.00	0.0%
GEREGU (POWER) NIPP	1.62	0.20	12.6%
ODUKPANI (CALABAR) NIPP	2.90	0.37	12.6%
OLORUNSOGO (POWER) NIPP	0.29	0.04	12.6%
OMOTOSHO GEN CO. NIPP	1.34	0.17	12.6%
SAPELE (OGORODE) NIPP	2.09	0.26	12.6%
IHOVOR NIPP	1.08	0.14	12.6%
GBARAIN NIPP	0.64	0.08	12.6%
IBOM	0.68	0.09	12.6%
OMOKU (FIPL)	0.17	0.02	12.6%
RIVERS IPP (FIPL)	0.72	0.09	12.6%
TRANS AMADI (FIPL)	0.96	0.12	12.6%
AZURAPOWER (NAIRA)	0.07	0.01	12.6%
SHELL (AFAM VI)	2.66	0.34	12.6%
AGIP (OKPAI)	4.16	0.52	12.6%
Total	48.24	6.09	12.6%

2018 Feb

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.56	1.10	43.0%
JEBBA (Mainstream)	2.02	0.87	43.0%
SHIRORO (North South Power)	0.84	0.36	43.0%
EGBIN	7.27	3.13	43.0%
UGHELLI TRANSCORP (DELTA)	7.33	3.15	43.0%
SAPELE (POWER) STEAM	0.00	0.00	0.0%
GEREGU	3.83	1.65	43.0%
AFAM IV-V	0.45	0.19	43.0%
OLORUNSOGO	2.54	1.09	43.0%
OMOTOSHO ELECTRIC	2.33	1.00	43.0%
ALAOJI NIPP	0.00	0.00	0.0%
GEREGU (POWER) NIPP	1.68	0.72	43.0%
ODUKPANI (CALABAR) NIPP	2.59	1.11	43.0%
OLORUNSOGO (POWER) NIPP	1.76	0.76	43.0%
OMOTOSHO GEN CO. NIPP	1.75	0.75	43.0%
SAPELE (OGORODE) NIPP	2.00	0.86	43.0%
IHOVOR NIPP	0.35	0.15	43.0%
GBARAIN NIPP	0.45	0.19	43.0%
IBOM	0.57	0.24	43.0%
OMOKU (FIPL)	0.39	0.17	43.0%
RIVERS IPP (FIPL)	0.57	0.24	43.0%
TRANS AMADI (FIPL)	0.76	0.33	43.0%
AZURA POWER (NAIRA)	0.06	0.03	43.0%
SHELL (AFAM VI)	2.06	0.89	43.0%
AGIP (OKPAI)	4.12	1.77	43.0%
Total	48.27	20.75	43.0%

2018 Apr

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.32	0.64	27.70
JEBBA (Mainstream)	1.89	0.52	27.70
SHIRORO (North South Power)	1.67	0.46	27.70
EGBIN	6.78	1.88	27.70
UGHELLI TRANSCORP (DELTA)	7.75	2.15	27.70
SAPELE (POWER) STEAM	0.42	0.12	27.70
GEREGU	3.80	1.05	27.70
AFAM IV-V	0.43	0.12	27.70
OLORUNSOGO	2.68	0.74	27.70
OMOTOSHO ELECTRIC	2.83	0.78	27.70
ALAOJI NIPP	0.00	0.00	0.00
GEREGU (POWER) NIPP	1.80	0.50	27.70
ODUKPANI (CALABAR) NIPP	1.72	0.48	27.70
OLORUNSOGO (POWER) NIPP	0.85	0.24	27.70
OMOTOSHO GEN CO. NIPP	1.28	0.36	27.70
SAPELE (OGORODE) NIPP	1.84	0.51	27.70
IHOVOR	1.01	0.28	27.70
GBARAIN NIPP	0.54	0.15	27.70
IBOM	0.67	0.19	27.70
OMOKU (FIPL)	0.86	0.24	27.70
RIVERS IPP (FIPL)	1.43	0.40	27.70
TRANS AMADI (FIPL)	0.04	0.01	27.70
AZURA POWER (NAIRA)	1.22	0.34	27.70
SHELL (AFAM VI)	3.04	0.84	27.70
AGIP (OKPAI)	4.11	1.14	27.70
Total	50.98	14.12	27.70%

2018 Mar

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.79	0.71	25.5%
JEBBA (Mainstream)	2.57	0.66	25.5%
SHIRORO (North South Power)	0.07	0.02	25.5%
EGBIN	7.94	2.03	25.5%
UGHELLI TRANSCORP (DELTA)	7.99	2.04	25.5%
SAPELE (POWER) STEAM	0.65	0.17	25.5%
GEREGU	2.71	0.69	25.5%
AFAM IV-V	0.84	0.22	25.5%
OLORUNSOGO	2.59	0.66	25.5%
OMOTOSHO ELECTRIC	2.81	0.72	25.5%
ALAOJI NIPP	0.00	0.00	0.0%
GEREGU (POWER) NIPP	1.97	0.50	25.5%
ODUKPANI (CALABAR) NIPP	3.52	0.90	25.5%
OLORUNSOGO (POWER) NIPP	0.15	0.04	25.5%
OMOTOSHO GEN CO. NIPP	1.57	0.40	25.5%
SAPELE (OGORODE) NIPP	2.22	0.57	25.5%
IHOVOR	1.22	0.31	25.5%
GBARAIN NIPP	0.78	0.20	25.5%
IBOM	0.62	0.16	25.5%
OMOKU (FIPL)	0.72	0.18	25.5%
RIVERS IPP (FIPL)	1.17	0.30	25.5%
TRANS AMADI (FIPL)	0.46	0.12	25.5%
AZURA POWER (NAIRA)	0.30	0.08	25.5%
SHELL (AFAM VI)	2.65	0.67	25.5%
AGIP (OKPAI)	4.19	1.07	25.5%
Total	52.51	13.39	25.5%

2018 May

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	1.71	0.52	30.4%
JEBBA (Mainstream)	1.78	0.54	30.4%
SHIRORO (North South Power)	2.80	0.85	30.4%
EGBIN	6.53	1.99	30.4%
UGHELLI TRANSCORP (DELTA)	7.49	2.28	30.4%
SAPELE (POWER) STEAM	0.46	0.14	30.4%
GEREGU	2.19	0.67	30.4%
AFAM IV-V	0.53	0.16	30.4%
OLORUNSOGO	2.46	0.75	30.4%
OMOTOSHO ELECTRIC	2.36	0.72	30.4%
ALAOJI NIPP	0.29	0.09	30.4%
GEREGU (POWER) NIPP	0.46	0.14	30.4%
ODUKPANI (CALABAR) NIPP	0.00	0.00	0.0%
OLORUNSOGO (POWER) NIPP	0.47	0.14	30.4%
OMOTOSHO GEN CO. NIPP	1.28	0.39	30.4%
SAPELE (OGORODE) NIPP	1.87	0.57	30.4%
IHOVOR	1.27	0.39	30.4%
GBARAIN NIPP	0.26	0.08	30.4%
IBOM	0.68	0.21	30.4%
OMOKU (FIPL)	0.84	0.26	30.4%
RIVERS IPP (FIPL)	1.66	0.51	30.4%
TRANS AMADI (FIPL)	0.00	0.00	0.0%
AZURA POWER (NAIRA)	5.47	1.66	30.4%
SHELL (AFAM VI)	2.46	0.75	30.4%
AGIP (OKPAI)	4.29	1.30	30.4%
Total	49.62	15.09	30.4%

2018 Jul

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	1.16	0.34	29.1%
JEBBA (Mainstream)	1.34	0.39	29.1%
SHIRORO (North South Power)	2.57	0.75	29.1%
EGBIN	7.77	2.26	29.1%
UGHELLI TRANSCORP (DELTA)	7.23	2.11	29.1%
SAPELE (POWER) STEAM	0.53	0.15	29.1%
GEREGU	2.65	0.77	29.1%
AFAM IV-V	0.98	0.29	29.1%
OLORUNSOGO	2.47	0.72	29.1%
OMOTOSHO ELECTRIC	2.44	0.71	29.1%
ALAOJI NIPP	0.00	0.00	0.0%
GEREGU (POWER) NIPP	1.40	0.41	29.1%
ODUKPANI (CALABAR) NIPP	0.00	0.00	0.0%
OLORUNSOGO (POWER) NIPP	0.72	0.21	29.1%
OMOTOSHO GEN CO. NIPP	1.72	0.50	29.1%
SAPELE (OGORODE) NIPP	1.70	0.49	29.1%
IHOVOR	1.22	0.36	29.1%
GBARAIN NIPP	0.60	0.17	29.1%
IBOM	0.63	0.18	29.1%
OMOKU (FIPL)	0.87	0.25	29.1%
RIVERS IPP (FIPL)	0.31	0.09	29.1%
TRANS AMADI (FIPL)	0.72	0.21	29.1%
AZURA POWER (NAIRA)	5.87	1.71	29.1%
SHELL (AFAM VI)	2.60	0.76	29.1%
AGIP (OKPAI)	4.30	1.25	29.1%
Total	51.79	15.09	29.14%

2018 Sep

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.47	0.77	31.3%
JEBBA (Mainstream)	2.84	0.89	31.3%
SHIRORO (North South Power)	3.32	1.04	31.3%
EGBIN	5.55	1.74	31.3%
UGHELLI TRANSCORP (DELTA)	5.48	1.72	31.3%
SAPELE (POWER) STEAM	0.62	0.19	31.3%
GEREGU	1.65	0.52	31.3%
AFAM IV-V	0.36	0.11	31.3%
OLORUNSOGO	2.22	0.69	31.3%
OMOTOSHO ELECTRIC	2.28	0.72	31.3%
ALAOJI NIPP	0.94	0.29	31.3%
GEREGU (POWER) NIPP	0.00	0.00	0.0%
ODUKPANI (CALABAR) NIPP	0.78	0.25	31.3%
OLORUNSOGO (POWER) NIPP	1.09	0.34	31.3%
OMOTOSHO GEN CO. NIPP	1.05	0.33	31.3%
SAPELE (OGORODE) NIPP	1.29	0.40	31.3%
IHOVOR	1.17	0.37	31.3%
GBARAIN NIPP	0.08	0.02	31.3%
IBOM	0.13	0.04	31.3%
OMOKU (FIPL)	0.53	0.17	31.3%
RIVERS IPP (FIPL)	1.28	0.40	31.3%
TRANS AMADI (FIPL)	0.53	0.17	31.3%
AZURA POWER (NAIRA)	6.13	1.92	31.3%
SHELL (AFAM VI)	1.75	0.55	31.3%
AGIP (OKPAI)	4.26	1.33	31.3%
Total	47.80	14.98	31.3%

2018 Aug

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	2.11	0.43	20.3%
JEBBA (Mainstream)	2.54	0.52	20.3%
SHIRORO (North South Power)	3.25	0.66	20.3%
EGBIN	6.57	1.33	20.3%
UGHELLI TRANSCORP (DELTA)	7.15	1.45	20.3%
SAPELE (POWER) STEAM	0.51	0.10	20.3%
GEREGU	1.23	0.25	20.3%
AFAM IV-V	0.81	0.16	20.3%
OLORUNSOGO	2.52	0.51	20.3%
OMOTOSHO ELECTRIC	2.47	0.50	20.3%
ALAOJI NIPP	0.81	0.17	20.3%
GEREGU (POWER) NIPP	0.24	0.05	20.3%
ODUKPANI (CALABAR) NIPP	0.01	0.00	20.3%
OLORUNSOGO (POWER) NIPP	1.41	0.29	20.3%
OMOTOSHO GEN CO. NIPP	1.30	0.26	20.3%
SAPELE (OGORODE) NIPP	1.45	0.30	20.3%
IHOVOR	1.34	0.27	20.3%
GBARAIN NIPP	0.56	0.11	20.3%
IBOM	0.17	0.03	20.3%
OMOKU (FIPL)	0.62	0.13	20.3%
RIVERS IPP (FIPL)	1.17	0.24	20.3%
TRANS AMADI (FIPL)	0.60	0.12	20.3%
AZURA POWER (NAIRA)	6.42	1.30	20.3%
SHELL (AFAM VI)	1.10	0.22	20.3%
AGIP (OKPAI)	4.31	0.88	20.3%
Total	50.70	10.29	20.3%

2018 Oct

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	3.01	0.69	23.1%
JEBBA (Mainstream)	3.13	0.72	23.1%
SHIRORO (North South Power)	4.04	0.93	23.1%
EGBIN	6.43	1.48	23.1%
UGHELLI TRANSCORP (DELTA)	6.18	1.43	23.1%
SAPELE (POWER) STEAM	0.55	0.13	23.1%
GEREGU	1.64	0.38	23.1%
AFAM IV-V	0.47	0.11	23.1%
OLORUNSOGO	2.39	0.55	23.1%
OMOTOSHO ELECTRIC	2.12	0.49	23.1%
ALAOJI NIPP	0.87	0.20	23.1%
GEREGU (POWER) NIPP	0.00	0.00	0.0%
ODUKPANI (CALABAR) NIPP	0.00	0.00	0.0%
OLORUNSOGO (POWER) NIPP	1.07	0.25	23.1%
OMOTOSHO GEN CO. NIPP	1.21	0.28	23.1%
SAPELE (OGORODE) NIPP	1.52	0.35	23.1%
IHOVOR	1.15	0.27	23.1%
GBARAIN NIPP	0.34	0.08	23.1%
IBOM	0.60	0.14	23.1%
OMOKU (FIPL)	0.64	0.15	23.1%
RIVERS IPP (FIPL)	1.34	0.31	23.1%
TRANS AMADI (FIPL)	0.50	0.11	23.1%
AZURA POWER (NAIRA)	6.16	1.42	23.1%
SHELL (AFAM VI)	2.66	0.61	23.1%
AGIP (OKPAI)	4.28	0.99	23.1%
Total	52.28	12.08	23.1%

Oct. 2017-Oct. 2018 (Data of Jun. 2018, missing)

(Unit Account: NGN billion)

GenCo	Invoice from GenCo	Payment to GenCo	Performance Ratio
KAINJI (Mainstream)	28.93	7.11	24.6%
JEBBA (Mainstream)	28.25	6.99	24.7%
SHIRORO (North South Power)	26.10	6.48	24.8%
EGBIN	79.64	19.94	25.0%
UGHELLI TRANSCORP (DELTA)	83.31	21.04	25.3%
SAPELE (POWER) STEAM	4.79	1.25	26.1%
GEREGU	34.39	8.53	24.8%
AFAM IV-V	7.40	1.78	24.1%
OLORUNSOGO	30.59	7.67	25.1%
OMOTOSHO ELECTRIC	30.13	7.54	25.0%
ALAOJI NIPP	4.08	1.01	24.9%
GEREGU (POWER) NIPP	13.50	3.37	25.0%
ODUKPANI (CALABAR) NIPP	19.06	4.57	24.0%
OLORUNSOGO (POWER) NIPP	12.37	3.18	25.7%
OMOTOSHO GEN CO. NIPP	16.79	4.27	25.4%
SAPELE (OGORODE) NIPP	21.94	5.48	25.0%
IHOVOR NIPP	13.03	3.16	24.3%
GBARAIN NIPP	5.59	1.37	24.5%
IBOM	6.53	1.60	24.5%
OMOKU (FIPL)	7.19	1.91	26.6%
RIVERS IPP (FIPL)	10.21	2.62	25.7%
TRANS AMADI (FIPL)	6.64	1.62	24.3%
AZURA POWER (NAIRA)	31.73	8.47	26.7%
SHELL (AFAM VI)	29.27	7.21	24.6%
AGIP (OKPAI)	50.52	12.74	25.2%
Total	601.98	150.92	25.1%

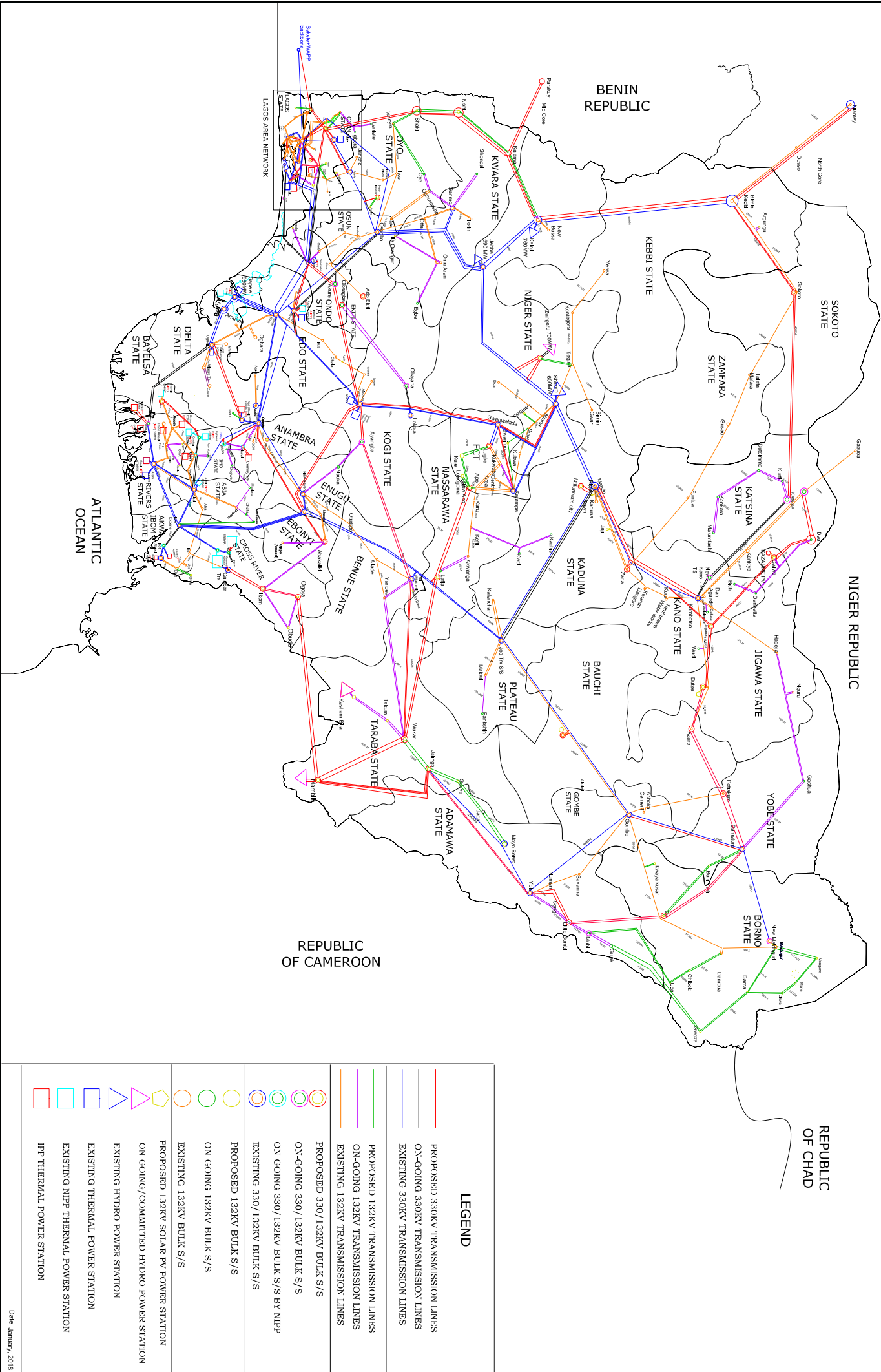
Annex 6.1 Generation expansion plan (Scenario-1) Low case demand

NCC No.	NAME OF STATION	ALTERNATIV E NAME	COMPANY	PSS/E bus numbers	PRIMARY ENERGY RESSOURCE	COMMERCIAL OPERATION DATE	NO. OF UNITS	GROSS UNIT CAPACITY (MW)	GROSS PLANT CAPACITY (MW)	GRID CONNECTION SUBSTATION	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
Existing Power Plants (Category One)																																		
1	KAINJI - G7-10		Mainstream Energy	36002, 36003	HYDRO	1978	4	80	320	KAINJI		80	160	240	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	
1	KAINJI - G5-6		Mainstream Energy	36000, 36001	HYDRO	1968	2	120	240	KAINJI	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	
1	KAINJI - G11-12		Mainstream Energy	36004, 36005	HYDRO	1976	2	100	200	KAINJI	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	100	100	100	100
2	JEBBA		Mainstream Energy	36006-36011	HYDRO	1983-88	6	101	607	JEBBA	607	607	607	607	607	607	607	607	482	482	482	482	482	482	607	607	607	607	607	607	607	607	607	
3	SHIRORO		North South Power Company	36012-36015	HYDRO	1990	4	150	600	SHIRORO	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	
4	EGBIN		EGBIN POWER PLC	16000-16005 (in 2025 at 16006)	STEAM	1985-1987	6	220	1320	ĖGBIN	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	880	440	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	SAPELE		SAPELE POWER PLC	46014-46019	STEAM	1978-1981	6	88	528	SAPELE	60	60	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	DELTA II - GT3-8		TRANSCORP POWER LTD	46002, 46003	GAS	2002	6	24	143	DELTA	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	75	75	75	75	75	75	75	75	
6	DELTA III - GT9-14		TRANSCORP POWER LTD	46004, 46005	GAS	2005	6	24	143	DELTA	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	64	64	64	64	64	64	
6	DELTA IV - GT15-20		TRANSCORP POWER LTD	46006-46011 (in 2025 at 46010-11)	GAS	1990	6	99	594	DELTA	630	630	630	372	372	372	372	372	372	372	372	372	372	0	0	0	0	0	0	0	0	0	0	
7	AFAM IV - GT13-18		AFAM POWER PLC	86007-86009	GAS	1982	6	75	450	AFAM	0	150	150	150	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	AFAM V - GT19-20		AFAM POWER PLC	86010, 86011	GAS	2002	2	138	276	AFAM	0	0	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	276	
8	GEREGU FGN 1		GEREGU GENERATION COMPANY LTD	46020, 46021, 46022	GAS	2007	3	138	414	GEREGU	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	414	
9	OMOTOSHO I		OMOTOSHO ELECTRIC ENERGY COMPANY	26020, 26022, 26024, 26025	GAS	2007	8	42	335	OMOTOSHO	304	304	304	304	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	
10	OLORUNSOGO I		PACIFIC ENERGY	16050-16057	GAS	2007	8	42	335	PAPALANTO	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	335	
11	GEREGU NIPP 1		NIPP	46023-46025	GAS	2013	3	148	444	AJAOKUTA	220	220	220	220	444	444	444	444	444	444	444	444	444	444	444	444	444	444	444	444	444	444		
12	SAPELE OGORODE 1 NIPP		NIPP	46050-46053	GAS	2011	4	113	454	SAPELE	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	454	
13	ALAOJI - NIPP		NIPP	86039-86042	GAS	2013-14	4	120	480	ALAOJI	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	
14	OLORUNSOGO II NIPP		NIPP	16060-16063	GAS	2011	4	120	480	PAPALANTO	240	240	240	360	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	
15	OLORUNSOGO II NIPP		NIPP	16064, 16065	STEAM	2012	2	120	240	PAPALANTO	120	120	120	120	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	
15	OMOTOSHO II NIPP		NIPP	26026-26029	GAS	2012	4	120	480	OMOTOSHO	240	240	240	240	240	360	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	
16	CALABAR / ODUKPANI NIPP		NIPP	86066-86064	GAS	2015	5	113	565	CALABAR	338	338	338	338	338	338	565	565	565	565	565	565	565	565	565	565	565	565	565	565	565	565	565	
17	IHOVBOR (EYAEN) NIPP		NIPP	46031-46034	GAS	2013-14	4	113	452	BENIN NORTH	339	339	339	339	339	339	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	
18	OKPAI IPP		NIGERIAN AGIP OIL CO	76000, 76001	GAS	2005	2	165	330	AGIP TO ONITSHA	300	300	300	300	330	330	330	330	330	330	330	330	330	330	0	0	0	0	0	0	0	0	0	
18	OKPAI IPP		NIGERIAN AGIP OIL CO	76002	STEAM	2005	1	140	140	AGIP TO ONITSHA	140	140	140	140	140	140	140	140	140	140	140	140	140	140	0	0	0	0	0	0	0	0	0	
19	AFAM VI - GT11-13		SHELL ROT	86012, 86013, 86014	GAS	2009	3	166	498	AFAM	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	
19	AFAM VI - ST1		SHELL ROT	86015	STEAM	2010	1	230	230	AFAM	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
20	IBOM 1		IBOM POWER	86025	GAS	2009	1	42	42	IKOT ABASI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	IBOM 1		IBOM POWER	86026	GAS	2016	1	40	40	IKOT ABASI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	IBOM 1		IBOM POWER	86027	GAS	2010	1	114	114	IKOT ABASI	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	
22	EBUTE BARGE (CYREX) AES	EBUTE BARGE	AES / CYREX ENERGY LTD	16040-16049 (exept 16044)	GAS	2002	9	31	279	EGBIN	0	0	0	150	150	150	150	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	279	
23	OMOKU IPP		FIRST INDEPENDENT POWER	86023, 86024	GAS	2006	6	25	150	OMOKU	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	
24	TRANS-AMADI IPP		FIRST INDEPENDENT POWER	86055 (GEN AMADI)	GAS	2010	4	25	100	OMOKU	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
25	RIVERS IPP		FIRST INDEPENDENT POWER	86035	GAS	2012	1	191	191	OMOKU	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	
26	ASCO			46027, 46028	GAS	2021	2	55	110	AJAOKUTA	0	0	0	55	55	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	
27	GBARAIN - GT2 NIPP	GBARAIN / UBIE	NIPP	86069	GAS	2016	1	113	113	YENEGOA	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	
28	PARAS ENERGY		PARAS ENERGY & NATURALS RES. DEV. LTD	16011	GAS	2016	9	9	79	IKORODU-SHAGAMU	79	79	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	
TOTAL									12,515	TOTAL	9,229	9,459	9,906	9,993	10,598	10,623	11,083	11,212	10,647	10,207	9,767	9,767	9,767	9,520	9,050	9,002	9,002	8,352	8,288	8,188	8,188	8,188	8,188	

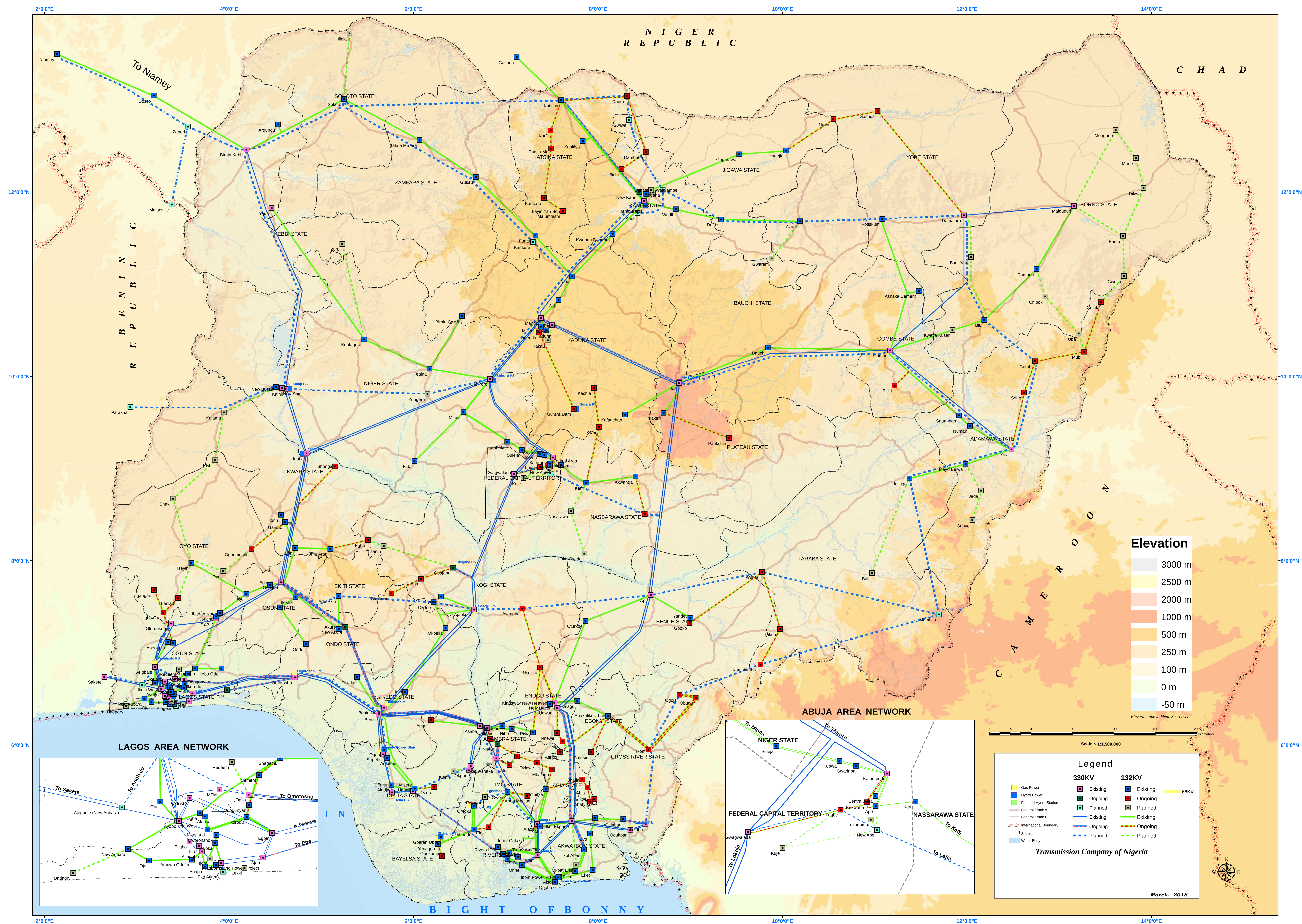
Power Plants under Construction (Category Two)																																	
	GBARAIN / UBIE I	GBARAIN / UBIE	NIPP	86068	GAS	2017	1	113	113	YENEGOA	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	
	EGBEMA I - NIPP		NIPP	86065	GAS	2018	1	113	113	EGBEMA	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
	EGBEMA I - NIPP		NIPP	86066	GAS	2019	1	113	113	EGBEMA	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
	EGBEMA I - NIPP		NIPP	86067	GAS	2019	1	113	113	EGBEMA	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
	KADUNA IPP		KADUNA IPP	56010	GAS	2019	1	215	215	MANDO	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215
	OMOKU - NIPP		NIPP	86021	GAS	2018	1	113	113	OMOKU	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
	OMOKU - NIPP		NIPP	86022	GAS	2019	1	113	113	OMOKU	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
	GURARA		SALINI NIGERIA LTD	56003	HYDRO	2017	2	15	30	GURARA-KUDANDA	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	MABON - DADIN KOWA		MABIN LTD.	66005	HYDRO	2018	1	39	39	GOMBE-BIU	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
	Katsina wind				Wind	2010	37	0.275	10.175		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	KASHIMBILLA			76013	HYDRO	2019		40	40	YANDEV	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
	AZURA			46035, 46036	GAS	2018	3	150	450	BENIN - AJAOKUTA	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
	ZUNGERU			36024-36027	HYDRO	2019	4	700	700	SHIRORO-JEBBA	750	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700
	ELEME			86050	GAS	2021	1	75	75	ONNE	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
	TOTAL								2,162	TOTAL	868	1,637	2,162	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	

NCC No.	NAME OF STATION	ALTERNATIV E NAME	COMPANY	PSS/E bus numbers	PRIMARY ENERGY RESSOURCE	COMMERCIAL OPERATION DATE	NO. OF UNITS	GROSS UNIT CAPACITY (MW)	GROSS PLANT CAPACITY (MW)	GRID CONNECTION SUBSTATION	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Power Plants Candidates																																	
PROPOSED GAS FIRED POWER PLANT CANDIDATES (Category Four)																																	
	OKPAI IPP II - AGIP(NNPC POWER BUSINESS PLAN)	OKPAI IPP II	NIGERIAN AGIP OIL CO	76008	GAS	2020	2	150	300	AGIP TO ONITSHA						300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
				76008	STEAM	2020	1	150	150	AGIP TO ONITSHA						150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
	DELTA III 2+		TRANSCORP POWER LTD	46006-46009	GAS	2023	1	143	143	DELTA							143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143
					GAS	2023	4	148.5	594	SAPELE							594	594	594	594	594	594	594	594	594	594	594	594	594	594	594	594	594
	EGBIN 2+		Egbin power plc	16000-16003	GAS	2021	4	300	1200	EGBIN				900	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
				16004-16005	STEAM	2021	2	350	700	EGBIN				350	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700
	SAPELE POWER PLC		Sapele power plc	46012	GAS	2021	30	20	600	SAPELE				20	170	450	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
				16013	GAS	2022	1	100	100	SAPELE				0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	GEREGU FGN1-2			96014	GAS	2029	3	138	414	GEREGU											285	285			414	414	414	414	414	414	414	414	414
	GEREGU NIPP 2			46026	STEAM	2027	1	285	285	GEREGU												285	285			285	285	285	285	285	285	285	285
				96015	GAS	2030	3	148	444	GEREGU														444	444	444	444	444	444	444	444	444	444
	OMOTOSHO II 2+			26030	STEAM	2027	2	127	254	OMOTOSHO										254	254			254	254	254	254	254	254	254	254	254	254
	CALABAR / ODUKPANI - NIPP	CALABAR / ODUKPANI	NIPP	96020	STEAM	2029	2	127	254	CALABAR													254	254	254	254	254	254	254	254	254	254	254
				96021	GAS	2030	4	141	564	CALABAR														564	564	564	564	564	564	564	564	564	564
	EGBEMA II			96018	STEAM	2030	1	127	127	EGBEMA															127	127	127	127	127	127	127	127	127
	IHOVBOR (EYAEN) 2 - NIPP			96013	STEAM	2030	2	127	254	BENIN NORTH															254	254	254	254	254	254	254	254	254
	GBARAIN / UBIE 2	GBARAIN / UBIE	NIPP	86048	STEAM	2029	1	115	115	GABARAN												115	115	115	115	115	115	115	115	115	115	115	115
	GBARAIN / UBIE 2	GBARAIN / CC	NIPP	86048	GAS	2030	8	113	904	GABARAN															904	904	904	904	904	904	904	904	904
	ALSCON		ALSCON	86031	GAS	2024	1	100	100	IBOM							100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
				86032	GAS	2026	2	130	260	IKOT ABASI																130	130	260	260	260	260	260	260
	ALAOJI 2+ NIPP		NIPP	86043	STEAM	2025	1	285	285	ALAOJI								285	285	285	285	285	285	285	285	285	285	285	285	285	285	285	285
	IKOT ABASI				GAS	2025	2	125	250	IKOT ABASI								250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
	IBOM II			86028	GAS	2020	4	138	552	IKOT ABASI			276	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552
	SAPELE 2 - NIPP			46060-46062	GAS	2028	3	151	453	SAPELE															453	453	453	453	453	453	453	453	453
	TOTALFINALF(OBITE)(NNPC POWER BUSINESS PLAN)			96026	GAS	2031			420	ONITSHA																420	420	420	420	420	420	420	420
	CHEVRON AGURA(NNPC POWER BUSINESS PLAN)			96006	GAS	2030			780	EGBIN															780	780	780	780	780	780	780	780	780
	SUPERTEK			96023	GAS	2030	5	100	500	AJAOKUTA																500	500	500	500	500	500	500	500
	LAFARAGE PHASE I			16009	GAS	2023	1	50	50	PAPALANTO						50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
	LAFARAGE PHASE II			16010	GAS	2025	2	110	220	PAPALANTO							220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
	ANAMBRA STATE IPP			96025	GAS	2031	2	264	528	NNEWI															528	528	528	528	528	528	528	528	528
	BENCO			96019	GAS	2033	7	100	700	OWERRI																700	700	700	700	700	700	700	700
	DELTA STATE IPP			96010	GAS	2032	5	100	500	SAPELE																500	500	500	500	500	500	500	500
	MBH			96005	GAS	2030	2	150	300	OGIJO EGBIN																300	300	300	300	300	300	300	300
	OATS			96007	GAS	2028	7	100	700	OMOTOSHO EPE AJA														300	500	700	700	700	700	700	700	700	
	YELLOW STONE			96017	GAS	2024	2	180	360	AJAOKUTA							360	360	360	360	360	360	360></										

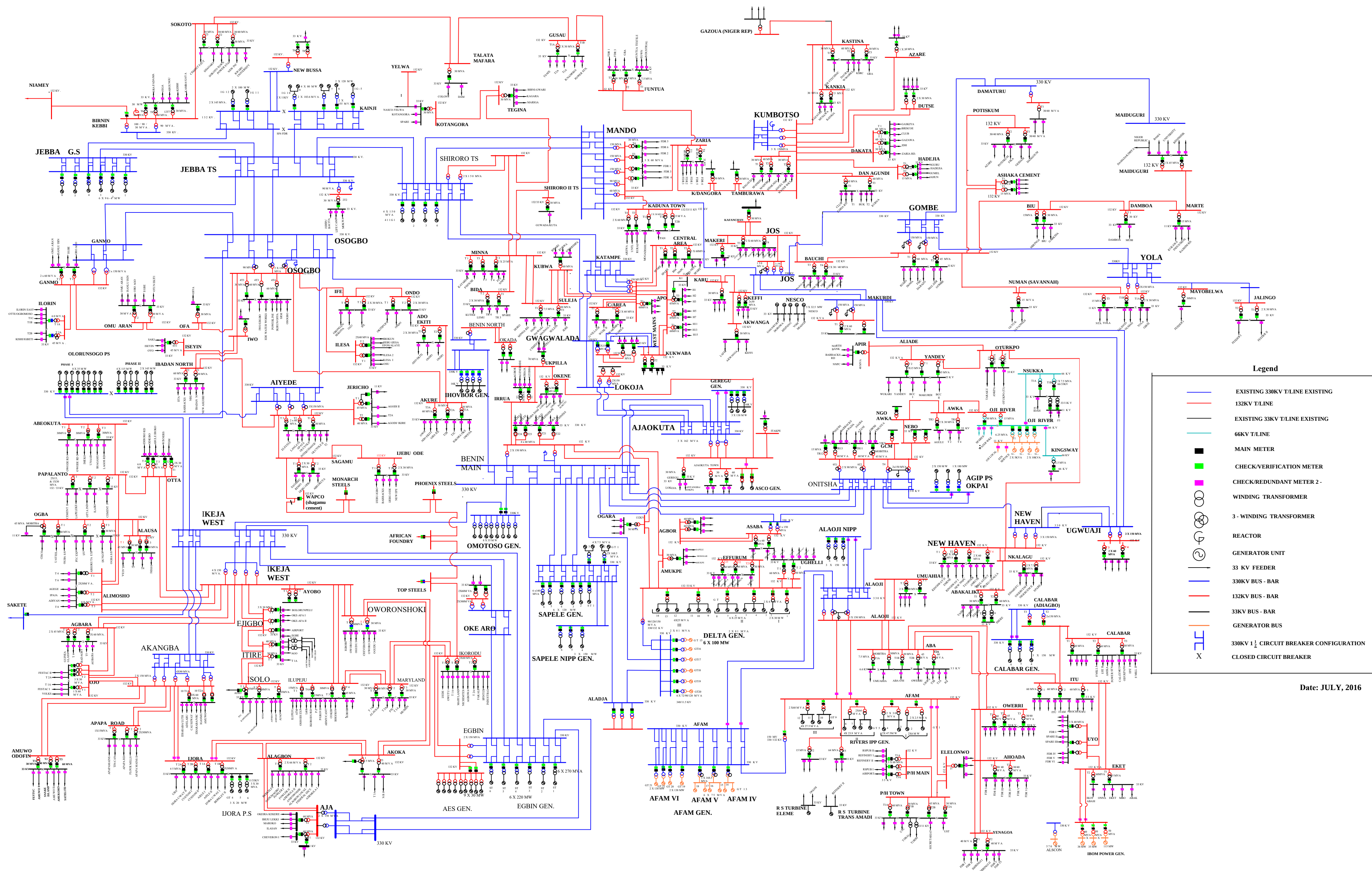
Annex 7.1 a Nigerian map showing existing, on-going & proposed TCN grid projects (NETAP/NIPP/TCN) as at January 2018



Annex 7.1b Nigeria grid map depicting the existing, on-going and planned power transmission projects 10 year plan (2018–2028)



Annex 7.1c Single line diagram of the existing Nigeria grid network



Annex 7.1d Transmission lines – Technical data

330kV OHL

Node		Numen- clature		Circuit Type (Sc or, Dc)		No. of Conductor per Phase		No. of Towers		Skywire (Status)		+ve Sequence Impedance					
From												Resistance (Ω/km)		Susceptance (μS/km)		Reactance (Ω/km)	
Osogbo	Ayede	H2A	119	Single Circuit	Bison Twin	2	350mm ²	234	1968		777	0,039	0,331	3,49	0,276	0,985	2,49
Jebba	Osogbo	J1H	157	Single Circuit	Bison Twin	2	350mm ²	170	1968		777	0,039	0,331	3,49	0,276	0,985	2,49
Jebba	Osogbo	J2H	157	Single Circuit	Bison Twin	2	350mm ²	184	1976		777	0,039	0,331	3,49	0,276	0,985	2,49
Jebba	Ganmo	J3G	70	Single Circuit	Bison Twin	2	350mm ²				777	0,039	0,331	3,49	0,276	0,985	2,49
Ganmo	Osogbo	H3G	87	Single Circuit	Bison Twin	2	350mm ²				777	0,039	0,331	3,49	0,276	0,985	2,49
Osogbo	Ihobvor	H7V	226	Single Circuit	Bison Twin	2	350mm ²				777	0,039	0,331	3,49	0,276	0,985	2,49

132kV OHL

Node		Numen- clature	Line Length (km)	Circuit Type (Sc or, Dc)	Conductor Type	No. of Conductor per Phase	Conductor Cross-Section (mm2)	No. of Towers	Year Built	Skywire (Status)	Rating (MVA)	+ve Sequence Impedance			Zero Sequence Impedance		
From	To											Resistance (Ω/km)	Reactance (Ω/km)	Susceptance (μS/km)	Resistance (Ω/km)	Reactance (Ω/km)	Susceptance (μS/km)
Ganmo	Ilorin	Ganmo-Ilorin	10,5	Single Circuit	Hyena, single	1	100mm ²	63				0,2712	0,4640	0,0701	0,5620	1,6020	0,0480
Ganmo	Offa	Ganmo-Offa	44,73	Double Circuit		1	100mm ²	267									
Offa	Osogbo	Offa-Osogbo	47,6	Single Circuit	Hyena, single	1	100mm ²	284			65,6	0,2712	0,4640	0,0701	0,5620	1,6020	0,0480
Osogbo	Iwo road	Osogbo-Iwo road	80	Single Circuit	Hyena, single	1	100mm ²	478			65,6	0,2712	0,4640	0,0701	0,5620	1,6020	0,0480
Iwo road	Isheyin	Iwo-Isheyin	91	Single Circuit	Wolf, Single	1	150mm ²	543			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Iwo road	Ibadan North	Iwo-Ibadan North	36	Single Circuit	Wolf, Single	1	150mm ²	215			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Ibadan North	Aiyede	Ibadan-Aiyede	14	Single Circuit	Wolf, Single	1	150mm ²	84			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Aiyede	Jericho road	Ayede-Jericho	6	Single Circuit	Wolf, Single	1	150mm ²	36			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Osogbo	Ilesha	Osogbo-Ilesha	17	Single Circuit	Wolf, Single	1	150mm ²	101			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Ilesha	Ife	Ilesha-Ife	19	Single Circuit	Wolf, Single	1	150mm ²	113			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Ife	Ondo	Ife-Ondo	58	Single Circuit	Wolf, Single	1	150mm ²	346			90	0,2220	0,4181	2,7368	0,4639	1,2986	1,7435
Osogbo	Akure	Osogbo-Akure	200	Single Circuit	Hyena, single	1	100mm ²	1194			65,6	0,2712	0,4640	0,0701	0,5620	1,6020	0,0480
Akure	Ado Ekiti	Akure-Ado Ekiti	35	Double Circuit	Panther, Double	1	250mm ²	209			192,5	0,1363	0,3920	4,0312	0,3150	1,3490	1,3511

7.1d-1

Annex 7.1e Transformer –Technical data

STATION	RATINGS(MVA)	Vrated(kv)	COOLING	VECTOR GROUP	NOMENCL.	MAKE	TYPE	POS. SEQ. IMPEDANCE (%)			ZERO SEQ. IMPEDANCE			Estimated R & X Value for Positive Sequence Impedance (% on Machine Base)		Estimated R & X Value for Zero Sequence Impedance (% on Machine Base)		LOSSES (kW)		Imag (pry)	NO. OF TAPS	NOM. TAP	REG. ABOVE	REG. BELOW	REG. STEP	COMPENSATING WINDING		EARTHING
								Z12	Z13	Z23	Z1N	Z2N	Z3N	R	X	R	X	Pcu	Pfe			POSITION	NOM. (%)	NOM. (%)	(%)			
AJA	150	330/132/33		YNy0d11	T3	mitsubishi		8,96	12	4,21	7,8	10,44	3,7															
	150	330/132/33		YNy0d11	T4	PAUWELS																						
	150	330/132/33		YNy0d11	T5	AREVA		9,49	9,71	10,9	8,3	8,5	9,483															
	100	132/33		YNy0d11	T1																							
	60/40/20	132/33		YNy0d11	T1	mitsubishi																						
	20	132/11		YNy0d11	T1	mitsubishi																						
60	132/33		YNd11	T2	PAUWELS		15,53	14,55	13,95	13,511	12,6585	12,1365																
AJAOKUTA	30	132/33	ONAN/ONAF	YNd11	T1	ABB TECH.		10,10			8,787			0,559	10,085	0,486	8,774	168										
	60	132/33	ONAN/ONAF	YNd11	T2	EMCO		10,41			9,0567			0,459	10,4	0,399	9,048											
	162	330/132/33	ONAN/ONAF	YNy0d11	T1	mitsubishi		11,28			9,8136			0,363		0,316	9,809											
	162	330/132/33	ONAN/ONAF	YNy0d11	T2	mitsubishi		11,28			9,8136			0,363	11,274	0,316	9,809											
AKANGBA	162	330/132/33	ONAN/ONAF	YNy0d11	T3	mitsubishi		11,28			9,8136			0,363	11,274	0,316	9,809											
	90	330/132/13.8	OB	Yy0Yd1	5T1A	ASGEN	CORE														17	9b						DIRECT
	90	330/132/13.8	ON/OFB	Yy0Yd1	5T2A	Mitsubishi	Shell														17	9b						GT
	90	330/132/13.8	ON/OFB	Yy0Yd1	5T1B	Mitsubishi	Shell														17	9b						GT
	150	330/132/33			5T4B	INDIA																						
	60	132/33			10T1A	A.B.B.																						
	60	132/33	ONAN/ONAF	YNd11	10T2A	LIAONING EFACEC		10,2			8,874			0,45	10,19	0,391	8,865				17	5	5	-15	1,18			
	60	132/33	ONAN/ONAF	YNd11	10T2B	mitsubishi		10,22			8,8714			0,45	10,19	0,391	8,865				17	3	5	-15	1,18			
	90	330/132/13.8	OB	Yy0Yd1	5T2B	ASGEN	CORE														17	9b						DIRECT
150	330/132/33	ONAN/ONAF	Yy0Yd1	5T4A	Mitsubishi	Shell														17	9b						GT	
ALAOJI	150	330/132/33	ONAN/ONAF	Yd11	T1A	mitsubishi	Shell	11,51	10,45	5,17	10,0137	9,0915	4,4979								17	5	-1,25	1,25	±1.25			GT
	150	330/132/33	ONAN/ONAF	YNa0d11	T3A	AREVA		11,94	8,9	4,18	10,3878	7,743	3,6366															
	150	330/132/33	ONAN/ONAF	Yd11	T2A	mitsubishi	Shell	11,51	10,45	5,17	10,0137	9,0915	4,4979							17	5	-1,25	1,25	±1.25			GT	
AYEDE	150	330/132/33	ONAN/ONAF	YNa0d11	T1B	AREVA		11,29			10,26			0,372	11,284	0,338	10,254				17	5	5	-15	1,18			
	150	330/132/34.5	ONAN/ONAF1/ONAF2	YNa0d11	T2B	CROMPTON GREAVES															17	5	5	-15	1,18			
	100	132/33			T1	GET								0,45	10,19	0,39	8,86											
	60	132/33			T3	PAUWEL TRA								0,64	14,62	0,56	12,72											
150/150/30	330/132/33	ONAN/OFAF	Yd11	T2A	mitsubishi	SHELL	11,73	6,38	3,32	10,2051	5,5506	2,888								17	5	5	12,27	1,25			GT	
	150	330/132/33	ONAN/ONAF	Yd11	6T1	mitsubishi		12,25			10,6575			0,403	12,243	0,351	10,652											
	150	330/132/33	ONAN/ONAF	Yd11	6T2	mitsubishi		12,21			10,6227			0,402	12,203	0,35	10,617											
	60	132/33	ONAN/ONAF	YNd11	T21	INDIAN T & R		10,42			9,0654			0,459	10,41	0,4	9,057											
	60	132/33	ONAN/ONAF	YNd11	T22	ABB-TECH		10,6			9,222			0,467	10,59	0,406	9,213											
	60	132/33	ONAN/ONAF	YNd11	T23	PAUWELLS		15,6			13,572			0,688	15,585	0,598	13,559											
	60	132/33	ONAN/ONAF	YNd11	T24	SPECO		9,95			8,6565			0,439	9,94	0,382	8,648											
	150	330/132/33	ONAN/OFAF		T2A	MELCO	Shell	11,86	6,42	3,32	10,3182	5,5854	2,8884							17	5	5	15	1,25			GT	
BIRNIN-KEBBI	90	330/132/33	ONAN/ONAF	YYO,Yd1,Yd2	19T1	Savigliano	CORE	11,77	19,65	18	10,179	17,0955	15,66								17	5	15	-5	1,25	NO		DIRECT
	150	330/132/33			MBH	MBH POWER																						
	30	132/33			T7	HAWKER SYDNEY		10,3			8,96			0,57	10,284	0,496	8,946											
	60	132/33			T8	PAULWELS																						
	60	132/33			MBH	MBH POWER																						

Transformer Data

Annex 7.2d

STATION	RATINGS(MVA)	Vrated(kv)	COOLING	VECTOR GROUP	NOMENCL.	MAKE	TYPE	POS. SEQ. IMPEDANCE (%)			ZERO SEQ. IMPEDANCE			Estimated R & X Value for Positive Sequence Impedance (% on Machine Base)		Estimated R & X Value for Zero Sequence Impedance (% on Machine Base)		LOSSES (kW)		Imag (prry)	NO. OF TAPS	NOM. TAP	REG. ABOVE	REG. BELOW	REG. STEP	COMPENSATING WINDING		EARTHING
								Z12	Z13	Z23	Z1N	Z2N	Z3N	R	X	R	X	Pcu	Pfe		POSITION	NOM. (%)	NOM. (%)	(%)				
KUMBOTSO	150	330/132/33			T4A	MBH POWER																						
	30	132/33			T1	TOSHIBA																						
	30/40	132/33			T2	ABB																						
	30	132/33			T3	ABB																						
	60	132/33			T4																							
KATAMPE	150	330/132/33	ONAF/ONAN	YNa0d1	T1	ABB	CORE	11,6	45,4	33,4	37	34,8	9,6								21	6	346,5	280,5	330		NO	GT
	150	330/132/33	ONAF/ONAN	YNa0d1	T2	ABB	CORE	11,6	45,4	33,4	37	34,88	9,6								21	6	345,5	280,5	330		NO	GT
	60	132/34.5	ONAN/ONAF1/ONAF2	YNd11	T1	SIEMENS		14,7			12,789			0,648	14,686	0,564	12,777				17	5	138,6	118,8	132		NO	GT
	60	132/33	ONAN/ONAF	YNd11	T2	ABB		10,1			8,787			0,445	10,09	0,387	8,778				17	9	145,2	112,2	132		NO	GT
	150	330/132/33	ONAN/ONAF1/ONAF2	YNa0d11	T3	AREVA		11,29			9,8223			0,372	11,284	0,323	9,817	53,3	368		21	6	345,5	280,5	330		NO	GT
NEW HAVEN	150	330/132/33	ONAN/ONAF	Yd11	T1A	MITSUBISHI	SHELL	11,32	11,45	12,01	10,57	10,32	9,42								17	5	-1,25	1,25	±1.25			GT
	30	132/33			TR1	LEE CHUM																						
	30	132/33			TR2	LEE CHUM																						
	60	132/33			TR3	LEE CHUM																						
	60	132/33			TR4	EMCO																						
150	330/132/33	ONAN/ONAF	Yd11	T2A	MITSUBISHI	SHELL	11,32	11,45	12,01	10,57	10,32	9,42								17	5	-1,25	1,25	±1.25			GT	
ONITSHA	90	330/132/13.8	ON/OFB	YyOYd1	T1A	MITSUBISHI	CORE	11,35	5,92	2,2	9,8745	5,1504	1,914								17	5	-1,25	1,25	±1.25			GT
	150	330/132/33	ONAN/ONAF	YNad1	T3	SIEMENS		12,18	49,97	35,16	10,5966	43,4739	30,5892								17	5	5	-15	1,18			
	150	330/132/33	ONAN/ONAF	YNa0d11	T4	AVERA		11,93	8,88	4,16	9,96	7,7256	3,6192								17	5	5	-15	1,18			
	30	132/33			MOB	MITSUBISHI																						
	15	132/11			MOB	MITSUBISHI																						
	60	132/33			GCM	LEEC																						
	60	132/33			TR11	HYUNDAI																						
	15	132/11			TR12	TRAFO-UNION																						
	60	132/33			TR13	PAUWEL																						
	40	132/33			TR14	CG ELECT.SYSTEM																						
90	330/132/13.8	OB	YyoYd1	T2A	ASGEN	CORE	12,2	6,7	2,26	10,614	5,829	1,9662								17	5	-1,25	1,25	±1.25			GT	
OSHOGBO	150	330/132/33	ONAN/ONAF1/ONAF2		4T1	TBEA		10,31	47,84	33,81	8,9697	41,6208	29,4147								17	5	-1,25	1,25	±1.18			
	150	330/132/33	ONAN/ONAF1/ONAF2	YNa0d11	4T6	AREVA		11,97	26,5	12,45	10,4139	23,055	10,8315								17	5	-1,25	1,25	±1.18			
	60	132/33	ONAN/ONAF	YNd11	4T3	T & R															17							
	60	132/33	ONAN/ONAF	YNd11	4T4	T&R															17							
	30	132/33	ONAN/ONAF	YNd11	4T5	MITSUBISHI															17							
	90	330/132/13.8	ON/OFB	VyoYd1	4T2	MITSUBISHI	SHELL	11,4	5,92	N/A	9,918	5,1504	#WERT!								17	9a	5	16	1			GT
SHIRORO	150	330/132/33	ONAF/ONAN	YNy0d11	T1	MITSUBISHI	SHELL	11,24	9,38	4,45	9,7788	8,1606	3,8715								17	5	5	15	1,25			DIRECT
	150	330/132/11			T1	EMCO																						
	30	132/33			T1	OEL																						
	150	330/132/33	ONAF/ONAN	YNy0d11	T2	MITSUBISHI	SHELL	11,24	9,38	4,45	9,7788	8,1606	3,8715								17	5	5	15	1,25			DIRECT
MINNA	60	132/33			T1	LEEC																						
	30	132/33	ONAF(ONAN)	YNd1	T2	TRAFO-UNION		10.3(7.2)			8.961(6.26)			0,57	10,284	0,496	8,947				17	5	138,6	112,2	132	NO		GT
	60	132/33	ONAN/ONAF	YNd11	T7	TRANF INDIA															17	5	138,6	112,2	132	NO		GT
TEGINA	40	132/33	ONAN/ONAF	YNd11	T1	TELK		9,63			8,3781			0,485	9,618	0,422	8,367				17	5	138,6	112,2	132	NO		GT
APO T.S	45/30/20	132/33/11	ONAF/ONAN	YNd1:yn0	T1	TRAFO-UNION		9.74/6.49	14.4/9.60	8.88/4.59											17	5	138,6	112,2	132	NO		GT
	45/30/20	132/33/11	ONAF/ONAN	YNd1:yn1	T2	TRAFO-UNION		9.74/6.50	14.4/9.61	8.88/4.60											17	5	138,6	112,2	132			

Transformer Data

Annex 7.2d

STATION	RATINGS(MVA)	Vrated(kv)	COOLING	VECTOR GROUP	NOMENCL.	MAKE	TYPE	POS. SEQ. IMPEDANCE (%)			ZERO SEQ. IMPEDANCE			Estimated R & X Value for Positive Sequence Impedance (% on Machine Base)		Estimated R & X Value for Zero Sequence Impedance (% on Machine Base)		LOSSES (kW)		Imag (prr)	NO. OF TAPS	NOM. TAP	REG. ABOVE	REG. BELOW	REG. STEP	COMPENSATING WINDING		EARTHING
								Z12	Z13	Z23	Z1N	Z2N	Z3N	R	X	R	X	Pcu	Pfe			POSITION	NOM. (%)	NOM. (%)	(%)			
KONTAGORA	40	132/33	ONAN/ONAF	YNd11	T1	TOSHIBA		8.10/10.80			9,396			0,544	10,786	0,473	9,384				13	4	138,6	112,2	132	NO		GT
SOKOTO	30/40	132/33	ONAN/ONAF		T1	TOSHIBA		10,74			9,3438			0,541	10,726	0,47	9,332											
	40	132/33	ONAN/ONAF	YNd11	T2	TOSHIBA		8.06/10.74			9,3438			0,541	10,726	0,47	9,332				13	4	138,6	112,2	132	NO		GT
	30	132/33	ONAN	Yd11	T3	ELTA		10,43			9,0741			0,577	10,414	0,502	9,06				17	5	138,6	112,2	132	NO		GT
MANDO T. S	60	330/132			T1A	MARELLI																						
	150	330/132			T4A	CROMPTON GREEVES																						
	90	330/132			T2A	ASGEN																						
	150	330/132			T3	MITSUBISHI																						
	150	330/132			T5	AREVA																						
	60	132/33			T1	ABB																						
	60	132/33			T2	PAUWELS																						
	60	132/33			T3	LEEC																						
60	132/33			T4	CROMPTON GREEVES																							
ZARIA	60	132/33			T3	PAUWELS																						
	40	132/33			T4(MOB)	PAUWELS																						
FUNTUA	7,5	132/33			T1	BRUSH																						
	7,5	132/11			T2	ASEA																						
	30	132/33			T3	PAUWELS																						
GUSAU	30	132/33			T1A	CENEMES																						
	30	132/33			T1B	HAWKER SIDENY																						
T-MAFARA	30	132/33			T1	ABB TECH																						
DAN-AGUNDI	60	132/33			T1	PAUWEL																						
	60	132/33			T3	ABBPOWERTECK																						
DAKATA	60	132/33			T1	ITAL-TRAFO																						
	60	132/33			T2	PAUWEL-TRAFO																						
	30	132/33			T3	PAUWEL-TRAFO																						
KANKIA	30	132/33			T1	PAUWELS																						
	30	132/33			T2	PAUWELS																						
KATSINA	60	132/33			T1	ELKA																						
	30	132/33			T2	PAUWELS																						
	30	132/33			T3	PAUWELS																						
HADEJIA	7,5	132/33			T1	PAUWELS																						
	15	132/33			T2	FERRANTI																						
DUTSE	30/40	132/33			T1	ABB																						
	30/40	132/33			T2	ABB																						
AZARE	30/40	132/33			T1	ABB																						
	30/40	132/33			T2	ABB																						
K/DANGORA	40	132/33			T1	CHINT																						
TAMBURAWA	30/40	132/33			T2	TRAFO-UNION																						
TAMBURAWA	30/40	132/33			T1	TRAFO-UNION																						
BAUCHI	40	132/33			T3	TELK																						
	30/40	132/33			T4	ABB																						
MAKERI	60	132/33			T1	ABB																						
	60	132/33			T2	ABB																						
KAFANCHAN	40	132/33			MOB	IRAN TRANSFO																						
POTISKUM	30	132/33			T1	GEM																						
	30	132/33			T2	TOSHIBA																						
BIU	15	132/33			T1	FERRANTI																						
	30/40	132/33			T2	TOSHIBA																						
MAIDUGURI	45	132/33			T1	HYUNDAI																						
	45	132/33			T2	HYUNDAI																						
	15	132/33			T3	FERRANTI																						
DAMBOA	30	132/33			T1	TOSHIBA																						
YOLA	150	330/132/33	ONAN/ONAF	Yd11	T1A	SIEMENS		12,19	9,19	4,45	10,6053	7,9953	3,8715								17	5	-15	5	1,176471			
	150	330/132/33	ONAN/ONAF	Yd11	T2A	SIEMENS		12,19	9,19	4,45	10,6053	7,9953	3,8715								17	5	-15	5	1,176471			
	30	132/33			T1-A	LEECHUM																						
	30	132/33			T1-B	LEECHUM																						
SAVANNAH	15	132/33			T1	G . E . M .																						
JALINGO	30/40	132/33			T1A	STEN																						

Transformer Data

Annex 7.2d

STATION	RATINGS(MVA)	Vrated(kV)	COOLING	VECTOR GROUP	NOMENCL.	MAKE	TYPE	POS. SEQ. IMPEDANCE (%)			ZERO SEQ. IMPEDANCE			Estimated R & X Value for Positive Sequence Impedance (% on Machine Base)		Estimated R & X Value for Zero Sequence Impedance (% on Machine Base)		LOSSES (kW)		Imag (prr)	NO. OF TAPS	NOM. TAP	REG. ABOVE	REG. BELOW	REG. STEP	COMPENSAT ING WINDING		EARTHING
								Z12	Z13	Z23	Z1N	Z2N	Z3N	R	X	R	X	Pcu	Pfe			POSITION	NOM. (%)	NOM. (%)	(%)			
ISOLU	60	132/33	ONAN/ONAF	YNd11	T2	BBC	CORE	10,22			8,8914			0,45	10,19	0,392	8,883				17	5	5	-15	1,18			
	45/30/15	132/33			T3	BBC																						
ITIRE	30	132/33			T1	MITSUBISHI																						
	60	132/33			T2																							
	40	132/33			T3	ABB POWER TECH																						
MARYLAND	22.5/30	132/33	ONAN/ONAF	YNd11	T1	MITSUBISHI	CORE														17	10	5	-15	1,176471			
	60	132/33			T2	CHANGODAR																						
	30	132/33	ONAN/ONAF	YNd11	T3	MITSUBISHI	CORE														17	6	10	-6	0,953654			
IKORODU	60	132/33	ONAN/ONAF	YNd11	T1	ABB POWER TECH	CORE														17	9	10	9	1,149733			
	60	132/33	ONAN/ONAF	YNd11	T2	ABB POWER TECH	CORE														17	9	10	9	1,149733			
	100	132/33	ONAN/ONAF	YNd11	T3	LEEEC	CORE	10,17			8,8479			0,38	10,163	0,331	8,841				17	5	5	-15	1,176471			
SHAGAMU	15	132/33	ONAN	Yd11	T1	FABRYKA	CORE							0,56	10,14	0,5	9,1				17							
	15	132/33	ONAN	Yd11	T2	FABRYKA	CORE							0,57	10,2	0,5	9,1				17							
OWORONSHOKI	60	132/33	ONAN/ONAF/ONAF2	YNd11	T1	CROMPTON	CORE	8,84			7,6908			0,39	8,837	0,339	7,683				17	5	5	-15	1,18			
	60	132/33	ONAN/ONAF/ONAF2	YNd11	T2	CROMPTON	CORE	8,84			7,6908			0,39	8,837	0,339	7,683				17	5	5	-15	1,18			
ALAGBON	66	132/33		YNd11	T1	ELTA		12,47	12,15	11,21	10,8489	10,5705	9,7527															
	66	132/33		YNd11	T2	ELTA		10,14	9,98	9,61	8,8218	8,6826	8,3607															
APAPA-ROAD	45/30/15	132/33		YNd11yn0	T1	HYUNDAI		3,01	9,3	4,8	2,6187	8,091	4,176															
	45/30/15	132/33		YNd11	T2	ITAL TRAFO		18,72	12,53	5,4	16,2864	10,9	4,698															
AKOKA	45/30/15	132/33		YNd11yn0	T1	TOSHIBA																						
	40	132/33		YNd11	T3	TOSHIBA		18,38			15,99			0,925	18,357	0,805	15,97											
AMUWO-ODOFIN	60	132/33		YNd11	T1	TOSHIBA																						
	30	132/33		YNd11	T2	MITSUBISHI																						
	40	132/33		YNd11	T3	TOSHIBA																						
	40	132/34		YNd11	T4	TOSHIBA																						
LEKKI	60	132/33		YNd11	TR1	AREVA																						
	60	132/34		YNd11	TR2	AREVA																						
OGBA	60/40/20	132/33			T1	TOSHIBA															17							
	60	132/33			T2	PAUWELL															17							
	60	132/33			T3	MITSUBISHI															17							
	45/30/20	132/33	ONAN/OFAF	YN.d11.yno	MOB	MITSUBISHI	CORE	18,74	12,41	5,52	16,3038	10,7967	4,8024								21	9	10	-15	1,190476			
	20	132/11				MITSUBISHI															15							
ALIMOSHO	30	132/33	ONAN/ONAF	YNd11	T1	MITSUBISHI		10,7			9,309			0,592	10,684	0,515	9,295				17	4	5	-15	1,567599			
	60	132/33	ONAN/ONAF	YNd11	T2	ABB		10,7			9,309			4,72	10,69	0,41	9,3				17	4	5	-15	1,567599			
	30	132/33	ONAN/ONAF	YNd11	T3	MITSUBISHI		10,7			9,309			0,592	10,684	0,515	9,295				17	5	5	-15	1,176471			
EJIGBO	30	132/33	ONAN/ONAF	YNd11	T1	ITAL TRAFO		10,2			8,874			0,565	10,184	0,491	8,86				21	13	10	-15	1,19			
	30	132/33	ONAN/ONAF	YNd11	T2	ITAL TRAFO		10,2			8,874			0,565	10,184	0,491	8,86				21	13	10	-15	1,19			
	100	132/33	ONAN/ONAF	YNd11	T3	STECO		10,7			9,309			0,4	10,693	0,348	9,3				13	4	5	15	1,54			
AGBARA	45/30/15	132/33			T1	HYUNDAI															15							
	45/30/15	132/33			T2	HYUNDAI															15							
	60	132/33			T3	CROMPTOM															17							
ALAUZA	45/30/15	132/33	ONAN/ONAF	YNd11.yn0	T1	HYUNDAI	CORE	13,01			11,3187			0,63	12,995	0,548	11,304				13	3	5	-15	1,67			
	30	132/33	ONAN/ONAF	YNd11	T2	ELTA	CORE																					
	60	132/33	ONAN/ONAF	YNd11	T3	PAUWELS	CORE	14,54			12,6498			0,641	14,526	0,558	12,538				17	9	10	-5	1,67			
OTTA	40	132/33			T1	MINEL																						
	60	132/33			T2	PAUWELS																						
	30	132/33			T3	BBC																						
	40/30/20	132/33			MOB	CG ELECT.SYSTEM																						
PAPALANTO	15	132/33			T1	TRAFO-UNION																						
	15	132/33			T2	TRAFO-UNION																						
	30	132/33			T3	PAUWELS																						
ABEOKUTA	30	132/33	ONAN	YNd11	T1	ELTA		10,16			8,8392			0,562	10,144	0,489	8,826				17	5	5	-15	1,67			
	30	132/33	ONAN	YNd11	T2	ELTA		10,16			8,8392			0,562	10,144	0,489	8,826				17	5	5	-15	1,67			
	30	132/33	ONAN/ONAF	YNd11.yn0	T3	PAUWEL		12,2			10,614			0,675	12,181	0,587	10,598				17	9	10	-15	1,25			
AYOBO	60	132/33			T1	PAUWEL																						
	60	132/34			T2	PAUWEL																						
OKE-ARO	300	330/132/33			T1	CROMPTOM GREAVES																						
	300	330/132/33			T2	CROMPTOM GREAVES																						
	60	132/33			T5	CROMPTOM GREAVES																						
	60	132/33			T6	CROMPTOM GREAVES																						
IFE	30	132/33	ONAN	Yd11	T1	ELTA								0,58	10,4	0,5	9,09				17	5	4	-15	1,18			
	30	132/33	ONAN	Yd11	T2	ELTA								0,58	10,4	0,5	9,09				17	5	4	-15	1,18			
ILESAS	40/30	132/33	ONAN/ONAF	YNd11	T1	ABB POWER TECH				10,9			9,483	0,553	10,966	0,477	0,9471				17	5	5	-15	1,18			
	40/30	132/33	ONAN/ONAF	YNd11	T2	ABB POWER TECH				10,9			9,483	0,553	10,966	0,477	0,9471				17	5	5	-15	1,18			
OFA	30	132/33	ONAN/ONAF	YNd11	T1	TOSHIBA								0,59	10,6	0,511	9,23											

Transformer Data

Annex 7.2d

STATION	RATINGS(MVA)	Vrated(kV)	COOLING	VECTOR GROUP	NOMENCL.	MAKE	TYPE	POS. SEQ. IMPEDANCE (%)			ZERO SEQ. IMPEDANCE			Estimated R & X Value for Positive Sequence Impedance (% on Machine Base)		Estimated R & X Value for Zero Sequence Impedance (% on Machine Base)		LOSSES (kW)		Imag (prr)	NO. OF TAPS	NOM. TAP	REG. ABOVE	REG. BELOW	REG. STEP	COMPENSATING WINDING		EARTHING
								Z12	Z13	Z23	Z1N	Z2N	Z3N	R	X	R	X	Pcu	Pfe			POSITION	NOM. (%)	NOM. (%)	(%)			
GANMO	150	330/132/33	ONAN/ONAF1/ONAF2	YNd11yn0	T1A	CROMPTON GREAVES	CORE	18,6	47	33	16,182	40,89	28,71								17	5	5	-15	1,18			
	150	330/132/33	ONAN/ONAF1/ONAF2	YNd11yn0	T2A	CROMPTON GREAVES	CORE	18,6	47	33	16,182	40,89	28,71								17	5	5	-15	1,18			
	60	132/33	ONAN/ONAF1	Yd11	T1	SIEMENS								0,74	14,75	0,65	12,8				17	5	4	-15	1,18			
	60	132/33	ONAN/ONAF1/ONAF2	Yd11	T2	SIEMENS								0,65	14,73	0,57	12,8				17	5	4	-15	1,18			
ILORIN	60	132/33	ONAN/ONAF	Yd11	T1A	TOSHIBA	CORE							0,46	10,52	0,4	9,15				13	5	4	-15	1,54			
	45/30	132/33	ONAN/ONAN	Yd11	T2A	HYUNDAI	CORE														13	5	4	-15	1,54			
OMU-ARAN	30	132/33			T1	mitsubishi								0,59	10,6	0,511	9,23											
	30	132/33			T2	TOSHIBA								0,68	12,18	0,59	10,59											
ONDO	30	132/33	ONAN	Yd11	T1	ELTA	CORE	10,42			9,11			0,58	10,4	0,5	9,09				17	5	5	-15	1,18			
	30	132/33	ONAN	Yd11	T2	ELTA	CORE	10,42			9,11			0,58	10,4	0,5	9,09				17	5	5	-15	1,18			
ADO EKITI	40/30	132/33	ONAN/ONAF		T1	ABB	TBA43							0,56	11,09	0,49	9,65				17	5	5	-15	1,18			
	40/30	132/33	ONAN/ONAF		T2	ABB	TBA43							0,54	10,69	0,47	9,3				17	5	5	-15	1,18			
AKURE	30	132/33	ONAN/ONAF		T1A	ABB								0,57	10,18	0,49	8,86				17	10	9	-10	1,18			
	30	132/33	ONAN/ONAF	Yd11	T2A	mitsubishi								0,55	9,84	0,47	8,56				17	5	5	-15	1,18			
	60	132/33			T3A	PAUWELLS																						
JERICHO	45/30/15	132/33/11	ONAN/ONAF	YdY	T1	mitsubishi		18,47	12,49	5,43	16,0689	10,8663	4,724								21	9	10	-15	1,19			
	40	132/33	ONAN/ONAF	YNd11	T2	PAUWELS	CORE							0,67	13,23	0,58	11,52				17	10	9	-10	1,18			
IBADAN NORTH	60	132/33	ONAN/ONAF	YNd11	T1	LEECC	CORE							0,45	10,09	0,39	8,78				17	5	5	-15	1,18			
	60	132/33	ONAN/ONAF	YNd11	T2	TELK	CORE							0,43	9,64	0,37	8,39				17	5	5	-15	1,18			
SAGAMU	30	132/33	ONAN	Yd11	T1	FABRYKA	CORE														17	5		-15	1,18			
	30	132/33	ONAN	Yd11	T2	FABRYKA	CORE														17	5	5	-15	1,18			
IJBEBU-ODE	30	132/33	ONAN	Yd11	T1	ELTA	CORE																					
	30	132/33	ONAN	Yd11	T2	ELTA	CORE																					
ISEYIN T.S	45/30	132/33	ONAN/ONAF	YNd11yn0	T1	HYUNDAI	CORE														13	5	-15	4	1,54			
IWOT.S	30	132/33			T1	LEECC																						
OWERRI	60	132/33/11			TR1	LEECC																						
	60	132/33			TR2	LEECC																						
	40	132/33			T1-MOB	PAUWELLS																						
ABA	7,5	132/6.6			T1A	PARSON																						
	60	132/33			T1B	LEECC																						
	45/30/15	132/33/11	ONAN/ONAF	YNd11	T2B	HYUNDAI		19,45	13,18	4,76	16,9215	11,4666	4,1412								13	5	-15	4	1,538462			
	30	132/33			T(MOB)	mitsubishi																						
	60	132/33			T2A	ABB																						
UMUAHIA	15	132/11			T4A(MOB)	mitsubishi																						
	40	132/33			T1	STEM ITALY																						
	40	132/33			T2	STEM ITALY																						

Transformer Data

Annex 7.2d

STATION	RATINGS(MVA)	Vrated(kV)	COOLING	VECTOR GROUP	NOMENCL.	MAKE	TYPE	POS. SEQ. IMPEDANCE (%)			ZERO SEQ. IMPEDANCE			Estimated R & X Value for Positive Sequence Impedance (% on Machine Base)		Estimated R & X Value for Zero Sequence Impedance (% on Machine Base)		LOSSES (kW)		Imag (prr)	NO. OF TAPS	NOM. TAP	REG. ABOVE	REG. BELOW	REG. STEP	COMPENSATING WINDING		EARTHING
								Z12	Z13	Z23	Z1N	Z2N	Z3N	R	X	R	X	Pcu	Pfe			POSITION	NOM. (%)	NOM. (%)	(%)			
ABAKALIKI	30	132/33	ONAN/ONAF	YNd11	T1	ABB																						
	60	132/33	ONAN/ONAF	YNd11	T2	INDIAN LTD																						
OTURKPO	7,5	132/33	ONAN/ONAF	YNd11	T1	PAUWELS																						
	30	132/33	ONAN/ONAF	YNd11	T2	ABB																						
NKALAGU	30	132/33	ONAN/ONAF	YNd11	T1A	GEN. ELECT.																						
	30	132/33	ONAN/ONAF	YNd11	T2A	ESPANOLA																						
YANDEV	15	132/33	ONAN/ONAF	YNd11	T1	FERRENTI																						
	60	132/33	ONAN/ONAF	YNd11	T2	LEEEC																						
	45	132/33	ONAN/ONAF	YNd11	MOB	mitsubishi																						
APIR	40	132/33	ONAN/ONAF	YNd11	MOB	ABB																						
ASABA	150	330/132/33	ONAN/ONAF	YNd11	T1																							
	150	330/132/33	ONAN/ONAF	YNd11	T2																							
	60	132/33	ONAN/ONAF	YNd11	TR1																							
	60	132/33	ONAN/ONAF	YNd11	TR2																							
AWKA	30	132/33	ONAN/ONAF	YNd11	TR1	ABB																						
	30	132/33	ONAN/ONAF	YNd11	TR3	PAUWEL TRAFO																						
AGU-AWKA	40	132/33	ONAN/ONAF	YNd11	MOB	LEEEC																						
NSUKKA	7,5	66/33	ONAN/ONAF	YNd11	T1A	TRAFO-UNION																						
	7,5	66/33	ONAN/ONAF	YNd11	T1B	FOSTER																						
OJI TS	30	132/33	ONAN/ONAF	YNd11	T1A	PAUWELL																						
	15	132/66	ONAN/ONAF	YNd11	T1B	SAVIGLIANO																						

Annex 7.2a Classification of on-going TCN capital projects by zones TCN Projects – updated July 2018

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
	Projects In South-East Zone				
1	Owerri-Ahoada-Yenegoa 132kv DC lines and substations Imo-Rivers-Bayelsa States	Imo/Rivers/ Bayelsa	Completed	Delivery of bulk power to Yenagoa in Bayelsa State & Ahaoada in Rivers State. Enhancement of industrial and socio-economic activities in the states.	Completed
2	Construction of Alaoji-Umuahia 132kv DC line	Abia	Completed	Increase in power supply to Umuahia and environs. Boosting of socio- economic activities in the areas.	Completed
3	Umuahia 2x30/40MVA, 132/33kV Substation	Abia	Completed	Increase in power supply to Umuahia and environs. Boosting of socio- economic activities in the areas.	Completed
4	Mbalano-Okigwe 132kv SC line	Abia	Completed	Provision of bulk energy delivery to Okigwe and environs; increase in socio-economic activity in the areas.	Completed
5	Construction of 150MVA 330/132/33kV T/F and 330kV bays at Onitsha and Benin.	Anambra/Edo	Completed	150MVA increase in transformer capacity at 330kV Voltage level at Onitsha. Boost in economic activity in the South East Zone.	Completed
6	2nd Benin-Onitsha 330kv SC line.	Anambra/Edo	Completed	Increase in wheeling capacity to the South-East Zone and Benue State. Boost in socio-economic activity in the South East zone and Benue State.	Completed
7	3rd Benin - Onitsha 330KV DC Line	Anambra/Edo	Completed	Increase in wheeling capacity to the South-East Zone and Benue State. Boost in socio-economic activity in the South East zone and Benue State.	Completed
8	2 x 330KV Line bay extension at Kaduna, Jos and Onitsha	Kaduna/Plateau/Anambra	30%	Increase in wheeling capacity to the South-East and North-East Zones . Boost in socio-economic activity in the affected areas.	70% and estimated to be completed in Dec 2018
9	2x60MVA, 132/33kv at Aboh -Mbaise S/S	Imo	75%	Improvement in power supply to Aboh Mbaise (Imo State)and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	75% Completed
10	2x60 MVA, 132/33 kV substation at Ideato and 2 x132KV Line Bays at Okigwe	Imo	70%	Improvement in power supply to Ideato (Imo State)and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	73% and estimated to be completed in Aug 2018
11	Onitsha - Oba - Nnewi - Ideato- Okigwe 132kv DC Line	Anambra/Imo	10%	Bulk power supply to parts of Anambra and Imo States. Improvement in socio-economic life of the people of the states.	48% and estimated to be completed in Dec 2018
12	Arochukuw 2x30/40MVA, 132/33kV substation	Abia	86	Improvement in power supply to Arochukwuand environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	92% and estimated to be completed in Dec 2018
13	Okigwe 2x30/40MVA 132/33kV Substation	Imo	65	Improvement in power supply to Okigwe and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	90% and estimated to be completed in Dec 2018
14	Ohafia 2x30/40MVA 132/33kV substation.	Abia	60	Improvement in power supply to Ohafia and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	82% and estimated to be completed in July 2018
15	Mbalano 2x30/40MVA 132/33kV substation.	Abia	60	80MVA transformer capacity at 132kV Voltage level at Mbalano to meet the power requirement of the town and environs, increase socio-economic activity and generate employment.	85% and estimated to be completed in Dec 2018
16	Nnewi 2x60 MVA 132kV substation	Anambra	70	Improvement in power supply to Nnewi and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	80% and estimated to be completed in Aug 2018

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
17	Nsukka - Ayangba 132KV DC Line	Enugu/Kogi	35	Improvement in power supply to Nsukka and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	63% completed
18	2x60 MVA, 132/33 kV substation at Oba and 2 x132KV Line Bays at Nnewi	Anambra	42	Improvement in power supply to Oba and adjoining parts of Anambra State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	45% and estimated to be completed in Dec 2018
19	Owerri - Abo Mbaise 132KV DC Line	Imo	12	Improvement in power supply to parts of Imo State to meet the power demand of the people, increase socio-economic activity and generate employment in the areas.	20% completed
20	Onitsha-Ifitedunu 132kv DC Transmission line	Anambra	0	Improvement in power supply to Ifitedunu and adjoining parts of Anambra State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	Yet to commence due to lack of funds
21	Construction of 2 x 60MVA 132/33kV Sunstation at Ifitedinu and 2 x 132kv line bays extension at Onitsha	Anambra	0	Improvement in power supply to Ifitedunu and adjoining parts of Anambra State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	Yet to commence due to lack of funds
22	2x60MVA,132/33kV substation at Amasiri, Afikpo and 2x132kV line bay extension at Abakaliki	Ebonyi	0	Contract was terminated and re-procured.	16% completed
23	2x60MVA,132/33kV substation at Mpu, with 2x132kV line bay extension at Nnenwe	Enugu	15	Improvement in power supply to Mpu and adjoining parts of Enugu State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	20% completed
24	Umuahia-Ohafia 132kv SC line	Abia	60	Improvement in power supply to Ohafia and environs to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	60% completed
25	Umuahia - Mbalano 132KV Line	Abia	67	Improvement in power supply to Mbalano and adjoining parts of Imo State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	76% completed
26	Ohafia - Arochukwu 132KV Line	Abia	65	Improvement in power supply to Ohafia and Arochukwu areas of Abia State to meet the power people and of the areas, increase socio- economic activity and generate employment in the areas.	78% completed
27	Abakaliki - Amasiri 132kV DC line	Ebonyi	20	Improvement in power supply to the entire Ebonyi South Senatorial Zone to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	67% and estimated to be completed in Dec 2018
28	Ugwuaji-Nnenwe 132kV DC line	Enugu	10	Improvement in power supply to Nnenwe and adjoining parts of Enugu State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	32% and estimated to be completed in Dec 2018
29	2x60MVA, 132/33kV substation at Nnenwe	Enugu	2	Improvement in power supply to Nnenwe and adjoining parts of Enugu State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	2% completed
30	Nnenwe-Mpu 132kV DC line	Enugu	8	Improvement in power supply to Mpu and adjoining parts of Enugu State to meet the power demand of the areas, increase socio-economic activity& generate employment in the areas.	22% completed
	Projects In South-West Zone				
31	Akure-Ado Ekiti 132kv SC line	Ondo/Ekiti	Completed	Improved power wheeling capacity to Ekiti State. Enhancement of socio-economic activity and generation of employment.	Completed
32	2 x 60MVA, 132/33kV substations at Odogunyan and Ayobo with 132kV DC Tline Ikeja West - Ayobo.		Completed	Improved power supply Odogunyan and Ayobo areas of Ogun and Lagos States (respectively). Enhancement of socio-economic activity and generation of employment.	Completed & Commissioned

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
33	Benin North-Oshogbo 330KV DC line with one SC turning in and out to New Akure substation	Edo/Osun	28	Improvement in power wheeling to Osgbo and Akure (Ondo State). Enhancement of the socio-economic live of the people of the states.	49% and estimated to be completed in Jan 2019
34	New Akure 2x150MVA,330/132KV + 2x60MVA, 132/33kV Substation and 2x330kV line bays extensions in Benin North and Osogbo substations	Osun/Ondo	60	Increase in power supply to Akure and entire Ondo State t bBoost economic activity and employment generation	Akure SS is 85% and estimated to be completed in Dec 2018
35	New Abeokuta - Igboora - Lanlate 132kv DC Line and Tee- Off at Igboora- Igangan	Ogun	10	Bulk power supply to Lanlate town and improved power supply to the town and environs. Stimulation of growth in socio-economic activity and generation of employment.	83% and estimated to be completed in July 2018
36	Ganmo -Ogbomosho 132kv DC line	Kwara/Oyo	15	Bulk power supply to Ogbomosho and environs. Stimulation of growth in socio-economic activity and generation of employment.	30% completed
37	2 x60MVA 132/33kV S/S at Ogbomosho 1no. 132kv Bay Extension at Ganmo	Oyo/Kwara	70	Bulk power supply to Ogbomosho and environs. Stimulation of growth in socio-economic activity and generation of employment.	75% and estimated to be completed in Dec 2018
38	2x30/40 MVA, 132/33 kV substation at Lanlate plus 2 x132KV Line Bays at New Abeokuta 132/33 kV substation	Ogun	70	Bulk power supply to Lanlate town and improved power supply to the town and environs. Stimulation of growth in socio-economic activity and generation of employment.	72% and estimated to be completed in Nov 2018
39	Ikorodu - Odogunyan - Shagamu 132kv DC Transmission Line	Lagos/Ogun	55	Bulk power supply to Odogunyan and Shagamu and environs. Stimulation of growth in socio-economic activity and generation of employment.	78% Completed
40	Transmission - 2x60MVA 132/33KV Substation at Igangan & 132kv Switching Station at Igboora	Ogun	45	Boost in power supply to Igangan and environs, enhancement of socio-economic activity and creation of employment in the areas.	46% and estimated to be completed in Dec 2018
41	Omotosho-Epe-Aja 330KV DC Line.	Lagos	50	Increase in power wheeling capacity to Aja and Epe in Lagos State. Boost in socio-economic activity.	42% and estimated to be completed in Dec 2018
42	Oshogbo- Ede 132KV DC Line	Osun/Ondo	72	Bulk power supply to Ede town and environs. Stimulation of growth in socio-economic activity and generation of employment in the areas.	100% Completed & awaiting Commissioning
43	2X60MVA Substation at Ede	Osun	20	Bulk power supply to Ede town and environs. Stimulation of growth in socio-economic activity and generation of employment in the areas.	30% and estimated to be completed in Sept 2018
44	Erukan - Omotosho 330KV DC Trx. Line	Ogun	20	Increase in wheeling capacity from Omotosho Power Plant. Boost in socio-economic activity in the South West zone	39% and estimated to be completed in Sept 2018
45	2x 150MVA, 330/132KV + 2x60MVA, 132/33kV substation at Omotosho	Ogun	15	Increase in transmission capacity and power supply to Omotosho and adjoining areas to Boost economic activity, employment generation	10% Completed
46	Obajana-Okeagbe 132kv DC line	Kogi/Ondo	5	Improvement of power supply to Okeagbe and entire Ondo State. Boosting of socio-economic life of the people of the state	15% Completed
47	2x60MVA 132/33kV substation at Okeagbe, Ondo State and line bays extension at Obajana	Ondo/Kogi	40	Improvement of power supply to Okeagbe and entire Ondo State. Boosting of socio-economic life of the people of the state	45% Completed
48	2x60MVA, 132/33kV Substation at Ose LGA Headquarters, Ondo State	Ondo	5	Improvement of power supply to Ose and adjoining parts of Ondo State. Boosting of socio-economic life of the people of the state	5% Completed
49	Provision of additional 2x150MVA 330/132KV Transformer capacity at Olorunsogo T/S.		10	Increase in transmission capacity and power supply to Olorunsogo area and environs areas to Boost economic activity, employment generation	3% Completed

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
	Projects In South-South Zone				
50	Owerri-Ahoada-Yenegoa 132kv DC lines and substations Imo-Rivers-Bayelsa States	Rivers/Bayelsa	Completed	Delivery of bulk power to Yenagoa in Bayelsa State & Ahoada in Rivers State. Enhancement of industrial and socio-economic activities in the States.	Completed
51	Afam-Port Harcourt 132kv D/C turning in and out at Port Harcourt main Ts	Rivers	Completed	Increase power wheeling capacity to Port Harcourt to meet the load demand in PH and increase socio-economic activity; create employment	Completed
52	Construction of 150MVA, 330/132/33kv transformer at Onitsha, 330kv bays at Onitsha and Benin.	Edo	Completed	Boost in power supply to Onitsha and Benin areas. Boost in economic activity in the South East and South-South Zones.	Completed
53	3rd Benin - Onitsha 330KV DC Line	Edo	Completed	Boost in power supply to Onitsha and Benin areas. Boost in economic activity in the South East and South-South Zones.	Completed
54	Calabar 2x150MVA, 330/132/33kv Substation and line bay at Alaoji Substation.	Cross Rivers	Completed	Boost in power supply to Calabar and the entire Cross River State. Generation of employment and increase in economic activity in the state.	Completed
55	1x60MVA Substation at Ughelli Power Plant and 1x30/40MVA substation reinforcement at Amukpe	Delta	94	Improvement in power supply to Amukpe, Sapele and environs. Boost in economic activity in the areas.	Both Completed & Commissioned
56	2nd Benin-Onitsha 330kv SC line.	Edo	85	Boost in power supply to Onitsha and Benin areas. Boost in economic activity in the South East and South-South Zones.	Completed & Commissioned
57	2x30/40MVA 132/33kv S/S at Ogoja	Cross Rivers	75	Improvement in power supply to Ogoja and environs to meet the power demand of the areas, increase socio-economic activity and generate employment in the areas.	75% and estimated to be completed in Aug 2018
58	Rehabilitation of Afam TS with 1 x 150MVA 330/132/33kv transformer and construction of Afam IV to Afam II 132kv Transmission Line	Rivers	65	Improvement in power supply to entire Rivers State to meet the power demand, increase socio-economic activity and generate employment in parts of the state.	Completed
59	DC 132kv line from Alcon to Ibom Power and Switching Station to link the GIS at Alcon with associated bay extensions at Ibom Power - Akwa Ibom State	Akwa Ibom	80	Boost in power supply to Akwa Ibom State. Generation of employment and increase in economic activity in the state.	90% and estimated to be completed in Jan 2019
60	Benin North-Oshogbo 330KV DC line with one SC turning in and out to New Akure substation	Edo	28	Increase in power wheeling capacity between Oshogbo and Benin and improved power availability for socio-economic development in the affected zones.	49% and estimated to be completed in August 2018
61	Obudu - Ogoja 132KV DC Line	Cross Rivers	7	Improvement in power supply to Ogoja, Obudu and environs to meet the power demand of the areas, increase socio-economic activity and generate employment in the areas.	85% and estimated to be completed in August 2018
62	1x60MVA, 132/33kv substation reinforcement at Ukpilla substation, Edo State	Edo	42	Improvement in power supply to Ukpilla and environs to meet the power demand of the areas, increase socio-economic activity and generate employment in the areas.	96% and estimated to be completed in August 2018
63	Yenagoa - Oporoma 132kv DC Transmission Line (50km)	Bayelsa	0	Improvement of power supply to Oporoma and other parts of Bayelsa State. Increase in employment generation and socio-economic development.	Yet to commence due to lack of funds
64	2x 60MVA, 132/33KV Substation at Oporoma and 2x 132KV Line bays Extension at Yenegoa Substation	Bayelsa	0	Improvement of power supply to Oporoma and other parts of Bayelsa State. Increase in employment generation and socio-economic development.	Yet to commence due to lack of funds
65	Delta-Port Harcourt 330KV DC line	Delta/Rivers	5	Increase in power wheeling and availability to the states of the South-South Zone. Increase in employment generation and socio-economic development.	30% and estimated to be completed in Dec 2019

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
66	4x330kV line bays extensions at Delta and Port Harcourt substations	Delta/Rivers	20	Increase in power wheeling and availability to the states of the South-South Zone. Increase in employment generation and socio-economic development.	11% Completed
	Projects In North Central Zone				
67	Katampe-National Stadium 132kv DC line	Abuja/FCT	95	Improvement in power wheeling capacity to National Stadium/Kukwaba areas of FCT. Enhancement of socio-economic activity and generation of employment.	98% and estimated to be completed in Dec 2018
68	Kukwaba 2x60MVA, 132/33kV substation	Abuja/FCT	80	Improvement in power supply to National Stadium/Kukwaba areas of FCT. Enhancement of socio-economic activity and generation of employment.	Completed
69	Nsukka - Ayangba 132KV DC Line	Kogi	35	Increase in power availability to Ayangba and environs. Enhancement in socio-economic live of the people.	63% completed
70	132/33KV Substation at Ayangba	Kogi	12	Increase in power availability to Ayangba and environs. Enhancement in socio-economic live of the people.	12% completed
71	1x150MVA, 330/132kV + 1x60MVA, 132/33kV substation at Obajana	Kogi	35	Improvement in power supply to Obajana to meet the power demand of the Industrial area and environs, to boost socio-economic activity and generate employment	50% and estimated to be completed in Aug 2018
72	Construction of Akwanga-Lafia 132kV Double Circuit Transmission Line	Nasarawa	10	Bulk power supply to Lafia town and environs. Stimulation of growth in socio-economic activity, generation of employment	15% and estimated to be completed in April 2019
73	2x30/40MVA, 132/33kV S/S at Lafia	Nasarawa	37	Bulk power supply to Lafia town and environs. Stimulation of growth in socio-economic activity, generation of employment	94% and estimated to be completed in August 2018
74	Makere - Pankshin 132KV DC Line	Plateau	90	Increased power supply to Makeri, Pankshin and their environs. Boost in socio-economic live in the areas and entire Plateau State.	47% and estimated to be completed in Dec 2018
75	2 x 30MVA, 132/33KV S/S at Pankshin and Makeri	Plateau	Completed	Increased power supply to Makeri, Pankshin and their environs. Boost in socio-economic live in the areas and entire Plateau State.	Completed
76	2x60MVA, 132/33KV S/S at Shonga.	Kwara	17	Bulk power supply to Songa and environs. Stimulation of growth in socio-economic activity, generation of employment	18% completed
77	Ganmo - Ogbomosho 132KV DC line	Kwara	15	Bulk power supply to Ogbomosho and environs. Stimulation of growth in socio-economic activity, generation of employment	30% completed
78	Lokoja - Obajana 330KV Line and Substation	Kogi	30	Improvement in power supply to Obajana to meet the power demand of the Industrial area and environs, to boost socio-economic activity and generate employment	47% completed
79	Ganmo-Shonga 132KV DC Line .	Kwara	20	Bulk power supply to Songa and environs. Stimulation of growth in socio-economic activity, generation of employment	29% completed
80	Obajana-Okeagbe 132KV DC line	Kogi	5	Bulk power supply to Okeagbe and environs. Stimulation of growth in socio-economic activity, generation of employment	15% and estimated to be completed in Mar 2019
81	Keffi-Kwoi-Kachia 132KV DC line	Kaduna	15	Bulk power supply to Kwoi, Kachia and adjoining parts of Kaduna State. Stimulation of growth in socio-economic activity, generation of employment	29% completed

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
82	Omu Aran-Egbe 132kv DC line	Kwara	5	Improvement of power supply to Kogi State. Boosting of socio-economic life of the people of the state	12% Completed
83	2x60MVA 132/33kv substation at Egbe	Kwara	60	Improvement of power supply to Kogi State. Boosting of socio-economic life of the people of the state	85% and estimated to be completed in July 2018
Projects In North-East Zone					
84	Construction of 2x150MVA, 330/132kv substation at Yola and 330kv Bay Extension at Gombe.	Adamawa/Gombe	Completed	Increase in power supply to Yola to meet the power demand in Adamawa State, boost in economic activity, employment generation.	Completed
85	2 x 330KV Line bay extension at Kaduna, Jos and Onitsha	Kaduna	30	Improvement of power wheeling to Kaduna, Plateau and Anambra States	70% and estimated to be completed in Dec 2018
86	Kaduna - Jos 330KV DC Line	Kaduna	67	Increase in power wheeling to the North-East Zone. Boost in socio-economic activity in the North East states.	75% and estimated to be completed in Dec 2018
87	Jos - Kafanchan 132kv D/C Line .	Kaduna	Completed	Bulk power supply to Kafanchan and Southern parts of Kaduna State. Increase in economic activity, employment generation.	Completed
88	Jalingo 2x30/40MVA, 132kv Substation	Taraba	Completed	Increase in power supply to Jalingo and environs. Boost in socio-economic activity and employment in the entire Taraba State.	Completed
89	Maiduguri 1x150MVA, 330/132kv Substation	Borno	80	Increase in power supply to Borno State. Boost in socio-economic activity and employment in the entire state.	90% and estimated to be completed in Dec 2018
90	Damaturu 330/132kv Substation	Yobe	88	Increase in power supply to Yobe State. Boost in socio-economic activity and employment in the entire state.	91% and estimated to be completed in July 2018
91	1x28MVA Mobile Substation at Mayo Belwa	Adamawa	80	Increase in power supply to Mayo Belwa and environs. Boost in socio-economic activity and employment in the areas.	100% Completed & Commissioned
92	Damaturu - Gashua 132kv DC Transmission Line (245km)	Yobe	0	Bulk power supply to Gashua and environs and adjoining parts of Yobe State. Boost in socio-economic activity and employment in the areas.	Yet to commence due to lack of funds
93	Gashua - Hadejia 132kv DC Transmission Line (150km)	Yobe/Jigawa	0	Increase in power supply to Gashua, Hadejia and adjoining parts of Yobe and Jigawa States. Boost in socio-economic activity and employment in the areas.	Yet to commence due to lack of funds
94	2x 60MVA, 132/33kv Substation at Gashua and 2x 132kv Line bays Extension at Damaturu and Hadejia	Yobe	0	Bulk power supply to Gashua and environs. Boost in socio-economic activity and employment in the areas.	Yet to commence due to lack of funds
95	Yola-Song-Mubi-Gulak 132kv DC line	Adamawa	10	Bulk power supply to various parts of Adamawa State. Boost in socio-economic activity and employment in the state.	41% and estimated to be completed in Jun 2019
96	2x60MVA, 132/33kv substations at Song	Adamawa	5	Bulk power supply to Song and environs. Boost in socio-economic activity and employment in the areas.	18% and estimated to be completed in April 2019
97	2x60MVA, 132/33kv substation at Little Gombi	Adamawa	10	Bulk power supply to Little Gombi and environs. Boost in socio-economic activity and employment in the areas.	15% Completed

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
98	2x60MVA, 132/33kV substations at Mubi	Adamawa	5	Bulk power supply to Mubi and environs. Boost in socion-economic activity and employment in the areas.	15% Completed
99	2x60MVA, 132/33kV substations at Gulak	Adamawa	5	Bulk power supply to Gulak and environs. Boost in socion-economic activity and employment in the areas.	15% Completed
	Projects In North-West Zone				
100	Rehabilitation of Sokoto - Talatamafara 132KV DC line	Sokoto/Zamfara	Completed	Improved powewr supply to Talata Mafara and environs. Boost in socion-economic activity and employment in the areas.	Completed
101	1X30 MVA 132/33 KV SS at Kwanar Dangora	Kano	Completed	Improved powewr supply to Kwanar Dangora and environs. Boost in socion-economic activity and employment in the areas.	Completed
102	Transmission & Supply of Substation at Tamburawa Water Facility	Kano	Completed	Improved powewr supply to Tamburawa and environs. Boost in socion-economic activity and employment in the areas.	Completed
103	Talata Mafara 2x30/40MVA 132/33kV substation	Zamfara	Completed	Improved powewr supply to Talata Mafara and environs. Boost in socion-economic activity and employment in the areas.	Completed
104	Kainji - New Bussa 132KV DC Transmission Line & 330KV SC River Crossing	Niger	Completed	Bulk power supply to New Bussa and environs. Boost in socio-econmic life and employment geration in the areas.	Completed
105	1x150MVA 330/132kV transformer at Birnin Kebbi and Reinforcement at 330/132/33 kV substation, Kumbotso	Kebbi/Kano	Completed	Improvement in power supply to entire Kebbi and Kano States. Boost in socio-econmic life and employment geration in the areas.	Completed
106	Kainji 1x150MVA 330/132kV & 2 x 30/40MVA Substation at New Bussa	Niger	Completed	Bulk power supply to New Bussa and environs. Boost in socio-econmic life and employment geration in the areas.	Completed
107	Jos - Kafanchan 132KV D/C Line .	Kaduna	Completed	Bulk power supply to Kafanchan and environs. Boost in socio-econmic life and employment geration in the areas.	Completed
108	Kafanchan 132kv 2 x 60mva Substation	Kaduna	80	Bulk power supply to Kafanchan and environs. Boost in socio-econmic life and employment geration in the areas.	85% and estimated to be completed in Dec 2018
109	Kano- Walalanbe 132KV Line (Turn in and out of Dan agundi-Dakata 132KV single Cct Line) and 2 x 30/40MVA S/S at Walalambe	Kano	67	Bulk power supply to Walalambe and environs. Boost in socio-econmic life and employment geration in the areas.	67% completed
110	Yelwa - Yauri 2 x 30/40MVA S/S and 100KM of 33KV Line	Kebbi	67	Bulk power supply to Yelwa-Yauri and environs. Boost in socio-econmic life and employment geration in the areas.	67% completed
111	2 x 330KV Line bay extension at Kaduna, Jos and Onitsha	Kaduna	30	Increased power wheeling to Kaduna, Plateau and Anambra States. Boost in socio- econmic life and employment geration in the atates.	70% and estimated to be completed in Dec 2018
112	Grid Rehabilitation And Reinforcement, Katsina, Hadejia, Kontagora.	Katsina/Jigawa/Niger	75	Improvement in power supply to entire Katsina, Hadejia, Kontagora and environs. Boost in socio-econmic life and employment geration in the areas.	98% Completed. Hadejia and Kontagora is commissioned. Pre-commissioning test ongoing at Katsina.
113	Kaduna Power Plant-Mando Road 330kV D/C line and Substation Extension	Kaduna	15	Increased power supply to entire Kaduna State. Improved socio-economic activity and employment generation.	22% completed

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
114	Daura 2 x 30/40MVA S/S and 2x 132kv line bay ext. at Katsina	Katsina	75	Bulk power supply to Daura and environs. Boost in socio-economic life and employment geration in the areas.	100% Completed & Commissioned
115	2nd Kaduna-Kano 330kV DC line.	Kaduna/Kano	0	Increased power wheeling to Kano and Katsina States. Improved socio-economic activity and employment generation.	0%. Terminated and reaward process on-going.
116	1x30MVA, 132/33 kV Substation at Wudil	Kano	70	Bulk power supply to Wudil and environs. Boost in socio-economic life and employment geration in the areas.	87% Completed
117	Kaduna - Jos 330KV DC Line	Kaduna	67	Increased power wheeling to Kaduna and Plateau States. Improved socio-economic activity and employment generation in the states.	45% and estimated to be completed in Dec 2018
118	Kano-Katsina 330KV DC Transmission Line	Kano/Katsina	35	Increased power wheeling to Katsina State. Improved socio-economic activity and employment generation.	45% and estimated to be completed in Dec 2018
119	2x150MVA Substation at Katsina.	Katsina	30	Bulk power supply to entire Katsina State. Boost in socio-economic life and employment geration in the state.	35% and estimated to be completed in Dec 2018
120	Katsina-Kurfi-Dutsinma-Kankara-Malumfashi 132KV Line	Katsina	15	Bulk power supply to various parts of Katsina State. Boost in socio-economic life and employment geration in the state.	50% Completed
121	2x60MVA, 132/33kV substation at Kurfi	Katsina	5	Bulk power supply to Kurfi and environs. Boost in socio-economic life and employment geration in the areas.	5% Completed
122	2x60MVA, 132/33kV substation at Dutsinma	Katsina	10	Bulk power supply to Dutsinma and environs. Boost in socio-economic life and employment geration in the areas.	10% Completed
123	2x60MVA, 132/33kV substation at Kankara	KATSINA	10	Bulk power supply to Kankara and environs. Boost in socio-economic life and employment geration in the areas.	15% Completed
124	2x60MVA, 132/33kV substation at Malumfashi	Katsina	25	Bulk power supply to Malumfashi and environs. Boost in socio-economic life and employment geration in the areas.	20% and estimated to be completed in Nov 2019
125	Kumbotso (Daura)-Dambatta 132KV Line	Kano	5	Bulk power supply to Dambatta and environs. Boost in socio-economic life and employment geration in the areas.	15% and estimated to be completed in Jun 2019
126	2x60MVA, 132/33kV substation at Dambatta, Kano State.	Kano	50	Bulk power supply to Dambatta and environs. Boost in socio-economic life and employment geration in the areas.	50% and estimated to be completed in Dec 2018
127	Katsina- Daura 132kv DC line Katsina State	Katsina	60	Bulk power supply to Daura and environs. Boost in socio-economic life and employment geration in the areas.	Completed and commissioned one circuit. 2nd circuit is 92% completed
128	2x330kV line bay extensions at each of Kaduna and Kano substations	Kaduna/Kano	20	Increased power wheeling between Kaduna and Kano.	25% and estimated to be completed in Dec 2018
129	Keffi-Kwoi-Kachia 132kV DC line	Kaduna	15	Bulk power supply to Kwoi, Kachia and environs. Boost in socio-economic life and employment geration in the areas.	29% completed
130	2x60MVA substation at Kwoi	Kaduna	5	Bulk power supply to Kwoi and environs. Boost in socio-economic life and employment geration in the areas.	22% and estimated to be completed in June 2019

S/N	PROJECT TITLE	STATE	COMPLETION STATUS	IMPACT OF PROJECT	SPD_TCN COMMENTS
131	2x60MVA substation at Kachia	Kaduna	30	Bulk power supply to Kachia and environs. Boost in socio-econmic life and employment geration in the areas.	30% and estimated to be completed in Dec 2018
132	Gagarawa 2x60 MVA, 132/33 kV substation, Jigawa State	Jigawa	10	Bulk power supply to Gagarawa and environs. Boost in socio-econmic life and employment geration in the areas.	44% and estimated to be completed in Dec 2018

Annex 7.2b Classification of on-going TCN capital projects by zones NIPP Projects – updated July 2018

S/N	PROJECT TITLE	State	Date of Commencement	Expected Date of Completion	Completion Status	IMPACTS OF PROJECT	SPD - TCN COMMENTS
	Projects In South-South Zone						
1	330KV DC Ikot Ekpene-Ugwuaji (Line 1 -4)		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to North West and North Central	Ikot Ekpene - Ugwuaji Line 1 is 95% but will be completed in Q2 of 2018 while Line 2 is has been commissioned already
2	330KV DC Afam -Ikot Ekpene		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to North West and North Central	Afam - Ikot Ekpene is 85% but is expected to be completed by Q3 of 2018
3	330KV Afam SS (Line Bay Ext.)		South South	April, 2015	Yet to be completed	The project when completed will provide power evacuation at Afam S/S	Completed in May 2018
4	330KV Ikot Ekpene SS		South South	April, 2015	Yet to be completed	The project when completed will provide power evacuation at Ikot Ekpene S/S	Completed and Commissioned in November 2016
5	330/132/33KV Ikot Abasi SS (New)		South South	April, 2015	Yet to be completed	The project when completed will provide power evacuation at Ikot Ekpene S/S (New)	Expected to be completed in Q3 of 2018
6	132KV DC Eket-Uyo (Reconductoring)		South South	Commissioned	Completed	The project when completed will provide alternative path for bulk power evacuation to Uyo , and the entire South - South region.	Commisioned
7	132KV DC Uyo-Itu (Reconductoring)		South South	Commissioned	Completed	The project when completed will provide alternative path for bulk power evacuation to Itu, and the entire South - South region.	Commisioned
8	132KV Uyo SS (Replacement of transformers)		South South	Commissioned	Completed	The project when completed will provide power evacuation at Uyo S/S	Commisioned
9	132KV Itu SS (Replacement of transformers)		South South	Delivered to site, not energized	Yet to be completed	The project when completed will provide power evacuation at Itu S/S	Commisioned
10	330/132/33KV Omoku SS (Supervised by DECON for Steag)		South South	April, 2015	Yet to be completed	The project when completed will provide power evacuation at Omoku S/S	58% and expected to be completed by Q4 of 2018
11	330KV DC Omoku-Egbema		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation from Omoku-Egbema , and the entire South - east	48% and expected to be completed by Q4 of 2018
12	330KV DC Egbema-Owerri		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation from Egbema - Owerri , and the entire South - east & South - South regions.	38% and expected to be completed by Q4 of 2018
13	132/33KV Ihovbor SS (New)		South South	April, 2015	Yet to be completed	The project when completed will provide power evacuation at Ihovbor S/S	Commisioned in April 2016
14	132/33V Agbor SS (New)		South South	April, 2015	Yet to be completed	The project when completed will provide power evacuation at Agbor S/S	Commisioned in April 2016
15	132/33KV Asaba SS (New)		South South	April, 2015	Yet to be completed	Grid Reinforcement	Commisioned in May 2015
16	132KV DC Agbor-Asaba		South South	April, 2015	Yet to be completed	Grid Reinforcement	Commisioned in October 2015
17	330/132/33KV Onne SS (New)		South South	April, 2015	Yet to be completed	Power Evacuation	70% and expected to be completed by Q4 of 2018
18	330KV Afam SS (Ext.)		South South	April, 2015	Yet to be completed	Power Evacuation	80% and expected to be completed by Q3 of 2018
19	132/33KV Trans Amadi SS (Ext.)		South South	April, 2015	Yet to be completed	Power Evacuation	
20	330KV DC Afam-Onne		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation in Port -Harcourt and the entire South-South	72% and expected to be completed by Q3 of 2018
21	132KV DC Onne-Trans Amadi		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation in Port -Harcourt and the entire South-South	
22	330 DC Ikot Abasi-Ikot Ekpene		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation in Akwa Ibom and the entire South-South region	40% and expected to be completed by Q2 of 2019
23	132/33KV Okada SS (New)		South South	April, 2015	Yet to be completed	Power Evacuation	Commisioned in April 2016

24	132KV Ihovbor SS (Line Bay Ext.)		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation at Ihovbor S/S	Commissioned in March 2016
25	330/132KV Ihovbor SS (New)		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation at Ihovbor S/S	Commissioned in March 2016
26	330KV DC Ihovbor-(Benin Main-Oshogbo) (Line A)		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Osogbo and the entire South west region	Commissioned in December 2014
27	330KV SC Ihovbor-(Benin Main/ Onitsha)		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Benin main, Onitsha and the entire South east region	
28	132KV DC Ihovbor-Okada		South South	April, 2015	Yet to be completed		Commissioned in March 2016
29	132/33KV Ikom SS (New)		South South	April, 2015	Yet to be completed	power evacuation	43% and expected to be completed by Q4 of 2018
30	132/33KV Obudu SS (New)		South South	April, 2015	Yet to be completed	power evacuation	35% and expected to be completed by Q4 of 2018
31	132KV DC Abakiliki-Ikom		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Cross River State , and environs.	0%
32	132KV DC Ikom-Obudu		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Cross River State , and environs.	0%
33	330KV Calabar SS (New)		South South	April, 2015	Yet to be completed	power evacuation	Commissioned
34	330KV DC Ikot Ekpene-Alaoji		South South	2015, April	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Alaoji , and the entire South east region	Commissioned in May 2016
35	330KV DC Calabar-Ikot Ekpene		South South	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation from Calabar PS.	Commissioned in November 2016
36	330KV DC (Calabar PS-Calabar SS)		South South	Commissioned	Completed	The project provides alternative path for bulk power evacuation from Calabar P/S.	Commissioned in October 2012
37	132/33KV Calabar SS (1x60MVA Ext.)		South South	April, 2015	Yet to be completed	power evacuation	Commissioned in June 2014
38	132/33KV Adiabo SS (2x60MVA Ext.)		South South	April, 2015	Yet to be completed	power evacuation	95% and expected to be completed by Q4 of 2018
39	132/33KV Calabar EPZ SS (2x60MVA New)		South South	April, 2015	Yet to be completed	power evacuation	35% complete
40	Construction of 5km 132KV DC OHTL & 8km SC Diversion		South South		Yet to be completed	power evacuation	Commissioned in 2013
41	Restructuring/Conversion of 4km 132KV SC to 132KV DC line		South South		Yet to be completed	power evacuation	35% and expected to be completed by Q4 of 2018
42	132KV DC Construction of two (2) 132kV DC lines each 5km		South South	2015, April	Yet to be completed	power evacuation	Commissioned in 2014
43	132KV DC Construction of New Lines and Disconnection of diversion line		South South	April, 2015	Yet to be completed	power evacuation	Commissioned in 2014
44	330KV Sapele SS (Rehab. & Ext.)		South South	Commissioned	Completed	Provides Power Evacuation	Completed in 2012
45	330KV Benin SS (Rehab.)		South South	Commissioned	Completed	Provides Power Evacuation	Completed in 2012
46	330/132KV Asaba SS (New)		South South	2014, June	Yet to be completed	Provides Power Evacuation	Commissioned in 2015
	Projects In South-East Zone						
47	330/132KV New Haven SS (Ext.)		South East	Commissioned	Completed	Provides Power Evacuation	Commissioned in 2013
48	330KV Ugwuaji SS (New)		South East	Commissioned	Completed	Provides Power Evacuation	Commissioned in 2015
49	330KV DC Ugwuaji-New Haven		South East	Commissioned	Completed	The project provides alternative path for bulk power evacuation to Enugun , and the entire South east region	Commissioned in 2014
50	330/132/33KV Owerri SS (New)		South East		Yet to be completed	The project will completed will provide power evacuation	95% and expected to be completed in Q3 of 2018

51	330KV Alaoji SS (Line bay ext.)		South East	Commissioned	Completed	The project provides alternative path for bulk power evacuation at Alaoji , and the entire South east region	Commissioned in 2012
52	330KV DC Owerri-Nnewi		South East	Stalled by Wayleave issue	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Nnewi, and the entire South east region	
53	330KV DC Nnewi-Onitsha		South East	Stalled by Wayleave issue	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Nnewi, and the entire South east region	
54	330KV Onitsha SS (Line bay ext.)		South East	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation at Onitsha S/S	
55	330KV DC Alaoji-Owerri		South East	April, 2015	Yet to be completed	The project when completed will provide grid re-inforcement.	64% and expected to be completed in Q4 of 2018
56	132/33KV Awka SS (New)		South East	April, 2016	Yet to be completed	The project will completed will provide power evacuation	75% and expected to be completed in Q3 of 2018
57	132KV DC Nnewi-Ihiala-Orlu		South East	April, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Ihiala, and environs.	Nnewi - Ihiala is 48% and expected to be complete in Q4 of 2018 while Ihiala - Orlu is 0%
58	132/33KV Nkalagu SS (Ext.)		South East	July, 2015	Yet to be completed	The project will completed will provide power evacuation	Completed
59	132KV Abakiliki SS (Ext.)		South East	July, 2015	Yet to be completed	The project will completed will provide power evacuation	Completed
60	132KV DC Nkalagu-Abakiliki		South East	July, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Abakiliki , and environs.	Commissioned in 2017
61	132/33KV Nsukka SS (New)		South East	July, 2015	Yet to be completed	The project will completed will provide power evacuation	Completed
62	330/132/33KV New Haven North SS (Ext.)		South East	July, 2015	Yet to be completed	The project will completed will provide power evacuation	Commissioned in 2015
63	132KV New Haven North-Nsukka		South East	May, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Nsukka , and environs.	90% and expected to be completed in Q4 of 2018
64	132/33KV Ubulusiuzor (Ihiala) SS (New)		South East	Dec ,2015	Yet to be completed	The project will completed will provide power evacuation	75% and expected to be completed in Q3 of 2018
65	132/33KV Orlu SS (New)		South East	June, 2015	Yet to be completed	The project will completed will provide power evacuation	40% and expected to be completed in Q4 of 2018
	Projects In South-West Zone						
66	132KV DC Oke Aro-Alausa		South West	June, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Alausa , and environs.	11% and expected to be completed in Q4 of 2018
67	132KV DC Oke Aro-(Ikorodu/Maryland)		South West	June, 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Ikorodu/Maryland, and environs.	
68	132KV Alausa SS (Line bay ext.)		South West	June, 2015	Yet to be completed	The project will completed will provide power evacuation	50% and expected to be completed in Q3 of 2018
69	132/33KV Aiyede SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2010
70	330KV DC Ganmo-(Jebba/Osogbo SC - Turn in/Turn out)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2009
71	132/33KV Agbara SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2012
72	132/33KV Ikeja West SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2012
73	132/33KV Ojo SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2012
74	132/33KV Oworonsoki SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2012
75	330/132KV Aja G.I.S. SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2013
76	132KV Aja G.I.S. SS (Ext.)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned in 2013
77	330/132/33KV Alagbon G.I.S. SS (New and Ext.)		South West	Oct, 2015	Yet to be completed	The project when completed will provide power evacuation	Commissioned in 2016
78	132/33KV Lekki G.I.S. SS (New)		South West	April, 2015	Yet to be completed	The project when completed will provide power evacuation	Commissioned in 2014

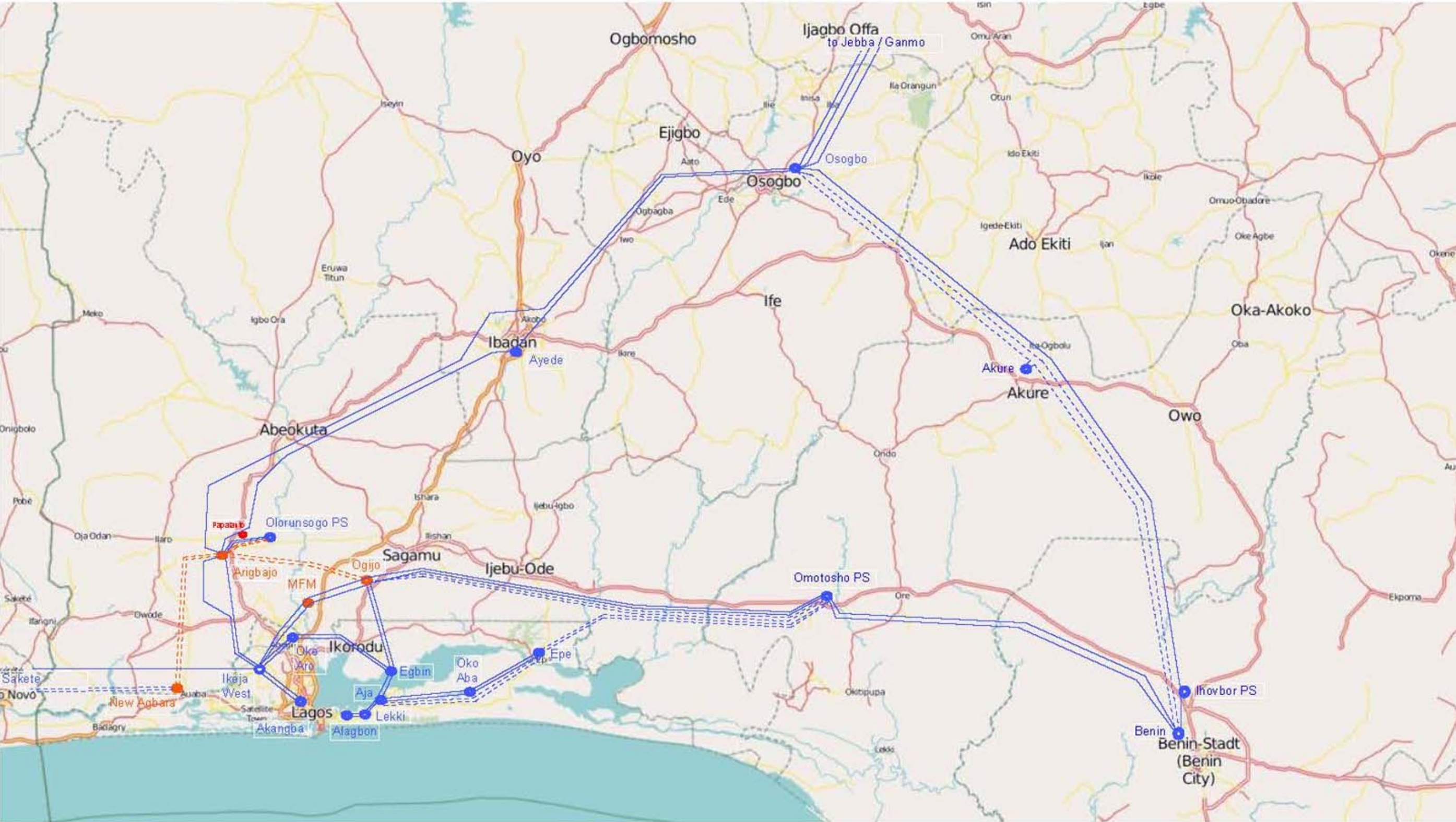
79	330/132/33KV Lekki G.I.S. SS (New)		South West	Nov, 2015	Yet to be completed	The project when completed will provide power evacuation	Commissioned in 2016
80	132KV DC Otta-Ogba Junction-Papalanto		South West	Dec , 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Ogba, and environs.	80% and expected to be completed in Q3 of 2018
81	132KV DC Papalanto-Old Abeokuta		South West	Aug , 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to Old Abeokuta, and environs.	Completed
82	132KV DC Old Abeokuta-New Abeokuta		South West	April , 2015	Yet to be completed	The project when completed will provide alternative path for bulk power evacuation to New Abeokuta, and environs.	Completed
83	132KV DC Lekki-Aja		South West	April , 2015	Yet to be completed	The project when completed will provide grid reinforcement.	
84	132/33KV New Abeokuta SS (New)		South West	June ,2015	Yet to be completed	The project when completed will provide power evacuation	Completed
85	132/33KV Old Abeokuta SS (New)		South West	Aug ,2015	Yet to be completed	The project when completed will provide power evacuation	Completed
86	132/33KV Papalanto SS (Ext.)		South West	Aug ,2015	Yet to be completed	The project when completed will provide power evacuation	Completed
87	132/33KV Otta SS (Ext.)		South West	Sept , 2015	Yet to be completed	The project when completed will provide power evacuation	Completed
88	330/132KV Papalanto SS (New)		South West	Commissioned	Completed	The project provides power evacuation	Commissioned
89	330KV DC Papalanto-(Ikeja West/Ayede)		South West	Commissioned	Completed	The project provides grid reinforcement and bulk power evacuation to Ikeja West, and environs.	Commissioned
90			South West	Commissioned	Completed	The project provides power evacuation	
91	330/132KV Omotosho SS (New)		South West	Commissioned	Completed	The project provides power evacuation	Completed
92	330KV DC Omotosho - Ikeja West		South West	Commissioned	Completed	The project provides grid reinforcement and bulk power evacuation to Ikeja West, and environs.	Completed
	Projects In North Central Zone						
93	330KV DC Makurdi-Jos		North Central	Commissioned	Completed	The project provides grid reinforcement and bulk power evacuation to Jos , and entire North-west and North-east regions.	Commissioned in 2014
94	330/132/33KV Makurdi SS (New)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Makurdi, and environs.	Commissioned in 2014
95	330/132KV Jos SS (Ext)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Jos, and environs.	Commissioned in 2014
96			North Central				
97	330KV DC Makurdi-Aliade		North Central	April, 2015	Yet to be completed	The project when completed will provide grid reinforcement and bulk power evacuation to Aliade , and entire North-central and North- east regions.	Commissioned in 2015
98	330KV DC Aliade-Ugwuaji		North Central	August, 2015	Yet to be completed	The project when completed will provide grid reinforcement and bulk power evacuation to Aliade , and entire North-central and South east regions.	Commissioned in 2015
99	330/132/33KV Ganmo SS (New)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Kwara state, and environs.	Commissioned in 2008
100	132KV DC Ganmo-(Ilorin/Oshogbo SC Turn in/Turn out)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Ilorin , and environs.	Commissioned in 2009
101	132/33KV Central Area SS (Ext.)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Central area , and environs.	Commissioned in 2011
102	330/132KV Katampe SS (Ext.)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Katampe, and environs.	Commissioned in 2011
103	330/132/33KV Gwagwalada SS (New)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Gwagwalada, and environs.	Commissioned in 2013
104	330KV DC Gwagwalada-Eastmain		North Central	Commissioned	Completed	The project provides grid reinforcement and bulk power evacuation to East mains , and entire FCT.	Commissioned in 2013
105	132KV DC Eastmain-Kukuaba		North Central	Commissioned	Completed	The project provides bulk power evacuation to Kukuaba.	Commissioned in 2013

106	132KV DC Kukwaba-Apo		North Central	Commissioned	Completed	The project provides bulk power evacuation to Apo.	Commissioned in 2013
107	132KV/33KV Apo SS (Ext.)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Apo, and environs.	Commissioned in 2013
108	132KV/33KV Kukwaba SS (Ext.)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Kukuaba, and environs.	95% and expected to be completed in Q3 of 2018
109	330/132/33KV Oke Aro SS (New)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Oke-Aro, and environs.	Commissioned in 2013
110	330KV DC Oke Aro-(Oke Aro/Ikeja West/Egbin)		North Central	Commissioned	Completed	The project provides grid reinforcement and bulk power evacuation to Oke-aro.	Commissioned in 2013
111	330/132/33KV Lokoja SS (New)		North Central	Dec, 2015	Yet to be completed	The project when completed will provide bulk power evacuation to Lokoja, and entire North-central region.	Commissioned in 2015
112	330KV Ajaokuta SS (Line Bay Ext.)		North Central	Commissioned	Completed	The project provides bulk power evacuation to Ajaokuta, and environs.	Commissioned in 2014
113	330KV DC Ajaokuta-Lokoja-Gwagwalada		North Central	Commissioned	Completed	The project provides grid reinforcement and bulk power evacuation to Ajaokuta.	Commissioned in 2012
	Projects In North West Zone						
114	132/33KV Kumbotso SS (Ext.)		North West	Commissioned	Completed	The provides bulk power evacuation to Kumbotso, and environs.	Commissioned in 2011
115	330/132/33KV Mando SS (Ext.)		North West	Commissioned	Completed	The provides bulk power evacuation to Mando, and environs.	Commissioned in 2011

Additional NIPP projects

S/N	PROJECT	STATUS
1	330KV Ihiala SS	20% but expected to be completed Q4 of 2018
2	132KV Ihiala line bay extension	64% but expected to be completed Q3 of 2018
3	132/33KV Asaba Ext	65% but expected to be completed Q3 of 2018
4	330/132/33KV Lafia SS (New)	34% but expected to be completed Q4 of 2018

Annex 7.2c 330 kV network in Lagos region— Layout

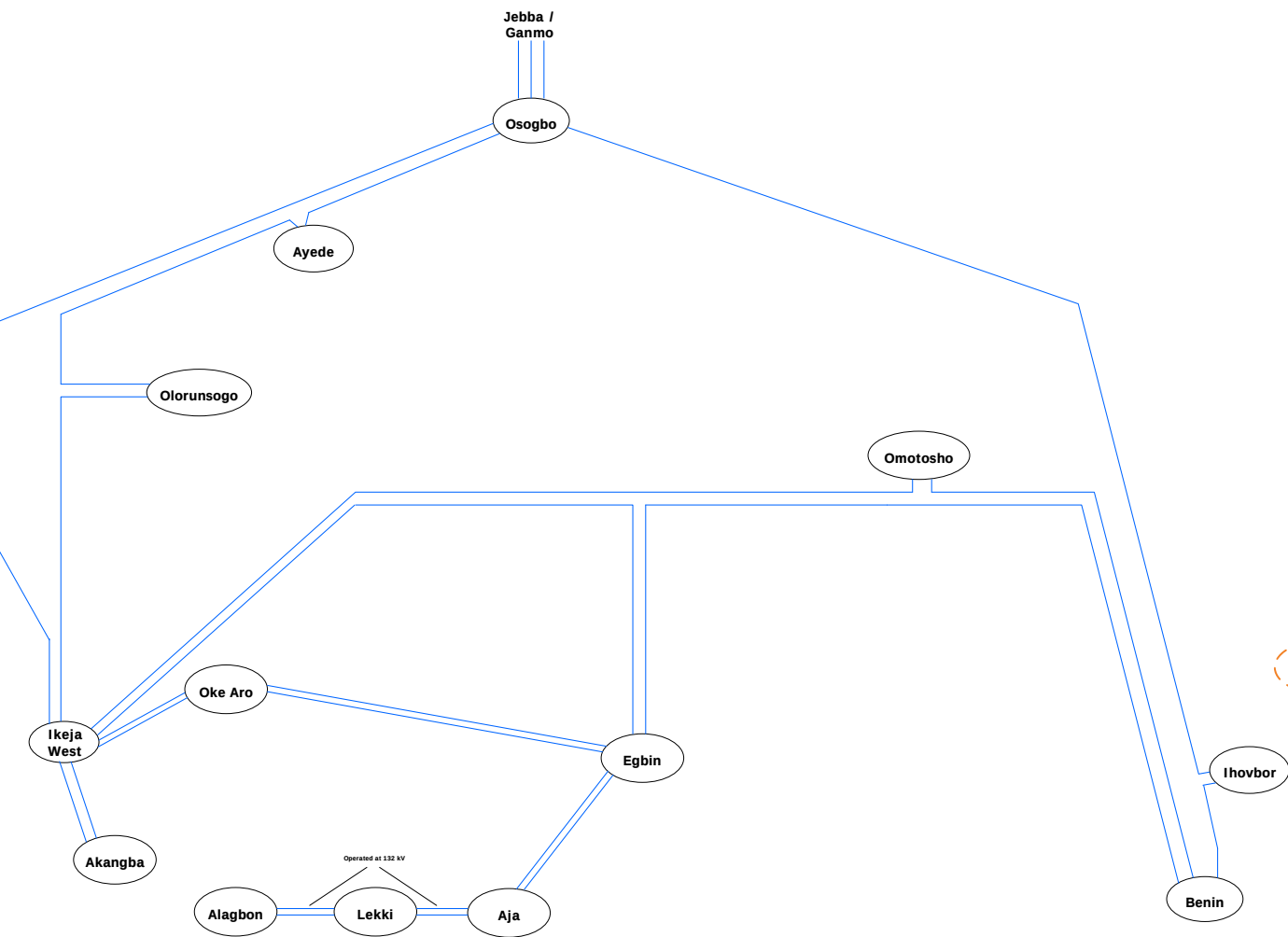


Legend

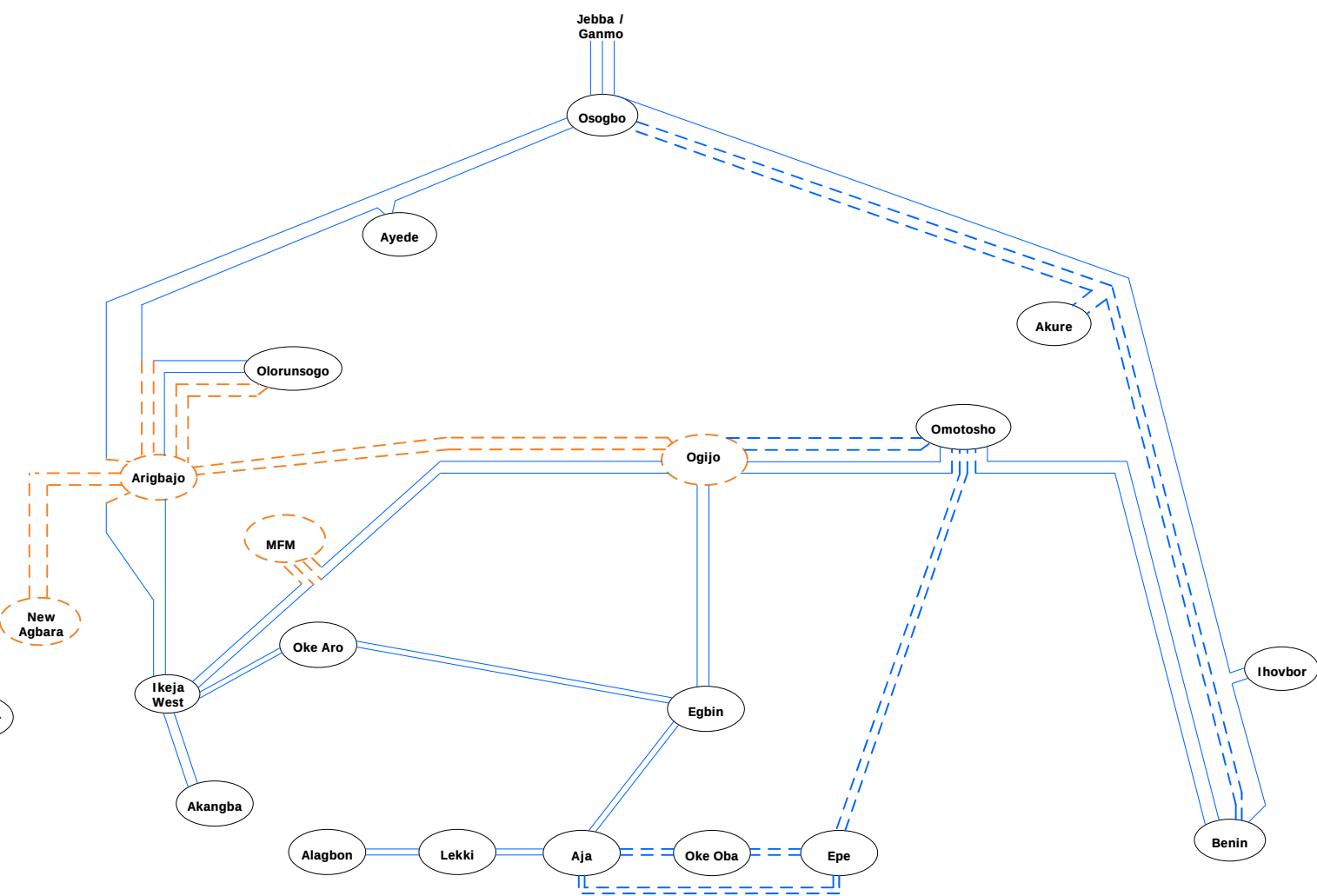
- 330 kV Lines - Existing
- - - 330 kV Lines – Ongoing TCN / NIPP Projects
- - - 330 kV Lines – Planned JICA Projects

Annex 7.2d 330 kV network in Lagos region— System Configuration

Existing 330 kV Network Configuration



Future 330 kV Network Configuration



Legend

- JICA Projects
- TCN / NIPP Projects

Annex 7.2e1 Proposed Abuja transmission ring project to be financed by AFD

S/N	REGION		LOCATION	DESCRIPTION	COST [USD]
TRANSMISSION LINES					
1	NORTH CENTRAL	ABUJA	New Apo	Construction of about 172km of new 330kV double circuit line from Lafia 330kV Substation (new) to the proposed New Apo 330/132/33kV Substation.	30,600,000
2	NORTH CENTRAL	ABUJA	Old Apo	Construction of about 7km of new 132kV double circuit line from new Apo 330/132/33kV substation to Old Apo 132/33kV substation:	1,200,000
3	NORTH CENTRAL	ABUJA	Old Kuje	Construction of 35km of new 132kV double circuit line from New Apo 330/132/33kV substation to the proposed Kuje 132/33kV substation.	8,700,000
4	NORTH CENTRAL	ABUJA	West Main Lugbe	Construction of 29km of new 132kV double circuit line from the proposed Kuje 132/33kV Substation to West Main (Lugbe) 330/132/33V substation.	7,800,000
				Sub-total	48,300,000
TRANSMISSION SUBSTATIONS					
5	NORTH CENTRAL	ABUJA	New Apo	Construction of complete new 330/132/33kV substation at New Apo to be equipped with 2No150MVA, 330/132kV transformers and 3No. 60MVA, 132/33kV transformers including 6 X 132kV line bay and 2 X 132kV line bay extension at Old Apo 132kV Substation.	29,800,000
6	NORTH CENTRAL	ABUJA	West Main Lugbe	Construction of complete new 330/132/33kV substation at West Main (Lugbe) to be equipped with 2X150MVA, 330/132kV transformers and 3No. 60MVA, 132/33kV Transformers (with 132kV outdoor GIS Switchgear) including 2 x 330kV line bay, 4X132kV line bays.	25,100,000
7	NORTH CENTRAL	ABUJA	Kuje	Construction of complete new 132/33kV substation at Kuje to be equipped with 3No. 60MVA, 132/33kV transformers including 4 x 132kV Line Bay	7,700,000
8	NORTH CENTRAL	ABUJA	Wumba/Lokogoma	Construction of complete new 132/33kV Substation at Wumba / Lokogoma to be equipped with 2No.60MVA, 132/33kV transformers, 2 X 132kV line bay including 5km underground 132kV XLPE Cable line, from New Apo to Wumba/Lokogoma	19,900,000
9	NORTH CENTRAL	ABUJA	Gwarimpa	Construction of complete new 132/33kV GIS substation at Gwarimpa to be equipped with 2No. 60MVA, 132/332kV transformers including OHL / Underground Cable termination of the existing 132KV Katampe – Suleja Transmission line.	22,000,000
				Sub-total	104,500,000
	NORTH CENTRAL	ABUJA	SCADA		2,000,000
	NORTH CENTRAL	ABUJA	ERM	Establishment of ERP in TCN for effective management of its assets	9,200,000
	NORTH CENTRAL	ABUJA	Project Management	Consuiltancy and other Runing cost	6,000,000
			Contigencies		-
			Contigencies	Contigencies	-
				Sub-total	17,200,000
				TOTAL	170,000,000

Annex 7.2e2 Lagos/Ogun Transmission Project to be financed by JICA

S/N	REGION		LOCATION	DESCRIPTION	COST [USD]
TRANSMISSION LINES					
1	SOUTH WEST	Lagos	New Abeokuta	Arigbajo – New Abeokuta 132kV D/C Transmission Line (37.8km)	11,000,000
2	SOUTH WEST	Lagos	Arigbajo	Olorunsogo – Arigbajo 330kV D/C Transmission Line (12.9km)	3,870,000
3	SOUTH WEST	Lagos	Ikeja West	Arigbajo – Ikeja West / Osogbo 330kV D/C Turn in-out (5.9km)	3,120,000
4	SOUTH WEST	Lagos	Arigbajo	Ogijo – Arigbajo D/C Transmission Line (43.7km)	3,120,000
5	SOUTH WEST	Lagos	Shagamu	132kV Quad Line (2.3km) from Ogijo – Existing Ikorodu/Shagamu 132 kV 2x D/C Transmission Line	2,000,000
6	SOUTH WEST	Lagos	Redeem	132kV D/C Transmission Line (10.3km) from Ogijo – Redeem.	2,750,000
7	SOUTH WEST	Lagos	Ikeja West	MFM – Existing Benin (Omotosho)/Ikeja West 330kV 2 x D/C Transmission Line (4.2km)	1,200,000
8	SOUTH WEST	Lagos	New Agbara	Arigbajo – New Agbara 330kV D/C Transmission Line (30.6km)	7,980,000
9	SOUTH WEST	Lagos	Agbara	New Agbara – Agbara 132kv D/C Transmission Line (20.8km)	5,392,000
10	SOUTH WEST	Lagos	Badagry	New Agbara – Badagry 132kv D/C Transmission Line (34.2km)	7,800,000
				Sub-total	48,232,000
TRANSMISSION SUBSTATIONS					
11	SOUTH WEST	Lagos	Ogijo	2x300MVA 330/132kV + 2 x 100MVA 132/33kV Transformer capacity at Ogijo, Lagos	37,000,000
12	SOUTH WEST	Lagos	Redeem	2x60MVA, 132/33kV Substation at Redeem.	12,500,000
13	SOUTH WEST	Lagos	MFM	2x150MVA, 330/132kV + 2x100MVA 132/33kV Substation at MFM	32,000,000
14	SOUTH WEST	Lagos	New Agbara	2x150MVA, 330/132kV + 2x100MVA 132/33kV Substation at New Agbara	32,000,000
15	SOUTH WEST	Lagos	Badagry	2x60MVA, 132/33kV substation at Badagry.	14,500,000
16	SOUTH WEST	Lagos	Arigbajo	Arigbajo +Olorunsogo+New Abeokuta line bay extensions	8,000,000
				Sub-total	136,000,000
				Contingencies	10,000,000
				Consultancies/Supervision	5,768,000
				TOTAL	200,000,000

Annex 7.2e3 Proposed Transmission Infrastructure Project to be financed by AfDB (Total 410 m USD)

Package A

S/N	REGION		SUBSTATION	DESCRIPTION	COST [USD]	Feasibility Studies
PACKAGE 1 - Substations						
Lot 1						
1	North East	Bauchi	Manguno	Construction of 2 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Old Maiduguri 132/33kV Substation.	7,000,000	Not Available
2	North East	Bauchi	Marte	Construction of 2 x 60MVA 132/33kV Complete substation	7,000,000	Not Available
3	North East	Bauchi	Dikwa	Construction of 1 x 60MVA 132/33kV Complete substation	3,500,000	Not Available
4	North East	Bauchi	Bama	Construction of 2 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at New Maiduguri 330/132kV Substation.	7,000,000	Not Available
5	North East	Bauchi	Gwoza	Construction of 1 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Gulak132/33kV Substation.	3,500,000	Not Available
				SUB TOTAL LOT 1	28,000,000	
LOT 2						
3	North Central	Bauchi	Jada	Construction of 2 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Mayo Belwa 330/132kV Substation.	7,000,000	Not Available
4	North East	Bauchi	Ganye	Construction of 2 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Mayo Belwa 330/132kV Substation.	7,000,000	Not Available
				SUB TOTAL LOT 2	14,000,000	
LOT 3						
1	North East	Bauchi	Uba	Construction of 2 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Mubi 132/332kV Substation.	7,000,000	Not Available
2	North East	Bauchi	Chibok	Construction of 1 x 60MVA 132/33kV Complete substation	3,500,000	Not Available
4	North Central	Bauchi	Biu	Construction of 1x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Biu 132/33kV Substation.	2,050,000	Not Available
5	North East	Bauchi	Bunyadi	Construction of 1 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension each at Damaturu 330kV Substation and Biu 132/33kV Substation respectively	3,500,000	Not Available
6	North East	Bauchi	Kwaya Kusar	Construction of 1 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension each at Damaturu 330kV Substation and Biu 132/33kV Substation respectively	7,000,000	Not Available
				SUB TOTAL LOT 3	23,050,000	
TOTAL PACKAGE 1 = LOTS 1+ 2+ 3 + 4					65,050,000	
PACKAGE 2 - New 132kV Double Circuit Transmission Lines						
PACKAGE 2A						
1	North East	Bauchi	Maiduguri - Manguno - Marte - Dikwa - Bama	Construction of a New 321km, 132kV Double Circuit Line Between Maiduguri - Manguno - Marte - Dikwa -Bama	45,903,000	Not Available
2	North East	Bauchi	Maiduguri - Bama - Goza - Gulak	Construction of a New 165km, 132kV Double Circuit Line from Maiduguri - Bama - Goza - Gulak	23,595,000	Not Available
				SUB TOTAL PACKAGE 2A	69,498,000	
PACKAGE 2B						
1	North East	Bauchi	Mayo Belwa - Jada - Ganye	Construction of a New 78km, 132kV Double Circuit Line from Mayo Belwa - Jada - Ganye.	11,154,000	Not Available
2	North East	Bauchi	Biu - BuniYadi - Damaturu	Construction of a New 134km, 132kV Double Circuit Line from Biu - BuniYadi - Damaturu	19,162,000	Not Available
3	North East	Bauchi	Dambua - Chibok - Uba - Mubi	Construction of a New 130km, 132kV Double Circuit Line from Dambua - Chibok - Uba - Mubi	18,590,000	Not Available
				SUB TOTAL PACKAGE 2B	48,906,000	
PACKAGE 2 = 2A + 2B					118,404,000	
PACKAGE 3						
1	Consultancy Services			Project Management and Consultancy Services	4,000,000	
				SUB TOTAL PACKAGE 3	4,000,000	
				GRAND TOTAL (GOODS, WORKS, CONSULTANCY SERVICES COMPENSATION COST)	187,454,000	
				CONTIGENCIES	12,546,000	
				TOTAL	200,000,000	

Package B

S/NO		Region	Station	SCOPE/BACKGROUND	ESTIMATED COST [USD]	STATUS OF FEASIBILITY STUDIES
1	North West	Kaduna	Construction of Quad 330KV on Kaduna-Kano 330KV Single DC Transmission Line	Construction of Double Circuit 330kV Quad Conductor Kaduna-Kano Transmission line.	50,350,000	Not Available
2	North West	Kaduna	Zaria	Turn-in Turn-out and Installation of 2x150MVA 330/132/33kV Transformer, 6x330kV bay extension, 2x60MVA 132/33kV Transformer, associated 132kV line bays and 6 number 33kV feeder bays at Zaria	19,000,000	Not Available
3	North West	Kaduna	Millenium City Kaduna	Turn-in Turn-Out and Installation of 2x150MVA 330/132/33kV Transformer, 2 x330kV bay extension, and 2x60MVA 132/33kV Transformer and 2x3number associated outgoing 33kV feeders.	24,000,000	Not Available
4	North West	Kaduna	Rigasa town, Kaduna	Turn-in Turn-out and Intallation of 2x60MVA 132/33kV Transformer and 5 number outgoing 33kV feeders	7,000,000	Not Available
5	North West	Kaduna	Jaji, Kaduna	Turn-in Turn-out and Installation of 2x60MVA 132/33kV Transformer and 6 number outgoing 33kV feeders	7,000,000	Not Available
6	South South	Benin	Reconstruction of Delta to Benin 330kV Transmission Line	Reconstruction of one of Delta-Benin 330kV Transmission Line Double Circuit to Quad Conductor 330 Double Circuit Line	41,650,000	Not Available
7	South South	Port Harcourt	Reconstruction of Alaoji to Onitsha 330kV	Double Circuit Alaoji-Ihiala-Onitsha to Quad conductor 330kV transmission line	26,000,000	Not Available
8	South South	Ahoda, Gilili and Sapele	Transmission Line Eviromental Impact Assessment and Resettlement Action Plan and Payment of Compensation	Double Circuit(DC) 132kV Ahoda-Gilli-Gilli DC Transmission Line and 2x60MVA 132/33KV Transformer at Gilli Gilli plus associated 6 number outgoing 33kV feeders and DC 132kV Sapele - Odilli DC Transmission Line and 2x60MVA 132/33KV Transformer at Gilli Gilli plus associated 6 number outgoing 33kV feeders	1,500,000	Not Applicable
9	North East	Bauchi	Eviromental Impact Assessment and Resettlement Action Plan and Payment of Compensation	132 line and associated substations: Maiduguri-Manguno-Marte-Dikwa-Bama,Maiduguri-Bama-Gwoza; Hadeja-Nguru-Gashua-Damaturu; Biu-Miringa-Buni Yadi-Damaturu; Dambua-Chibok-Askira-Uba-Mubi; Mayo Belwa-Jada-Ganye	11,000,000	Not Applicable
				Project Management & Coordination	5,000,000	Not Applicable
				SUBTOTAL	192,500,000	
				CONTINGENCY	17,500,000	
				GRAND TOTAL	210,000,000	

TOTAL OF PACKAGE A AND PACKAGE B: 410,000,000 USD

Annex 7.2e4 Proposed NETAP package to be financed by World Bank

SUBSTATION REINFORCEMENT AND REHABILITATION					
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
Lot 1					
1	North West	Kaduna	Kumbotso	Reinforcement with 1 x 300MVA 330/132kV Power Transformer, High Voltage Switchgears and Associated Equipment, Replacement of Control and Relay Panel with Digital Control System	4,500,000
2	North West	Kaduna	Dakata	Reinforcement with 1 x 100MVA 132/33kV Power Transformer, Switchgears , Associated Equipment, Digital Control System. Supply & Installation of Additional 3 No. Feeders Bay and Rehabilitation of Control Room	3,144,326
3	North west	Kaduna	Kankia	Replacement of Faulty 1 x 30MVA and Upgrading of 1 x 30MVA Transformers to 2 x 60MVA 132/33kV Transformers, High Voltage Switchgears and Associated Equipment Including Digital Control System.	3,960,000
4	North west	Kaduna	Dan Agundi	Reinforcement of 1 x100MVA 132/33kV Transformers, High Voltage Switchgears and Associated Equipmemt including Digital Control System and Rehabilitation of Control Room	2,920,000
5	North West	Shiroro	Birnin Kebbi	Reinforcement with 2 x150MVA 330/132kV and Installation of 1 x 60MVA 132/33kV Power Transformers with associated 3no. Outgoing 33kV Feeders and Rehabilitation of Control Room	10,715,669
5	North Central	Shiroro	Shiroro	Replacement of Obsolate Control and Relay Pannels with Didital Control System, High Voltage 330kV Switchgears and Associated Equipment	4,840,000
6	North Central	Shiroro	Abuja Central Area	Upgrading of 2 x 45MVA with 2 x 100MVA 132/33kV Power Transformer, High Voltage Switchgears, Associated Equipment Including Gas Insulated Substation. Rehabilitation of Civil Structures of the Control Room and Digital Control Sytem.	5,500,000
7	North central	Shiroro	Kainji	Rehabilitation of the 330kV Substation, High Voltage Switchgears, Associated Equipment. Rehabilitation of Control Room including Digital onrol System.	5,500,000
				SUB TOTAL LOT 1	41,079,995
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
Lot 2					
1	South East	Port Harcourt	Alaoji	Rehabilitation of 330kV Substation, 330kV Control room, Digital Control System and Replacement of High Voltage Switchgears and Associated Equipment.	3,905,445
2	South East	Port Harcourt	Aba	Rehabilitation of 132kV Substation, 132kV Control room, Digital Control System and Replacement of High Voltage Switchgears.	2,750,000
3	South East	Port Harcourt	Port Harcourt Main	Reinforcement with 1 x 100MVA 132/33kV Power Transformers, Control Room, High Voltage Switchgears and Associated Equipment.	2,750,000
4	South East	Port Harcourt	Port Harcourt Town	Reinforcement with 1 x 100MVA 132/33kV Power Transformers, Control Room, High Voltage Switchgears and Associated Equipment.	2,750,000
5	South south	Port Harcourt	ItuTS	Reinforcement with 1x 60MVA 132/33kV Power Transformers, High Voltage Switchgears, Associated Equipment. Rehabilitation of Control Room including Digital onrol System.	3,000,000
6	South East	Enugu	New Haven, Enugu	Reinforcement with 1 x 150MVA 330/132/33kV, 2 x 60MVA Transformers with Associated Equipment, Replacement of Hihg Voltage Switchgears and Rehabilitation of Control Room with Digital Control System.	10,780,000
7	South East	Enugu	G C M TS, Onitsha	Reinforcement of 1Nos. 60MVA 132/33kV Power Transformers, High Voltage Switchgears, and Associated equipment.	1,595,000
8	South East	Enugu	Abakaliki	Upgrade of 1x30MVA to 60MVA 132/33kV Power Transformer, High Voltage Switchgears, and Associated Equipment.	1,375,000
9	South East	Enugu	Orji river	Reinforcement of 1Nos. 60MVA 132/33kV power Transformers, Switchgears, associated equipment and devices.	1,595,000
10	South East	Enugu	Ugwuaji	Supply and Installation of 1x75MVar Reactor and 1 x 60MVA 132/33kV High Voltage Switchgears, and Associated Equipment.	3,300,000
11	North Central	Enugu	Otukpo	Upgrading of 7.5MVA Power Transformer to 1x 60MVA 132/33kV Transformer, High Voltage Switchgears and Associated Euipment.	1,760,000
12	North Central	Enugu	Apir, Makurdi	Reinforcement with 1x150MVA 330/132/33kV and 1x 60MVA 132/33kV Power Transformers High Voltage Switchgears and Associated Euipment.	4,950,000
13	South East	Enugu	Umuahia	Reinforcement with 100MVA 132/33kV Power Transformer and Extension of 132kV Bus with 3 No Additional Feeder Bays.	1,760,000
				SUB TOTAL LOT 2	42,270,445
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
Lot 3					
1	North East	Bauchi	Yola	Reinforcement with 1 x 150MVA 330/132kV and 2x 100MVA 132/33kV Power Transformers, High Voltage Switchgears, and Associated equipment with 3 No Additional Feeder Bays	10,450,000
2	North East	Bauchi	Mayo Belwa	Reinforcement with 1Nos. 150MVA 330/132kV power Transformers, High Voltage Switchgears, and Associated Equipment with 3 No Additional Feeder Bays	2,750,000

3	North East	Bauchi	Jalingo	Upgrading from 132kV to 330kV Substation with 1x150MVA, 330/132/33kV Power Transformers and 1 x 100MVA 132/33kV Transformer, High Voltage Swtichgears and Associated Equipment. Constuction of 330/132kV Control Room	8,280,000
4	North East	Bauchi	Damaturu	Reinforcement with 1Nos. 150MVA 330/132kV power Transformers, High Voltage Switchgears, and Associated Equipment with 3 No Additional Feeder Bays	4,400,000
5	North East	Bauchi	Biu	Reinforcement of 1 x 60MVA 132/33kV Power Transformers, High Voltage Switchgears, Associated Equipment.and Complete Rehabilitation of Substation	2,200,000
				SUB TOTAL Lot 3	28,080,000
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
LOT 4					
1	North East	Bauchi	Damboa	Reinforcement of 2x 60MVA 132/33kV Power Transformers, High Voltage Switchgears, Associated Equipment.and Complete Rehabilitation of Substation	4,400,000
2	North East	Bauchi	Gombe	Reinforcement with 1 x 300MVA 330/132kV and 1x 100MVA 132/33kV Transformers with High Voltage Switchgears, and Associated equipment Bus with 3 No Additional Feeder Bays.	9,900,000
3	North Central	Bauchi	Jos TS	Reinforcement of 1x 300MVA 330/132/33kV & 1 x 100MVA Power Transformers, 330kV High Voltage Switchgears and Associated EuiPMENT. Rehabilitation of Civil Structures of the Control Room and Digital Control Sytem.	11,000,000
4	North East	Bauchi	Maiduguri	Reinforcement with 1Nos. 150MVA 330/132kV power Transformers, High Voltage Switchgears, and Associated Equipment with 3 No Additional Feeder Bays	4,400,000
5	North East	Bauchi	Bauchi	Upgrading of 22.5MVA and 30MVA Transformers to 2X 60MVA 132/33kV Transformers, Rehabilitation of Control Room with Digital Control System and Associated High Voltage Switchgears.	4,015,000
				SUB TOTAL LOT 4	33,715,000
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
LOT 5					
1	South West	Osogbo	Osogbo	Upgrading of 1x 90MVA with 1x300MVA 330/132kV and Reinforcement with 1x100MVA Power Transformers, High Voltage Switchgears and Associated Equipment and 75MX Reactor including the renovation of control room	9,900,000
2	South West	Osogbo	Ilorin	Reinforcement of 2 x100MVA 132/33kV Power Transformers, High Voltage Switchgears, and Associated Equipment. Construction of New Control Room with Digital Control System (DCS)	4,620,000
3	South West	Osogbo	Ondo	Upgrading of 2x 30MVA with 2x 60MVA,132/33kV Power Transformers, Replacememnt of High Voltage Switchgears, Conversion of 6nos. 33kV Indoor to Outdoor. Rehabilitation oif Control Room with Digital Control System, and Perimeter Fencing.	5,280,000
4	South South	Benin	Irrua	Supply and installation of 100MVA 132/33KV power Transformer and associated Swtichgears.	2,420,000
5	South South	Benin	Delta IV TS	Reinforcement with 1 x 150MVA 330/132kV Interbus Transformer, 1 x 100MVA Power Transformer, High Voltage Switchgears, and Associated Equipment. Replacement of Obsolate Control and Relay Pannels with Didital Control System	6,050,000
6	South South	Benin	Effurun	Replacement of defective 1x 60MVA 132/33kV with a new 1x 100MVA 132/33KV Power Transformer, High Voltage Switchgears, and Associated Equipment with 4 No Additional Feeder Bays	2,200,000
7	South South	Benin	Benin TS	Reinfrcement with 1 x 150MVA 330/132kV Power Transformers and 100MVA 132/33KV Power Transformer, High Voltage Switchgears and Associated Equipment. Replacement of Obsolate Control and Relay Pannels with Didital Control System	6,000,000
				SUB TOTAL LOT 5	36,470,000
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
LOT 6					
1	Lagos Area	Lagos	Ijora	Upgrading of 2 x 30MVA with 2 x 100MVA 132/33kV Rehabilitation of Civil Structures of the Control Room and Digital Control Sytem. Equipment.High Rehabilitation of Civil Structures of the Control Room and Digital Control Sytem.	4,950,000
2	Lagos Area	Lagos	Lekki	Supply and installation of 1x 300MVA 330/132kV, 2 x 100MVA 132/33kV Power Transformer, High Voltage Switchgears and Associated Equipment .	4,950,000
3	Lagos Area	Lagos	Alagbon	Supply and Installation of 1x 300MVA 330/132kV, 2x 100MVA 132/33kV Power Transformers, Switchgears, associated Equipment and Devices.	9,460,000
				SUB TOTAL LOT 6	19,360,000
	REGION		SUBSTATION	DESCRIPTION	COST [USD]
LOT 7					
1	Lagos Area	Lagos	Alausa	Reinforcement of 1x 100MVA 132/33kV Power Transformer, High Voltage Switchgears and Associated Equipment.	2,420,000
2	Lagos Area	Lagos	Akoka	Complete Rehabilitation of the Gas Insulated Substation (GIS)	7,700,000
3	Lagos Area	Lagos	Amowu Odoffun	Complete Rehabilitation of the Gas Insulated Substation (GIS)	7,700,000

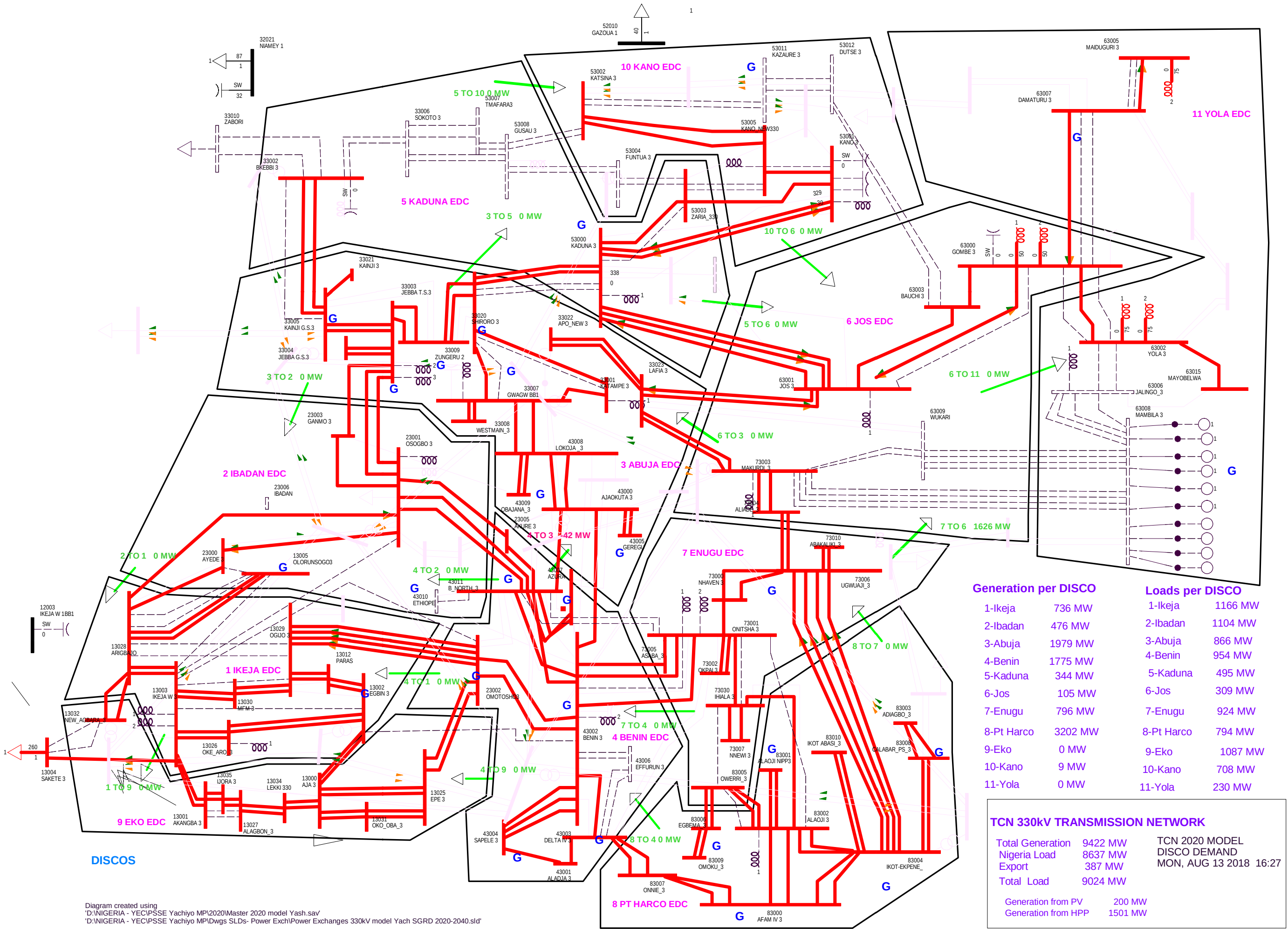
4	Lagos Area	Lagos	Itire	Complete rehabilitation of the Gas Insulated Substation (GIS)	7,700,000
5	Lagos Area	Lagos	Otta TS	Upgrading the 1x 30MVA and 1x40MVA with 2x 100MVA 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment.	4,455,000
6	Lagos Area	Lagos	Maryland	Upgrading of 2 x 30MVA to 2 x 100MVA 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment.	4,950,000
7	Lagos Area	Lagos	Egbin	Replacement of Obsolate Control and Relay Pannels with Didital Control System, Rehabilitation of Control Room , High Voltage Switchgears and Associated Equipment.	8,800,000
				SUB TOTAL LOT 7	43,725,000
	(PACKAGE) 1 Lots (1+2+3+4+5+6+7) =				244,700,440
132kV LINES RECONDUCTORING					
	"A"				
1	South West	Osogbo	Osogbo- Offa - Ganmo - Ilorin	Reconductoring of 150km, 132kV Line Between Osogbo-Offa/Omuaran to Ganmo and Ilorin TS	3,149,750
2	South West	Osogbo	Ayede - Shagamu	Reconstruction and Conversion of SC to Double Circuit of Ayede -Ajebo-Ishara-Shagamu 132kV Line (54km) and Creation of Additional Bays 132kV Line Bays at Ayede , Ajebo, Ishara and Shagamu.	7,020,000
	South West	Osogbo	Osogbo- Ife / Ilesha	Reconstruction and Conversion to Double Circuit of Osogbo-Ife/Ilesha 132kV Line (39.21 km) and Osogbo-Ilesha 132kV Line Tie-Off (22.1km) and Creation of Additional 132kV Line Bays at Osogbo abd Ilesha.	4,420,000
4	South East	Port Harcourt	Afam - PH Main	Reconstruction of Existing Double 132kV Line Circuit to 4 x 132kV Line Circuit Using the Same Right of Way from Afam to Port Harcourt Main (37.8km), and Creating Additional 3 x 132kV Line Bays	6,804,000
5	South East	Port Harcourt	PH Mian - PH Main	Reconductoring of 132kV Double Circuit of Port Harcourt Main to Port Harcourt Town 132kV Line (6km)	2,310,000
				SUB TOTAL A	23,703,750
"B"					
1	North West	Kaduna	Kumbotso - Hadelja	Reconductoring of Kumbotsho- Hadeji 132kV Line (165km)	4,125,000
2	North West	Kaduna	Kumbotso - Kankia	Reconductoring of Kumbotsho- Kankia 132kV Line (100km)	2,500,000
3	south East	Enugu	Onitsha - Oji River	Reconductoring of Onitsha- Orji 132kV Line (87km) with Turn In- Turn Out Tower at Nibo (Agu Awka) in Awka 132kV Substation.	2,175,000
4	south East	Enugu	Alaoji to Aba Town	Reconductoring of Alaoji - Aba Town Double Circuit 132kV line (8km) Including Rehabilitation of Two Nos. Towers along the Line.	315,000
5	South South	Benin	Irrua - Benin	Reconductoring of Irrua - Benin 132kV line (81km)	4,375,000
6	South South	Benin	Irrua - Okpila	Reconductoring of Irrua- Okpilai 132kV line (43km) .	1,075,000
7	South South	Benin	Okpila - Okene	Reconductoring of Okpilai - Okene 132kV line (65km)	1,625,000
8	South South	Benin	Ajakuta-Okene	Reconductoring of Ajakuta- Okene 132kV line (60km)	1,500,000
9	North East	Bauchi	Gombe-Biu- Damboa-Maiduguri	Reconductering of the Entire Route Length from Gombe - Biu -Damboa - Maiduguri 132kV line of 356km Route Length	8,188,000
				SUB TOTAL B	25,878,000
				SUB TOTAL A+B	49,581,750
SUPPLY OF POWER EQUIPMENT					
1	Supply of Power Equipment to Ojo		3 x 150MVA,10 x100MVA, 10 x 60MVA and Earthing Transformers		21,400,000
2	Additional supplies to OJO		330kV, 132kV and 33kv Instrument Transformers, Isolators, Circuit Breakers and Insulators		9,589,995
				SUB TOTAL	30,989,995
SCADA PROJECT					
	SCADA Device				65,000,596
				SUB TOTAL	65,000,596
SUPPLY AND INSTALLATION OF SVC					
	SVC to Gombe				14,000,000
				SUBTOTAL	14,000,000
CONSULTANCY SERVICES					
	Consultancy Services		Consultancy Services on SCADA, SVC, Environmental and Social Related Studies, Contract Supervisions and other Studies (Such as Double Circuit Lines Quad Conductor from Bauchi - Gombe, Ugwuaji - Aliade - Makurdi - Jos, Omotosho - Akure - Oshogbo, Gashua - Hadejia - Damaturu, Delta - Benin, Benin - Omotosho, Zungeru - Shiroro, Onitsha - Aba and Kano - Kaduna)		35,000,000
				SUB TOTAL	35,000,000
			GRAND TOTAL (GOODS, WORKS AND CONSULTANCY SERVICES)		439,272,781
				OPERATING COST	7,000,000
				CONTIGENCIES	39,727,219
				TOTAL VALUE	486,000,000

Annex 7.2e5 Northern Corridor Transmission Project to be financed by AFD

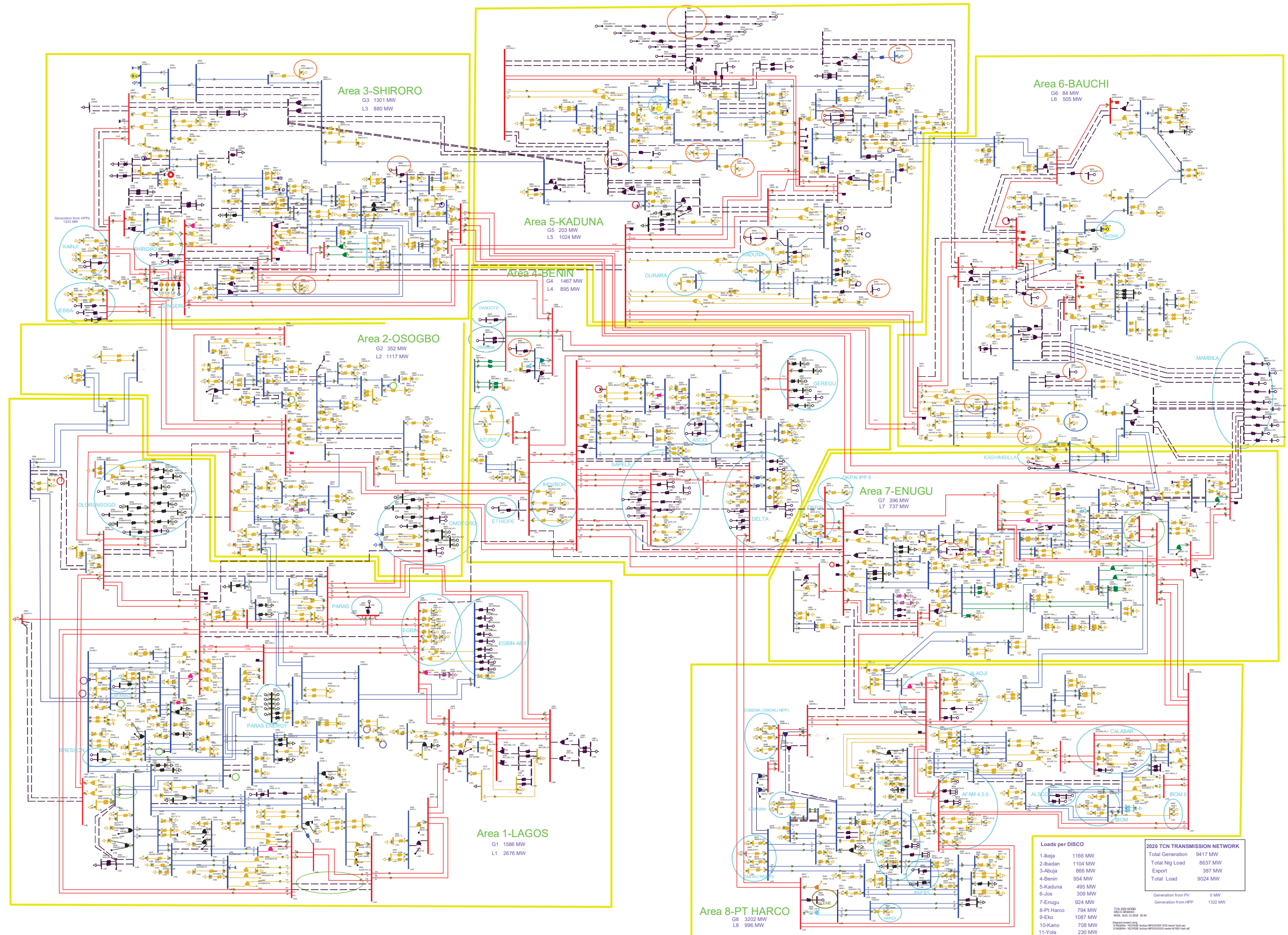
S/N	REGION		SUBSTATION	DESCRIPTION	COST [USD]	STATUS OF FEASIBILITY STUDIES
1	North West	SHIRORO	Kainji - Birnin Kebbi 330kV Double Circuit (DC) Line (310km)		59,000,000	Up-to-date Feasibility Studies is available. Feasibility studies was carried out by AF consult in July 2013
2	North West	SHIRORO	Birnin Kebbi-Sokoto 330kV Double Circuit (DC) Line (130km)	(1) Birnin Kebbi-Sokoto 330kV DC Transmission Line on the existing 132KV Birnin-Kebbi Sokoto ROW and reconducting the existing 132kV Single circuit Birnin-Kebbi Line to double its capacity	22,100,000	Brown field project. Feasibility Studies not Available
3	North West	Kaduna	Katsina-Daura-Gwiwa-Minjibir-Kura (234KM)	Construction of length of 330kV DC Twin line between Katsina-Daura-Gwiwa-Jogana- Kura	39,312,000	Green Field (partly financed through Euro 25 Million from EU)
4	North Central	SHIRORO	Lambata (Mina-Suleja Rd)	Turn in Turn out Mina - Suleja 132KV DC and Construction of 1 x 60MVA 132/33kV Complete substation	3,500,000	Green Field
5	North West	SHIRORO	Fakon Sarki-Argungu	Turn in Turn Out on Brinin Kebbi-Sokoto 132KV Line and Construction of 2 x 60MVA 132/33kV Complete substation	7,000,000	Green Field
6	North West	SHIRORO	Yelwa- Yawuri	Construction of 1 x 60MVA 132/33kV Complete substation and High Voltage Switchgears and Associated Equipment.	1,700,000	Brown Field
7	North Central	SHIRORO	Birnin Gwari	Construction of 1 x 60MVA 132/33kV Complete substation and High Voltage Switchgears and Associated Equipment.	2,000,000	Brown Field (Existing 33KV Substation)
8	North West	Kaduna	Daura-Katsina State	Installation of 2x150MVA 330/132/33KV Double Circuit Substation and with associated 132kV bay extension and Installation of 2x60MVA 132/33kV transformers, 6number outgoing 33kV feeder bays	19,000,000	Green Field
9	North West	Kaduna	Jogana-Kano	Installation of 2x150MVA 330/132/33KV Double Circuit Substation and with associated 132kV bay extension and Installation of 2x60MVA 132/33kV transformers, 6 number outgoing 33kV feeder bays	19,000,000	Green Field
10	North West	SHIRORO	330kV Sokoto Transmission Substation	Installation of 2x150MVA 330/132/33KV Transformers at Sokoto New 330 Double Circuit Substation and with associated 132kV bay extension and Installation of 2x60MVA 132/33kV transformers, 6number outgoing 33kV feeder bays	19,000,000	Semi-Brown Feasibility studies required
11	North Central	SHIRORO	Shiroro –Kaduna (Mando) 330kV Lines 1 & 2 SC Transmission Lines (96km)	Reconstruction and upgrading of 2 Single Circuit 330kV Transmission Lines 1 & 2 from Shiroro PS to Mando (Kaduna) to a 2 Double Circuit, Quad conductor Shiroro-Mando (Kaduna) Transmission lines 1 and 2. The line bay extension at Mando and Shiroro	26,688,000	Semi Brown field project. Feasibility Studies not Available
12	NORTH EAST	BAUCHI	Bauchi 330kV Transmission Substation (2km)	Turn in-out of the existing 330kV SC Jos-Gombe line at Bauchi, and installation of 2x150MVA 330/132/33kV Transformers with associated 132kV bay extension and 2x60MVA 132/33kV transformers, 6number outgoing 33kV feeder bays	19,000,000	Semi green field project. Feasibility Studies not Available
13	North Central	SHIRORO	Rehabilitation work at Kainji TS	Urgent Replacement of Kainji/Jebba 330kV line 1 - 330kV Circuit Breaker at Kainji TS.	148,000	Brown field project. Feasibility Studies not Applicable
14	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Replacing the existing very old(1968) Marilli 80MVA 330/132/13.8kV, 2T1 transformer with 1x150MVA 330/132/33kV plus 1X60MVA, 132/33kV transformer and 3 number 33KV Feeder Control and protection	3,800,000	Brown field project. Feasibility Studies not Applicable
15	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Urgent Replacement of 1nos. Jebba T/S 75MX reactor 2R2 CB - that exploded.	235,000	Brown field project. Feasibility Studies not Applicable
16	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Replacement of 11nos. 330KV Circuit Breakers at Jebba 330kV Switchyard. The existing CB's are obsolete no parts and spares available.	160,000	Brown field project. Feasibility Studies not Applicable
17	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Replacement of 9 spans of Sky wire for 330kV Jebba-Osogbo lines 1 & 2 and 330kV Jebba- Ganmo line	15,000	Brown field project. Feasibility Studies not Applicable
18	North Central	SHIRORO	Rehabilitation work at Jebba Power Station Transmission Switch yard.	Replacement of 8nos. 330KV obsolete Circuit Breakers.. The existing CB's are obsolete no parts and spares available.	1,200,000	Brown field project. Feasibility Studies not Applicable
19	North Central	SHIRORO	Rehabilitation work at Shiroro TS	Replacement of 330KV obsolete hydraulic SF6, Circuit Breakers and associated motorized Isolators at Shiroro TS	150,000	Brown field project. Feasibility Studies not Applicable
20	North Central	SHIRORO	Rehabilitation work at Shiroro TS	Replacement of 28 spans of Sky wire for 330kV 330kV Shiroro- Jebba line 2	15,000	Brown field project. Feasibility Studies not Applicable
21	North Central	SHIRORO	Rehabilitation work at Minna TS	Reinforcement of Minna with 1x60MVA 132/33kV Transformer to relief the existing overloaded 1x30MVA 132/33kV Transformer with complete 132kV Bay extension and additional 3 number 33kV Feeder Control and protection panels. Control room rehabilitation	1,800,000	Brown field project. Feasibility Studies not Applicable
22	North Central	SHIRORO	Rehabilitation work at Minna TS	Replacement of 32 spans of Sky wire for 132kV Minna- Bida line	13,000	Brown field project. Feasibility Studies not Applicable
23	North Central	SHIRORO	Karu -Keffi -Akwanga 132kV Transmission line (103km)	Reconductoring of 132kV SC Karu-Keffi-Akwanga transmission Line	1,035,000	Brown field project. Feasibility Studies not Applicable
24	North Central	SHIRORO	Keffi TS Transmission Line Rehabilitation	Replacement of 36 spans of Sky wire for 132kV Apo-Keffi line	14,000	Brown field project. Feasibility Studies not Applicable
SUBTOTAL					245,885,000	
CONTINGENCY					21,613,000	
TECHNICAL ASSISTANCE AND CAPACITY DEVELOPMENT/PROJECT MANAGEMENT					5,000,000	
GRAND TOTAL					272,498,000	

Annex 7.4.1 330 kV transmission 2020

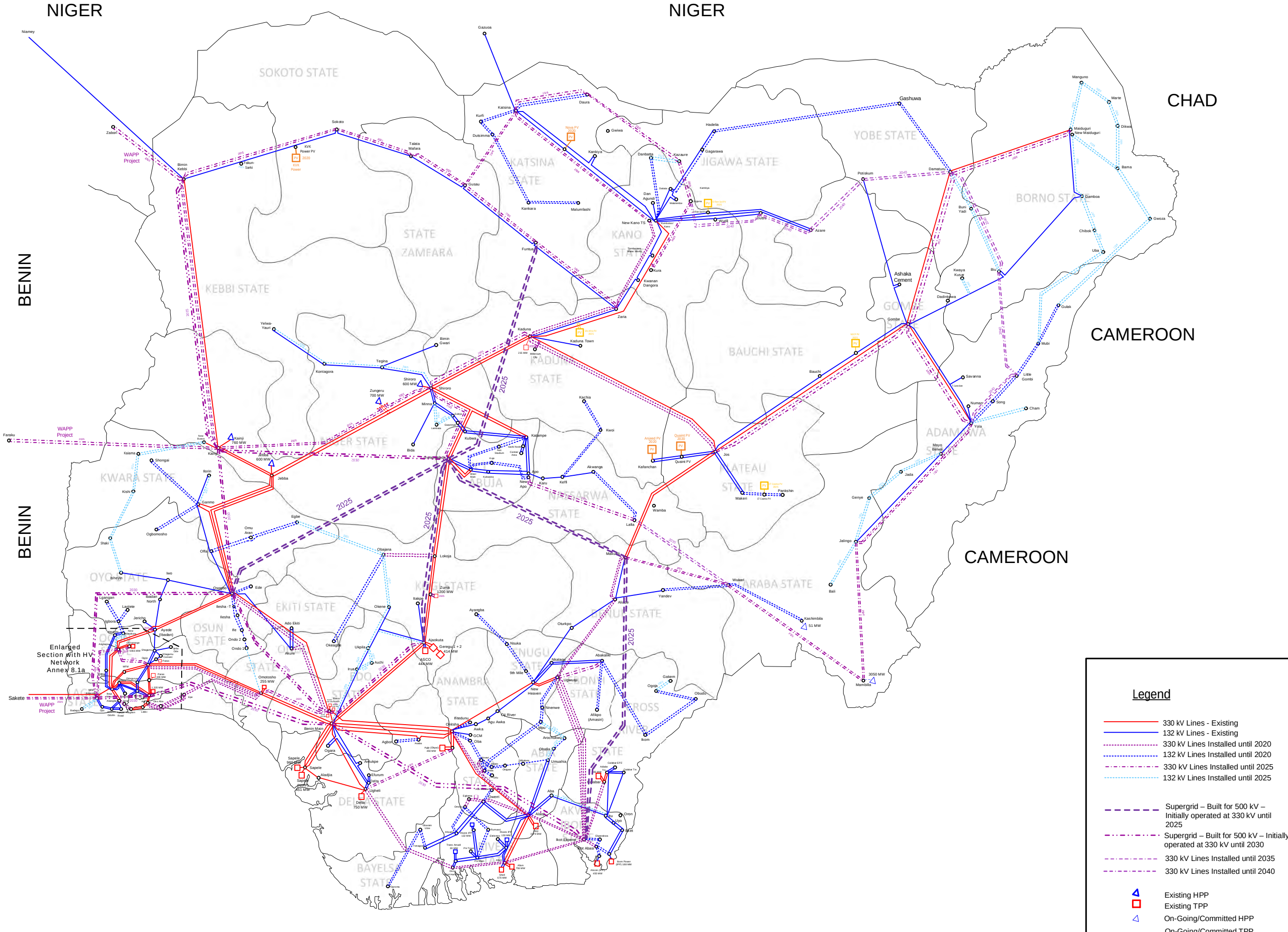
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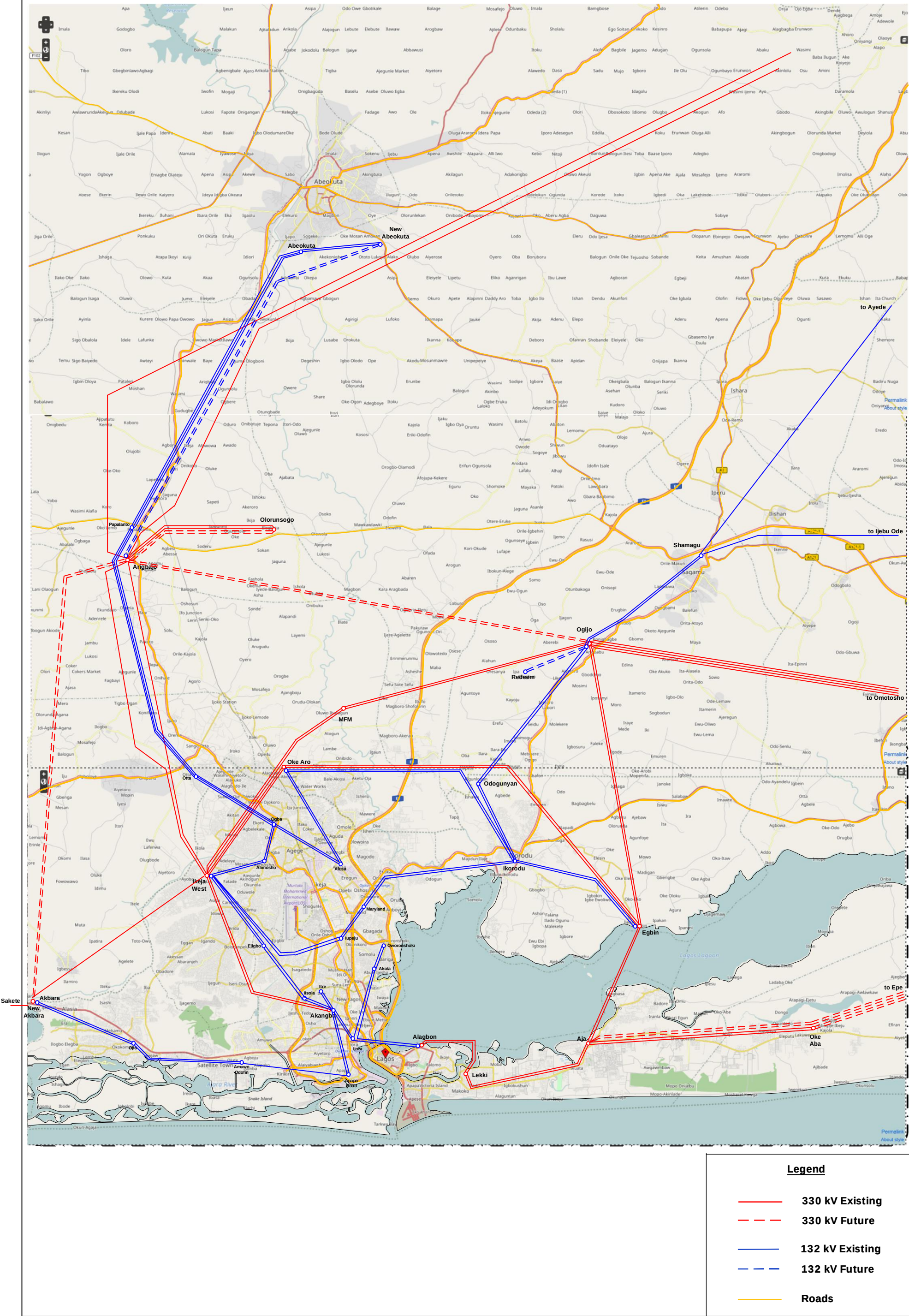
Annex 7.4.2 SLD in PSSE for TCN transmission system-2020



Annex 7.4.3 Nigeria 330+132 kV network existing + expansions



Annex 7.4.4 Nigeria electricity and gas improvement project transmission expansion plan



Annex 7.4.5 DisCos served loads in 2020

IKEJA

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)
15009	ALAUSA 33 33.000	17.04	9.43
15010	ALIMOSHO 33 33.000	19.68	10.89
15014	EJIGBO 33 33.000	47.38	18.65
15016	EJIGBO BBI 33 33.000	50.40	27.89
15017	MARYLAND 33 33.000	24.89	13.77
15018	OGBA 33 33.000	22.18	12.27
15020	OWOROSOKI 33 33.000	31.25	17.29
15022	IKORODU 33 33.000	46.50	25.73
15026	IKW T2B 33 33.000	1.01	0.56
15027	ILUPEJU 33 33.000	17.04	9.43
15033	EGBIN 33 33.000	22.72	12.57
15049	MARYLAND T2 33.000	23.34	12.91
15050	IKORODU T3 33.000	49.40	27.33
15054	OGIJO 33 33.000	42.42	23.47
15055	MFM 33 33.000	63.63	35.21
15056	REDEEM 3 33.000	40.32	22.31
15062	ARIGBAJO 33 33.000	69.99	27.97
15063	ODOGUNYA 33 33.000	96.82	53.57
15066	OGBA 33 2 33.000	13.06	7.23
15070	OGBA T1 33.000	20.60	11.39
15071	OGBA T2 33.000	21.40	11.84
15072	ALIMOSHO T1 33.000	22.72	12.57
15073	ALIMOSHO T2 33.000	21.98	12.16
15076	ALAUSA T3 33.000	24.29	13.44
15077	ALAUSA T3 33.000	19.10	10.57
15082	OKE_ARO_TR1 33.000	24.48	13.54
15083	AYOBO 33 33.000	12.20	6.75
15084	OKE_ARO_TR2 33.000	28.40	15.72
15091	OWORO 33 BBI 33.000	22.72	12.57
15109	OGBA T5 33.000	40.32	22.31
15110	IKJW TR1 33.000	37.16	20.56
15111	EGBIN TR3 33 33.000	40.32	22.31
15116	AFR FOUNDRY 33.000	29.54	16.35
15128	EJIGBO 33 33.000	55.80	27.03
16025	ILUPEJU 11 11.000	14.16	7.83
16027	OGBA 11 11.000	10.00	5.53
16033	ILLUPEJU T2 11.000	14.94	8.27
16071	OGABA 11 2 11.000	6.82	3.77
Total		1166	623

IBADAN

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)
15011	ABEOKUTA OLD33.000	9.5141	5.264
15021	PAPALANTO 3333.000	7.2872	4.0319
15037	NEW ABEOK 3333.000	30.9175	17.1062
15064	PAPALANTO 3333.000	5.6037	3.1004
15078	OTTA T1 33.000	20.3751	11.2732
15079	OTTA T2 33.000	35.2562	19.5067
15080	OLD ABEOK T233.000	10.3556	5.7296
15081	OLD ABEOK T3 33.000	5.6037	3.1004
15088	OLORUNSO 33 33.000	40.2928	22.2933
16007	SHAG CEM 11 11.000	6.7283	3.7227
16028	SHAG IND 11 11.000	40.2928	22.2933
16038	SHAG CEM 11 11.000	6.7283	3.7227
25000	GANMO T2 33 33.000	21.4194	11.851
25002	IWO 33 33.000	39.2855	21.736
25004	AYEDE 33 33.000	54.3953	30.096
25005	AYEDE TR1 3333.000	1.1207	0.6201
25007	IBADAN NORTH33.000	37.2709	20.6213
25008	IFE 33 33.000	39.2261	21.7031
25009	JERICO 33 33.000	19.2457	10.6483
25010	ILESHA 33 33.000	16.8112	9.3013
25011	ILORIN 33 33.000	39.2855	21.736
25012	ISEYIN 33 33.000	19.9212	11.0221
25013	JERICO2 33 33.000	28.205	15.6053
25014	LANLATE 33 33.000	11.2075	6.2009
25015	OFFA 33 33.000	26.1903	14.4907
25016	OMUARAN 33 33.000	27.1976	15.048
25019	OGBOMOSO 33 33.000	16.8112	9.3013
25026	OSOGBO 33 33.000	27.1976	15.048
25029	OSOGBO T1 33.000	17.0768	9.4483
25030	OSOGBO T2 33.000	14.5843	8.0692
25031	ILESHA T1 33.000	16.8112	9.3013
25032	GANMO T1 33.000	47.3441	26.1947
25033	ILORIN T2A B33.000	28.205	15.6053
25035	SHAGAMU 33 33.000	26.2175	14.5057
25038	IJEBU ODE 3333.000	24.2072	13.3935
25040	SHAGAM T2 BB33.000	15.6904	8.6812
25041	IJEBU T1 BB 33.000	25.3685	14.036
25042	IBADAN T2 BB33.000	33.1505	18.3416
25043	EGBE T1 33.000	11.7678	6.5109
25045	AYEDE 33 33.000	38.2782	21.1787
25046	OMUARAN T2 33.000	11.5336	6.3814
25047	EDE_3 33.000	36.2635	20.064
25048	SHONGO_3 33.000	16.8112	9.3013
25049	ISEYIN T2 3333.000	16.8112	9.3013
25054	SHAGAM T3 BB33.000	11.2075	6.2009
25055	IGANGAN 3 33.000	11.2075	6.2009
25056	AJEBO 33 33.000	22.4149	12.4018

25057 ISHARA 33	33.000	22.4149	12.4018
26005 JERICO 11	11.000	12.8886	7.131
Total		1104	611

ABUJA

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)	
35000	AKWANGA 33 33.000	6.8339	3.6885	
35001	APO 33 33.000	22.0257	11.8882	
35002	BIDA 33 33.000	18.4068	9.935	
35004	CENTRAL AREA33.000	71.6635	38.6799	
35005	JEBBA 33 33.000	22.7796	12.2951	
35006	KARU 33 33.000	23.7878	12.8393	
35007	KATAMPE 33 33.000	16.5193	8.9162	
35008	KEFFI 33 33.000	11.6094	6.2661	
35009	KONTAGORA 3333.000	4.4051	2.3776	
35010	KUBWA 33 33.000	46.4851	25.09	
35011	APO_60MVA T333.000	23.7878	12.8393	
35012	MINNA 33 33.000	14.8067	7.9918	
35013	SHIRORO 33 33.000	21.606	11.6617	
35015	TEGINA 33 33.000	18.1729	9.8087	
35028	KUKWABA 33 33.000	22.0257	11.8882	
35031	YAURI_33 33.000	5.5064	2.972	
35034	WESTMAIN_33 33.000	76.9825	41.5508	
35035	KWOI_33 33.000	16.5471	8.9312	
35037	LAFIA_33 33.000	7.7467	4.1812	
35040	NEW BUSSA 3333.000	24.1181	13.0176	
35045	YELWA 33 33.000	13.0533	7.22	
35046	SULEJA T2 33.000	17.6205	9.5106	
35047	SULEJA T3 33.000	17.6205	9.5106	
35048	MINNA T2 33.000	14.8067	7.9918	
35049	AKWANGA MOB 33.000	3.3039	1.7832	
35053	GWAGW_TR1_3333.000	15.0428	8.1192	
35054	GWAGW_TR2 3333.000	15.0428	8.1192	
35055	KAIMA 33 33.000	10	5.53	out
35058	APO_100MVAT333.000	27.5321	14.8603	
35060	KISHI 33 33.000	7.321	4.05	out
35062	YELWA 33 33.000	17.5128	9.69	
35066	YAURI_33_1 33.000	7.2826	3.9308	
35079	KTAGORA T23333.000	4.4051	2.3776	
35080	KUJE 33 33.000	18.4068	9.935	
35081	LOKOGOMA 33 33.000	19.546	10.5498	
35084	APO_NEW 33 33.000	15.0425	8.1191	
35087	GWARIMPA 33 33.000	15.0425	8.1191	
36016	SULEJA 11 11.000	15.0428	8.1192	
45003	OKENE 33 33.000	15.0428	8.1192	
45021	OKEAGBE_33 33.000	16.5193	8.9162	
45028	OKENE T2 SEC33.000	8.8103	4.7553	
45032	AJAOKUTA T1 33.000	25.3295	13.6714	
45033	AJAOKUTA T2 33.000	28.1275	15.1816	
45034	GEREGU 33 33.000	25.8803	13.9687	
45036	LOKOJA T1T2 33.000	42.4988	22.9384	
45038	OKENE T3 SEC33.000	22.0257	11.8882	

Total	896	484
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BENIN

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)
22014	OMOTOSHO 1 132.00	23.2864	12.5689
22024	OMOTOSHO 2 132.00	23.2864	12.5689
25001	ADO EKITI 3333.000	30.5652	16.9078
25003	AKURE 33 33.000	17.8252	9.8598
25017	ONDO1 33 33.000	27.655	15.3
25018	AKURE T3A 3333.000	38.3221	21.2027
25027	AKURE T2B 33.000	41.7697	23.1115
25028	AKURE T2A 33.000	20.5922	11.3942
25034	ONDO T2 33 B33.000	8.702	4.082
45000	BENIN 33 33.000	74.1495	41.0251
45001	UGHELLI 33 33.000	44.7354	24.7487
45002	IRRUA 33 33.000	34.0841	14.9844
45004	UKPILLA 33 33.000	17.4041	8.8981
45012	UGELLI T2 3333.000	23.6834	13.1048
45013	UGELLI T3 3333.000	23.6834	13.1048
45015	B_NORTH_33 33.000	60.952	33.7202
45019	OKADA_33_1 33.000	8.702	4.8161
45022	AMUKPE 33 33.000	18.2743	10.1094
45023	EFFURUN 33 33.000	31.98	17.6934
45024	EFFURUN TR2 33.000	23.7566	13.1415
45025	EFFURUN TR3 33.000	21.9291	12.1357
45026	AMUKPE BB 3333.000	33.5898	18.5817
45027	IRRUA BBII3333.000	36.61	13.4859
45029	BENIN T22 3333.000	69.7895	38.6097
45030	BENIN T23 3333.000	66.0693	36.554
45031	BENIN T24 3333.000	67.5574	37.3763
45040	OGHARA 33 33.000	54.0333	29.8952
45120	IRRUA_33 33.000	11.0125	0.7342
Total		954	510

KADUNA

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)	
35014	SOKOTO 33 33.000	23.4923	12.6839	
35044	BKEBBI 33 33.000	22.7405	12.2729	
35050	SOKOTO T3 33.000	18.1047	9.7739	
35051	BKEBBI T8 33.000	30.5713	16.4981	
35052	BKEBBI MBH 33.000	13.0226	7.0284	
35056	BGWARI 33.000	13.26	7.34	out
35059	KACHIA_33 33.000	10.3836	5.6062	
35063	JEGA 33 33.000	26.52	14.67	out
55004	GUSAU 33 33.000	17.6505	8.7053	
55005	KADUNA 33 33.000	32.9127	17.7641	
55006	KADUNA TOWN 33.000	14.6827	7.9244	
55011	ZARIA 33 33.000	18.692	10.0863	
55040	KAD 33 BBII 33.000	20.7672	11.2125	
55041	KAD T2 33.000	31.3231	16.9091	
55042	KAD T4 33.000	21.9261	11.8372	
55043	TMAFARA 33 33.000	8.2223	4.439	
55046	GUSAU T1 33.000	15.5754	7.5873	
55060	ZARIA 33 33.000	26.9143	14.5253	
55061	KD TWN T1 33.000	14.6827	7.9244	
55068	KUDENDA T1 33.000	23.4923	12.6839	
55069	KD TWN T2 33.000	29.3654	15.8487	
55072	KD TWN T3 33.000	29.3654	15.8487	
56001	KADUNA TOWN 11.000	6.8676	3.7074	
65032	KAFANCHAN 3333.000	26.7029	14.4102	
65036	KAFANCHAN 3333.000	14.0562	7.5873	
65037	KAFANC M TR133.000	23.4923	12.6839	
Total		495	266	

JOS

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)	
55012	AZARE 33 33.000	7.5154	4.0589	
55048	AZARE T2 33.000	9.861	5.3252	
65002	ASHAKA 33 33.000	7.5905	4.1	
65003	BAUCHI 33 33.000	22.5462	12.1699	
65005	JOS T4 60MVA33.000	41.3347	22.3137	
65006	GOMBE 33 33.000	23.009	12.4163	
65007	JOS 33 33.000	16.435	8.8707	
65008	PANKSHIN 33 33.000	11.2731	6.0849	
65010	SAVANNAH 33 33.000	7.7916	4.2026	
65011	BAUCHI T4 33.000	9.861	5.3252	
65026	GOMBE TR3 3333.000	13.2559	7.1527	
65033	MAKERI 33 33.000	12.9816	7.009	
65038	MAKERI TR2 33.000	2.1365	1.1568	
65050	WUKARI 33.000	20.5341	12.3205	
65091	BAUCHI_33_1 33.000	2.7379	0.6845	
66002	GOMBE T3 11.000	7.2476	3.9152	
75002	APIR 33 33.000	4.7347	2.5531	
75015	OTURKPO 33 33.000	9.0734	4.9008	
75017	YANDEV 33 33.000	5.4941	2.9638	
75043	OTURK T2 33.000	34.296	18.98	out
75045	YANDEB T2 33.000	13.047	7.0432	
75048	APIR_33B 33.000	7.5154	4.0589	
75051	MAKURDI T2 33.000	23.009	12.4163	
75056	ALIADDE T1 33.000	3.6157	1.9507	
75067	ALIADDE 33 33.000	14.4628	7.8098	
75077	KASHBILA 33 33.000	3.9699	1.9165	
75095	TAKUM TR1 33.000	7.9665	3.8584	
Total		309	167	

ENUGU

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)
75001	ABAKALIKI 3333.000	34.9156	19.3187
75003	AROCHUKWU 3333.000	10.6946	5.9161
75004	AWKA 33 33.000	15.712	8.6913
75005	AYANGBA 33 33.000	10.6946	5.9161
75006	IDEATO 33 33.000	10.6946	5.9161
75007	NHAVEN 33 33.000	22.4508	12.4221
75008	NKALAGU 33 33.000	10.6946	5.9161
75009	NNEWI 33 33.000	26.1867	14.4911
75010	NSUKKA 33 33.000	4.3645	2.418
75011	OBA 33 33.000	8.7289	4.8276
75012	OJI RIVER 3333.000	6.9831	3.8637
75013	OKIGWE 33 33.000	4.3645	2.418
75014	ONTISHA 33 33.000	18.8959	10.4529
75018	MBALANO 33 33.000	6.3988	3.5397
75019	OHAFIA 33 33.000	5.7429	3.1741
75030	IHIALA_33 33.000	17.4578	9.6552
75031	ORLU_33 33.000	17.4578	9.6552
75032	NENWE_33 33.000	17.4578	9.6552
75033	GCM 33 33.000	8.7289	4.8276
75034	GCM T2 33 33.000	12.8335	7.1043
75035	ASABA 33 33.000	17.4578	9.6552
75036	AGU-AWKA 33 33.000	10.4747	5.7915
75037	ONITSH TR14 33.000	20.8929	11.558
75038	ONITSHA TR1133.000	31.6795	17.5239
75039	NHAV TR2 33.000	15.6248	8.6415
75040	NHAV TR3 33.000	17.5451	9.705
75041	NHAV TR4 33.000	33.087	18.305
75042	ABAKALIK T2 33.000	25.663	14.2003
75044	NKALGU T1A 33.000	15.5375	8.5999
75046	AWKA TR3 33.000	10.4747	5.7915
75047	NSUKKA T1B 33.000	6.4167	3.548
75050	NSUKKA N 33 33.000	10.4747	5.7915
75057	AMASIRI 33.000	12.8335	7.1043
75058	UGWUAJI 33 33.000	17.4578	9.6552
75059	MPU 33.000	7.4862	4.1379
75060	IGBUMATOR 3333.000	3.4916	1.9277
75061	AMMASOM 33 33.000	6.0145	3.3236
75063	UKUBIE 33.000	10.6946	5.9161
75064	EKAWE 33 33.000	6.4167	3.548
75070	AGBOR 33 33.000	17.4578	9.6552
75071	NKALGU T3 33.000	20.9494	11.5912
75072	ONITSHA TR1533.000	34.9156	19.3187

75079 KWALE TR1 33.000	13.2755	6.4296
76003 ONITSHA 11.000	20.9494	11.5912
76004 ONTISHA 11 11.000	11.0054	6.0906
85016 OWERRI 33 33.000	20.2747	10.9431
85017 ABA 33 33.000	13.0934	7.0711
85018 ABA T2B 33 33.000	21.3858	11.5414
85019 OWERRI 33 TR33.000	17.4578	9.4225
85020 OWERR T1MOB 33.000	19.7692	10.6689
85021 ABA T2A 33 33.000	17.4578	9.4225
85023 ABA T4A(MOB)33.000	8.4688	4.57
85024 UMUHIA 33 33.000	43.6446	23.5563
85031 ABA 33 33.000	18.3307	9.8962
85093 UMUHIA TR4 33.000	52.6474	25.4982
86019 OWERR TR1 11.000	17.4578	9.4225
86020 ABA T1A 6.6 6.6000	4.2778	2.3099
Total	924	504

PH

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)
85000	AFAM 33 33.000	16.9435	9.1467
85001	CALABAR T13333.000	39.8775	21.5261
85002	EKET T1B 33.000	36.581	19.7412
85003	EKET 33 33.000	31.459	16.9774
85004	ITU 33 33.000	25.8229	13.9422
85006	PHCT TOWN1 333.000	21.4807	11.5979
85007	UYO 33 33.000	37.5469	20.2676
85009	PHCT MAIN 3333.000	22.7302	12.2724
85012	ABOH MBAISE 33.000	20.6566	11.1538
85013	OGOJA 33 33.000	10.3327	5.5769
85014	AHOADA 33 33.000	11.9012	6.4241
85015	YENAGOA 33 33.000	10.3682	5.5933
85025	PHCT MAIT3A 33.000	29.2524	15.7929
85026	PHCT T2A 33.000	14.8788	8.0281
85027	PHCT T1A 33.000	25.1672	13.5803
85028	YANAG T2 SEC33.000	10.3682	5.5933
85029	CALABAR T33333.000	45.6288	24.6271
85030	UYO T2B 33.000	41.2245	22.2499
85036	ELENLEWO 33 33.000	33.4706	18.0632
85038	AHOADA T2 33.000	17.1385	9.2537
85045	OBUDU_33 33.000	10.3327	5.5769
85046	IKOM_33 33.000	10.3327	5.5769
85053	CALAB_EP_3333.000	20.6566	11.1538
85054	ADIAGBO_33 33.000	20.6566	11.1538
85056	PHCT TWN 33.000	10.3327	5.5769
85060	RUMUSOI T13333.000	27.9232	15.0691
85061	RUMUSOI T23333.000	27.9232	15.0691
85062	OPROMA 33 33.000	14.4888	7.8224
85079	OGOJ-GAKEM3333.000	9.5909	5.3054
85092	IKOT ABAS 3333.000	41.3131	22.2993
86000	AFAM 11 11.000	46.4795	25.0877
86017	PHCT MAIN 1111.000	25.1672	13.5803
86018	PHCT TOWN 1111.000	25.9736	14.0162
Total		794	429

EKO

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)	
15002	AGBARA 33 33.000	24.3701	13.4849	
15003	AJA 33 33.000	57.2947	29.2777	
15005	AJA TR2 33 33.000	0.8041	0.4438	
15006	AKANGBA 33 33.000	34.2531	18.9482	
15007	AKOKA T1 33 33.000	21.2334	11.7498	
15008	ALAGBON 33 33.000	77.7193	40.3981	
15012	AMUWO ODOFIN 33.000	31.355	17.3504	
15013	APAPA RD 33 33.000	23.3559	12.92	
15015	IJORA 33 33.000	30.0152	16.6079	
15019	AJA TR1 33.000	26.0489	14.4129	
15028	ISOLO 33 33.000	46.3993	25.6705	
15029	ISOLOTR3 33 33.000	26.911	14.889	
15030	OJO 33 33.000	45.8266	25.3558	
15041	LEKKI T1 33.000	21.7073	12.0081	
15042	LEKKI 33 BB 33.000	44.4021	24.5649	
15045	IJORA T1A&B 33.000	17.4155	8.1103	
15046	IJORA T2B 33.000	19.0295	8.9173	
15047	OJO T3_T4 33.000	46.5502	25.7593	
15048	ISOLO T1 33.000	17.7276	9.805	
15051	AJA T3 TERT 33.000	1.206	0.6698	
15052	AKANGBA 33 33.000	28.9431	16.0108	
15053	AKANGBA 33 33.000	37.3848	20.6833	
15057	EPE 33 33.000	45	24.9	out
15058	OKO_OBA_33 33.000	40.7429	20.9254	
15059	EPZ_33 33.000	54.7483	30.2946	
15060	NEW_AGBARA_33 33.000	63.4316	35.0962	
15061	BADAGRY_3 33.000	39.856	22.05	out
15065	IJORA 33.000	25.3727	12.4277	
15067	AKOKA T2 33.000	26.056	13.6059	
15068	AMUWO T2 30M 33.000	12.0597	6.6738	
15069	AMUWO T3 40M 33.000	18.0895	10.0067	
15074	AGBARA TI 33.000	14.9539	8.2717	
15075	AGBARA T2 33.000	14.9539	8.2717	
15098	APAPA T1 33.000	25.3727	14.0417	
15099	APAPA RDT4 33.000	1.206	0.6698	
15103	AKOKA T3 33.000	12.6863	7.0208	
15112	AJA 2 33 33.000	24.91	13.78	out
15118	ALAGBON T3T4 33.000	16.1399	8.9334	
16019	AKANGBA 5T2A 13.800	1.206	0.6698	
16021	AJA 11 11.000	13.0244	7.2065	
16022	AKOKA 11 11.000	12.0597	6.6738	
16026	ISOLO 11 11.000	12.0597	5.0599	
16032	ITIRE 11 11.000	18.2992	10.1278	

16034	ITERE T3	11.000	24.5853	13.6059
	Total		1087	588

KANO

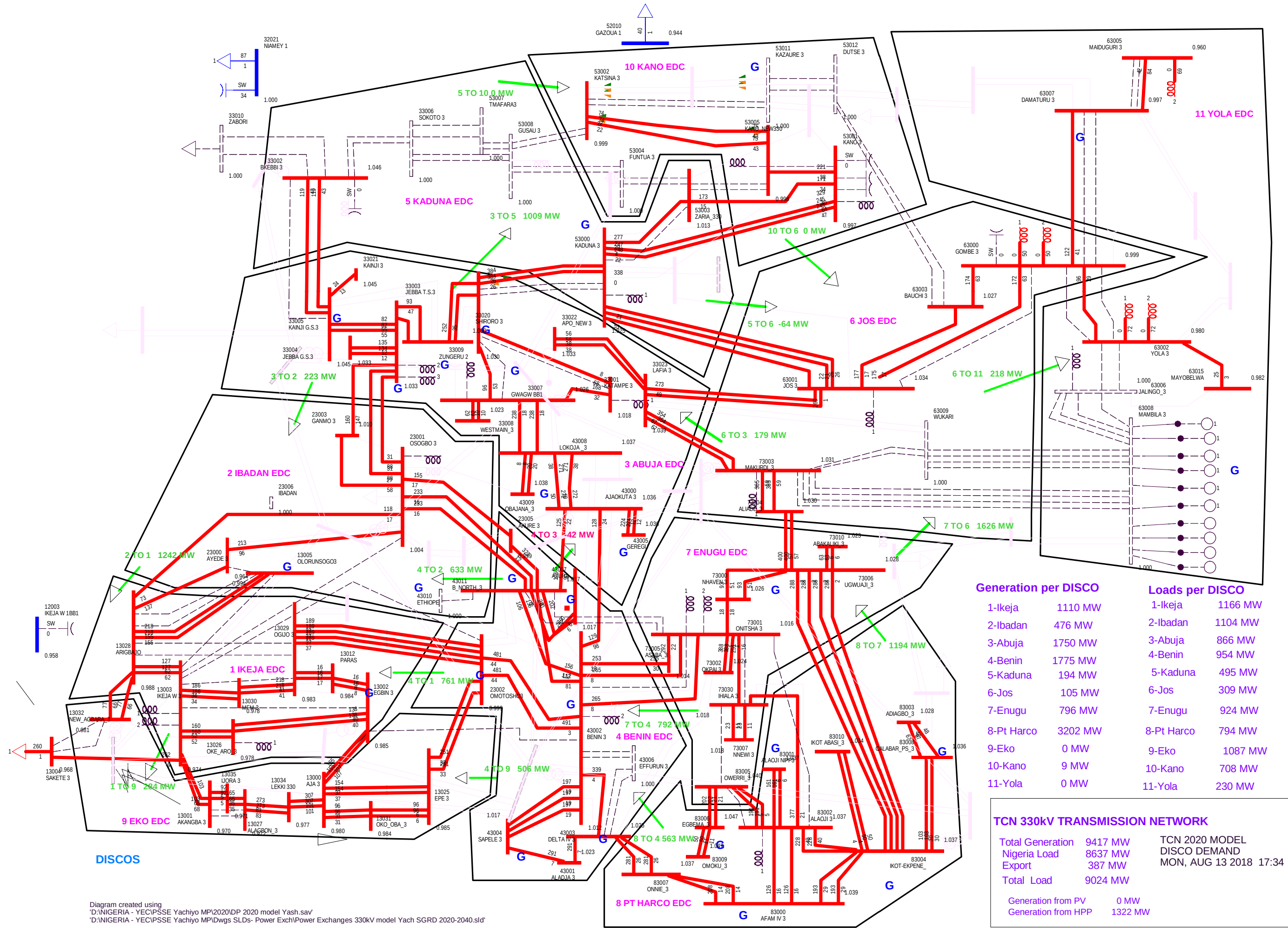
Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)	
55000	DAKATA 33 33.000	18.6676	10.0757	
55001	DAN AGUNDI 33 33.000	39.1003	21.1041	
55002	DUTSE 33 33.000	8.2111	4.4319	
55003	FUNTUA 33 33.000	27.153	14.6556	
55008	KANKIA 33 33.000	12.7741	6.8947	
55009	KANO 33 33.000	14.3116	7.7246	
55010	KATSINA 33 33.000	37.9191	20.4666	
55022	WUDIL 33 33.000	10.8612	5.8622	
55023	KWANAR DANGO 33 33.000	18.8562	10.1775	
55024	TAMBURAWA 33 33.000	11.2006	6.0455	
55025	WALALAMBE 33 33.000	27.153	14.6556	
55026	DAURA 33 33.000	13.5765	7.3278	
55027	HADEJIA 33 33.000	6.7882	3.6639	
55028	HADEJIA BB1 33 33.000	13.5765	7.3278	
55030	KURFI_33 33.000	8.2138	4.4333	
55031	DUTSINMA_33 33.000	8.2138	4.4333	
55032	MALUMFASHI_33 33.000	24.4377	13.1901	
55033	DANBATTI_33 33.000	26.1199	14.098	
55034	KANKARA_33 33.000	8.2138	4.4333	
55035	GAGARAWA_33 33.000	11.5401	6.2287	
55049	DUTSE T1 33.000	8.2111	4.4319	
55050	HADEJIA T2 33.000	6.7882	3.6639	
55051	DAKATA T2 33.000	18.6676	10.0757	
55052	DAKATA T3 33.000	19.6762	10.6201	
55053	DAGUNDI T2 33.000	25.8062	13.9287	
55054	KANKIA T1 33.000	3.5638	1.9235	
55055	KATSINA T2 33.000	13.5765	7.3278	
55056	KATSINA T3 33.000	20.3647	10.9917	
55057	KUMB T2 33.000	28.8835	15.5897	
55058	KUMB T3 MOB 33.000	33.9412	18.3195	
55059	KUMB T4 33.000	33.9412	18.3195	
55067	DAKATA T1T2 33.000	30.045	16.62	out
55070	KANO II 33 33.000	71.6838	38.6908	
55076	BKUDU 33.000	10.015	5.54	out
55078	KATSINA T4 33.000	6.7882	3.6639	
55090	BICHI_33 33.000	21.251	13.7	out
55092	KAZAURE 33 33.000	41.251	25.57	out
56000	FUNTUA 11 11.000	8.1256	4.3857	
56005	FUNTUA T2 11.000	6.7882	3.6639	
65061	GASHUWAT1A 33.000	27.153	14.6556	
65062	GASHUWA T2A 33.000	27.153	14.6556	
Total		708	382	

YOLA

Bus Numb	Bus Name	Pload (MW)	Qload (Mvar)	
65000	YOLA 33 33.000	17.2572	9.5511	
65004	BIU 33 33.000	3.1451	1.7425	
65009	POTISKUM 33 33.000	12.9429	7.1597	
65015	JALINGO 33B 33.000	16.86	9.3251	
65018	JALINGO 33A 33.000	14.3905	7.9617	
65019	NUMAN 33 33.000	3.4159	1.8884	
65020	DAMBOA 33 33.000	3.8437	2.129	
65021	MAIDUG T3 33.000	9.4915	5.9786	
65029	MUBI_33 33.000	10.3543	5.7307	
65030	SONG 33 33.000	10.3543	5.7307	
65031	GULAK 1 33.000	8.6286	4.7756	
65034	GOMBI_33 33.000	10.3543	5.7307	
65039	POTISK T2 33.000	12.9429	7.1597	
65040	BIU T2 33.000	12.9429	7.1597	
65041	MAID T2 33.000	9.4915	5.2495	
65042	MAID T1 33.000	9.4915	5.2495	
65043	YOLA T1 33.000	8.6286	4.7756	
65044	MAID T4 33.000	9.4915	5.2495	
65045	DAMATUR 33 33.000	10.3543	5.7307	
65047	MAYEBELWO 1 33.000	8.6286	4.7756	
65051	WUKARI T1A 33.000	20	10	out
65080	BIU_33 33.000	18.7028	9.0583	
66000	YOLA 11 11.000	4.637	2.5664	
66006	MAIDUG 11 11.000	3.6499	2.0196	
Total		230	127	

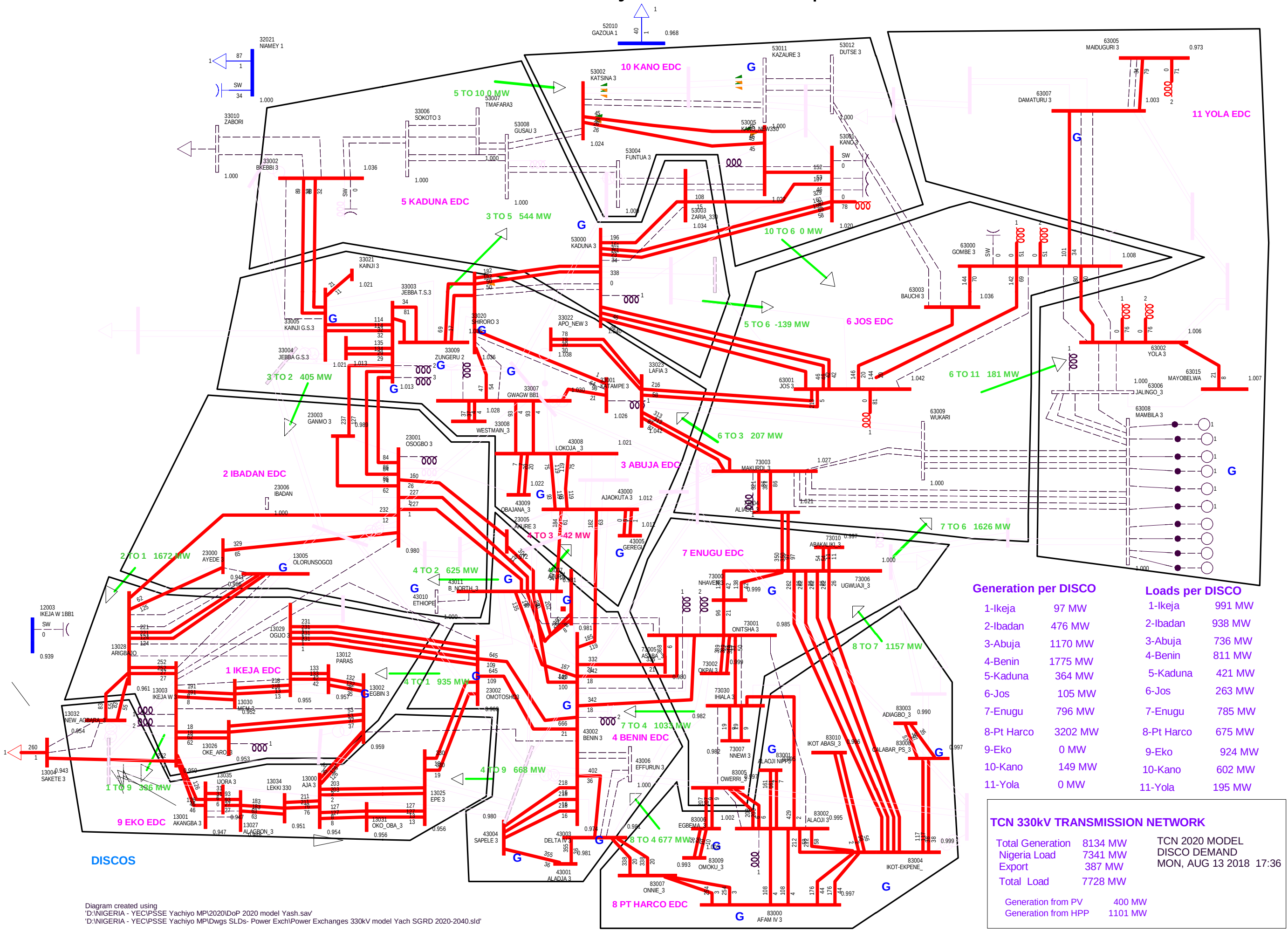
Annex 7.4.6 – Dry season peak 2020

7.4.6-1



Annex 7.4.7 – Dry season Off-peak 2020

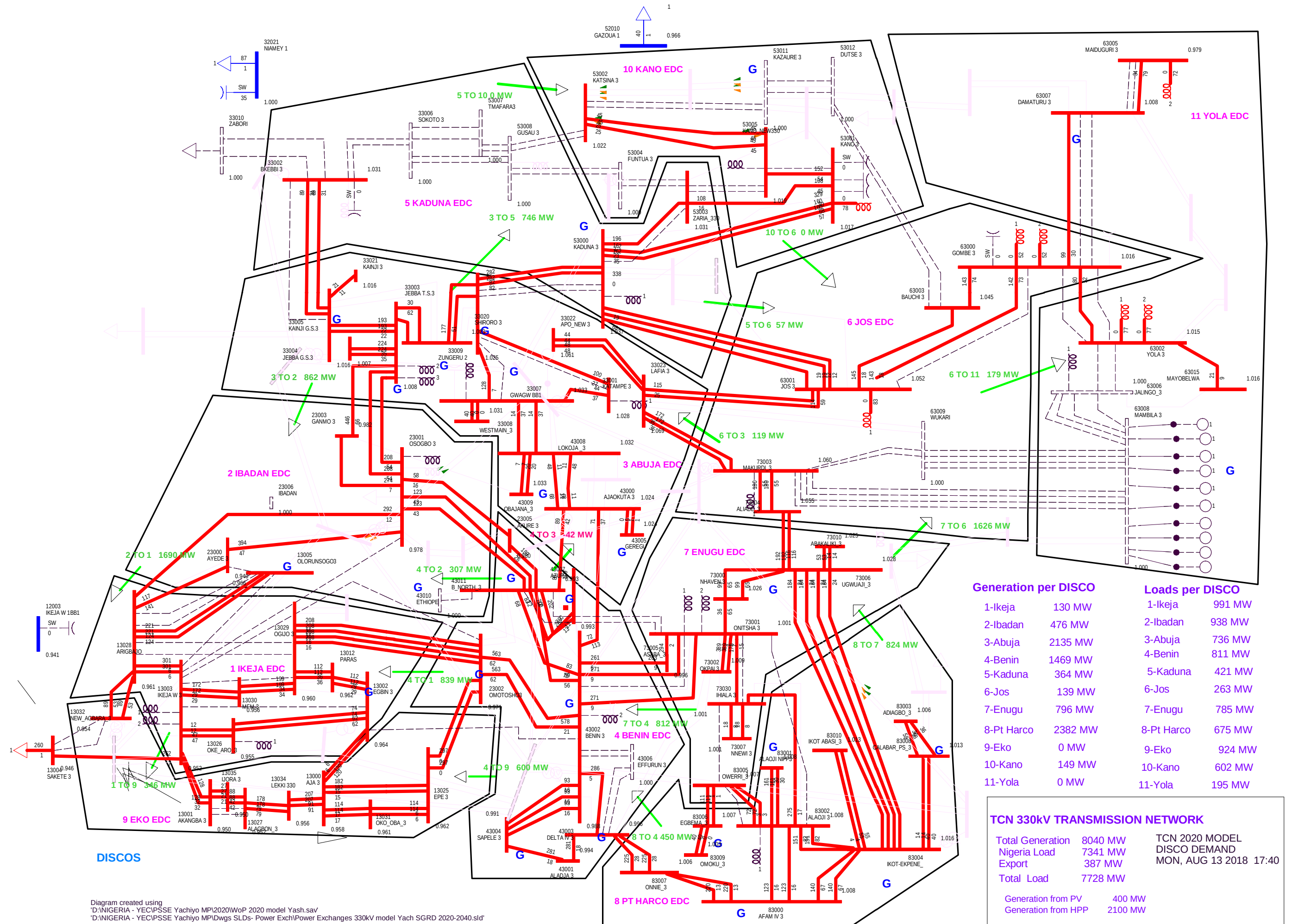
7.4.7-1



7.4.8-1



Annex 7.4.9 – Wet season Off-peak 2020



Annex 7.4.10 Results of fault level analysis

Table 1: IEC 60909 Fault analysis results, Year 2020

Bus no	Bus name	kV	AMP		Bus no	Bus name	kV	AMP
43002	BENIN 3	330	30340		82000	AFAM 1-2-3	132	29882
83000	AFAM IV 3	330	29491		82002	AFAM IV	132	29767
83002	ALAOJI 3	330	28225		12003	IKEJA W 1BB1	132	28156
83001	ALAOJI NIPP3	330	27810		82019	OMOKU 1	132	26663
43011	B_NORTH_3	330	27132		12042	OKE_ARO_1	132	25624
43007	AZURA	330	27130		82007	PHCT MAIN1	132	25428
83004	IKOT-EKPENE_	330	23898		12019	ALIMOSHO 1	132	24521
43004	SAPELE 3	330	21502		82001	ALAOJI 1	132	23829
13002	EGBIN 3	330	21200		82014	RIVERS_IPP	132	23801
73001	ONITSHA 3	330	21166		82036	RUMUSOI 1	132	23713
13003	IKEJA W 3	330	20102		12024	IJORA 1	132	23067
83007	ONNIE_3	330	19953		12017	ALAGBON 1	132	21938
23002	OMOTOSHO3	330	19850		12046	OGIJO 1	132	21543
13000	AJA 3	330	19815		82040	TRAMADI	132	21477
13029	OGIJO 3	330	19066		12032	OGBA 1	132	21346
83008	CALABAR_PS_3	330	18985		12018	ALAUSA 1	132	20836
13034	LEKKI 330	330	18936		12001	AKANGBA 1	132	20786
13001	AKANGBA 3	330	18516		82013	ONNE 1	132	19440
13028	ARIGBAJO	330	18397		12025	IKORODU	132	19231
13026	OKE_ARO_3	330	18356		12016	AKOKA 1	132	18854
13035	IJORA 3	330	18347		12020	ITIRE 1	132	18796
13027	ALAGBON_3	330	18287		82018	AHOADA 1	132	18431
13030	MFM 3	330	18197		12021	AMUWO ODOFIN	132	18292
13012	PARAS	330	18189		12015	AGBARA 1	132	18129
13005	OLORUNSOGO3	330	17529		12004	AKANGBA BBII	132	17554
13025	EPE 3	330	17098		82028	OWERRI 1	132	17553
73002	OKPAI 3	330	16808		42004	BENIN 1	132	17544
13031	OKO_OBA_3	330	16131		12034	OWOROSOKI 1	132	17382
73006	UGWUAJI_3	330	15979		12055	ODOGUNYAN 1	132	17276
83005	OWERRI_3	330	15921		12022	APAPA RD 1	132	17246
23001	OSOGBO 3	330	15859		12027	ISOLO 1	132	16967
43003	DELTA IV 3	330	15483		12026	ILLUPEJU 1	132	16935
73000	NHAVEN 3	330	15443		12029	OJO 1	132	16768
33003	JEBBA T.S.3	330	14520		12056	AKANGB 1	132	16542
43000	AJAKUTA 3	330	14364		22027	SHAGAMU 1	132	16370
43005	GEREGU	330	14304		12031	MARYLAND1	132	16361
33009	ZUNGERU	330	13671		12002	EGBIN 1	132	16115
33020	SHIRORO 3	330	13662		82031	IKOT_ABASI	132	16103
33004	JEBBA G.S.3	330	13650		82026	ABA 1	132	16042
13032	NEW_AGBARA_3	330	12745		32002	KATAMPE 1	132	16021
43001	ALADJA 3	330	12680		42003	DELTA 1	132	15604

73005	ASABA_3	330	12229		82034	ALSCON 1	132	15503
83006	EGBEMA_3	330	12212		32006	APO 1	132	15423
73030	IHIALA 3	330	12083		12023	EJIGBO 1	132	15404
83003	ADIAGBO_3	330	11845		72002	NHAVEN 1	132	15395
23000	AYEDE 3	330	11425		12052	NEW_AGBARA_1	132	15252
43008	LOKOJA_3	330	11385		42002	UGHELLI 1	132	15042
23003	GANMO 3	330	11214		32050	APO_NEW	132	14997
83010	IKOT ABASI_3	330	11167		22000	AYEDE 1	132	14881
73007	NNEWI 3	330	11111		82008	PHCT TOWN1 1	132	14358
33005	KAINJI G.S.3	330	10486		82009	PHCT TOWN2 1	132	14358
33021	KAINJI 3	330	10328		12048	REDEEM 1	132	14040
33007	GWAGW BB1	330	9409		22001	OSOGBO 1	132	13928
83009	OMOKU_3	330	9369		32020	NAT STADIUM1	132	13774
53000	KADUNA 3	330	9185		12037	PARAS_1	132	13675
73004	ALIAD_3	330	8515		42000	AJAOKUTA 1	132	13493
73010	ABAKALIKI_3	330	8342		32027	WESTMAIN_1	132	13440
43009	OBAJANA_3	330	8100		12057	IKEJAW 1BIII	132	13377
23005	AKURE 3	330	8000		32051	KUJE 1	132	13371
73003	MAKURDI_3	330	8000		12033	OTTA 1	132	13227
33023	LAFIA 3	330	7683		22034	ISHARA	132	13217
33008	WESTMAIN_3	330	7666		82039	IKOT_EKPENE	132	13052
33001	KATAMPE 3	330	7279		22012	JERICH0 1	132	13013
63001	JOS 3	330	7001		32009	GARKI NODE 1	132	13003
13004	SAKETE 3	330	6211		32001	SHIRORO 1	132	12819
33022	APO_NEW 3	330	5601		12005	IKJW T1BT2B	132	12779
53003	ZARIA_330	330	5518		72012	NNEWI 1	132	12577
53001	KANO 3	330	4826		22033	AJEBO	132	12569
53005	KANO_NEW330	330	4270		32008	CENTRAL AREA	132	12566
63003	BAUCHI 3	330	3635		72036	IHIALA 1	132	12436
63000	GOMBE 3	330	3221		12035	AYOBO 1	132	12396
33002	BKEBBI 3	330	3040		12041	SHAG INDUSTR	132	12393
53002	KATSINA 3	330	2824		32052	LOKOGOMA 1	132	12316
63007	DAMATURU 3	330	1829		72032	UGWUAI_1	132	12007
63002	YOLA 3	330	1595		12036	SHAGAMU CEME	132	11794
63015	MAYOBELWA	330	1569		32053	GWARIMPA 1	132	11543
63005	MAIDUGURI 3	330	1142		32026	GWAGWALADA_1	132	11419
72006	9TH MILE 1	132	11233		32017	SULEJA 1	132	5243
82024	IBOM IPP 1	132	11229		52019	WALALAMBE 1	132	5232
22006	IBADAN NORTH	132	11145		62025	KAFANCHAN 1	132	5209
82033	ADIAGBO_1	132	11111		52012	KATSINA 1	132	5191
82003	ALAOJI T4A	132	10706		72009	AWKA 1	132	5183
82038	EKPARAKWA 1	132	10541		72023	ASABA 1	132	5136
72000	ONITSHA BBI	132	10451		42018	ASCO 132	132	5126
72014	OBA 1	132	10425		82021	IKOM 1	132	5117
32004	KUBWA	132	10382		42016	LOKOJA_1	132	5073

72031	MPU_1	132	10149		72003	AGU-AWKA	132	5060
82004	CALABAR 1	132	10139		22022	GANMO T1 BB	132	5060
62001	JOS 1	132	10100		22013	OFFA 1	132	5015
42015	AMUKPE 1	132	9992		52007	DAN AGUNDI 1	132	5006
82017	YENAGOA 1	132	9978		32035	KAINJI 1 1	132	4981
72016	ABAKALIKI 1	132	9917		32005	AKWANGA 1	132	4895
82022	GBARAIN UBIE	132	9843		52034	KAD BB II	132	4865
82032	CALABAR_EP	132	9803		52006	DAKATA 1	132	4811
22002	OSOGBO 4T2	132	9748		52031	KUMB T2A BB	132	4790
12054	ARIGBAJO 1	132	9731		32033	B/KEBBI II	132	4709
12047	MFM 1	132	9709		12038	OLD ABEOKUTA	132	4675
12043	OLORUNSOGO 1	132	9630		32012	KEFFI 1	132	4623
72007	APIR 1	132	9570		62024	MAKERI 1	132	4546
72025	MAKURDI 1	132	9570		52032	KUMB T4A BB	132	4501
32011	KARU 1	132	9452		82025	OPOROMA_1	132	4486
22029	ILESHA TEE1	132	9377		32036	NEW BUSSA 1	132	4470
22032	EDE_1	132	9270		72034	AMMASOMA_1	132	4322
72033	NENWE_1	132	9153		72018	OTURKPO 1	132	4263
72011	NKALAGU 1	132	8918		22018	OGBOMOSO 1	132	4168
12008	EGBIN BBII	132	8900		52025	KURFI_1	132	4153
22005	AKURE 1	132	8886		72019	YANDEV 1	132	4081
72037	ALIADDE 1	132	8781		72005	IFITEDUNU	132	3963
82035	ELELENWO 1	132	8664		52029	KANO_NEW132	132	3914
82006	ITU 1	132	8610		72051	KWALE_1	132	3888
72021	IDEATO 1	132	8584		22028	IJEBU ODE 1	132	3823
52033	MANDO T4A BB	132	8539		42009	OKENE 1	132	3822
52035	KUDENDA 1	132	8494		72035	AMASIRI_1	132	3689
82016	ABOH MBAISE	132	8318		32003	BKEBBI 1	132	3678
32029	LAFIA 1	132	8168		52013	TAMBURAWA 1	132	3639
12030	LEKKI 1	132	8143		62003	YOLA 1	132	3605
12014	PAPALANTO 1	132	8047		32028	KWOI_1	132	3451
82010	UYO 1	132	7668		62028	MAYEBELWO 1	132	3412
52015	ZARIA 1	132	7656		42008	IRRUA 1	132	3345
82005	EKET 1	132	7489		42005	B_NORTH 1	132	3341
42025	OGHARA	132	7137		12039	NEW ABEOKUTA	132	3338
42017	OBAJANA_1	132	7021		22021	SHONGO_1	132	3325
22008	IWO 1	132	7008		52026	DANBATTI_1	132	3300
72004	ONITSHA BBII	132	7000		42010	UKPILLA 1	132	3272
72030	ORLU_1	132	6947		82020	OBUDU 1	132	3249
72017	OKIGWE 1	132	6902		62013	T_JUNCTION 1	132	3199
62033	QUAINT PV	132	6809		62018	NUMAN 1	132	3067
22003	GANMO TR2 BB	132	6436		62026	DADINKOWA 1	132	3065
52001	KANO 1	132	6324		72041	UKUBIE_1	132	2980
62000	GOMBE 1	132	6251		72026	KASHIMBILLA	132	2964
42014	EFFURUN 1	132	6230		52023	DUTSIN_MA_1	132	2960
52002	KADUNA 1	132	6135		72024	AGBOR 1	132	2955

52003	KADUNA TOWN	132	6061		22004	ADO EKITI 1	132	2932
22024	OMOTOSHO 2	132	5969		62035	WUKARI 1	132	2926
82027	UMUAHIA 1	132	5951		42006	OKADA	132	2886
52030	KUMB T1A BB	132	5883		62022	DAMATURU_1	132	2862
22007	IFE 1	132	5878		52021	WUDIL 1	132	2839
22009	ILESHA 1	132	5850		72047	TAKUM 1	132	2820
72020	MBALANO 1	132	5716		42019	OKEAGBE_1	132	2779
32015	MINNA 1	132	5643		52009	DUTSE 1	132	2774
72013	NSUKKA 1	132	5583		32032	KACHIA_1	132	2753
22010	ILORIN 1	132	5574		52040	NOVA PV	132	2753
72001	ONITSHA 1	132	5526		52005	KANKIA 1	132	2752
12000	AJA 132	132	5487		72022	OHAFIA 1	132	2750
12006	AJA 132BBIII	132	5487		62020	JALINGO 1	132	2735
22014	OMOTOSHO 1	132	5487		72010	AYANGBA 1	132	2668
72015	OJI RIVER 1	132	5442		22017	ONDO2 1	132	2612
12044	AJA 132 BBII	132	5422		52017	DAURA 1	132	2587
72029	GCM 1	132	5392		32014	TEGINA 1	132	2535
72050	OKPAI PH2_1	132	5380		62008	BAUCHI 1	132	2447
32000	JEBBA 1	132	5275		82030	OGOJA 1	132	2393
52016	FUNTUA 1	132	2325		62029	GASHUWA 1	132	1785
22015	OMUARAN 1	132	2316		62015	GOMBI 1	132	1754
12040	IGBORA 1	132	2303		52010	GAZOUA 1	132	1735
52027	KANKARA_1	132	2297		62006	ASHAKA 1	132	1727
62010	PANKSHIN 1	132	2273		62019	DAMBOA 1	132	1725
72039	EKAWE_1	132	2273		52024	MALUMFASHI_1	132	1630
62016	SONG 1	132	2233		32013	KONTAGORA 1	132	1626
22016	ONDO1 1	132	2203		32007	BIDA 1	132	1618
62023	NEW MAIDUG 1	132	2202		56023	NOVA SCOT PV	132	1617
52008	AZARE 1	132	2095		32016	SOKOTO 1	132	1533
22011	ISEYIN 1	132	2039		62012	SAVANNAH 1	132	1530
82029	OGOJA-GAKEM	132	2036		22020	EGBE_1	132	1477
52014	KWANAR DANGO	132	2034		62014	MUBI 1	132	1395
62021	MAIDUGURI 1	132	1990		52011	GUSAU 1	132	1395
22023	LANLATE 1	132	1969		52028	GAGARAWA_1	132	1374
52018	GURARA 1	132	1936		52022	HADEJIA 1	132	1348
72008	AROCHUKWU 1	132	1904		52004	TMAFARA 1	132	1293
62009	BIU 1	132	1900		32019	DOSSO	132	1118
62007	ASHAKA RNDAB	132	1886		62027	GULAK 1	132	990
32041	KVKPOWER PV	132	1885		32025	YELWA_YAURI	132	956
22019	IGANGAN 1	132	1879		62011	POTISKUM 1	132	953
72038	IGBUMATORU_1	132	1837		32021	NIAMEY 1	132	643

Table 2: IEC 60909 Fault analysis results, Year 2025

Bus no	Bus name	kV	AMP		Bus no	Bus name	kV	AMP
43007	AZURA	330	50597		12003	IKEJA W 1BB1	132	39371
43011	B_NORTH_3	330	50597		12019	ALIMOSHO 1	132	35753
43010	ETHIOPE	330	50179		12042	OKE_ARO_1	132	34537
43002	BENIN 3	330	47283		82000	AFAM 1-2-3	132	31848
23002	OMOTOSHO3	330	44147		82002	AFAM IV	132	31718
13002	EGBIN 3	330	43618		12046	OGIJO 1	132	30364
13000	AJA 3	330	40349		12024	IJORA 1	132	29479
13029	OGIJO 3	330	39686		12032	OGBA 1	132	29355
83002	ALAOJI 3	330	39592		12018	ALAUZA 1	132	28283
83001	ALAOJI NIPP3	330	38767		12025	IKORODU	132	27973
83004	IKOT-EKPENE_	330	37100		12017	ALAGBON 1	132	27715
13025	EPE 3	330	36777		12002	EGBIN 1	132	27436
13003	IKEJA W 3	330	36579		82019	OMOKU 1	132	27397
83000	AFAM IV 3	330	36139		82007	PHCT MAIN1	132	26729
13034	LEKKI 330	330	36054		82001	ALAOJI 1	132	26719
43000	AJAKUTA 3	330	35663		22027	SHAGAMU 1	132	26286
13012	PARAS	330	34922		82014	RIVERS_IPP	132	25941
13028	ARIGBAJO	330	34677		12001	AKANGBA 1	132	25810
43005	GEREGU	330	34447		82036	RUMUSOI 1	132	23838
13027	ALAGBON_3	330	32641		12055	ODOGUNYAN 1	132	23001
13001	AKANGBA 3	330	32506		12016	AKOKA 1	132	22949
13005	OLORUNSOGO3	330	32372		12020	ITIRE 1	132	22799
13030	MFM 3	330	32278		32002	KATAMPE 1	132	22280
13035	IJORA 3	330	32257		82040	TRAMADI	132	22063
13026	OKE_ARO_3	330	31730		12021	AMUWO ODOFIN	132	21872
73001	ONITSHA 3	330	31637		12015	AGBARA 1	132	21679
13031	OKO_OBA_3	330	30935		82031	IKOT_ABASI	132	21576
43004	SAPELE 3	330	30269		12026	ILLUPEJU 1	132	21052
73002	OKPAI 3	330	27520		12004	AKANGBA BBII	132	20849
23010	SHAGAMU	330	26563		12034	OWOROSOKI 1	132	20808
43012	ZUMA	330	26534		82034	ALSCON 1	132	20644
43003	DELTA IV 3	330	26218		12031	MARYLAND1	132	20485
33007	GWAGW BB1	330	25749		12022	APAPA RD 1	132	20396
83008	CALABAR_PS_3	330	25610		82018	AHOADA 1	132	20386
73030	IHIALA 3	330	24252		32006	APO 1	132	20348
23001	OSOGBO 3	330	23815		12027	ISOLO 1	132	20162
83007	ONNIE_3	330	23261		42004	BENIN 1	132	20121

Bus no	Bus name	kV	AMP		Bus no	Bus name	kV	AMP
33020	SHIRORO 3	330	22940		42000	AJAOKUTA 1	132	20121
33009	ZUNGERU	330	22098		82013	ONNE 1	132	20009
83005	OWERRI_3	330	21595		12029	OJO 1	132	19707
23000	AYEDE 3	330	21346		22000	AYEDE 1	132	19640
43008	LOKOJA_3	330	21181		12056	AKANGB 1	132	19428
73007	NNEWI 3	330	20755		32050	APO_NEW	132	19199
13032	NEW_AGBARA_3	330	20000		82028	OWERRI 1	132	19182
73006	UGWUAJI_3	330	19860		12033	OTTA 1	132	18753
33003	JEBBA T.S.3	330	19540		82026	ABA 1	132	18370
73000	NHAVEN 3	330	18969		32020	NAT STADIUM1	132	18251
73003	MAKURDI_3	330	18857		32027	WESTMAIN_1	132	18002
33004	JEBBA G.S.3	330	18111		12023	EJIGBO 1	132	17974
53000	KADUNA 3	330	17937		12052	NEW_AGBARA_1	132	17949
33005	KAINJI G.S.3	330	17031		32051	KUJE 1	132	17867
33021	KAINJI 3	330	16633		22001	OSOGBO 1	132	17560
43001	ALADJA 3	330	16543		22034	ISHARA	132	17459
83006	EGBEMA_3	330	16039		12057	IKEJAW 1BIII	132	17396
83010	IKOT ABASI_3	330	15935		12048	REDEEM 1	132	17257
33008	WESTMAIN_3	330	15134		12037	PARAS_1	132	17253
73004	ALIADDE_3	330	14981		32009	GARKI NODE 1	132	16839
23003	GANMO 3	330	14163		82024	IBOM IPP 1	132	16787
83003	ADIAGBO_3	330	14161		32004	KUBWA	132	16770
73005	ASABA_3	330	14085		72002	NHAVEN 1	132	16660
53020	MILLENIUUM	330	13492		12030	LEKKI 1	132	16457
43009	OBAJANA_3	330	12749		12041	SHAG INDUSTR	132	16303
33023	LAFIA 3	330	11974		32008	CENTRAL AREA	132	16110
13004	SAKETE 3	330	11801		22033	AJEBO	132	15800
53004	FUNTUA 3	330	11281		32001	SHIRORO 1	132	15612
53003	ZARIA_330	330	11056		42003	DELTA 1	132	15393
83009	OMOKU_3	330	10994		82009	PHCT TOWN2 1	132	15125
33001	KATAMPE 3	330	10948		32026	GWAGWALADA_1	132	15058
63001	JOS 3	330	10566		32052	LOKOGOMA 1	132	15007
63009	WUKARI 3	330	9971		42002	UGHELLI 1	132	14845
63008	MAMBILA 3	330	9452		82008	PHCT TOWN1 1	132	14751
73010	ABAKALIKI_3	330	9290		12036	SHAGAMU CEME	132	14693
23005	AKURE 3	330	9176		12005	IKJW T1BT2B	132	14487
53008	GUSAU 3	330	9097		82039	IKOT_EKPENE	132	14442
53001	KANO 3	330	8022		32053	GWARIMPA 1	132	14410
33011	FARAKU	330	7791		22006	IBADAN NORTH	132	14144
53016	JOGANA	330	7393		12035	AYOBO 1	132	13996
53007	TMAFARA3	330	7088		12014	PAPALANTO 1	132	13331
33022	APO_NEW 3	330	6999		12054	ARIGBAJO 1	132	13075
53005	KANO_NEW330	330	6990		22012	JERICHO 1	132	12832
63006	JALINGO_3	330	6980		62001	JOS 1	132	12809
53002	KATSINA 3	330	6867		12050	OKO_OBA_1	132	12601

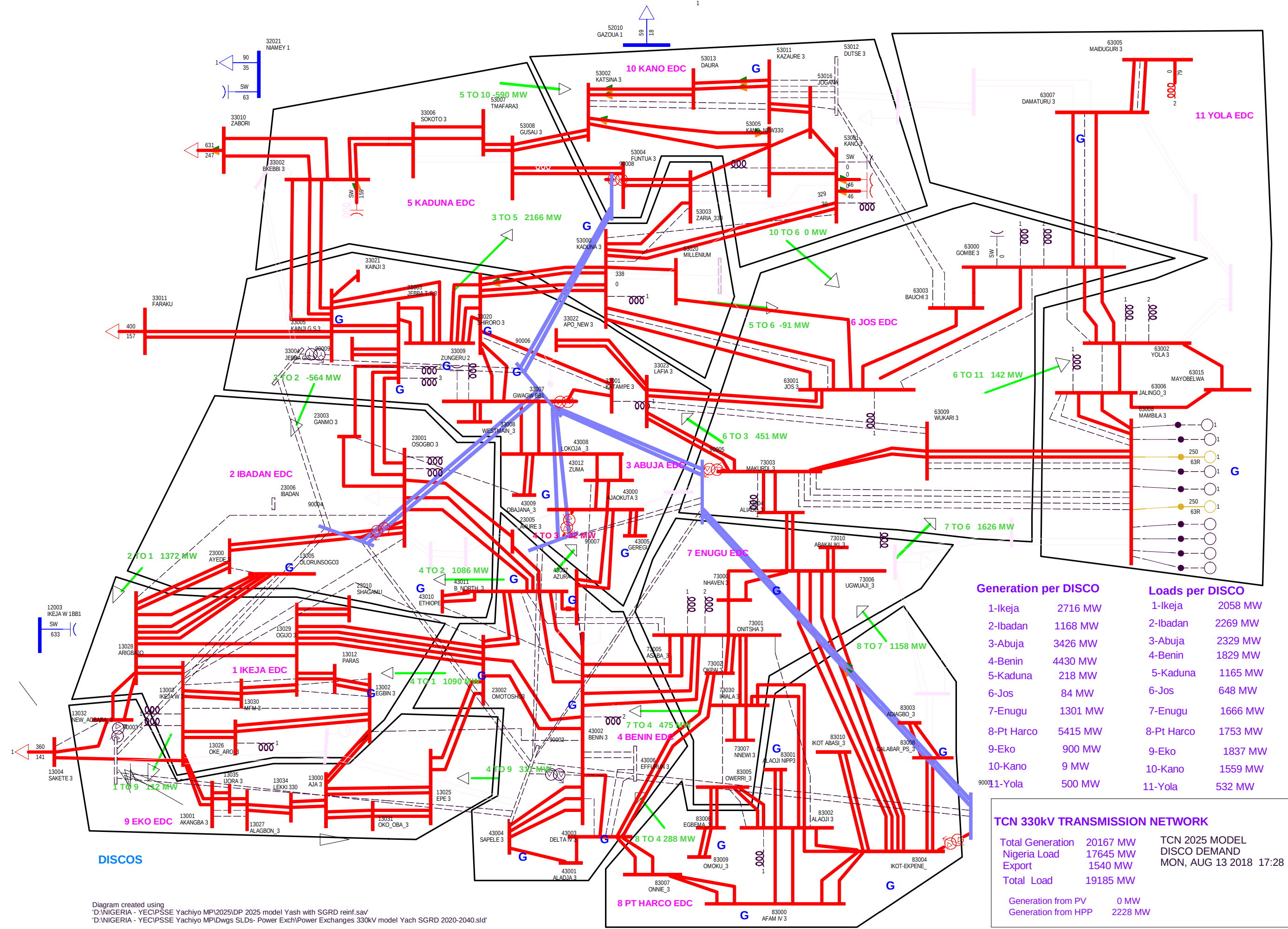
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53013	DAURA	330	6614		72012	NNEWI 1	132	12419
33006	SOKOTO 3	330	6216		82033	ADIAGBO_1	132	12300
63000	GOMBE 3	330	5541		22029	ILESHA TEE1	132	11895
63002	YOLA 3	330	5369		72006	9TH MILE 1	132	11890
63003	BAUCHI 3	330	5195		82038	EKPARAKWA 1	132	11760
63015	MAYOBELWA	330	4973		82003	ALAOJI T4A	132	11657
33010	ZABORI	330	4550		52015	ZARIA 1	132	11606
63007	DAMATURU 3	330	3471		52080	N_ZARIA_132	132	11606
63005	MAIDUGURI 3	330	2270		82004	CALABAR 1	132	11171
72037	ALIADDE 1	132	11107		72029	GCM 1	132	5485
32011	KARU 1	132	11023		32000	JEBBA 1	132	5479
42017	OBAJANA_1	132	11018		52034	KAD BB II	132	5424
72036	IHIALA 1	132	11006		62028	MAYEBELWO 1	132	5399
72032	UGWUAI_1	132	10966		72009	AWKA 1	132	5314
12049	EPE 1	132	10880		52032	KUMB T4A BB	132	5303
72000	ONITSHA BBI	132	10791		22018	OGBOMOSO 1	132	5296
22032	EDE_1	132	10732		32005	AKWANGA 1	132	5288
82006	ITU 1	132	10722		82021	IKOM 1	132	5248
82032	CALABAR_EP	132	10711		72031	MPU_1	132	5245
12043	OLORUNSOGO 1	132	10708		72003	AGU-AWKA	132	5181
12047	MFM 1	132	10705		62024	MAKERI 1	132	5021
42015	AMUKPE 1	132	10654		32012	KEFFI 1	132	4939
22002	OSOGBO 4T2	132	10635		62046	GANYE 132	132	4920
72014	OBA 1	132	10557		62045	JADA 132	132	4829
52016	FUNTUA 1	132	10487		72018	OTURKPO 1	132	4613
72016	ABAKALIKI 1	132	10423		72022	OHAFIA 1	132	4603
62035	WUKARI 1	132	10272		62023	NEW MAIDUG 1	132	4589
42016	LOKOJA_1	132	10012		72008	AROCHUKWU 1	132	4578
42009	OKENE 1	132	9952		32014	TEGINA 1	132	4507
12008	EGBIN BBII	132	9740		32003	BKEBBI 1	132	4506
22003	GANMO TR2 BB	132	9628		72047	TAKUM 1	132	4468
52011	GUSAU 1	132	9620		22020	EGBE_1	132	4435
62000	GOMBE 1	132	9491		82025	OPOROMA_1	132	4353
32029	LAFIA 1	132	9487		62016	SONG 1	132	4345
82017	YENAGOA 1	132	9482		62013	T_JUNCTION 1	132	4329
72011	NKALAGU 1	132	9324		32071	FAKUN-SARKI	132	4175
82022	GBARAIN UBIE	132	9234		52013	TAMBURAWA 1	132	4157
52012	KATSINA 1	132	9195		22015	OMUARAN 1	132	4127
82010	UYO 1	132	9186		62047	BUNUYADI	132	4125
22005	AKURE 1	132	9150		32041	KVKPOWER PV	132	4119
52001	KANO 1	132	9145		72005	IFITEDUNU	132	4064
72023	ASABA 1	132	9144		22016	ONDO1 1	132	4060

Bus no	Bus name	kV	AMP		Bus no	Bus name	kV	AMP
82005	EKET 1	132	9087		72051	KWALE_1	132	4033
82035	ELELENWO 1	132	8927		22021	SHONGO_1	132	4003
32017	SULEJA 1	132	8858		62021	MAIDUGURI 1	132	3992
12038	OLD ABEOKUTA	132	8824		12040	IGBORA 1	132	3972
52004	TMAFARA 1	132	8818		62030	NSCP PV	132	3943
22010	ILORIN 1	132	8736		72024	AGBOR 1	132	3935
72021	IDEATO 1	132	8731		52023	DUTSIN_MA_1	132	3932
22022	GANMO T1 BB	132	8701		62026	DADINKOWA 1	132	3783
52033	MANDO T4A BB	132	8691		72035	AMASIRI_1	132	3756
82016	ABOH MBAISE	132	8665		62019	DAMBOA 1	132	3676
22008	IWO 1	132	8608		62009	BIU 1	132	3641
62003	YOLA 1	132	8582		62015	GOMBI 1	132	3635
12039	NEW ABEOKUTA	132	8525		32028	KWOI_1	132	3624
52017	DAURA 1	132	8421		72034	AMMASOMA_1	132	3515
52042	KAZAURE 1	132	8394		22011	ISEYIN 1	132	3510
52002	KADUNA 1	132	8374		62014	MUBI 1	132	3467
12051	EPZ_1	132	8366		72026	KASHIMBILLA	132	3446
52035	KUDENDA 1	132	8204		52040	NOVA PV	132	3307
32016	SOKOTO 1	132	8090		52005	KANKIA 1	132	3306
22007	IFE 1	132	8033		62048	CHIBOK	132	3303
52062	MILLEN 132	132	7965		82020	OBUDU 1	132	3301
62033	QUAINT PV	132	7939		62043	BAMA 132	132	3283
42010	UKPILLA 1	132	7732		62039	KWAYA KUSAR	132	3279
62008	BAUCHI 1	132	7709		62049	UBA	132	3275
32033	B/KEBBI II	132	7689		42005	B_NORTH 1	132	3262
22024	OMOTOSHO 2	132	7653		62031	CT COSMO PV	132	3235
52007	DAN AGUNDI 1	132	7651		42019	OKEAGBE_1	132	3225
32015	MINNA 1	132	7553		52021	WUDIL 1	132	3152
42018	ASCO 132	132	7512		52009	DUTSE 1	132	3092
42008	IRRUA 1	132	7406		22023	LANLATE 1	132	3075
42025	OGHARA	132	7406		22004	ADO EKITI 1	132	2959
52036	JOGANA	132	7405		32032	KACHIA_1	132	2862
52030	KUMB T1A BB	132	7381		22019	IGANGAN 1	132	2860
82027	UMUAHIA 1	132	7320		52027	KANKARA_1	132	2841
72004	ONITSHA BBII	132	7270		42006	OKADA	132	2827
52029	KANO_NEW132	132	7238		62044	GWOZA 132	132	2808
22009	ILESHA 1	132	7234		62007	ASHAKA RNDAB	132	2770
22028	IJEBU ODE 1	132	7225		72010	AYANGBA 1	132	2703
42023	AUCHI_1	132	7200		62027	GULAK 1	132	2692
12053	BADAGRY_1	132	7195		72041	UKUBIE_1	132	2573
52061	RIGASA_132	132	7192		62029	GASHUWA 1	132	2571
72017	OKIGWE 1	132	7186		32037	KAIMA 1	132	2540
22014	OMOTOSHO 1	132	7113		62011	POTISKUM 1	132	2505
12006	AJA 132BBIII	132	7046		62006	ASHAKA 1	132	2440
12044	AJA 132 BBII	132	6954		82030	OGOJA 1	132	2421

Bus no	Bus name	kV	AMP		Bus no	Bus name	kV	AMP
22013	OFFA 1	132	6849		62010	PANKSHIN 1	132	2385
52003	KADUNA TOWN	132	6836		62042	DIKWA 132	132	2354
52026	DANBATTA_1	132	6770		62040	MONGUNO 132	132	2323
52060	JAJI_132	132	6702		62041	MARTE 132	132	2279
32070	LAMBATA	132	6650		52008	AZARE 1	132	2267
72030	ORLU_1	132	6486		32013	KONTAGORA 1	132	2262
52019	WALALAMBE 1	132	6420		52044	O REN SOL PV	132	2239
52025	KURFI_1	132	6371		32030	BIRNIN GWARI	132	2213
32035	KAINJI 1 1	132	6298		52014	KWANAR DANGO	132	2183
72020	MBALANO 1	132	6280		52028	GAGARAWA_1	132	2166
52039	EN AFRIC PV	132	6274		82029	OGOJA-GAKEM	132	2056
42014	EFFURUN 1	132	6192		52022	HADEJIA 1	132	2035
72033	NENWE_1	132	6159		72039	EKAWE_1	132	2028
62022	DAMATURU_1	132	6091		52010	GAZOUA 1	132	2018
62018	NUMAN 1	132	6068		52024	MALUMFASHI_1	132	1885
72019	YANDEV 1	132	5887		52020	BIRNIN KUDU	132	1840
52031	KUMB T2A BB	132	5867		52018	GURARA 1	132	1819
62025	KAFANCHAN 1	132	5843		32038	KISHI 1	132	1810
52006	DAKATA 1	132	5824		32007	BIDA 1	132	1745
12000	AJA 132	132	5814		62012	SAVANNAH 1	132	1740
72013	NSUKKA 1	132	5740		56023	NOVA SCOT PV	132	1721
62020	JALINGO 1	132	5726		72038	IGBUMATORU_1	132	1674
72001	ONITSHA 1	132	5724		32025	YELWA_YAURI	132	1521
22017	ONDO2 1	132	5704		32019	DOSSO	132	1186
72050	OKPAI PH2_1	132	5662		62017	BALI 1	132	1135
72015	OJI RIVER 1	132	5580		32021	NIAMEY 1	132	665
32036	NEW BUSSA 1	132	5496					

Annex 7.5.1 – 330 kV transmission – 2025

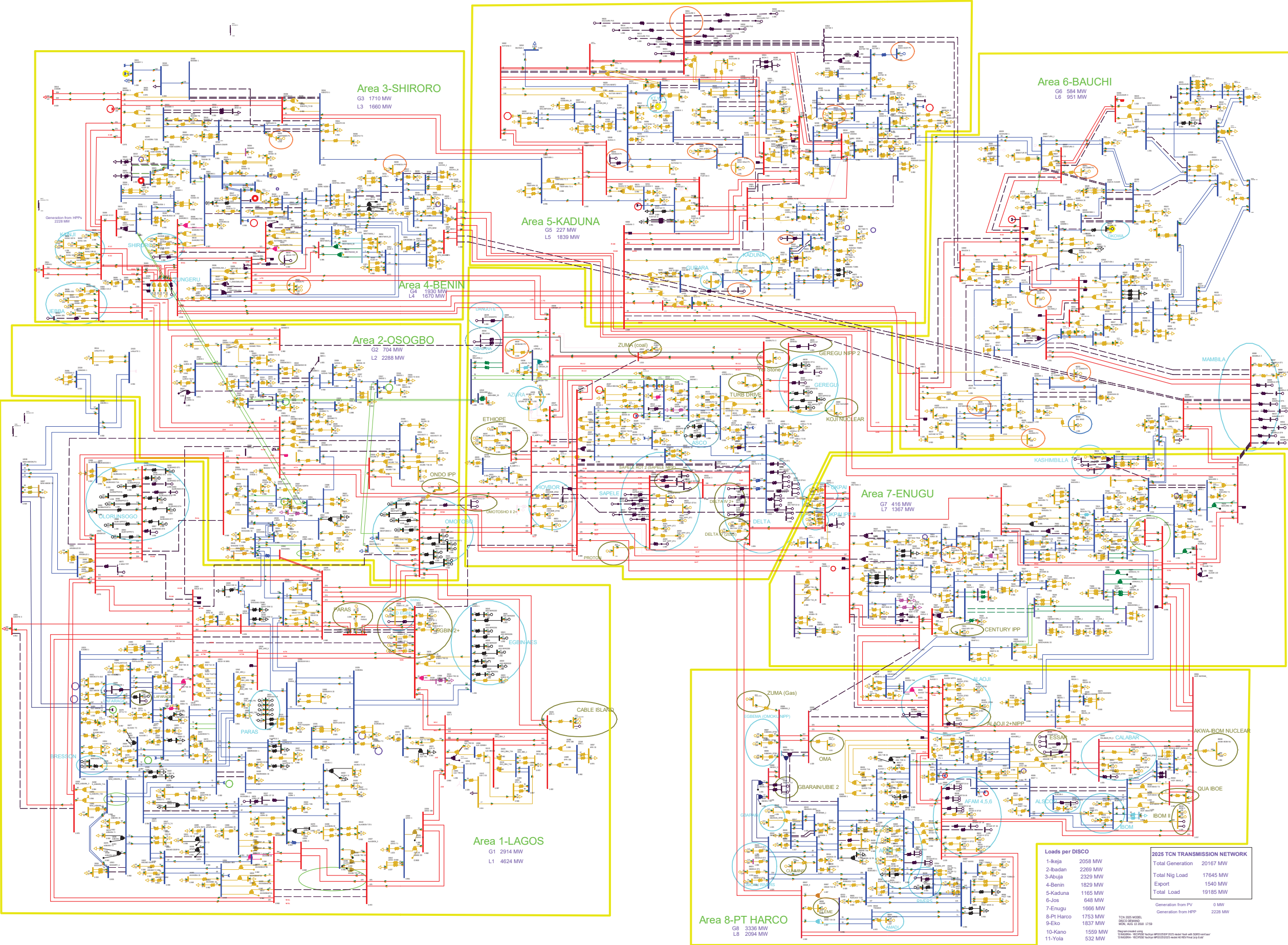
7.5.1-1



Generation per DISCO		Loads per DISCO	
1-Ikeja	2716 MW	1-Ikeja	2058 MW
2-Ibadan	1168 MW	2-Ibadan	2269 MW
3-Abuja	3426 MW	3-Abuja	2329 MW
4-Benin	4430 MW	4-Benin	1829 MW
5-Kaduna	218 MW	5-Kaduna	1165 MW
6-Jos	84 MW	6-Jos	648 MW
7-Enugu	1301 MW	7-Enugu	1666 MW
8-Pt Harco	5415 MW	8-Pt Harco	1753 MW
9-Eko	900 MW	9-Eko	1837 MW
10-Kano	9 MW	10-Kano	1559 MW
11-Yola	500 MW	11-Yola	532 MW

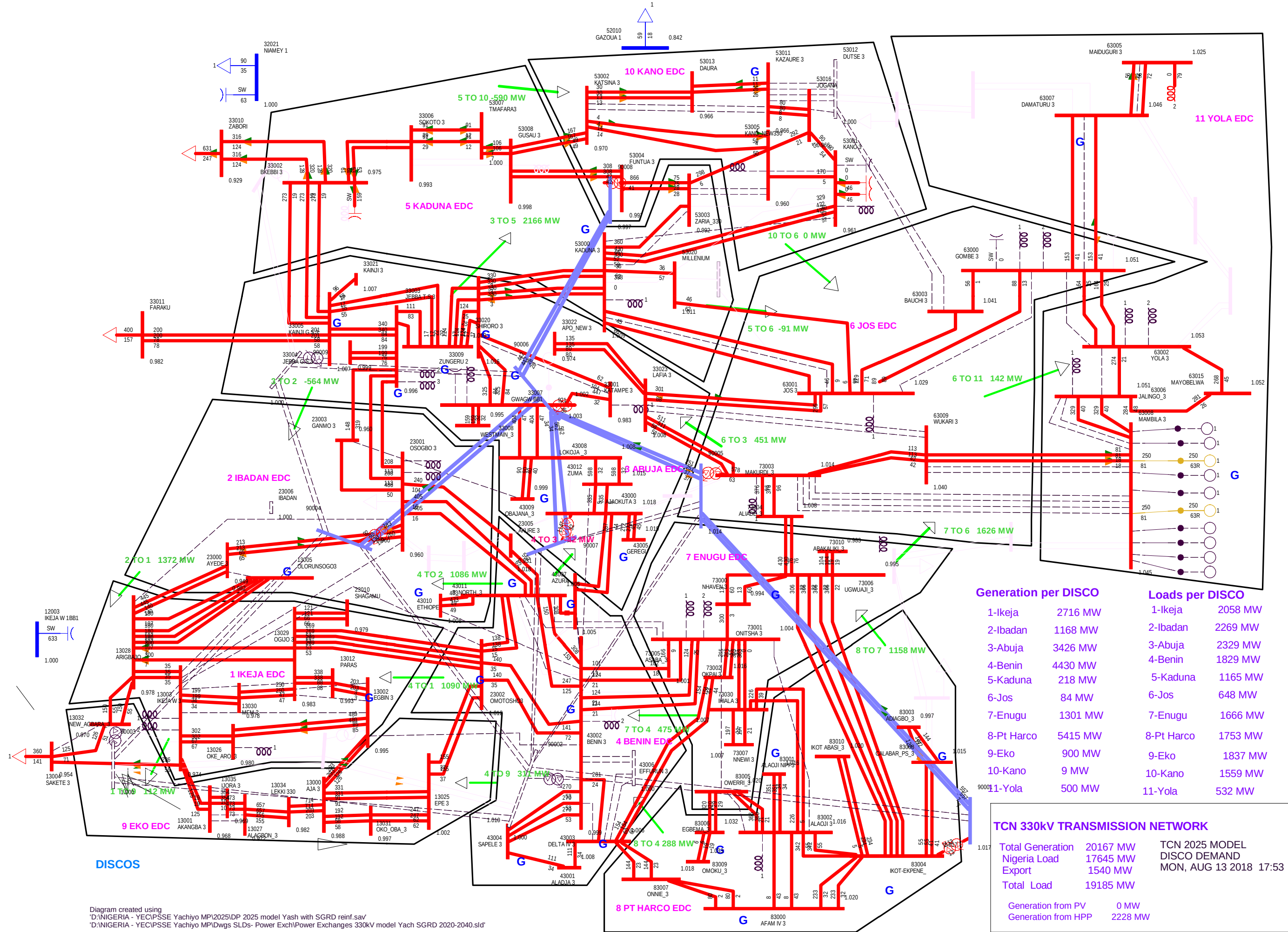
TCN 330kV TRANSMISSION NETWORK		
Total Generation	20167 MW	TCN 2025 MODEL DISCO DEMAND MON, AUG 13 2018 17:28
Nigeria Load	17645 MW	
Export	1540 MW	
Total Load	19185 MW	
Generation from PV	0 MW	
Generation from HPP	2228 MW	

Annex 7.5.2 SLD in PSSE for TCN transmission system-2025



Annex 7.5.3 Dry season Peak 2025

7.5.3-1

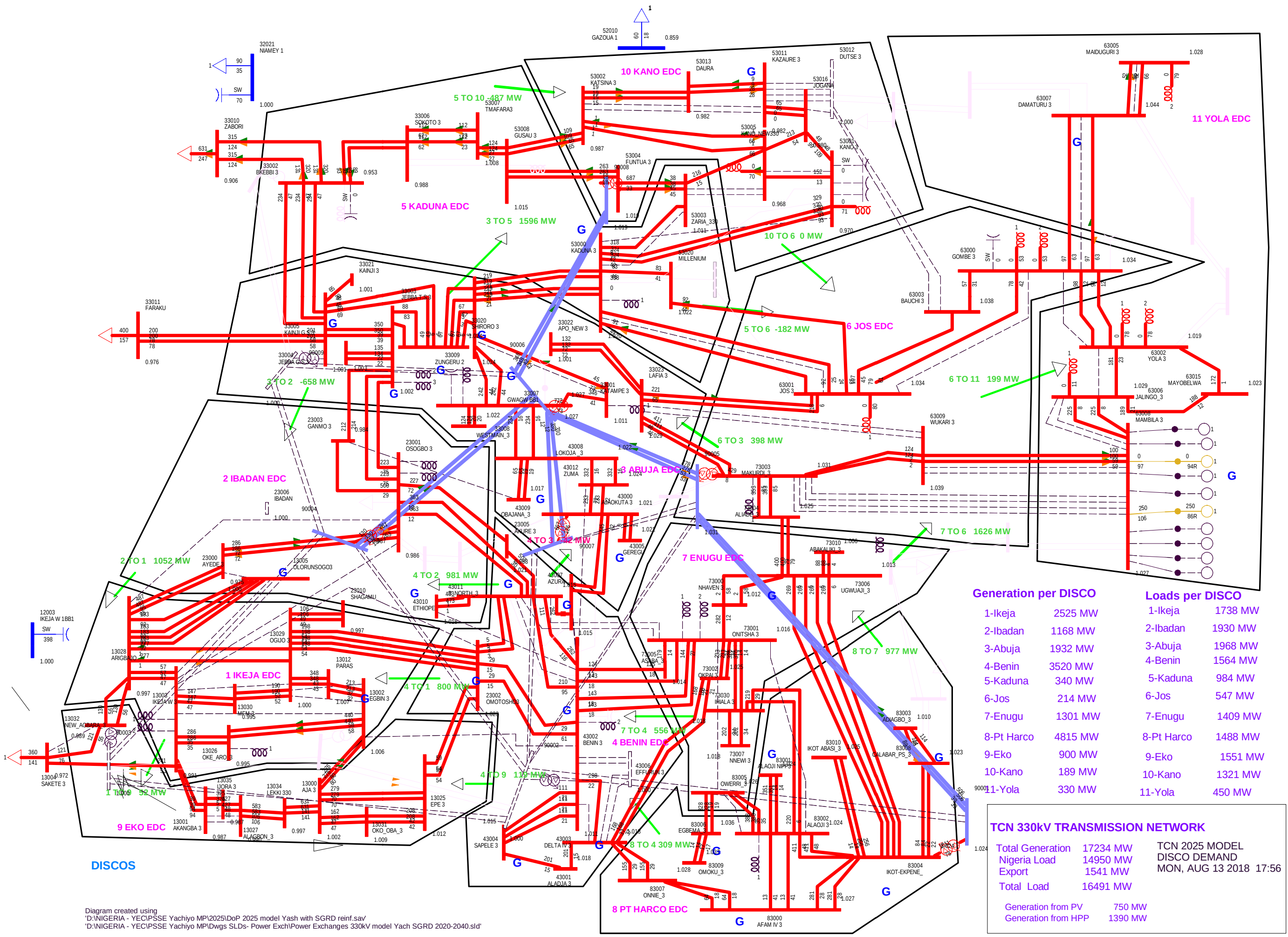


Generation per DISCO		Loads per DISCO	
1-Ikeja	2716 MW	1-Ikeja	2058 MW
2-Ibadan	1168 MW	2-Ibadan	2269 MW
3-Abuja	3426 MW	3-Abuja	2329 MW
4-Benin	4430 MW	4-Benin	1829 MW
5-Kaduna	218 MW	5-Kaduna	1165 MW
6-Jos	84 MW	6-Jos	648 MW
7-Enugu	1301 MW	7-Enugu	1666 MW
8-Pt Harco	5415 MW	8-Pt Harco	1753 MW
9-Eko	900 MW	9-Eko	1837 MW
10-Kano	9 MW	10-Kano	1559 MW
11-Yola	500 MW	11-Yola	532 MW

TCN 330kV TRANSMISSION NETWORK		
Total Generation	20167 MW	TCN 2025 MODEL DISCO DEMAND MON, AUG 13 2018 17:53
Nigeria Load	17645 MW	
Export	1540 MW	
Total Load	19185 MW	
Generation from PV	0 MW	
Generation from HPP	2228 MW	

Annex 7.5.4 Dry season Off-Peak 2025

7.5.4-1



Generation per DISCO		Loads per DISCO	
1-Ikeja	2525 MW	1-Ikeja	1738 MW
2-Ibadan	1168 MW	2-Ibadan	1930 MW
3-Abuja	1932 MW	3-Abuja	1968 MW
4-Benin	3520 MW	4-Benin	1564 MW
5-Kaduna	340 MW	5-Kaduna	984 MW
6-Jos	214 MW	6-Jos	547 MW
7-Enugu	1301 MW	7-Enugu	1409 MW
8-Pt Harco	4815 MW	8-Pt Harco	1488 MW
9-Eko	900 MW	9-Eko	1551 MW
10-Kano	189 MW	10-Kano	1321 MW
11-Yola	330 MW	11-Yola	450 MW

TCN 330kV TRANSMISSION NETWORK		
Total Generation	17234 MW	TCN 2025 MODEL DISCO DEMAND MON, AUG 13 2018 17:56
Nigeria Load	14950 MW	
Export	1541 MW	
Total Load	16491 MW	
Generation from PV	750 MW	
Generation from HPP	1390 MW	