



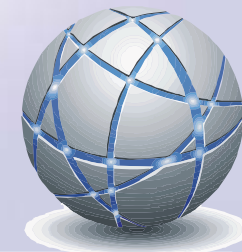
Electricity Coordinating Center Ltd
Elektroenergetski koordinacioni centar d.o.o.



TNA

general software presentation

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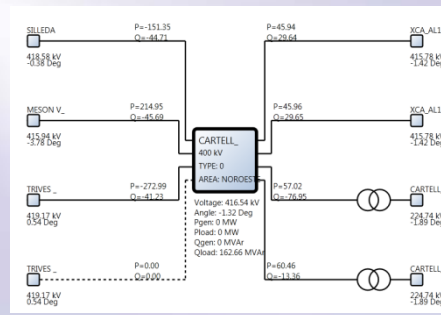


TNA - General

Transmission Network Analyzer in development since 2009, by EKC and SE DMS
TNA provides analytic and short-term planning functions, suitable for TSOs and RCCs

- ❖ Calculation of static load flow (AC, DC)
- ❖ Contingency analyses (n-1, n-x), Remedial Actions
- ❖ Automatic transmission capacity calculation: NTC, Flow-based (PTDF/RAM)
- ❖ Day Ahead Congestion Forecast (DACF) procedure, D2CF, IDCF
- ❖ Network models building, validation, merging, conversion (UCTE, RAW, CIM/CGMES)
- ❖ Sensitivity analyses (zonal, nodal PTDF, OTDF, PSDF, DCDF, PFC, FLD)
- ❖ Statistics (contingencies, losses)
- ❖ Short circuit analyses

TNA obtained CGMES format Conformity Attestation (gold), by ENTSO-E (2015)



CIM AC Power Flow

Scenario: v7 Espana

Type Of Result: Full Result

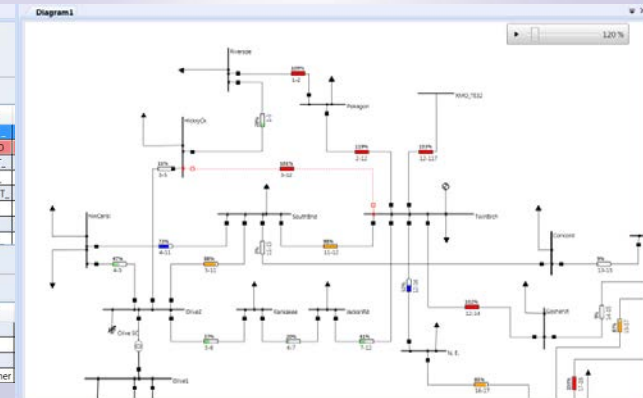
Areas: ☒ All

Voltage Levels: ☒ 70, ☒ 110, ☒ 115, ☒ 132, ☒ 135, ☒ 150, ☒ 154

Limits: Lines' Loading Coefficient [%] 100, Transformers' Loading Coefficient [%] 100, Voltage Limits

CIM Id	Name
588345c7-8882-e636-23ef-0425e83c33ee	AGUAYO
2a76363a-c02d-d795-7bc3-95c7830b0e21	APARECDO
b1c9d8f-6a5e-64e7-150e-841d9a8b196a	BOIMENT
41c2705-9a1f-dca2-4211-7795705768ba	CARTELL
14d8e0e1-92a4-6590-109f-57eeb4d64d3	COMPOST
0a23d14e-1d30-0d74-3736-57eb24720c29	EL PALO
b576b25c-2d64-54fc-dfa8-c6e932e8b1d	PESQZ
d9a97760-206a-6267-2ad3-e4b37e835e2	LA LOMB

CIM Id	Type
71bb4d66-c79d-ca0f-9bc9-58f7a098435a	Line
390be319-39e6-a3c6-021c-a9e795bd4dc	Line
91c759ac-9fd5-c5ba-63e0-85c513b83e9e	Line
5603827a-0618-a618-51e6-c5fda0b02619	Transformer





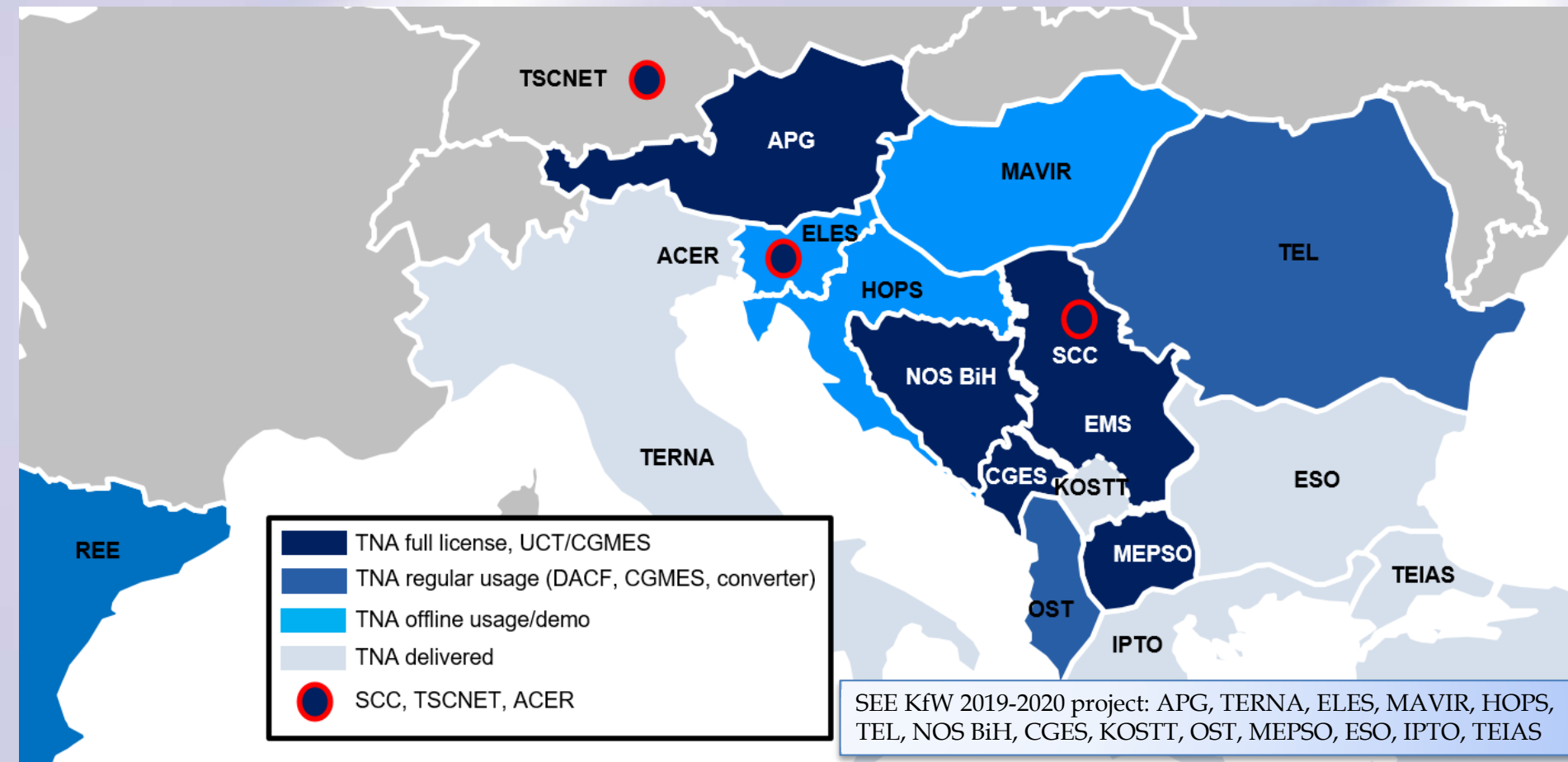
TNA - Beneficiaries

TSOs: TNA is provided to 16 TSOs in Continental Europe, in everyday usage by 8 TSOs

(APG, CGES, EMS, MEPSO, NOSBiH, OST, REE, Tranelectrica)

RCCs: SCC Belgrade (primary tool), TSCNET Munich (secondary tool), CORESO (PFC function)

Regulators: ACER Ljubljana, delivery projects 2017 and 2019



ATTESTATION OF CONFORMITY

Date of issue: 08 June 2015

Attestation number: 2014/08/001

The European Network of Transmission System Operators for Electricity (ENTSO-E), hereby declares that, in accordance with the section 5.1.2 of the CGMES Conformity Assessment Framework adopted on 11 April 2014, a second party assessment has been performed for the Application:

Transmission Network Analyser
Version 2

for which an Attestation of Conformity was sought by Schneider Electric DMS NS D.O.O., a company registered in Serbia with registered offices at Narodnog fronta 25 A, B, C, D, Novi Sad, Serbia (corporate number 20422882) and Electricity Coordinating Center D.O.O., a company registered in Serbia with registered offices at Vojvode Stepe 412, PO Box 50, 11040 Belgrade, Serbia (corporate number 06971121).

ENTSO-E declares that the Opinion Body issued a positive opinion on the Conformity of the Application (Declaration of Conformity 05/12/2014) with the requirements of the Common Grid Model Exchange Standard (CGMES) version 2.4.15, the Conformity Assessment Scheme version 1.1.1 and asked the Assessment Body to issue this Attestation of Conformity for the following CGMES conformity levels:

In accordance with the section 5.1.2.2 of the CGMES Conformity Assessment Framework, this Attestation of Conformity shall be valid for the full lifetime of this specific version of the Application, unless withdrawn in accordance with the procedure described in section 6.2 of the CGMES Conformity Assessment Framework.

For the avoidance of doubt, this Attestation of Conformity reflects the opinion of the Opinion Body on the Conformity of the Application with the requirements of the CGMES but cannot be regarded as granting any right or obligation of any kind towards third parties.

Brussels, 9/6/15

Place, Date



Konstantin Staschus, Secretary General

Attestation of Conformity: Gold

ENTSO-E, Brussels
June 2015

Standard		Bronze
Profile	Equipment Boundary	Gold
Profile	Topology Boundary	Gold
Profile	Equipment core	Gold
Profile	Equipment short circuit	Gold
Profile	Equipment operation	Gold
Profile	Topology	Gold
Profile	Steady State Hypothesis	Gold
Profile	State Variables	Gold
Profile	Dynamics	n/a
Profile	Diagram Layout	Gold
Profile	Geographical Location	Gold
Function	Import	Gold
Function	Export	Gold
Function	Update and Repository	Gold
Function	Diagram Layout	Gold
Function	Geographical (GIS) location	Gold
Function	Load Flow (Node-breaker input representation)	Gold
Function	Load flow (Bus-branch input representation)	Gold
Function	Dynamics	n/a
Function	Short circuit	Gold

TNA 2.3

Functionalities:

TNA functionality	Type
AC Load Flow	Function
DC Load Flow	Function
Area Interchange	Function
Contingency: n-x (AC, DC)	Function
OTDF (AC, DC)	Function
Island Checker	Function
Network reduction	Function
Network equivalent	Function
Generation&Load shift	Function
NTC calculation, single	Function
Flow-based calculation (PTDF/RAM)	Function
PTDF/OTDF usage for CB/CO filtering	Function
Nodal PTDF	Function
Power Flow Colouring/Decomposition (PFC, FLD)	Function
DACF/D2CF/IDCF procedure	Function
NTC calculation, 24 hours (embedded in D2/DACF/ID)	Function
Short circuit (fault) calculation	Function
Contingency Builders	Builder
Monitoring Builders	Builder
Model Builder	Builder
CRAC builder	Builder
Graphical Builder	Builder
GSK Builder (for FB)	Builder
CBCO builder (for FB)	Builder
API functionality	Tool
Models validation & merging	Tool
Statistics: model validation	Tool
Statistics: losses	Tool
Statistics: contingency	Tool
Models conversion CGMES/UCT/RAW	Tool
Floating License Server (FLS)	Tool

TNA 2.3 Load flow

Analyzer v1.7.111.197

File Functions Builders Tools Options Window Help

Models Single Node View: OWIEN 11 AC Power Flow AC System Summary AC Power Flow

Functions Builders

- AC Load Flow Ctrl+L
- DC Load Flow Ctrl+D
- PTDF&MF Daily
- PTDF&MF Monthly/Yearly
- AC OTDF
- DC OTDF
- N-1 Contingency Analysis Ctrl+C
- N-X Contingency Analysis Ctrl+X
- AC/DC Comparison
- Load Shift Ctrl+S
- BFRM Ctrl+B
- Post Auction Contingency Analysis
- PTDF&OTDF For CBCO Building
- Area Interchange Ctrl+I
- Island Checker
- Net Transfer Capacity

Outage Transfer Distribution Factors

Contingency Analysis

AC/DC Comparison

Base Flow Reliability Margin

PTDF/OTDF Usage For CBCO

Post Auction Contingency Analysis

Area Interchange

Island Checker

Net Transfer Capacity

AC Power Flow Result

Scenario: W2013 bezKBTI Model: 20130116_1030_RE3_UX0_bezKB-TI_v2

Type Of Result: Full Result

Areas: ☒ All

Voltage Levels: ☒ All

Limits: Lines' Loading Coefficient [%] 100 Transformers' Loading Coefficient [%] 100

Voltage Limits

Level	p.u. Min	p.u. Max
750	0.95	1.05
400	0.95	1.05
220	0.95	1.05
150	0.95	1.05
120	0.95	1.05
110	0.95	1.05
70	0.95	1.05
27	0.95	1.05
330	0.95	1.05
500	0.95	1.05

Node Code 1	Voltage	Angle	Pgen	Pload	Qgen	Qload
OZELL 21	233.3	-33.2	0.0	85.0		
OZELL 11	408.8	-32.5	70.0	0.0		
OYMELL12	403.3	-38.2	0.0	0.0		
OYMELL11	403.3	-38.2	0.0	0.0		
OYBBSF21	238.5	-20.2	145.0	27.0		
OWIEN 21	238.8	-24.9	0.0	197.0		
OWIEN 11	406.4	-28.2	0.0	-300.0		
OWESTT21	232.3	-32.1	0.0	139.0		
OWESTT11	401.2	-31.0	0.0	0.0		
OWEISS21	236.2	-31.2	0.0	43.0		
OWALLS21	237.7	-20.4	149.0	25.0		
OTERNI29	233.4	-30.9	0.0	0.0		

Search By Code: Search

Node Code 2	Area	CKT	P	Q	S	Ploss	Qloss	Sn
OWIEN 21	AT	1	120.7	95.8	154.1	0.4	7.2	
OWIEN 21	AT	2	120.7	95.8	154.1	0.4	7.2	
OSUEDB11	AT	1	572.3	-15.2	572.5	3.2	-24.9	
OSARA 11	AT	2	-355.1	-43.4	357.8	0.4	-10.2	
OSARA 11	AT	1	-357.8	-38.5	359.9	0.5	-0.8	
OOSTST11	AT	1	571.2	-29.9	572.0	5.0	-36.5	
OBISAM11	AT	1	-517.8	18.9	518.1	2.7	-8.7	
XWL_SZ11	XX	0	145.8	-96.6	174.9	0.4	-48.8	

OWIEN 11 400 kV TYPE: 0 AREA: AT

Voltage: 406.36 kV

Angle: -28.24 Deg

Pgen: 0 MW

Pload: -300 MW

Qgen: 0 MVar

Qload: 13 MVar

TNA: NTC calculation

All Export Areas

Area	Include
HR	<input type="checkbox"/>
HU	<input type="checkbox"/>
ME	<input checked="" type="checkbox"/>
MK	<input type="checkbox"/>
RO	<input type="checkbox"/>
RS	<input checked="" type="checkbox"/>
SI	<input type="checkbox"/>

Selected Export Areas

Area	Ratio(%)
RS	87.66
ME	12.34

Nodes of selected export areas

Area	Node Code	Pg
RS	JTKOSB12	250
RS	JTKOSB11	250
RS	JTKOSA2	240
RS	JTENTB12	450
RS	JTENTB11	450
RS	JTENTA24	220
RS	JTENTA23	220
RS	JTENTA22	150
RS	JTENTA21	150

Node Code: Search

NTC

Export Methods:

☒ Proportional To Reserve (dPg)

☐ Proportional To Engagement (Pg)

☐ Proportional To K

☐ Generation Shift Lists

Area	Node Code	Pg [MW]	dPg [MW]	K	Pmin	Pmax
RS	JTKOSB12	250	10	1	170	260
RS	JTKOSB11	250	10	1	160	260
RS	JTKOSA2	240	30	1	100	270
RS	JTENTB12	450	130	1	480	580
RS	JTENTB11	450	130	1	480	580
RS	JTENTA24	220	60	1	200	280
RS	JTENTA23	220	60	1	200	280
RS	JTENTA22	150	41	1	120	191
RS	JTENTA21	150	41	1	120	191
RS	JTENTA12	220	80	1	200	300
RS	JTENTA11	220	60	1	200	280
RS	JTDRMN11	300	0	1	220	290
RS	JHDJE111	651	249	1	400	900
RS	JHBIST2	100	2	1	10	102
SUM:		4491.16	1132.84	18		

Import Methods:

☒ Proportional To Reserve (dPg)

☐ Proportional To Engagement (Pg)

☐ Proportional To K

☐ Generation Shift Lists

Area	Node Code	Pg [MW]	dPg [MW]	K	Pmin	Pmax
BA	WUGLJE1	249.69	79.69	1	170	275
BA	WTUZL62	179.3	49.3	1	130	200
BA	WTETUZ2	329	199	1	130	364
BA	WSALAK2	34.9	7.9	1	27	210
BA	WHRAMA2	69.8	14.8	1	55	160
BA	WHEVIS1	80	20	1	60	315
BA	WHETRE2	49.9	23.9	1	26	180
BA	WHEDUB2	89.698	35.7	1	54	105
BA	WGRABO2	34.9	4.9	1	30	114
BA	WGACKO1	249.88	79.88	1	170	275
SUM:		1367.07	515.07	10		

Limit: 100 [MW]

Step: 50 [MW]

AIC Local Slacks:

☐ : On

☒ : Off

Import NTC

Export NTC

Run NTC

Close

All Import Areas

Area	Include
AL	<input type="checkbox"/>
BA	<input checked="" type="checkbox"/>
BG	<input type="checkbox"/>
GR	<input type="checkbox"/>
HR	<input type="checkbox"/>
HU	<input type="checkbox"/>
MK	<input type="checkbox"/>

Selected Import Areas

Area	Ratio(%)
BA	100

Nodes of selected import areas

Area	Node Code	Pg
BA	WUGLJE1	249.69
BA	WTUZL62	179.3
BA	WTETUZ2	329
BA	WSALAK2	34.9
BA	WHRAMA2	69.8
BA	WHEVIS1	80
BA	WHETRE2	49.9
BA	WHEDUB2	89.698
BA	WGRABO2	34.9

Node Code: Search

Net Transfer Capacity Results

Scenario: SEE 22.02.2012 Model: 20120222_1030_F03_SEE0.uct

Summary by steps					
Select	Step	DEmax [MW]	Outages	Overloaded	Max loading [%]
<input type="radio"/>	0	0	252	1	85.8
<input type="radio"/>	1	50	252	2	87.7
<input type="radio"/>	2	100	252	2	89.5
<input type="radio"/>	3	150	252	2	91.4
<input type="radio"/>	4	200	252	2	93.3
<input type="radio"/>	5	250	252	3	95.1
<input type="radio"/>	6	300	252	3	97.0
<input type="radio"/>	7	350	252	3	98.9
<input checked="" type="radio"/>	8	400	252	4	100.8
<input type="radio"/>	9	450	252	6	102.7
<input type="radio"/>	10	500	252	6	104.6

Outage details				Details of the overloaded elements	
Node 1	Node 2	CKT	Overloaded	Overloaded elements	Loading [%]
WUGLJE1	WTUZL62	1	2	HMRACL2 HZERJA2 1	100.8
HMEJN1	HTUMBR1	1	2	HZERJA2 HZERJA1 1	85.2
JBGD8 12	JRPDRM11	1	0		
JBGD8 11	JPANC211	1	0		
JBGD8 11	JBGD8 12	1	0		
JBGD3 21	JBBAST21	1	0		
JBGD3 21	JBGD3 22	1	0		
JBGD5 21	JBGD5 22	1	0		
JBGD8 22	JBGD3 22	1	0		
JBGD8 22	JBGD1723	1	0		
JBOR 21	JHDJE111	1	0		
JBGD8 22	JHIP 2	1	0		
JBGD8 21	JBGD3 21	1	0		

Export areas		Import areas	
Area name		Area name	
RS		BA	

Calculated parameters			
NTC	389.1 [MW]	TTC	489.1 [MW]
NTF	89.12 [MW]	TTF	280.38 [MW]
BCE	89.1 [MW]	TRM	100.0 [MW]
DEmax	400.0 [MW]	DFmax	171.26 [MW]
PTDFbase	100.0262 [%]	PTDFmax	53.23652 [%]

Flow based calculation (PTDF/RAM)

Calculation Parameters X

AC Power Flow

Flow-Based Calculation

Base Voltages

Contingency Analysis

Fault Calculation

Total Adjustment

Calculate & Report

Calculate PTDFs between

☐ All Areas

☒ Participating areas only

☒ PTDF values for CB/CO pairs

☒ PTDF values for Tie Lines

☐ All Tie Lines

☒ Tie Lines from participating areas

☒ RAM values

☒ Notify RAM less than 3 [%] Fmax

☐ Automatically replace low RAM with 3 [%] Fmax

☒ Remedial Actions (RA)

☐ Report only CB/CO/RA result

☒ Report both CB/CO and CB/CO/RA result

☒ PST Distribution factors

☒ HVDC Distribution factors

Load Flow settings for RAM calculation

Base topology

☒ Full Newton-Raphson

☐ Fast-decoupled Newton-Raphson

☐ DC Load Flow

☒ Enforce Q limits for generators

Outage topologies

☒ Full Newton-Raphson

☐ Fast-decoupled Newton-Raphson

☐ DC Load Flow

☐ Enforce Q limits for generators

Reference flow calculation

☐ Do not remove Reference Base Case Exchange

☐ Remove Reference Base Case Exchange of all Areas

☐ Remove Reference Base Case Exchange of participating Areas, from BCE file

☒ Restore Nominated Programs, from Already Nominated Transactions (ANT) file

☐ Restore Allocated Programs, from Already allocated Transactions (AAT) file

OK

Cancel

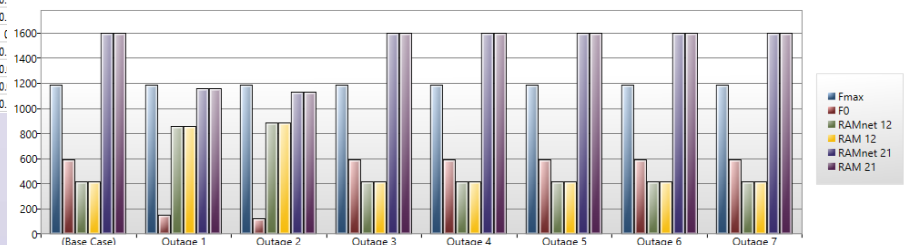
Defaults

Critical branch	Critical outage	Cos Phi	FRM 12	FRM 21	FAV 12	FAV 21	Imax	Snom	U1	U2	Smax	Fmax	Fref	Fnp	F0	RAMnet 12	RAMnet 21	ANF	Fref	AAF 12	AAF 21	RAM 12	RAM 21	
			[MW]	[MW]	[MW]	[MW]	[A]	[MVA]	[kV]	[kV]	[MVA]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	[MW]	
KER_SM11_JSMIT21_CKT_1	(Base Case)	0	119.7	119.7	59.9	59.9	1920	1330.2	400	400	1330.2	1197.2	-156.7	-156.7	0	-156.7	1174.3	860.9	0	-156.7	0	1174.3	860.9	
	PTDF from	o	RTE	TTN	PSE	REN	SEPS	TEIAS	OST	APG	ESO	HOPS	MAVIR	MEPSO	Transelectra	EMS	ELES	WPS	NOSBIH	TERNA	IPTO	CGES	ELIA	
	RTE		-0.000037	0.004812	0.000023	0.002188	0.158076	0.153497	-0.004943	0.157663	0.037094	-0.017173	0.161249	0.140554	0.217392	-0.012926	0.02086	0.000024	0.000759	0.160079	0.148367	-0.000047	-0.000042	
	TTN		0.000037		0.004849	0.000061	0.002225	0.158113	0.153535	-0.004905	0.1577	0.037132	-0.017136	0.161286	0.140592	0.217429	-0.012889	0.020898	0.000062	0.000796	0.160116	0.148404	-0.00001	-0.000005
	PSE		-0.004812	-0.004849		-0.004788	-0.002624	0.153264	0.148685	-0.009755	0.152851	0.032282	-0.021985	0.156437	0.135742	0.21258	-0.017738	0.016049	-0.004788	-0.004053	0.155267	0.143555	-0.004859	-0.004854
	REN		-0.000023	-0.000061	0.004788		0.002164	0.158052	0.153474	-0.004966	0.157639	0.037071	-0.017197	0.161225	0.140531	0.217368	-0.01295	0.020837	0.000001	0.000735	0.160055	0.148344	-0.000071	-0.000066
	SEPS		-0.002188	-0.002225	0.002624	-0.002164		0.155888	0.15131	-0.007131	0.155475	0.034907	-0.019961	0.159061	0.138367	0.215204	-0.015114	0.018673	-0.002164	-0.001429	0.157891	0.146179	-0.002235	-0.00223
	TEIAS		-0.158076	-0.158113	-0.153264	-0.158052	-0.155888		-0.004579	-0.163019	-0.000413	-0.120982	-0.175249	0.003173	-0.017522	0.059316	-0.171002	-0.137215	-0.158052	-0.157317	0.002003	-0.009709	-0.158123	-0.158118
	OST		-0.153497	-0.153535	-0.148685	-0.153474	-0.15131	0.004579		-0.15844	0.004165	-0.116403	-0.17067	0.007751	-0.012943	0.063895	-0.166424	-0.132637	-0.153473	-0.152739	0.006582	-0.00513	-0.153545	-0.153539
	APG		0.004943	0.004905	0.009755	0.004966	0.007131	0.163019	0.15844		0.162605	0.042037	-0.01223	0.166192	0.145497	0.222335	-0.007983	0.025803	0.004967	0.005702	0.165022	0.15331	0.004896	0.004901
	ESO		-0.157663	-0.1577	-0.152851	-0.157639	-0.155475	0.000413	-0.004165	-0.162605		-0.120568	-0.174836	0.003586	-0.017108	0.059729	-0.170589	-0.136802	-0.157638	-0.156904	0.002416	-0.009296	-0.15771	-0.157705
	HOPS		-0.037094	-0.037132	-0.032282	-0.037071	-0.034907	0.120982	0.116403	-0.042037	0.120568		-0.054267	0.124154	0.10346	0.180298	-0.050021	-0.016234	-0.037077	-0.036336	0.122985	0.111273	-0.037142	-0.037136
	MAVIR		0.017173	0.017136	0.021985	0.017197	0.019961	0.175249	0.17067	0.01223	0.174836	0.054267		0.178422	0.157777	0.180298	0.050021	0.016234	0.037077	0.036336	0.122985	0.111273	-0.037142	-0.037136
	MEPSO		-0.161249	-0.161286	-0.156437	-0.161225	-0.159061	-0.003173	-0.007751	-0.166192	-0.003586	-0.124154	-0.178422	-0.157777	0.180298	0.050021	0.016234	0.037077	0.036336	0.122985	0.111273	-0.037142	-0.037136	
	Transelectra		-0.140554	-0.140592	-0.135742	-0.140531	-0.138367	0.017522	0.012943	-0.145497	0.017108	-0.10346	-0.157777	0.020694										
	EMS		-0.217392	-0.217429	-0.21258	-0.217368	-0.215204	-0.059316	-0.063895	-0.222335	-0.059729	-0.180298	-0.234565	-0.056143	-0.174175	0.140388								
	ELES		0.012926	0.012889	0.017738	0.01295	0.015114	0.171002	0.166424	0.007983	0.170589	0.050021	0.004347	0.174175	0.140388									
	WPS		-0.02086	-0.020898	-0.016049	-0.020837	-0.018673	0.137215	0.132637	-0.025803	0.136802	0.016234	-0.038034	0.140388										
	NOSBIH		-0.000024	-0.000062	0.004788	-0.000001	0.002164	0.158052	0.153473	-0.004967	0.157638	0.037077	-0.017197	0.161224	-0.136049									
	TERNA		-0.000759	-0.000796	0.004053	-0.000735	0.001429	0.157317	0.152739	-0.005702	0.156904	0.036336	-0.017932	0.16049										
	IPTO		-0.160079	-0.160116	-0.152627	-0.160055	-0.157891	-0.002003	-0.00582	-0.165022	-0.002416	-0.122985	-0.177252	0.00117	-0.16049									
	CGES		-0.148367	-0.148404	-0.143555	-0.148344	-0.146179	0.009709	0.00513	-0.15331	0.009296	-0.111273	-0.16554	0.012882	-0.161296									
	ELIA		0.000047	0.000001	0.004859	0.000071	0.002235	0.158123	0.153545	-0.004896	0.15771	0.037142	-0.017126	0.161296										

Branch XPF_D11_JHDJE111_CKT_1 Chart Report

<

- Hub area
- Selected Hub
- OST
- ESO
- HOPS
- MEPSO
- Transelectra
- EMS
- ELES
- NOSBIH
- IPTO
- CGES



TNA: DACF/IDCF/D2CF Manager

DACF Manager

Selected date: 11/30/2014 2 AM Forecast Model Creation

National data

Area	Purpose	Su	Mo	Tu	We	Th	Fr	Sa	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HU	SNAPSHOT D-	26	27	28	29	30	31	1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	SNAPSHOT D-	2	3	4	5	6	7	8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	9	10	11	12	13	14	15	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	16	17	18	19	20	21	22	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	23	24	25	26	27	28	29	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	30	1	2	3	4	5	6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	EXC	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	LFDA	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
HU	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	

Foreign data

Area	Purpose	TOTAL	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALL	FORECAST	TOTAL	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AL	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AT	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
BA	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
BE	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
BG	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
CH	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
CZ	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DE	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
ES	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
FR	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
GR	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
HR	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
IT	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
ME	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
MK	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
NL	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
PL	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
PT	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
RO	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
RS	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
SI	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
SK	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
TR	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
UA	FORECAST	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

X-node compare status

Area	Purpose	Type	00-24	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
UX	DACF	diff status	/	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	3/2	3/2	2/2	2/2	3/2	3/2
UX	DACF	unpaired	/	5/3	8/3	8/3	8/3	8/3	8/3	8/3	8/3	8/3	5/3	8/3	8/3	8/3	8/3	8/3

Merged data and total adjustment

Area	Purpose	Type	00-24	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
UX	DACF	MERGED	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
UX	DACF	TOT. ADJ	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	

Contingency analysis results

Area	Purpose	Type	00-24	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
UX	DACF	MERGED	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
UX	DACF	TOT. ADJ	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	

Quality indicators legend

Legend

- / Missing
- RC Received
- OK Valid
- OKF Valid Fixed
- OKW Valid Warning
- RP Replaced
- Denied
- Denied Validation
- Denied Convergence
- Denied Date
- WD Warning Diverge! (TotAdj)
- Not Used

Validation details on the right click

Import Snapshot

Create Forecast

Import Forecast

Merge Forecast

Files for export

Select files for export

Hours

1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th 13th 14th 15th 16th 17th 18th 19th 20th 21st 22nd 23rd 24th

File types

Equipment Topology State variables Steady State Hypothesis Equipment boundary set Topology boundary set

Export CIM 14 file Export UCT file Export CIM 16 file Export as *.zip file

Save Report

Export Close

Model builder: UCT/CGMES

CIM Model: SmallGrid NB 02

CIM Model: SmallGrid BB 02

CIM Network Model, scenario: SmallGrid NB 02

Nodes

Lines

Transformers

Border Nodes

Energy Consumer

Shunts

Machines

Couplers

Energy Consumer

Substation	Node Name	Load Name	Energy Consumer Type	Status	Vbase	P Load	Q Load	Pfixed	Pfixed Pct	Qfixed	Qfi
Pincup	Switchbk	Switchbk LD	Energy Consumer	✓	132.0	30.0	16.0	-	-	-	-
Hogsmeade	Sunnysde	Sunnysde LD	Energy Consumer	✓	132.0	84.0	18.0	-	-	-	-
Beauxbatons	W.Lancst	W.Lancst LD	Energy Consumer	✓	132.0	28.0	10.0	-	-	-	-
Lond Daer Enehd	Summerfl	Summerfl LD	Energy Consumer	✓	132.0	28.0	7.0	-	-	-	-
Annuinas	Lincoln	Lincoln LD	Energy Consumer	✓	132.0	45.0	25.0	-	-	-	-
Dale	Smythe	Smythe LD	Energy Consumer	✓	132.0	5.0	3.0	-	-	-	-
Needlehole	Darrah	Darrah LD	Energy Consumer	✓	132.0	68.0	36.0	-	-	-	-
Minas Tirith	NwCarls	NwCarls NegG LD	Energy Consumer	✓	132.0	9.0	0.0	-	-	-	-
Minas Tirith	NwCarls	NwCarls LD	Energy Consumer	✓	132.0	30.0	12.0	-	-	-	-
Crickhollow	CabinCrk	CabinCrk LD	Energy Consumer	✓	132.0	130.0	26.0	-	-	-	-
Dorne	Deer Crk	Deer Crk NegG LD	Energy Consumer	✓	132.0	6.0	0.0	-	-	-	-
Crownlands	Danville	Danville LD	Energy Consumer	✓	132.0	25.0	13.0	-	-	-	-
Crownlands	Danville	Danville NegG LD	Energy Consumer	✓	132.0	43.0	0.0	-	-	-	-
Casterly Rock	Bradley	Bradley LD	Energy Consumer	✓	132.0	34.0	8.0	-	-	-	-
Fornost Erain	Adams	Adams LD	Energy Consumer	✓	132.0	18.0	3.0	-	-	-	-
Tuckborough	Wooster	Wooster LD	Energy Consumer	✓	132.0	23.0	11.0	-	-	-	-
Godrics Hollow	Jay	Jay LD	Energy Consumer	✓	132.0	14.0	8.0	-	-	-	-
Rivendell	Franklin	Franklin LD	Energy Consumer	✓	132.0	8.0	3.0	-	-	-	-
Aldburg	Hancock	xxx	Energy Consumer	✓	132.0	0.0	0.0	-	-	-	-

Search by

Energy Consumer Name:

Node Name:

Energy Consumer

Conform Load

Non Conform Load

Station Supply

Transf

Border Nodes

Energy Consumer

Machines

Shunts

Couplers

24-72	Trenton	Hillsbro	✓	8.503	34.151	0.000	280.074	8.673	0.000	0.000	0.000	1000	Real
17-18	Sorenson1	McKinley	✓	2.143	8.799	0.000	74.495	2.186	0.000	0.000	0.000	1000	Real
17-113	Sorenson1	Deer Crk	✓	1.591	5.245	0.000	44.077	1.623	0.000	0.000	0.000	1000	Real
49-50	Philo	WCambdrg	✓	4.652	13.103	0.000	107.553	4.745	0.000	0.000	0.000	1000	Real
1-3	Riverside	HickryCk	✓	2.248	7.388	0.000	62.098	2.293	0.000	0.000	0.000	1000	Real
92-102	Saltvile	Smythe	✓	2.143	9.740	0.000	84.022	2.186	0.000	0.000	0.000	1000	Real
93-94	Tazewell	Switchbk	✓	3.886	12.754	0.000	107.668	3.963	0.000	0.000	0.000	1000	Real
46-48	W.Lancst	Zanesvll	✓	10.472	32.931	0.000	270.891	10.681	0.000	0.000	0.000	1000	Real
49-66	Philo	Muskngum1	✓	3.136	16.013	0.000	142.332	3.199	0.000	0.000	0.000	1000	Real
75-118	SthPoint	WHuntngd	✓	2.526	8.381	0.000	68.756	2.577	0.000	0.000	0.000	1000	Real
94-96	Switchbk	Baileysv	✓	4.687	15.141	0.000	132.002	4.781	0.000	0.000	0.000	1000	Real
62-67	Natrium	Summerfl	✓	4.495	20.386	0.000	177.916	4.585	0.000	0.000	0.000	1000	Real
47-49	Crooksvl	Philo	✓	3.328	10.890	0.000	92.057	3.395	0.000	0.000	0.000	1000	Real
100-106	Glen Lyn	Cloverdl	✓	10.542	39.901	0.000	355.831	10.752	0.000	0.000	0.000	1000	Real
77-78	Turner	Chemical	✓	0.655	2.161	0.000	72.544	0.668	0.000	0.000	0.000	1000	Real
6-7	Kankakee	JacksnRd	✓	0.800	3.624	0.000	31.566	0.816	0.000	0.000	0.000	1000	Real
77-80	Turner	CabinCrk	✓	5.123	18.295	0.000	130.854	5.225	0.000	0.000	0.000	1000	Real

Search by

Line Name:

First Node Name:

Second Node Name:

Power View

Cim View

Slack Selection

Shunts

Substation	Node Name	Shunt Type	Shunt Name	Status
Oldtown	Reusens	Linear Shunt Compensator	Reusens SC	✓
Havens of the Fates	N.Newark	Linear Shunt Compensator	N.Newark SC	✓
Waymoot	Fieldale	Linear Shunt Compensator	Fieldale SC	✓
Beauxbatons	W.Lancst	Linear Shunt Compensator	W.Lancst SC	✓
Border Node	XWE, BT21	Equivalent Injection	Injection	✓
Border Node	XMO, TE31	Equivalent Injection	Injection	✓
Border Node	XMO, TE33	Equivalent Injection	Injection	✓
Alquistville	Wagonhls	Linear Shunt Compensator		✓

Search by

Shunt Name:

Linear Shunt Compensator

Nonlinear Shunt Compensator

Static Var Compensator

Equivalent Shunt

Equivalent Injection

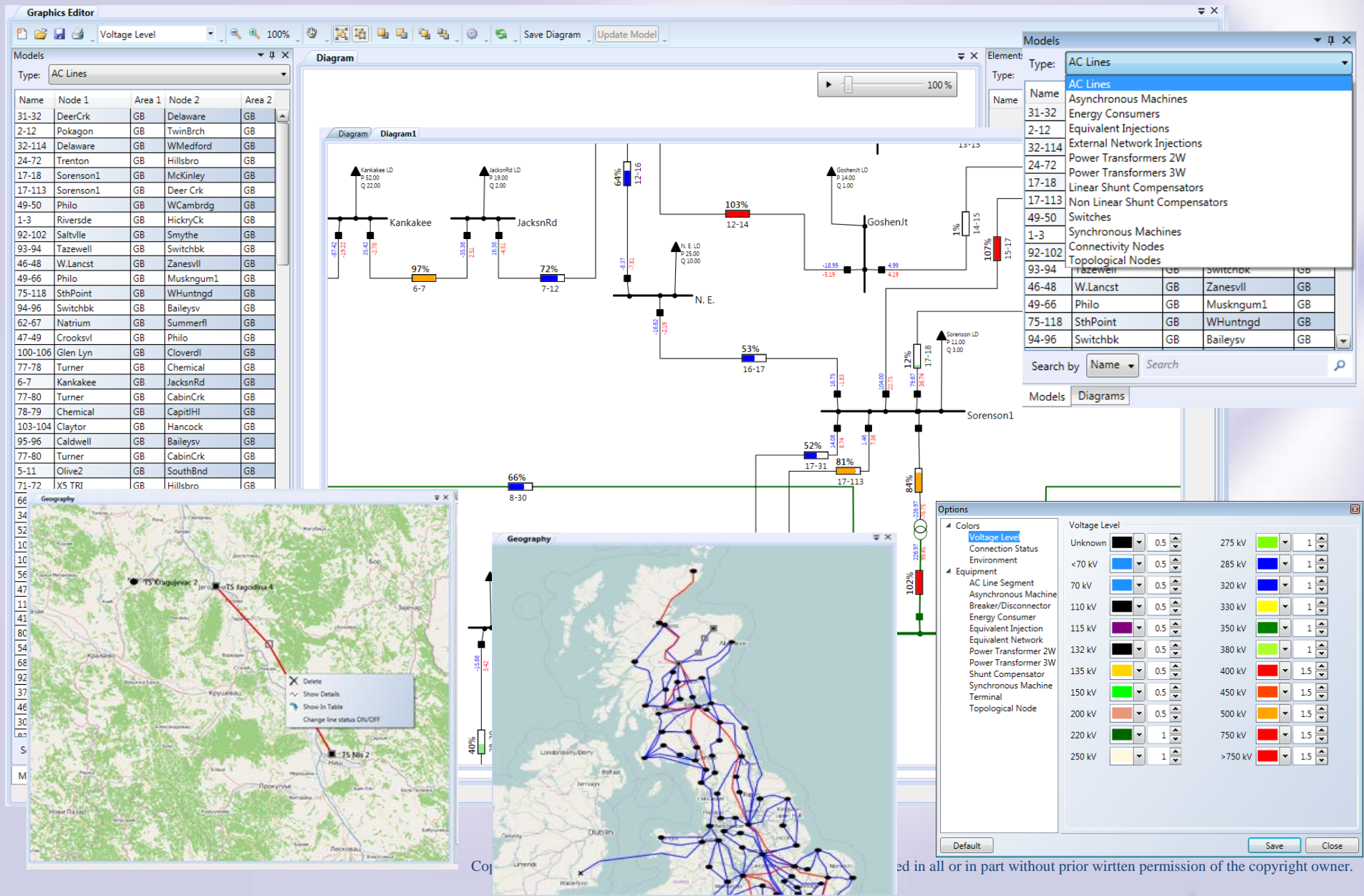
Gch [μS]	Bch [μS]	R0 [Ω]	X0 [Ω]	G0ch [μS]	B0ch [μS]	IMax [A]	Type
0.000	144.054	5.296	0.000	0.000	0.000	1000	Real
0.000	90.220	3.323	0.000	0.000	0.000	1000	Real
0.000	93.434	2.399	0.000	0.000	0.000	1000	Real
0.000	280.074	8.673	0.000	0.000	0.000	1000	Real
0.000	74.495	2.186	0.000	0.000	0.000	1000	Real
0.000	44.077	1.623	0.000	0.000	0.000	1000	Real
0.000	107.553	4.745	0.000	0.000	0.000	1000	Real
0.000	62.098	2.293	0.000	0.000	0.000	1000	Real
0.000	84.022	2.186	0.000	0.000	0.000	1000	Real
0.000	107.668	3.963	0.000	0.000	0.000	1000	Real
0.000	270.891	10.681	0.000	0.000	0.000	1000	Real
0.000	142.332	3.199	0.000	0.000	0.000	1000	Real
0.000	68.756	2.577	0.000	0.000	0.000	1000	Real
0.000	132.002	4.781	0.000	0.000	0.000	1000	Real
0.000	177.916	4.585	0.000	0.000	0.000	1000	Real
0.000	92.057	3.395	0.000	0.000	0.000	1000	Real
0.000	355.831	10.752	0.000	0.000	0.000	1000	Real
0.000	72.544	0.668	0.000	0.000	0.000	1000	Real
0.000	31.566	0.816	0.000	0.000	0.000	1000	Real
0.000	130.854	5.225	0.000	0.000	0.000	1000	Real

Apply changes

Save model

Close

TNA 2.3 Graphical builder



TNA 2.3 Conversion tools

Formats: UCTE - PSSE RAW - CGMES (CIM)

