

ITCS Transfer Study Scope – Part I

March 2024

Purpose

This study consists of three parts that will meet the requirements of Fiscal Responsibility Act of 2023 regarding calculation of current total transfer capability. This document is intended to describe the assumptions and procedures for Part-I only. Described below are the three parts of the study:

1. Calculate the current total transfer capability, between each pair of neighboring transmission planning regions.
2. Recommendations on prudent additions to the amount of electric power that can be moved or transferred in the interest of reliability.
3. Recommendations on how to achieve and maintain the identified total transfer capability (from #1) and the recommended additional transfer capability (from #2).

Study Tool

PowerGem TARA software will be used for steady state thermal and voltage analysis.

Base Case Assumptions

Cases created through the MOD-032 process will be used as a starting point. Planning Coordinators (PC) and Transmission Planners (TP) will be provided with an opportunity to review these cases and supply updates using IDEV files. Updates should focus on:

- New generation - Generation with a signed ISA should be included in the future year cases. This does not exclude the modeling of other queue generation in these cases.
- Planned retirements - Generation that has retired or has announced retirement should be removed from the appropriate cases
- Load forecast
- Dispatch
- Line Ratings
- Expected long term facility outage
- Transmission system topology
- Base firm interchange across interfaces

Initial Solution Parameters¹

Once all updates have been applied to the case, the following solution options will be used:

- Fixed Slope Decoupled Newton-Raphson
- Area Interchange Enabled
- Tap Adjustment – Stepping
- Switched Shunt Adjustments – Enable All
- Adjust Phase Shifters
- Adjust DC taps

Eastern Interconnection

The cases listed below from the Multiregional Modeling Working Group (MMWG) 2023 series will be used. These are assembled with a non-coincident 50/50 load level and are available in PSSE v35 formats.

- 2024 Summer Peak
- 2024/25 Winter Peak
- 2033 Summer Peak
- 2033/34 Winter Peak

The Canadian Province of Québec is tied to the Eastern Interconnection by DC ties. Transfers from Québec to the United States will be based on DC tie ratings.

Western Interconnection

The table below lists the cases WECC will be producing for the study years. These are assembled with a non-coincident 50/50 load level and are available in PSSE v34 and PSLF v22 formats.

- 2024 Heavy Summer
- 2024/25 Heavy Winter - Available March 2024
- 2023/24 Heavy Winter - Currently available. May be temporarily used in place of 2024/25 Heavy Winter until March 2024
- 2033 Heavy Summer
- 2033/34 Heavy Winter

Electric Reliability Council of Texas (ERCOT) Interconnection

Cases for ERCOT are not required, transfers will be based on DC tie ratings and should be modelled into the Eastern Interconnection cases. Estimates of load for 2024 summer and winter will be provided.

¹ https://www.rfirst.org/wp-content/uploads/2023/07/MMWG_Procedural_Manual_v35.pdf,
<https://www.wecc.org/Administrative/2023%20Data%20Preparation%20Manual.pdf>

Contingencies

Standard set of contingencies to support NERC and local planning criteria. Transfer capability analysis shall include N-1 contingencies. The following NERC standard TPL-001-5.1 contingencies will be used for the transfer studies:

Three types of NERC Category P1 contingencies (100 kV and above) will be used:

- P1-1: Loss of individual generators
- P1-2: Loss of a single transmission line, operating at 100 kV or above
- P1-3: Loss of a single transformer, with a low side voltage of 100 kV or above

Solution Parameters

The options below will be selected in the TARA program to import the case and run transfer analysis:

- Enable Tap adjustment
- Enable Phase Shifter adjustment
- Enable shunt adjustment - All
- Area interchange control - No
- Adjust DC taps

Total Transfer Capability

Total Transfer Capability (TTC) is the sum of the Base Transfer Capability (BTC) and First Contingency Incremental Transfer Capability (FCITC) as shown in the simple equation below:

$$TTC = BTC + FCITC$$

FCITC can be calculated dependent upon the specifics of the transfer methodology, TARA's TrLim (Proportional Thermal Transfer) is the approach to be used in the study to provide the FCITC.

In order to use a consistent approximation for BTC values, the total tie line flows will be used as a proxy for BTC. In other words, the sum of the flows on the direct ties between the sending and receiving subsystems will be used as the BTC.

Transfer Directions

Non-simultaneous transfer analysis will be performed based on the source and sink definitions identified below for each of the study areas. Canadian Entities will be included in the source/sink areas but Province to Province transfers will not be studied. Definitions for each source/sink can be found in Appendix I.

Eastern Interconnection

From	To																			
	MISO Central	MISO East	MISO South	MISO West	MRO Manitoba Hydro	MRO SaskPower	NPCC Maritimes	NPCC New England	NPCC New York	NPCC Ontario	PJM East	PJM South	PJM West	SERC Central	SERC East	FRCC	SERC Southeast	SPP North	SPP South	
MISO Central		x	x	x										x	x					x
MISO East	x			x					x				x							
MISO South	x													x			x			x
MISO West	x	x			x				x				x	x				x	x	x
Manitoba Hydro				x																
SaskPower																				x
Maritimes								x												
ISO New England							x		x											
New York ISO								x		x	x									
Ontario		x		x					x											
PJM East									x											
PJM South											x		x				x			
PJM West	x	x		x							x	x		x	x					
SERC Central	x		x	x									x		x			x	x	x
SERC East												x	x	x				x		
FRCC																				
SERC Southeast			x											x	x	x				
SPP North				x		x								x						x
SPP South	x		x	x										x						x

Transfer analysis for Québec will consist of calculating the capacity of the DC tie lines to the United States. These include:

- NPCC Québec to NPCC New York
- NPCC Québec to NPCC New England

Western Interconnection

From	To							
	WECC-CA	Washington Region	Oregon Region	Wasatch Front	Front Range	Northern California	Southern California	Southwest Region
WECC-CA		x						
Washington Region (NG)	x		x	x				
Oregon Region (NG)		x		x		x		
Wasatch Front (NG)		x	x		x		x	x
Front Range (WC)				x				x
Northern California (CAISO)			x				x	
Southern California (CAISO)				x		x		x
Southwest Region (WC)				x	x		x	

Transfer capability between the Western Interconnection and Eastern Interconnection will be determined by calculating the capacity of the ties.

- McNeill DC tie: 150 MW
- Miles City DC tie: 200 MW
- Stegall DC tie: 110 MW
- Virginia Smith DC tie: 200 MW
- Lamar DC tie: 210 MW
- Blackwater DC tie: 200 MW
- Artesia DC tie: 200 MW
- Rapid City DC tie: 200 MWs

Electric Reliability Council of Texas (ERCOT) Interconnection

Transfer analysis for the ERCOT interconnection will consist of calculating the capacity of the tie lines with neighboring interconnections. These include:

- North DC tie to/from SPP
- East DC tie to/from SPP

An additional set of transfers will be performed between the FERC Order 1000 Transmission Planning Regions.

From	To												Northern Grid	California Independent System Operator	WestConnect	
	MISO	Manitoba Hydro	SaskPower	Maritimes	ISO New England	New York ISO	Ontario	PJM	SCRTP	FRCC	SERTP	SPP				
MISO		x					x	x			x	x				
Manitoba Hydro	x															
SaskPower												x				
Maritimes					x											
ISO New England				x		x										
New York ISO					x		x	x								
Ontario	x					x										
PJM	x					x										
SCRTP												x	x			
FRCC												x				
SERTP	x							x	x	x			x			
SPP	x		x					x				x				
Northern Grid															x	x
California Independent System Operator														x		x
WECC-CA														x		
WestConnect														x	x	

Monitored Facilities

Following criteria were used to create monitored element files including:

- All transmission facilities 100 kV and above
- All transmission facilities included in the Intra- and Inter- regional Interface definitions.
- Report limits with Outage Transfer Distribution Factor (OTDF) ≥ 3%
- For base conditions, normal ratings (RATE-1) at > 100 %
- For contingency conditions, emergency ratings (RATE-2) at > 100 %
- Thermal and voltage limits
- Interface thermal/voltage limits
- Known transient stability limits

Voltage Analysis

A voltage screening will be performed for each transfer direction at the valid FCITC limit found. A case will be exported with the valid transfer amount built in. This case will be screened for N-1 voltage violations using category P1 contingencies.

Modeling of Transfer Participation

Each transfer will be simulated until a valid thermal limit is reached while enforcing the sending system's P_{MAX}². If the transfer does not report any limits, the transfer will be simulated without enforcing the sending system's P_{MAX}. Not respecting P_{MAX} values may lead to invalid limits being reported such as overloads on GSU's or lines leaving the plant substation. These will be ignored.

Export Subsystem File Criteria

To determine the total transfer capability between planning areas based on the transmission topology in the study model, the command SCALE ALL FOR EXPORT INCLUDE OFFLINE will be used for export subsystems. Any individual generating unit that meets the criteria below will be excluded from participation.

- The generator is not expected to be in commercial operation during the study period - mothballed, retired, non-existent, under construction
- It has a bad P_{MAX} value in the model - P_{MAX} = default 9999, non-zero P_{MAX} of SVC
- Other generation specified by the Transmission Planner

Import Subsystem File Criteria

The command, SCALE ALL FOR IMPORT will be used for import subsystems. In certain instances, generation may be excluded from participation, e.g declared future day retirement generations.

TARA Transfer Analysis Options

The options below will be selected when performing the transfer analysis:

- Enable AC Verification on all transfers
- Add Contingency Events in the reporting options
- Enable - Ignore initial overloads which have negative DFAX such that increasing transfer will fix the overload
- Enable – Report initial overloads
- Report 15 constraints per path
- 5 - Max times to report same branch under different contingencies
- Results will include the TRLProp, Warn_Cont, Warn_Sum, Warn_List, CaseSum, and LogFile reports at a minimum

² The upper limit on the total amount of active power available for dispatch, specified in MW.

Appendix I

Source & Sink Definitions

The control area name and numbers for each of the source/sink used in the transfer analysis are listed below.

Eastern Interconnection

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
SERC Southeast	SERTP	354	SERU	Southeastern Power Administration	SERC
SERC Southeast	SERTP	346	SOCO	Southern Company Services, Inc. - Trans	SERC
SERC Southeast	SERTP	353	SEHA	Hartwell - SEPA	SERC
SERC Southeast	SERTP	355	SETH	Thurmond – SEPA	SERC
SPP South	SPP	515	SWPA	Southwestern Power Administration	MRO
MISO Central	MISO	207	HE	Hoosier Energy REC, Inc.	RF
MISO Central	MISO	208	DEI	Duke Energy Indiana	RF
MISO Central	MISO	210	SIGE	Southern Indiana Gas & Electric Company	RF
MISO Central	MISO	216	IPL	Indianapolis Power & Light Company	RF
MISO Central	MISO	217	NIPS	Northern Indiana Public Service Company	RF
MISO Central	MISO	314	BREC	Big Rivers Electric Corporation	SERC
MISO Central	MISO	315	HMPL	Henderson Municipal Power & Light	SERC
MISO Central	MISO	333	CWLD	City of Columbia, MO	SERC
MISO Central	MISO	356	AMMO	Ameren Missouri	SERC
MISO Central	MISO	357	AMIL	Ameren Illinois	SERC
MISO Central	MISO	360	CWLP	City of Springfield, IL - CWLP	SERC
MISO Central	MISO	361	SIPC	Southern Illinois Power Cooperative	SERC
MISO Central	MISO	362	GLH	GridLiance Holdco, LLC	SERC
MISO East	MISO	218	METC	METC	RF
MISO East	MISO	219	ITCT	ITC Transmission	RF
MISO South	MISO	326	EES-EMI	Entergy Mississippi	SERC
MISO South	MISO	349	SMEPA	Cooperative Energy	SERC
MISO South	MISO	351	EES	Entergy	SERC
MISO South	MISO	502	CLEC	Cleco Corporate Holdings LLC	SERC
MISO South	MISO	503	LAFSA	Lafayette Utilities System	SERC
MISO South	MISO	504	LEPA	Louisiana Energy & Power Authority	SERC
MISO South	MISO	327	EES-EAI	Entergy Arkansas	SERC

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
MISO South	MISO	332	LAGN	Louisiana Generating, LLC	SERC
MISO West	MISO	295	WEC	Wisconsin Electric Power Company	RF
MISO West	MISO	296	MIUP	Upper Michigan Energy Resources Corporation	RF
MISO West	MISO	600	XEL	Northern States Power (Xcel Energy)	MRO
MISO West	MISO	608	MP	Minnesota Power (Allte, Inc.)	MRO
MISO West	MISO	613	SMMPA	Southern Minnesota Municipal Power Agency	MRO
MISO West	MISO	615	GRE	Great River Energy	MRO
MISO West	MISO	620	OTP	Otter Tail Power Company	MRO
MISO West	MISO	627	ALTW	Alliant Energy - West	MRO
MISO West	MISO	633	MPW	Muscatine Power & Water (Board of Water, Electric & Communications)	MRO
MISO West	MISO	635	MEC	MidAmerican Energy Company	MRO
MISO West	MISO	661	MDU	Montana-Dakota Utilities Company	MRO
MISO West	MISO	663	BEPC-MISO	Basin Electric Power Cooperative	MRO
MISO West	MISO	680	DPC	Dairyland Power Cooperative	MRO
MISO West	MISO	694	ALTE	Alliant Energy - East	MRO
MISO West	MISO	696	WPS	Wisconsin Public Service Corporation	MRO
MISO West	MISO	697	MGE	Madison Gas and Electric Company	MRO
MISO West	MISO	698	UPPC	Upper Peninsula Power Company	MRO
Manitoba Hydro	Manitoba Hydro	667	MH	Manitoba Hydro	MRO
SaskPower	SaskPower	672	SPC	Saskatchewan Power Corporation	MRO
Maritimes	Maritimes	105	NB	New Brunswick Power Corporation	NPCC
Maritimes	Maritimes	106	NS	Nova Scotia Power Inc.	NPCC
ISO New England	ISO New England	101	ISO-NE	ISO-NE	NPCC
New York ISO	New York ISO	102	NYISO	New York Independent System Operator	NPCC
Ontario	Ontario	103	IESO	Ontario IESO	NPCC
Quebec	Quebec	104	TE	Hydro-Quebec TransEnergie	NPCC
PJM East	PJM	225	PJM	PJM Interconnection, LLC	RF
PJM East	PJM	226	PENELEC	Pennsylvania Electric Company	RF
PJM East	PJM	227	ME	Metropolitan Edison Company	RF
PJM East	PJM	228	JCPL	Jersey Central Power & Light Company	RF
PJM East	PJM	229	PL	PPL Electric Utilities Corporation	RF
PJM East	PJM	230	PECO	PECO Energy Company	RF

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
PJM East	PJM	231	PSEG	Public Service Electric & Gas Company	RF
PJM East	PJM	234	AE	Atlantic City Electric Company	RF
PJM East	PJM	235	DP&L	Delmarva Power & Light Company	RF
PJM East	PJM	236	UGI	UGI Utilities, Inc.	RF
PJM East	PJM	237	RECO	Rockland Electric Company	RF
PJM South	PJM	232	BGE	Baltimore Gas and Electric Company	RF
PJM South	PJM	233	PEPCO	Potomac Electric Power Company	RF
PJM South	PJM	238	SMECO	Southern Maryland Electric Cooperative, Inc.	RF
PJM South	PJM	345	DVP	Virginia Electric and Power Company (DP, TO)	SERC
PJM West	PJM	201	AP	Allegheny Power	RF
PJM West	PJM	202	ATSI	American Transmission Systems, Incorporated	RF
PJM West	PJM	205	AEP	American Electric Power-East	RF
PJM West	PJM	206	OVEC	Ohio Valley Electric Corporation	RF
PJM West	PJM	209	DAY	The Dayton Power and Light Company	RF
PJM West	PJM	212	DEO&K	Duke Energy Ohio & Kentucky	RF
PJM West	PJM	215	DLCO	Duquesne Light Company	RF
PJM West	PJM	222	CE	Commonwealth Edison Company	RF
PJM West	PJM	320	EKPC	East Kentucky Power Cooperative	SERC
SERC Central	SERTP	347	TVA	Tennessee Valley Authority	SERC
SERC Central	SERTP	363	LGEE	LG&E and KU Services Company	SERC
SERC Central	SERTP	364	OMUA	Owensboro, KY Municipal Utilities	SERC
SERC Central	SERTP	365	SMT	Smoky Mountain Transmission LLC	SERC
SERC Central	SERTP	330	AECI	Associated Electric Cooperative, Inc.	SERC
SERC East	SERTP	341	CPLW	Duke Energy Progress, LLC	SERC
SERC East	SERTP	342	DUK	Duke Energy Carolinas, LLC	SERC
SERC East	SCRTP	343	SCEG	Dominion Energy South Carolina, Inc.	SERC
SERC East	SCRTP	344	SC	South Carolina Public Service Authority	SERC
SERC East	SERTP	352	YAD	Cube Hydro Carolinas, LLC	SERC
SERC East	SERTP	340	CPLE	Duke Energy Progress, LLC	SERC
SERC FL Peninsula	FRCC	401	FPL	Florida Power & Light Co.	SERC
SERC FL Peninsula	FRCC	402	DEF	Duke Energy Florida, LLC	SERC
SERC FL Peninsula	FRCC	403	FTP	Fort Pierce Utilities Authority	SERC
SERC FL Peninsula	FRCC	404	GVL	Gainesville Regional Utilities	SERC
SERC FL Peninsula	FRCC	405	HST	Homestead, City of	SERC
SERC FL Peninsula	FRCC	406	JEA	JEA	SERC

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
SERC FL Peninsula	FRCC	407	KEY	Key West, City of (Keys Energy)	SERC
SERC FL Peninsula	FRCC	409	LWU	City of Lake Worth Beach	SERC
SERC FL Peninsula	FRCC	411	FMPP	Florida Municipal Power Pool	SERC
SERC FL Peninsula	FRCC	412	SEC	Seminole Electric Cooperative	SERC
SERC FL Peninsula	FRCC	415	TAL	Tallahassee, City of	SERC
SERC FL Peninsula	FRCC	416	TECO	Tampa Electric Company	SERC
SERC FL Peninsula	FRCC	419	RCU	Reedy Creek Improvement District	SERC
SERC FL Peninsula	FRCC	421	TCEC	Treasure Coast Energy Center	SERC
SERC FL Peninsula	FRCC	426	OSC		SERC
SERC FL Peninsula	FRCC	427	OLEANDER	Oleander IPP at Brevard (FPL)	SERC
SERC FL Peninsula	FRCC	428	Calpine		SERC
SERC FL Peninsula	FRCC	438	IPP-REL	Reliant at Indian River (FMPP)	SERC
SERC FL Peninsula	FRCC	348	FPLNW	Florida Power & Light Co. (Gulf Power Company)	SERC
SPP North	SPP	640	NPPD	Nebraska Public Power District	MRO
SPP North	SPP	641	HAST	Hastings Utilities	MRO
SPP North	SPP	642	GRIS	City of Grand Island, NE	MRO
SPP North	SPP	645	OPPD	Omaha Public Power District	MRO
SPP North	SPP	650	LES	Lincoln Electric System	MRO
SPP North	SPP	652	WAPA	Western Area Power Administration - Upper Great Plains East	MRO
SPP North	SPP	659	BEPC-SPP	Basin Electric Power Cooperative	MRO
SPP South	SPP	511	AECC	Arkansas Electric Cooperative	MRO
SPP South	SPP	540	GMO	Greater Missouri Operations Company	MRO
SPP South	SPP	545	INDN	Independence Power & Light (Independence, Missouri)	MRO
SPP South	SPP	546	SPRM	City Utilities of Springfield, MO	MRO
SPP South	SPP	506	MJMEUC	Missouri Joint Municipal Electric Utility Commission	MRO
SPP South	SPP	520	AEPW	American Electric Power System-West	MRO
SPP South	SPP	523	GRDA	Grand River Dam Authority	MRO
SPP South	SPP	524	OKGE	Oklahoma Gas and Electric Co.	MRO
SPP South	SPP	525	WFEC	Western Farmers Electric Cooperative	MRO
SPP South	SPP	526	SPS	Southwestern Public Service Co. (Xcel Energy)	MRO
SPP South	SPP	527	OMPA	Oklahoma Municipal Power Authority	MRO
SPP South	SPP	531	MIDW	Midwest Energy, Inc.	MRO
SPP South	SPP	534	SUNC	Sunflower Electric Power Corporation	MRO

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
SPP South	SPP	536	WERE	Western Resources	MRO
SPP South	SPP	541	KCPL	Kansas City Power & Light Company	MRO
SPP South	SPP	542	KACY	Board of Public Utilities (Kansas City, KS)	MRO
SPP South	SPP	544	EMDE	The Empire District Electric Company	MRO

Western Interconnection

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
WECC-CA	WECC-CA	50	BCH	British Columbia hydro and power Authority	WECC
WECC-CA	WECC-CA	52	FBC	FortisBC, Inc	WECC
WECC-CA	WECC-CA	54	ALB	Alberta Electric System Operator	WECC
Front Range	WestConnect	11	ELP	El Paso Electric Company	WECC
Front Range	WestConnect	70	PSCO	Public Service Company of Colorado (Xcel Energy)	WECC
Front Range	WestConnect	73	WAPA - RM	Western Area Power Administration – Rocky Mountain Region	WECC
Front Range	WestConnect	10	PNM	Public Service Company of New Mexico	WECC
Northern California Region	CAISO	30	PG&E	Pacific Gas and Electric Company	WECC
Northern California Region	CAISO	30	BANC	Balancing Authority of Northern California	WECC
Southern California Region	CAISO	21	IID	Imperial Irrigation District	WECC
Southern California Region	CAISO	22	SDGE	San Deigo Gas and Electric	WECC
Southern California Region	CAISO	24	SCE	Southern California Edison Company	WECC
Southern California Region	WestConnect	26	LADWP	Los Angeles Department of Water and Power	WECC
Southwest Region	WestConnect	14	APS	Arizona Public Service Company	WECC
Southwest Region	WestConnect	15	SRP	Salt River Project	WECC
Southwest Region	WestConnect	16	TEP	Tucson Electric Power	WECC
Southwest Region	WestConnect	17	APCO	Arizona Electric Power Cooperative	WECC

Source/Sink		Area Number	Area Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
Southwest Region	WestConnect	19	WAPA - DSW	Western Area Power Administration – Desert Southwest Region	WECC
Wasatch Front	NorthernGrid	18	NVE	NV Energy	WECC
Wasatch Front	NorthernGrid	60	IPC	Idaho Power Company	WECC
Wasatch Front	NorthernGrid	62	NWMT	Northwestern Energy	WECC
Wasatch Front	NorthernGrid	63	WAPA-UW	Western Area Power Administration – Upper Great Plains Region	WECC
Wasatch Front	NorthernGrid	64	SPP	NV Energy – Sierra Pacific	WECC
Wasatch Front	NorthernGrid	65	PACE	PacifiCorp - East	WECC

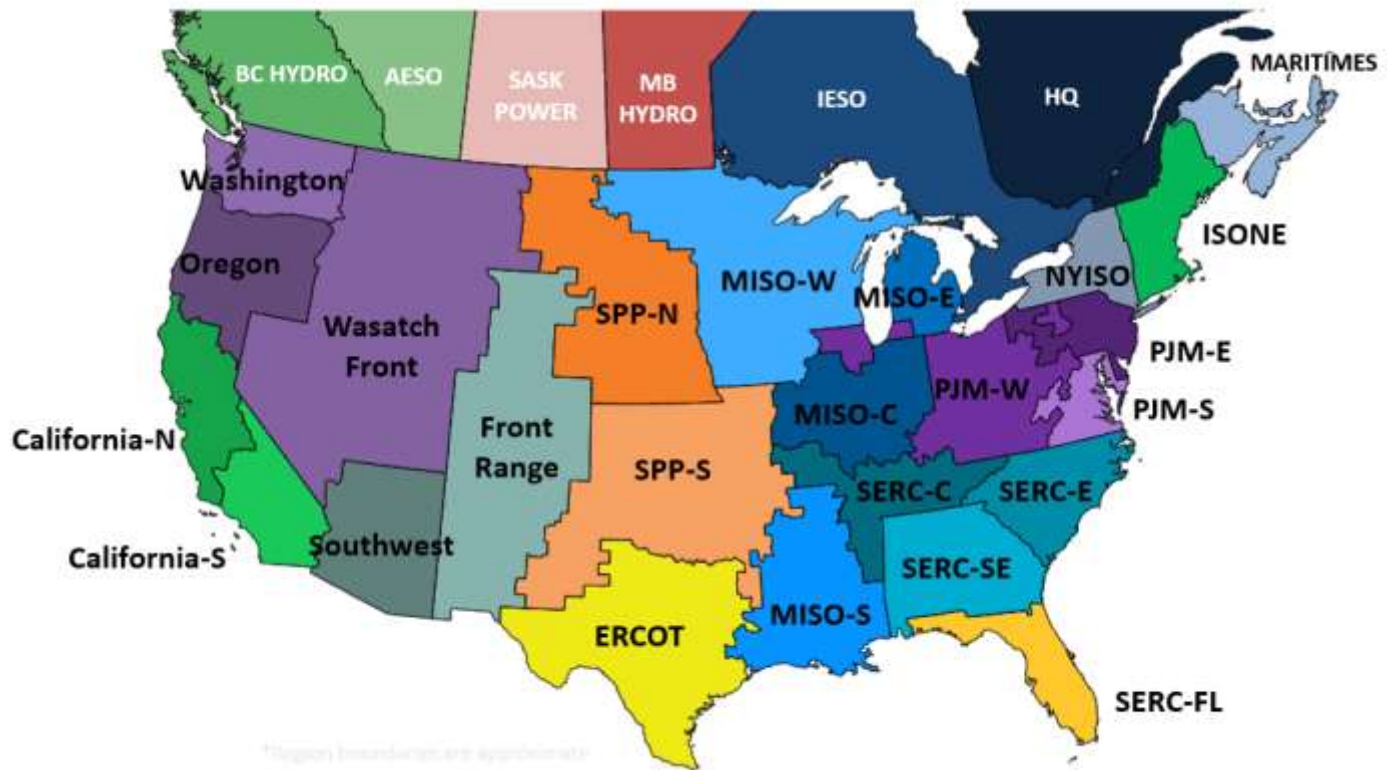
The table below shows the Northwest footprint (area 40), this area will be split to match the appropriate region by their Balancing Number and include all zones within that Balancing area. PACW and BPA have loads in both Oregon and Washington Region, which were split by the geographic boundaries.

Source/Sink		Balancing Number	Balancing Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
Oregon and Washington Region	NorthernGrid	13	PACW	PacifiCorp - West	WECC
Oregon and Washington Region	NorthernGrid	14	BPA	Bonneville Power Administration	WECC
Oregon Region	NorthernGrid	32	PGE	Portland General Electric Company	WECC
Washington Region	NorthernGrid	15	SCL	Seattle City Light	WECC
Washington Region	NorthernGrid	29	AVA	Avista Corporation	WECC
Washington Region	NorthernGrid	30	PSE	Puget Sound Energy	WECC
Washington Region	NorthernGrid	35	GCPD	PUD No. 2 of Grant County	WECC
Washington Region	NorthernGrid	36	CHPD	Chelan PUD	WECC
Washington Region	NorthernGrid	38	TWPR	Tacoma Power	WECC

Source/Sink		Balancing Number	Balancing Name	Name	Region
ITCS Assessment Area	FERC Order 1000 Area				
Washington Region	NorthernGrid	46	DOPD	PUD No. 1 of Douglas County	WECC

Source & Sink Maps

Eastern Interconnection



Western Interconnection

