Northwest **Power** and **Conservation** Council

May 3, 2016

MEMORANDUM

TO: **Council members**

FROM: **Shirley Lindstrom, Idaho State Staff**

SUBJECT: **Northern Tier Transmission Group**

BACKGROUND:

Presenter: Dave Angel, Senior Manager of System Planning, Idaho Power Company

Summary: Dave will give the Council an overview of the Northern Tier Transmission Group (NTTG) with an update of the most recent events. He will also give us some updates on WECC issues that are related and impacts the NTTG.

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Frequently Asked Questions About NTTG

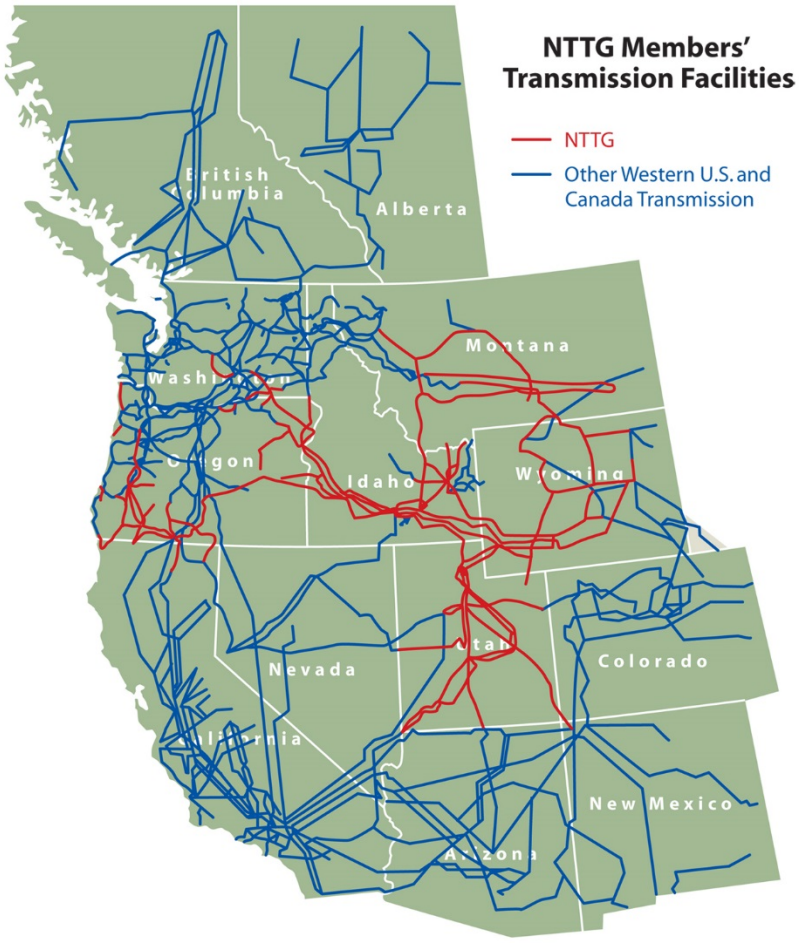
What is NTTG?

The Northern Tier Transmission Group (NTTG) is a group of transmission providers and customers that are actively involved in the sale and purchase of transmission capacity of the power grid that delivers electricity to customers in the Northwest and Mountain States. Transmission owners serving this territory work in conjunction with state governments, customers, and other stakeholders to improve the operations of and chart the future for the grid that links all of these service territories.

NTTG coordinates individual transmission systems operation, products, business practices, and planning of their high-voltage transmission network to meet and improve transmission services that deliver power to consumers.

Northern Tier Transmission Group members are committed to working with stakeholders and state officials to increase efficient use of the grid and to develop the infrastructure needed to deliver new renewable and thermal power resources to consumers. NTTG is a proactive group devoted to a collaborative, step-by-step approach to achieve prompt and cost-effective results.

What geographical area does NTTG cover?



NTTG is a regional entity spanning from the Pacific Northwest to the desert Southwest. NTTG has direct state regulatory commission participation in Idaho, Montana, Oregon, Wyoming, and Utah. It has participating utility members with service areas in California, Idaho, Montana, Oregon, Washington, Wyoming, and Utah.

How many customers are served by the transmission owners participating in NTTG?

Total customers served - 4,308,200

- Portland General Electric - 1,634,700 customers
- PacifiCorp - 1,600,000 customers
- Idaho Power - 471,800 customers
- NorthWestern Energy - 316,000 customers
- UAMPS (a public power organization) - 240,700 customers
- Deseret (a generation and transmission cooperative) - over 45,000 customers

How many miles of high-voltage transmission lines are included within NTTG?

In total NTTG members directly own and market more than 29,239 miles of transmission lines.

- PacifiCorp - 15,580 miles
- Northwestern Energy - 7,000 miles
- Idaho Power - 4,691 miles
- Portland General Electric - 1,681 miles
- Deseret - 287 miles

How is NTTG managed?

A Steering Committee has been established with responsibility for providing governance and direction on the initiatives undertaken by the Northern Tier Transmission Group members and to provide a forum for facilitating dispute resolution.

The Steering Committee membership is composed of one representative from each of the following:

- State regulatory utility commissioners in Northern Tier
- Executive level representatives from the utility cooperative and utilies, which are party to the NTTG Funding Agreement
- Representatives appointed by state customer advocacy groups within Northern Tier

As the independent staff, Comprehensive Power Solutions provides third-party management and planning facilitation services for the ongoing operations and development of NTTG.

Will NTTG engage in reliability or economic planning?

NTTG covers both reliability and economic planning coordination, and has started by identifying projects that have been previously studied and spurred interest from members within the NTTG service area. NTTG works under the WECC PCC for reliability planning, WECC TEPPC for economic planning, and is working to implement a framework for cooperation with neighboring sub-regional planning entities.

What role does NTTG play in regional planning?

NTTG focuses its efforts on the evaluation of transmission projects that move power across the sub-regional bulk transmission system that services load in its footprint. NTTG committed to coordinating the facilitation of sub-regional planning efforts with adjacent sub-regional groups and other planning entities. It is expected that WECC will continue to be responsible for coordinating and promoting electric system reliability of the Western Interconnection through its role in regional reliability planning and facility rating, and by providing economic planning services through TEPPC to its members.

How does NTTG plan to meet FERC's reform planning requirements?

NTTG is committed to the principles outlined in FERC Order 890, including direct and meaningful involvement of state regulatory commissions and retail customer advocacy groups, providing forums for open participation of all parties (including non-members), and executive level support and involvement by member utilities.

Does NTTG support the creation of competitive markets in the Pacific Northwest?

Yes, the possible creation of economically justified competitive markets for ancillary services or energy and capacity products is an initiative that is on NTTG's long-term agenda. Furthermore, the NTTG planning function supports competitive power markets by helping facilitate the kind of transmission projects that strengthen the grid and reduce congestion. In the near term, however, NTTG is focusing on easily achievable initiatives that enjoy a broad support and will bring immediate and cost effective benefits to its service area.

What is NTTG doing to relieve congestion?

NTTG members Idaho power, NorthWestern Energy, and PacifiCorp all have announced major transmission expansion projects targeted at relieving regional congestion and serving their customer's load growth requirements. The members of NTTG participate in and rely on the transparency of Northern Tier's sub-regional planning processes to further these projects.

Congestion and congestion relief are high priority issues for the members of NTTG, and near-term benefits are expected from mechanisms that will facilitate the more efficient use of existing capacity, such as transparency into NTTG member transmission providers' available transfer capability and supporting economic congestion studies as outlined in FERC's Order 890. Long-term solutions will come from planning studies to identify key cost-effective transmission investments and working to facilitate their implementation.

What is ADI and how is NTTG facilitating further development?

NTTG members Idaho Power, NorthWestern Energy, and PacifiCorp, with support from British Columbia Transmission Corporation, have developed communication protocols and software to allow control areas to share Area Control Error (ACE) signals. By sharing these signals, control areas take advantage of the diversity in these signals and help reduce the regulation capacity requirements. This system is called ACE Diversity Interchange or ADI. The ADI companies recognize that the development of ADI is not difficult and the benefits far exceed the development costs.

The ADI participants under NTTG are evaluating other similar processes or systems which could bring similar benefits to its members in future phases of the ADI development. These efforts may result in the development or permit the transmission of new capacity and energy products within the ADI footprint.

How does NTTG facilitate investment in transmission construction?

NTTG fosters a spirit of cooperation and accountability among provider, customers, and regulators which encourages transmission construction that best addresses the needs of the region. The operation of NTTG's cost allocation process promotes financing efforts and provides valuable insights for those developing the projects. NTTG members Idaho

Power, NorthWestern Energy, and PacifiCorp recently announced major expansion projects which already enjoy a significant level of support among member utilities and the region. For projects beyond these, NTTG and its member utilities are establishing the framework for an ongoing Order 890-compliant planning process that will also include new tools for such difficult tasks as cost allocation and economic planning.

How does NTTG ensure transparency, and still ensure confidential information is protected?

Regular public forums that address the areas of planning and transmission utilization are open to all interested parties. The NTTG Planning and Steering Committee are establishing mechanisms to ensure confidential information and critical energy infrastructure information is protected and compliant with current WECC models and CEII rules.

Does NTTG have an independent third party to oversee or coordinate the planning process?

NTTG is overseen by the Steering Committee, with participation from commissions in each state and executives from transmission providers. NTTG also provides third party project management and planning facilitation services provided through Comprehensive Power Solutions, Inc which represent the members of NTTG.

How does NTTG address cost allocation and recovery?

NTTG has established a Cost Allocation Committee whose purpose is to apply Cost Allocation Principles consistently, openly, and fairly, while conducting analyses of cost allocations that accompany transmission project proposals developed in the NTTG planning processes and to make recommendations on cost allocations to the Steering Committee based on those analyses. Each regulatory commission, state consumer agency and publicly-owned or consumer-owned entity which is a member of NTTG may appoint one person to represent it as a member of the Cost Allocation Committee.

For more information on the NTTG's Cost Allocation Principles and processes, click **here**.

How far out in the planning horizon does NTTG look?

NTTG's comprehensive transmission planning process includes biennial preparation of a long-term (10 year) bulk transmission expansion plan, with consideration of up to a twenty year planning horizon.

NORTHERN TIER
TRANSMISSION GROUP

Regional Transmission Planning

Northwest Power and Conservation Council Meeting

Boise, Idaho
May 11, 2016

Northern Tier Transmission Group

Participating Utilities

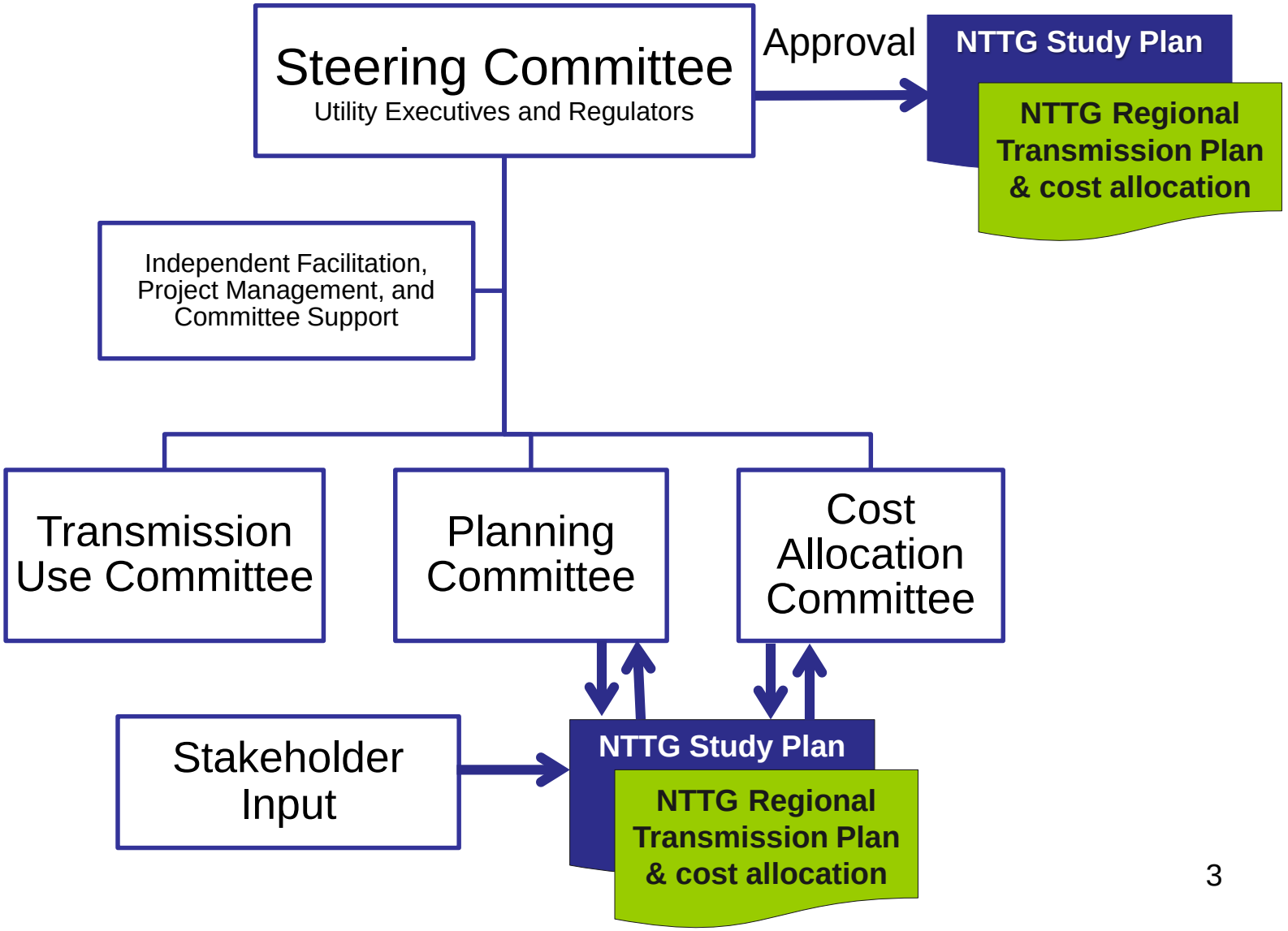
Deseret Power Electric Cooperative
Idaho Power
NorthWestern Energy
PacifiCorp
Portland General Electric
Utah Associated Municipal Power Systems

4,308,200 customers served
29,239 miles of transmission

Participating State Representatives

Idaho Public Utilities Commission
Montana Consumer Counsel
Montana Public Service Commission
Oregon Public Utility Commission
Utah Office of Consumer Services
Utah Public Service Commission
Wyoming Public Service Commission

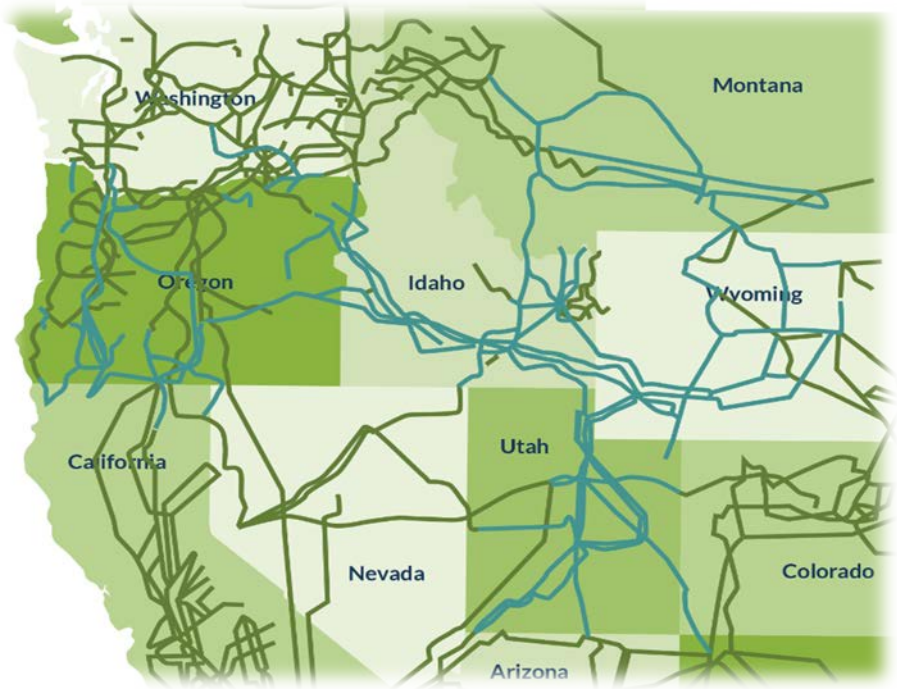
NTTG Structure



NORTHERN TIER
TRANSMISSION GROUP

NTTG 2014-15
Regional Transmission Plan

NTTG 2014-15 Regional Transmission Plan



- Develop a plan that meets the NTTG footprint transmission need more efficiently or cost-effectively than the individual local transmission plans

Local Plan Transmission Projects

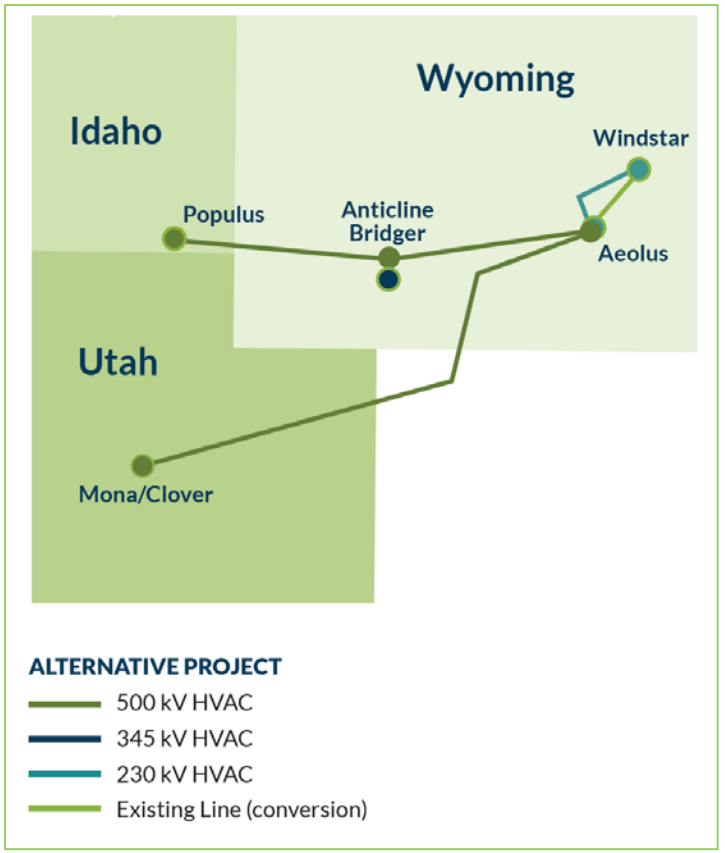
SPONSOR	TYPE	PROJECTS	VOLTAGE	CIRCUITS
IDAHO POWER (NON-COMMITTED)	LTP	Gateway West Project	500 kV	2
	LTP	B2H Project	500 kV – 230 kV	2
GREAT BASIN TRANSMISSION (NON-COMMITTED)	Sponsored (1)	Southwest Intertie Project North	500 kV	1
NORTHWESTERN ENERGY	LTP	Broadview – Garrison Upgrade	500 kV	1
	LTP	Millcreek – Amps Upgrade	230 kV	1
PACIFICORP EAST (NON-COMMITTED)	LTP	Gateway South Project	500 kV	1
	LTP	Gateway West Project	500 kV – 230 kV	5
PORTLAND GENERAL	LTP	Blue Lake – Gresham	230 kV	1
TRANSWEST EXPRESS	Merchant Transmission Developer (2)	TransWest Express	±600 kV DC	1

(1) Sponsored Projects and Unsponsored will be evaluated

(2) Per customer request, the TransWest Express (Merchant) project will not be evaluated this planning cycle as an Alternative Project for selection in the Regional Transmission Plan

Regional Transmission Plan

- Boardman to Hemmingway 500 kV Project
- Alternative to the Gateway Energy Project



Public Policy Consideration Scenario

- Retire Colstrip units 1 and 2 by 2020
- Replace with 610 MW of wind at Broadview, Montana
  - Power flow contingency and dynamic stability analysis performed
  - Generation tripping is required to maintain system reliability
  - Cannot definitively conclude that the wind-for-coal replacement is possible

NTTG 2016-2017 Planning Cycle

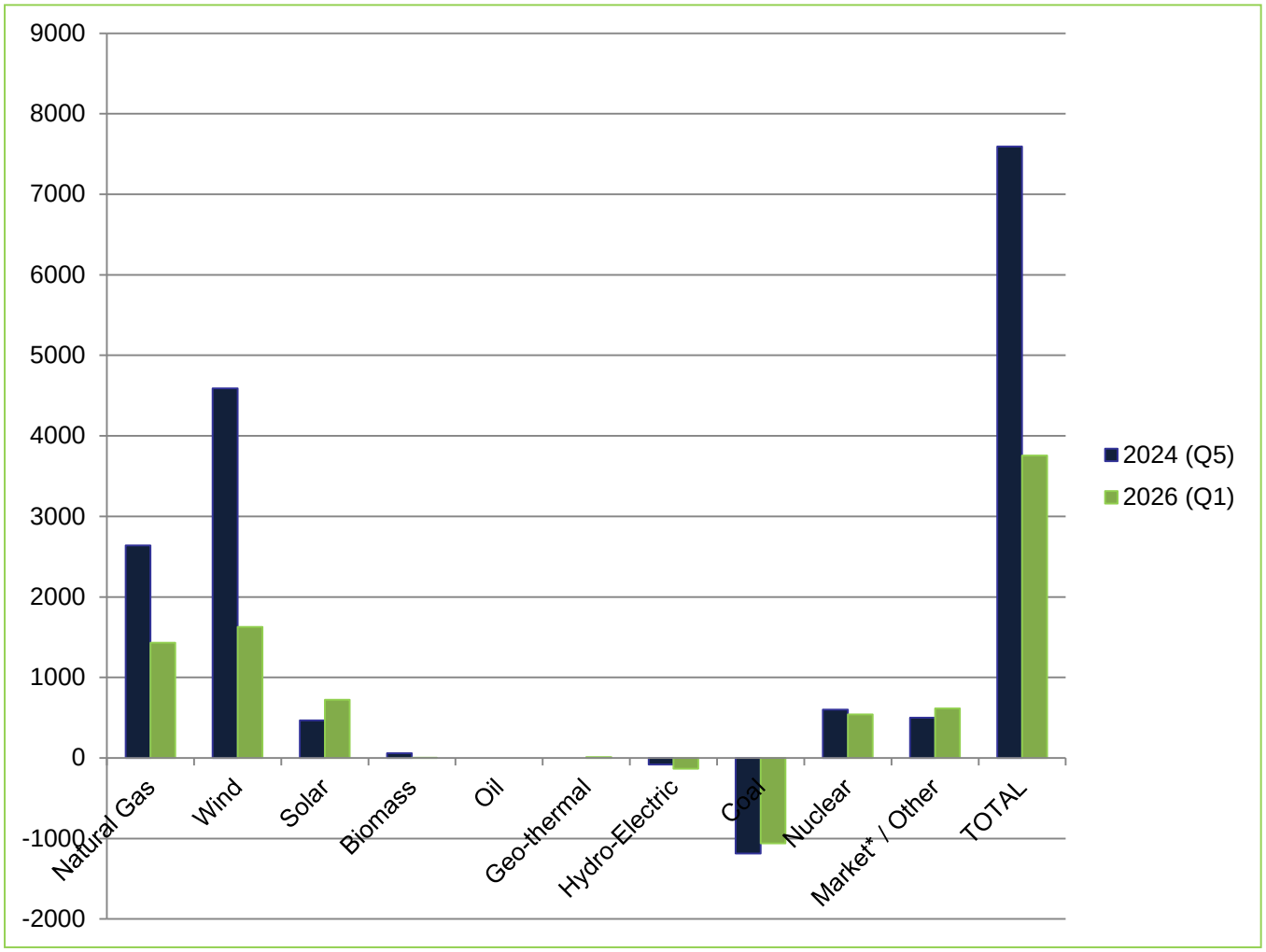
Load Submissions

SUBMITTED BY:	2015 Actual Peak Demand (MW)	2024 Summer Load Data Submitted in Q1 2014 (MW)	2026 Summer Load Data Submitted in Q1 2016 (MW)	Difference (MW) 2024-2026
Deseret G&T	Included in PacifiCorp East			
Idaho Power	3,743	4,193	4,359	166
NorthWestern	1,790	1,774	1,992	218
PacifiCorp	13,469*	14,002	13,414	-588
Portland General	3,958	3,933	3,885	-48
UAMPS	Included in PacifiCorp East			
TOTAL	22,960	23,892	23,650	-242

- Based on 2014 Actual Peak Demand

2015 Actual Peak Demand will be provided when it becomes available

Resource Submissions



NTTG 2016-17
New Transmission Service

Submitted by	MW (1)	Start Date	POR	POD
Idaho Power	500/200	2021	Northwest	IPCo
	250/550	2022	LaGrande	BPASEID
PacifiCorp East	540	2024	Antelope	Network
	887	2026	Miners, Point of Rocks	Network

(1) Summer/Winter

2016 Regional Transmission Submissions

Sponsor	From	To	Voltage	Circuit	Type	Projects
Deseret G&T	Bonanza	Upalco	138 kV	2	LTP	New Line
Idaho Power	Hemingway	Boardman/ Longhorn	500 kV	1	LTP	B2H Project
	Cedar Hill	Hemingway	500 kV	1	LTP	Gateway West Segment #9 (joint with PacifiCorp East)
	Cedar Hill	Midpoint	500 kV	1	LTP	Gateway West Segment #10
	Midpoint	Borah	500 kV	1	LTP	(convert existing from 345 kV operation)
	Hemingway	Bowmont	230 kV	2	LTP	New Line
	Bowmont	Hubbard	138 kV	1	LTP	New Line
	King	Wood River	138 kV	1	LTP	Line Reconductor
	Willis	Star	138 kV	1	LTP	New Line
PacifiCorp East	Aeolus	Clover	500 kV	1	LTP	Gateway South Project – Segment #2
	Aeolus	Anticline	500 kV	1	LTP	Gateway West Segments 2&3
	Anticline	Jim Bridger	500 kV	1	LTP	345/500 kV Tie
	Anticline	Populus	500 kV	1	LTP	Gateway West Segment #4
	Populus	Borah	500 kV	1	LTP	Gateway West Segment #5
	Populus	Cedar Hill	500 kV	1	LTP	Gateway West Segment #7
	Antelope	Goshen	345 kV	1	LTP	Nuclear Resource Integration
	Antelope	Borah	345 kV	1	LTP	Nuclear Resource Integration
	Windstar	Aeolus	230 kV	1	LTP	Gateway West Segment #1W
	Cedar Hill	Hemingway	500 kV	1	LTP	Gateway West Segment #9 (joint with Idaho Power)
Portland General	Blue Lake	Gresham	230 kV	1	LTP	New Line
	Blue Lake	Troutdale	230 kV	1	LTP	Rebuild
	Blue Lake	Troutdale	230 kV	2	LTP	New Line
	Horizon	Springville Jct	230 kV	1	LTP	New Line (Trojan-St Marys-Horizon)
	Horizon	Harborton	230 kV	1	LTP	New Line (re-terminates Horizon Line)
	Trojan	Harborton	230 kV	1	LTP	Re-termination to Harborton
	St Marys	Harborton	230 kV	1	LTP	Re-termination to Harborton
	Rivergate	Harborton	230 kV	1	LTP	Re-termination to Harborton
	Trojan	Harborton	230 kV	2	LTP	Re-termination to Harborton

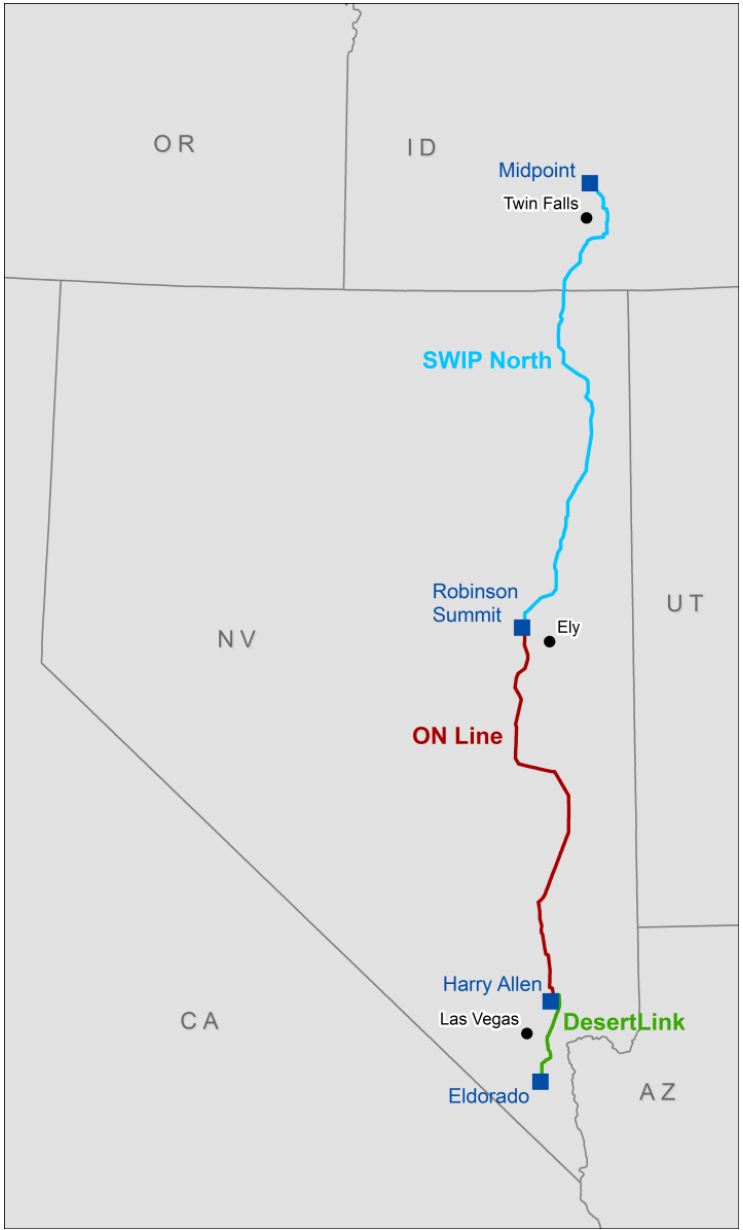
(1) Transmission projects as of April 7th, 2016

(2) Slight change in Gateway West configuration

NTTG 2016-17
Interregional Project Submissions

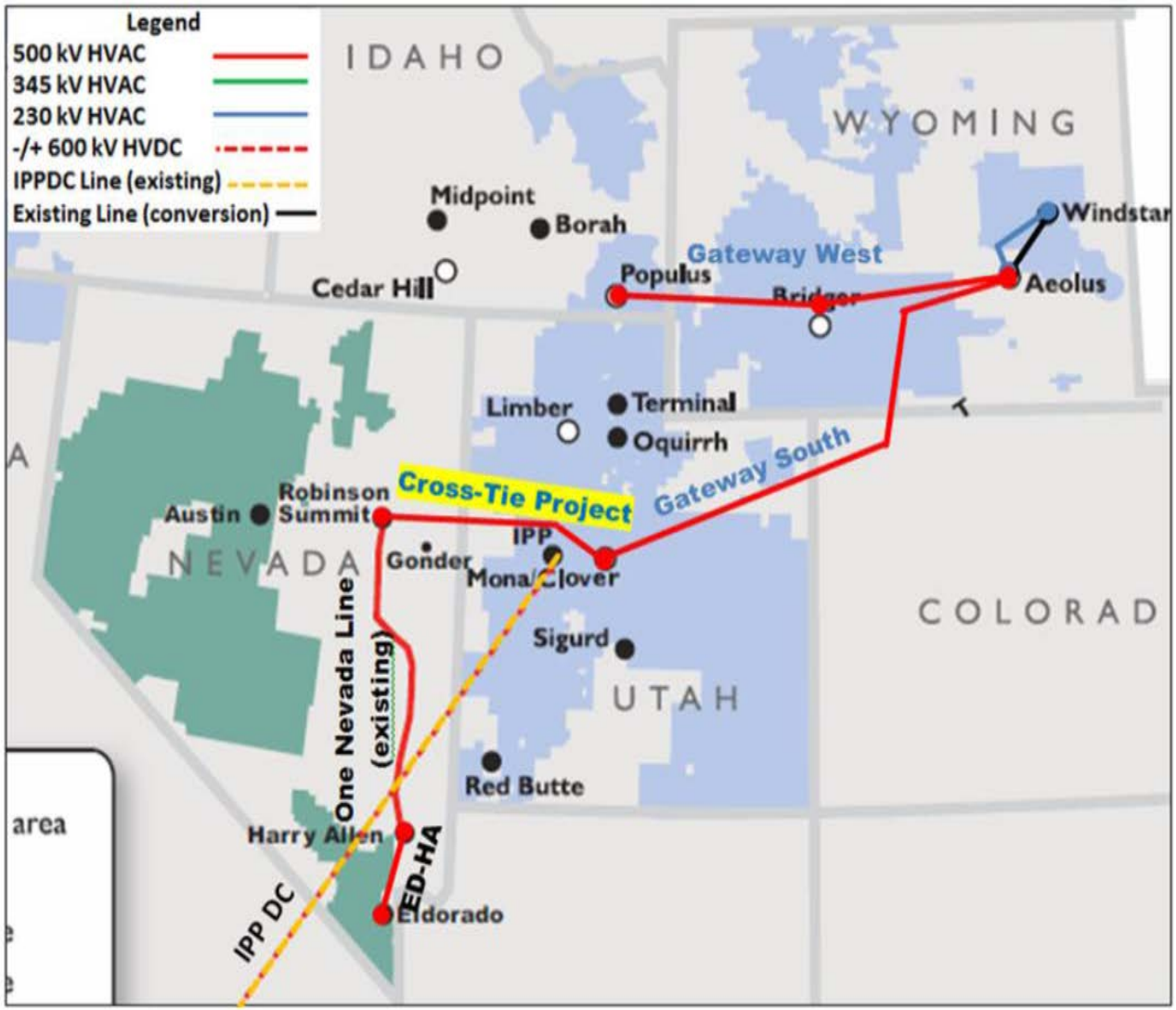
- Great Basin Transmission - 500 kV AC
- TransCanyon – 500 kV AC
- TransWest Express – 600 kV DC

SWIP-North

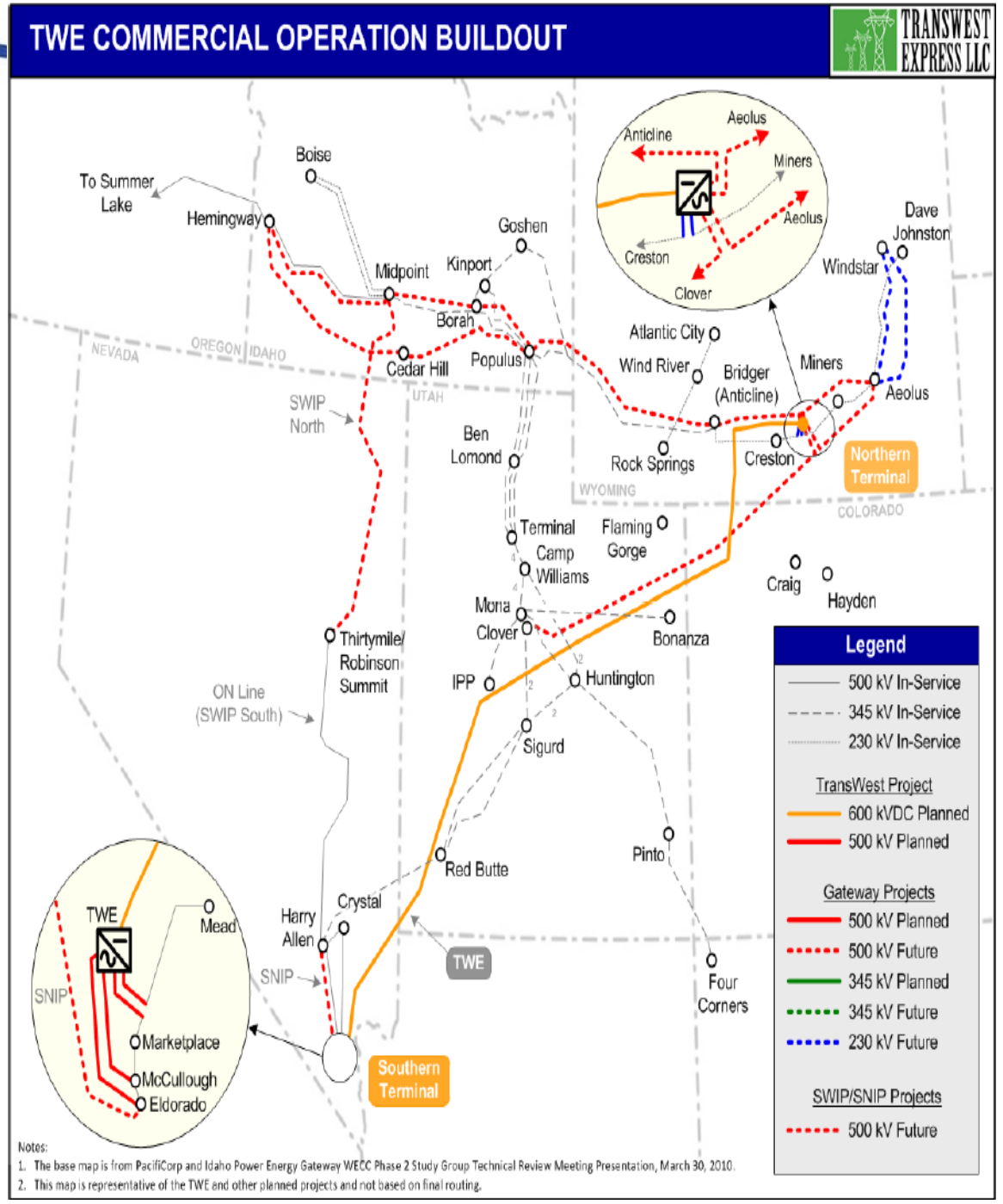

OR
ID
Midpoint
Twin Falls
SWIP North
Robinson
Summit
Ely
NV
UT
ON Line
Harry Allen
Las Vegas
DesertLink
CA
Eldorado
AZ

Cross-Tie

Figure 1 Cross-Tie Transmission Project Overview



TransWest Express



NTTG 2016-17
Public Policy Considerations

- Renewable Northwest and NW Energy Coalition Request
  - Based on 111(d) proposed rule, consider retirement of Colstrip 1, 2 & 3 (1494 MW)
  - Three replacement scenarios:
    a) 1494 MW of wind located at Broadview
    b) Scenario a) with a synchronous condenser at Colstrip
    c) 1244 MW of wind and 250 MW gas turbine at Billings