Welcome!
Transmission Corridors Work Group

Meeting #3

Day 1: December 8, 2021, 9 AM – 12 PM

Observers: Please join the meeting via Livestream: www.rossstrategic.com/livestream

Public Participation

- Public observers, if you are in the Zoom meeting right now, please log off and listen/watch the meeting via livestream: www.rossstrategic.com/livestream
- If you wish to provide public comment, please join the Zoom meeting **tomorrow at 11:45 AM**.
- We will share Zoom info at that time (available through livestream)

Welcome and agenda review

Rob Willis, TCWG co-facilitator, Ross Strategic
Kathleen Drew and Joe Wood, EFSEC

A few quick reminders....

Please keep yourself muted while others are speaking.

Raise your virtual hand to contribute to the conversation.

- **Alt+Y** to raise and lower your hand 

Allow everyone the chance to speak, and listen actively to understand others' views.

If you need technical assistance, please send a Zoom chat to **Lauren Dennis.**

Agenda Review

Today's agenda – Day 1 (Dec 8)

Time	Topic
9:00 AM	Opening (agenda review, remarks, etc.)
9:05 AM	TCWG Member Round Robin
9:25 AM	Challenges/Opportunities to improving the existing transmission system: • *Chris Jones, BPA* - Transmission service requests and contracted transmission capacity vs actual RE generation onto line • *Amer Nizam, WSDOT* - Challenges to siting within in ROW
10:10 AM	Break (10 mins)
10:20 AM	Facilitated Discussion: • Review of challenges discussed in Meeting #1 and #2 • Most important opportunities for near-term transmission improvement? • …for long-term transmission improvement?
11:55 AM	Day 1 wrap-up, look ahead to Day 2, closing remarks
12:00 PM	Adjourn

Tomorrow's agenda – Day 2 (Dec 9)

Time	Topic
9:00 AM	Opening – recap, observations, reflections, questions from Day 1
9:05 AM	Challenges/Opportunities presentations (cont'd): • *Will Power, IBEW 77* - Labor needs and shortages in the PNW and what it means for transmission upgrades
9:35 AM	Emerging Principles for Meeting Near-term Transmission Needs: • Walk through draft list of emerging principles • Facilitated discussion to vet, revise, annotate, confirm
10:25 AM	Break (10 mins)
10:35 AM	Emerging Principles for Improving or Upgrading the Existing Transmission System (same as above)
11:50 AM	Public Comment Opportunity (up to 2 mins per person)
12:00 PM	Looking Forward, Wrap-up, and Adjourn

New Work Group Member Introductions (<2 mins each)

- Name
- What is your organization/agency's interest in transmission siting?
- Why is the work of the TCWG important to you?

TCWG member round robin

Observations? Information or insights to share with one other?

Presentations on Challenges/Opportunities to improving the existing transmission system

Perspectives shared today & tomorrow

Today (Day 1):

- *Chris Jones, BPA* - Transmission service requests and contracted transmission capacity vs actual RE generation onto line
- *Amer Nizam, WSDOT* - Challenges to siting within in ROW

Tomorrow (Day 2):

- *Will Power, IBEW 77* - Labor needs and shortages in the PNW and what it means for transmission upgrades

BPA's Transmission Offerings and Study Process

December 8, 2021

Tariff Context

- BPA provides wholesale transmission service in accordance with its Open Access Transmission Tariff (OATT) and supporting Business Practices
- BPA's process for evaluating and responding to transmission service requests (TSRs) largely mirrors the method defined by the Federal Energy Regulatory Commission's *pro forma* tariff
  - BPA has 30-day response requirement to notify the requesting customer whether BPA can provide requested service without requiring a study
  - If the existing system cannot enable the TSR, BPA is obligated to offer to study and identify plans of service to upgrade the transmission system (more on this later)

Types of Transmission Services

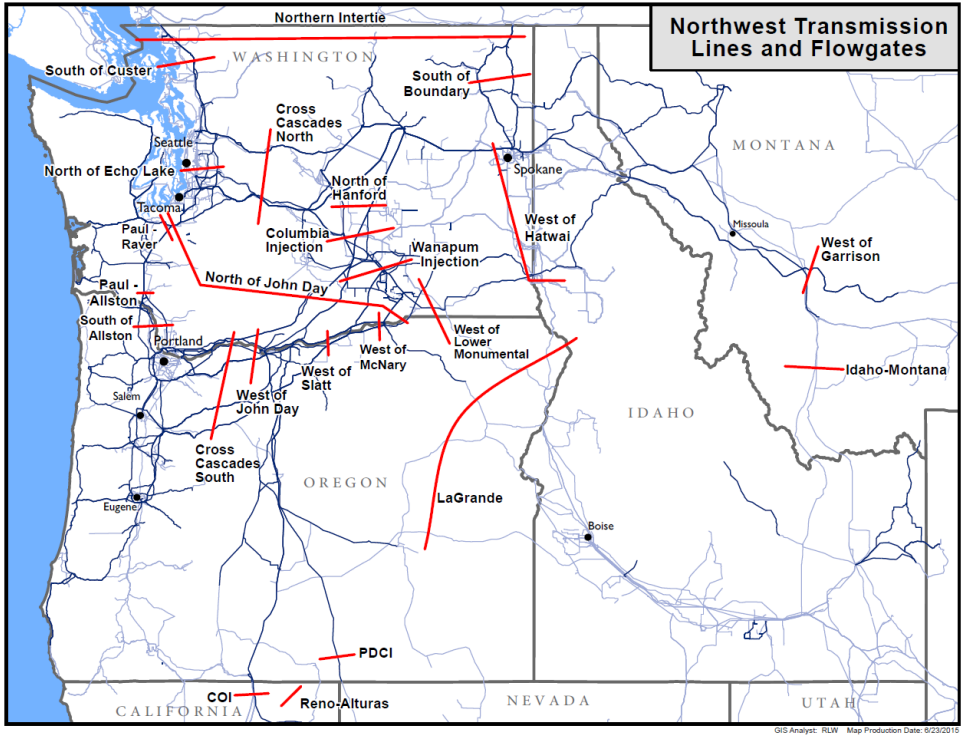
- Like other wholesale transmission providers that operate under an OATT framework, BPA offers two basic types of transmission service
  - Point-to-Point
    - Generally used to transmit from a single Point of Receipt to a single Point of Delivery, across BPA's main network grid
    - Customer pays a fixed rate 24x7 for the entirety of the contract, regardless of whether the customer actually schedules to use that contracted capacity
    - Point-to-point service can be redirected (change of the POR or POD) and resold to another transmission customer
    - The start of this service can also be deferred for up to 5 years
      - Useful for generation developers that are also constructing new resources and moving through the siting/permitting/interconnection process
  - Network Integration Transmission Service
    - Only used for load service, this service allows the designation of multiple resources for serving a designated load
    - Customer pays on metered load on a monthly basis

Firm, Non-Firm, and Conditional Firm

- BPA offers firm, non-firm, and conditional firm transmission service to PTP customers
  - Firm transmission
    - Has the highest curtailment priority (i.e., curtailed after all non-firm transactions during congestion situations)
    - Can be reserved for a minimum of one hour to 30 years
    - PTP service at least 5 years in duration carries rollover (renewal) rights (i.e., customer can continue taking same service)
  - Non-firm transmission
    - Non-firm transmission has numerous sub-priorities for curtailment (ranging from hourly, daily, weekly, and monthly non-firm)
  - Conditional Firm transmission
    - A form of long-term firm PTP service
    - Allows the Transmission Provider to curtail the service during certain a specified number of hours per year, or specified system conditions
    - Provides customers with a long-term firm PTP product and associated attributes such as rollover rights, redirects and the ability to resell to other customers
    - Customers cannot request CF service; only offered as a result of BPA performing a study of the requested transmission service

Available Transmission Capability Evaluation

- BPA manages 13 internal network flowgates, in addition to its external interties/interchanges
- In addition to managed constraints on the bulk grid network, new requests are also screened for local sub-grid area reliability limitations
  - Constraints generally associated with Receipt or Delivery Points at lower voltage levels
- Consequently, a large proportion of new requests are identified as requiring a System Impact Study



Transmission Capacity

- BPA calculates and posts separate Available Transmission Capacity (ATC) values for the long-term (beyond 13 months) and short-term (within 13 months) horizons
- BPA employs different long and short-term ATC methodologies given the differing time horizons and level of known information
  - Short-term calculations can account for near-term outage planning, or other changes in topology through near-term studies (ranging from seasonal studies to two-week-ahead and real-time studies)
  - Long-term calculations assume certain transmission projects are completed, load growth factors, as well as certain resource retirements and additions
  - This results in differences between available capacity in the long-term versus short-term time horizon
- Short-term TSR processing
  - BPA's short-term request (<13 months out) process is fully automated, and compares PTDF impacts of new transmission requests against posted short-term ATC values
    - If sufficient ATC exists, the service is offered; if not, the request is rejected
- Long-term TSR processing
  - BPA reviews all long-term requests submitted by customers, and performs a similar PTDF-based analysis that is conducted for the short-term horizon
  - Given the number of managed paths on BPA's transmission network, many transmission requests beyond the 13-month horizon require a System Impact Study to assess what, if any, upgrades are required

Transmission Inventory Map

- In order to assist customers with the submittal of long-term transmission requests, BPA also maintains a Transmission Inventory Map tool
  - Customers can input hypothetical requests, and the PTDF impacts are assessed against powerflow study results of BPA's latest study
  - Allows customers to 'self-score' requests prior to submittal, to assess better and worse locations to request service
  - Provides initial indications regarding whether the request will need to be studied by BPA to determine what upgrades might be required

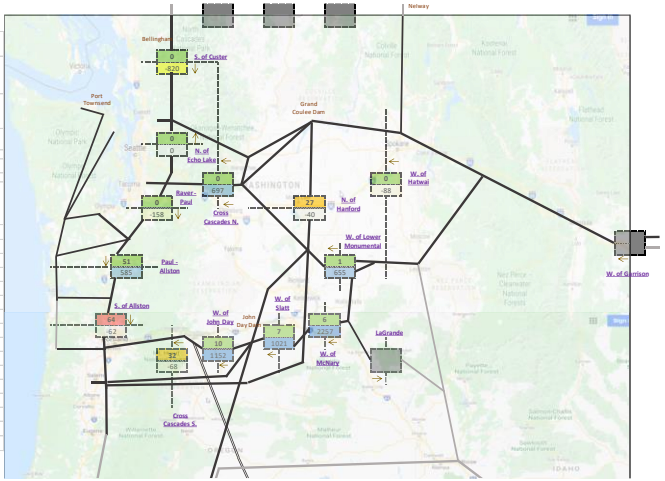
Transmission Inventory Map (cont.)

		Zone	kV	Owner Name
Evaluated Source:	ABERDEN115	Seattle Area, Olympic Peninsula	115	Bonneville Power Admin
Evaluated Sink:	BPAT.PGE	NA	NA	NA
Request MW:	100			

Posted 7/22/21

Sub Grid Constrained Area:		
PTDF #:	40007	321

Flowgate	Source	Sink	% Impact	MW Impact	Result
CROSS CASCADES NORTH E>W	-0.6530	-0.3085	-34.5%	0.0	Potential LTF
CROSS CASCADES SOUTH E>W	-0.3117	-0.6325	32.1%	32.1	Potential CF
NORTH OF HANFORD N>S	-0.2365	-0.5110	27.5%	27.5	Potential CF
PAUL TO ALLSTON N>S	0.2651	-0.2479	51.3%	51.3	Potential LTF
RAVER TO PAUL N>S	-0.3929	-0.1980	-19.5%	0.0	Potential LTF
SOUTH OF ALLSTON N>S	0.3362	-0.3041	64.0%	64.0	Cluster Study Likely
WEST OF JOHN DAY E>W	-0.0995	-0.1986	9.9%	9.9	Potential LTF
WEST OF SLATT E>W	-0.0687	-0.1343	6.6%	6.6	Potential LTF
WEST OF LOWER MONUMENTAL E>W	-0.0414	-0.0561	1.5%	1.5	Potential LTF
SOUTH OF CUSTER N>S	-0.0034	0.0007	-0.4%	0.0	Potential LTF
NORTH OF ECHO LAKE S>N	0.0390	0.0409	-0.2%	0.0	Potential LTF
WEST OF MCNARY E>W	-0.0702	-0.1337	6.4%	6.4	Potential LTF
WEST OF HATWAI E>W	0.0248	0.0355	-1.1%	0.0	Potential LTF



BPA's Cluster Study Process

- Once BPA determines a study is required, it will offer the customer(s) a study agreement
  - System Impact Study (SIS)
  - Facilities Study (FS)
- BPA has historically (since 2008) relied on a 'cluster study', aggregating all eligible requests and combining the SIS and FS into a single study
  - The customer always has the option to request to be studied on an individual basis
- Benefits of clustering:
  - Participant cost sharing;
  - More efficient sizing of upgrades;
  - More efficient queue processing and response (queue re-stacking);
  - Higher project subscription helps project business case and rate treatment
- Risk to clustering:
  - Cost allocations can fluctuate over time based on participation levels (good or bad);
  - Customers awaiting the next BPA cluster study can sit in queue for a lengthy period of time

Study Process and Assumptions

- Once BPA has the list of transmission requests that will be studied, it performs an assessment of potential path deficiencies
  - After loading all of the new transmission requests on top of its existing transmission commitments, BPA runs power flow studies of the managed BPA network paths over a wide-range of scenarios, in order to identify maximum likely impact
    - This analysis is conducted on a 5-year out horizon, including relevant system topology, load growth, and generation addition/retirement assumptions
  - Assesses different seasons (winter/summer peak, Spring light load to capture hydro diversity), as well as different generation assumptions (wind on/off, different hydro dispatches, etc.)
    - Also runs sensitivities to test impacts of different changes in assumptions
  - This analysis results in anticipated capacity deficiencies on each of BPA's managed network paths, that are passed to BPA Planning engineers to identify necessary transmission upgrades

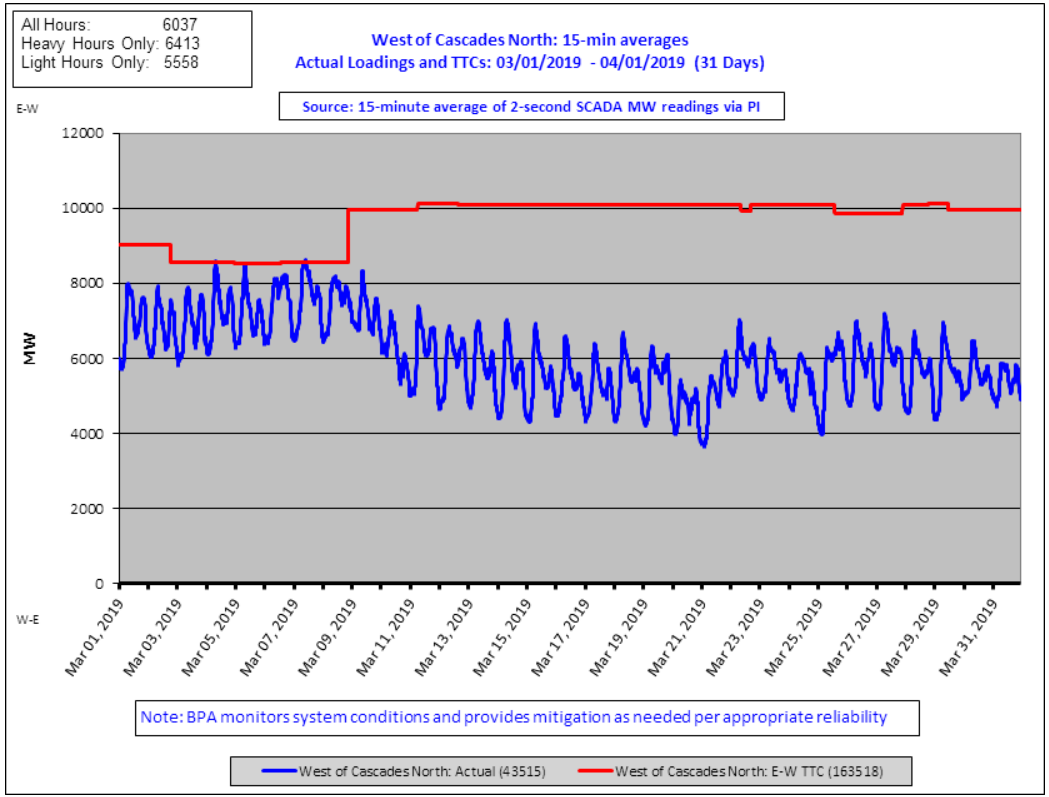
Study Process and Assumptions (cont.)

- BPA studies and plans its transmission system in a manner that respects the existing long-term firm rights held by its transmission customers
  - This means modeling these firm rights and ensuring additional service does adversely impact these users
- In addition, BPA's transmission request study process also accounts for requests that have been studied previously, that remain waiting for the completion of upgrades
- Taken together, BPA's transmission study process often identifies the need for reinforcements to meet new requests for service

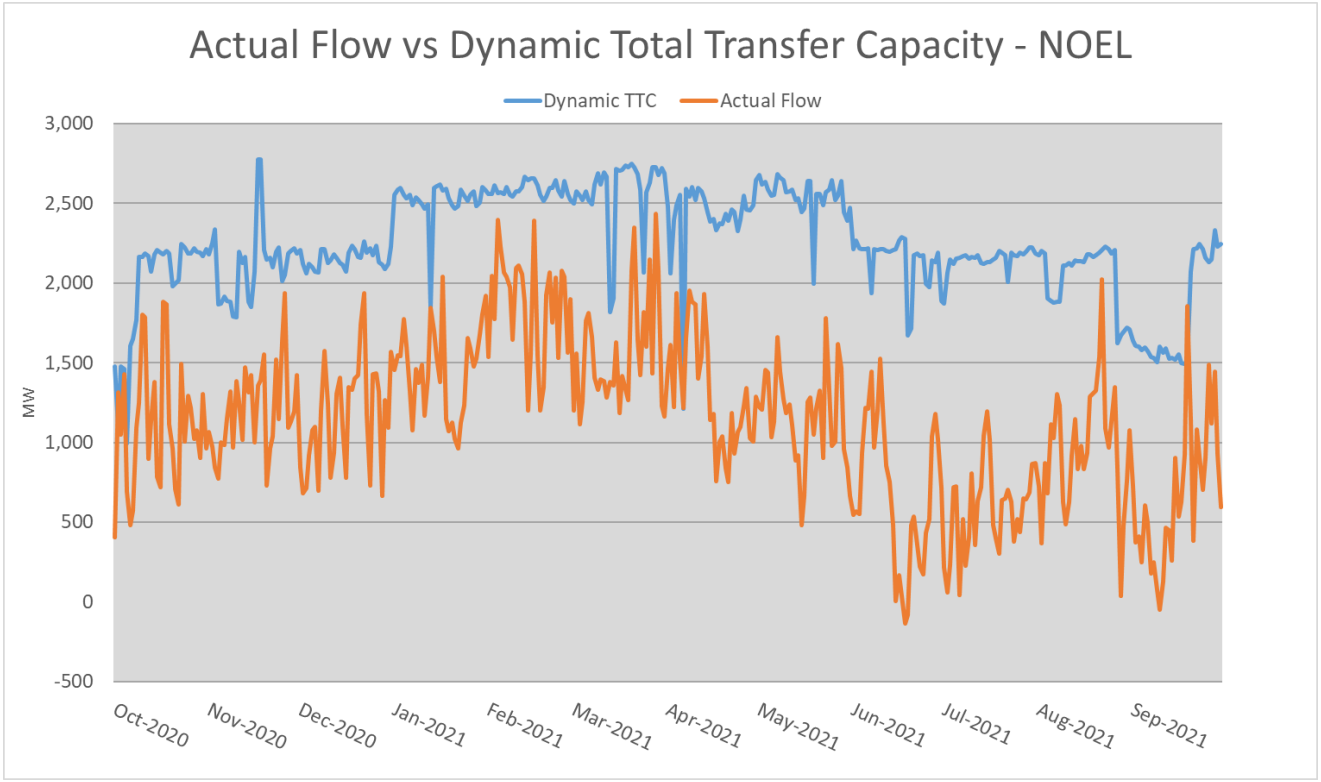
Study Process and Conditional Firm

- In recognition of the ‘all-or-nothing’ nature of acquiring long-term firm PTP service, BPA evaluates requests within its study process for Conditional Firm (CF) service
  - BPA’s studies not only identify the cost, timeline, and share of transmission upgrades necessary to provide the requested LTF service, it also provides results of conditional firm service
    - As stated previously, this service, if accepted, allows the Transmission Provider to curtail the transaction under specified system conditions, or for a specified number of hours per year
  - Where BPA identifies it can reliably offer CF service to a request, the customer can choose to accept this service under two scenarios
    - If the customer also supports the identified transmission upgrades, the service will be considered ‘Bridge’, and the conditions will be fixed until the completion of the transmission upgrades
    - If the customer decides not to support the upgrades, it can receive CF service on a ‘reassessment’ basis
      - This type of CF allows the Transmission Provider to reassess the conditions every two years
      - Allows the Transmission Provider to modify the service based on changes in topology or native load service needs

Example: Transmission Usage



Example: Transmission Usage (cont.)



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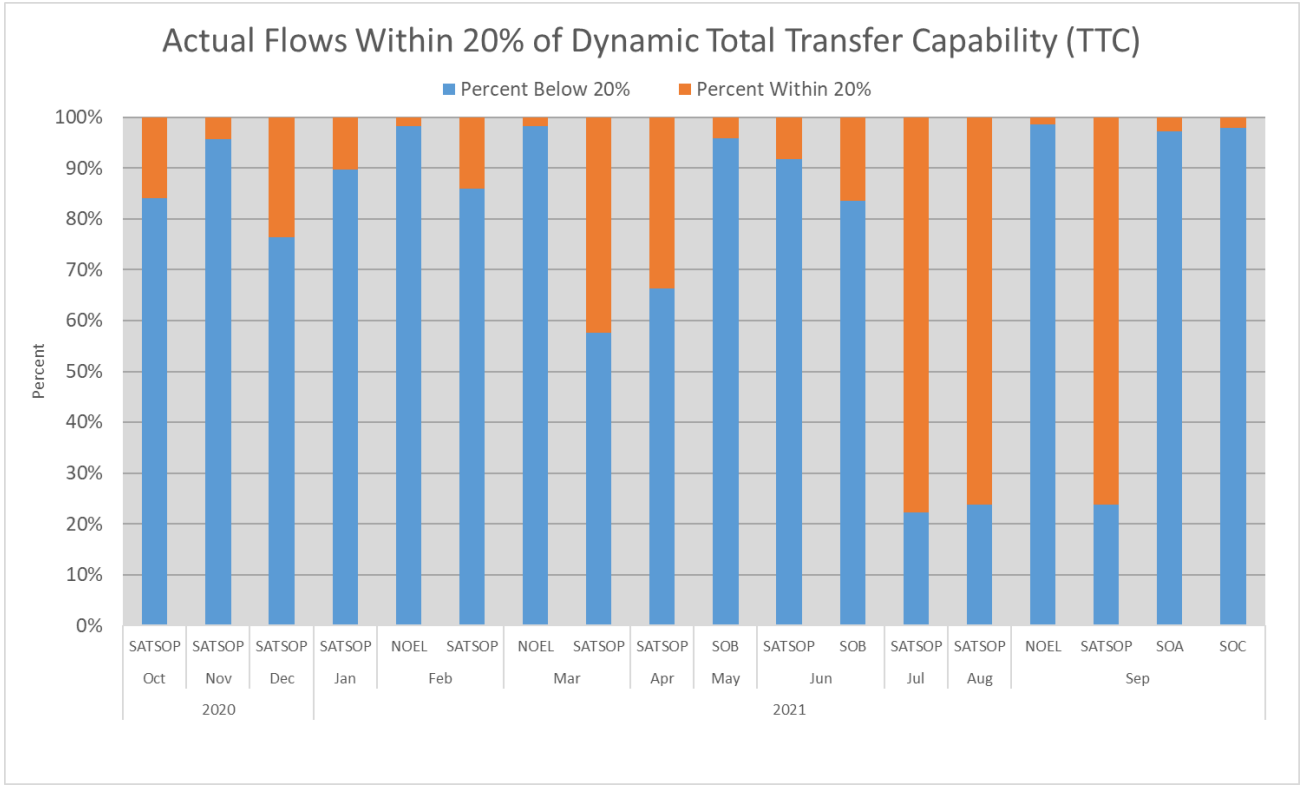
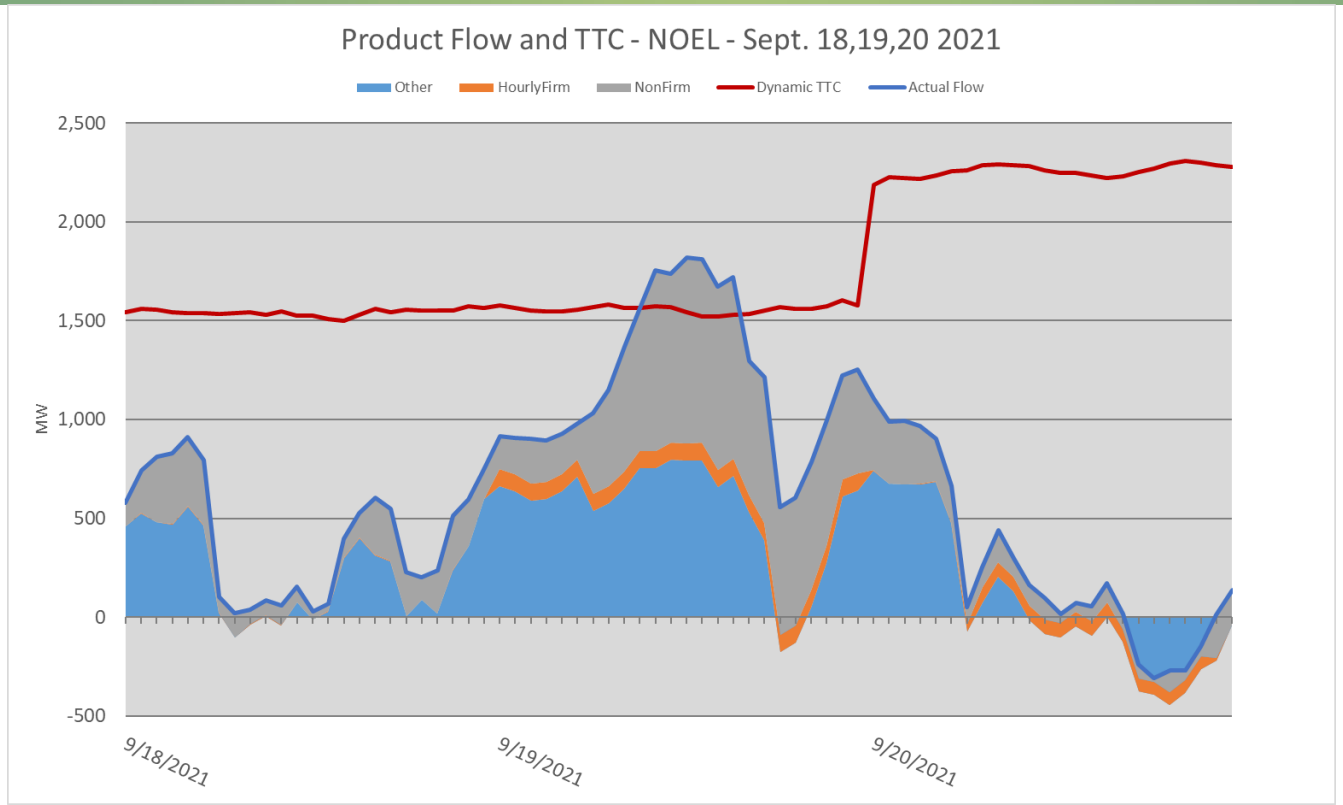


Example: Transmission Use, by Product



Questions?

Challenges/Opportunities to improving the existing transmission system

Ahmer Nizam, WSDOT

Washington State Department of Transportation

Sustainability Initiatives & ROW Policies

Ahmer Nizam, Technical Services Manager
Justin Zweifel, Environmental Policy Manager

Transmission Corridor Working Group
December 8, 2021


Safety
Engagement
Sustainability
Leadership
Integrity
Innovation
INCLUSION
WORKFORCE DEVELOPMENT
PRACTICAL SOLUTIONS

Sustainability

Climate Change Mitigation (GHG)

• Reduce transpo sector emissions:
- Land use, VMT reduction, equitable access
- ZEV infrastructure
- Active Transportation
- Transit

• Project-specific (design, materials, construction)

• Agency emissions, Ferry electrification, green fleet

Resilience to natural hazards and climate change impacts

- Maintain WSDOT assets
- Partner to improve resilience of entire multimodal system
- Address vulnerable communities' needs
- Multisector (utilities, flood control, emergency response)

Stewardship

- Cultural & natural resource protection
- Energy efficiency
- Pollution prevention (maintenance, spill response, design, construction monitoring)
- Recycle/reuse materials
- Orca and salmon recovery (fish passage, stormwater treatment)

Overview of WSDOT Policies

- Types of WSDOT Properties
- Types Occupancy Rights
- Considerations and Terms of ROW Occupancy
- Opportunities

Types of Properties Owned by WSDOT

Highway Rights of Way
Highway corridors, ramps, frontage roads, rest areas

Non-Highway Properties ("sundry sites")
Pit/quarry sites, park and ride lots, ferry terminals, airports, mitigation sites

Siting within highway rights of way

Utility Facility: Crossing	Utility Facility: Longitudinal Installation	Other Facility Types
Permit RCW 47.44.050	Franchise RCW 47.44.010	Lease RCW 47.12.120
Cost is limited to recovery of expenditures by WSDOT	Cost is limited to recovery of expenditures by WSDOT	Requires charging fair market rent
Typically allowed FHWA approval typically not required	Requires variance approval FHWA approval required for Interstates	FHWA approval required for interstates

Highway Classification

Limited Access

Managed Access

Primary Factors in Decision-Making

Safety & Operations

- Design Standards
- Access Requirements

Preservation

- Paramount use as a highway corridor is not diminished

Conditions of WSDOT Highway ROW Occupancy

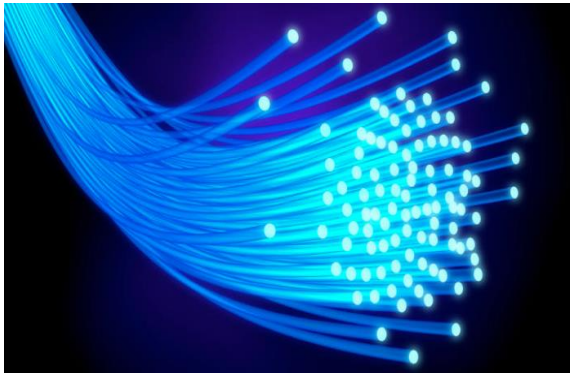
- Facility must be subject to modification, relocation or removal if necessitated for a highway purpose – RCW 47.44.020
- Typical franchise term is 25 years
- Facility must meet prescribed design requirements (height, depth, clear zone) – WAC 468-34
- Maintenance access requires additional access break approval

Siting Within Non-Highway ROW

Requires Issuance of airspace leases

- Fees based on fair market rent
- Leases are revokable
- Similar relocation requirements (as with franchises) related to future highway purposes
- Functionality of site for WSDOT's purpose needs to be preserved

Balancing Priorities: Broadband Example



- All of the same siting factors apply
- Dig Once Policy
- Innovative Partnerships
  - Collaborate with State Broadband Office and industry to address WSDOT broadband network needs along with state broadband goals

What Opportunities Exist For Electrical Transmission Facilities?

- Completion of the electric vehicle charging network
- Ferry's Electrification
- Solar Generation within WSDOT-owned properties
- What else?

Questions & Discussion

Brief Q&A

Break

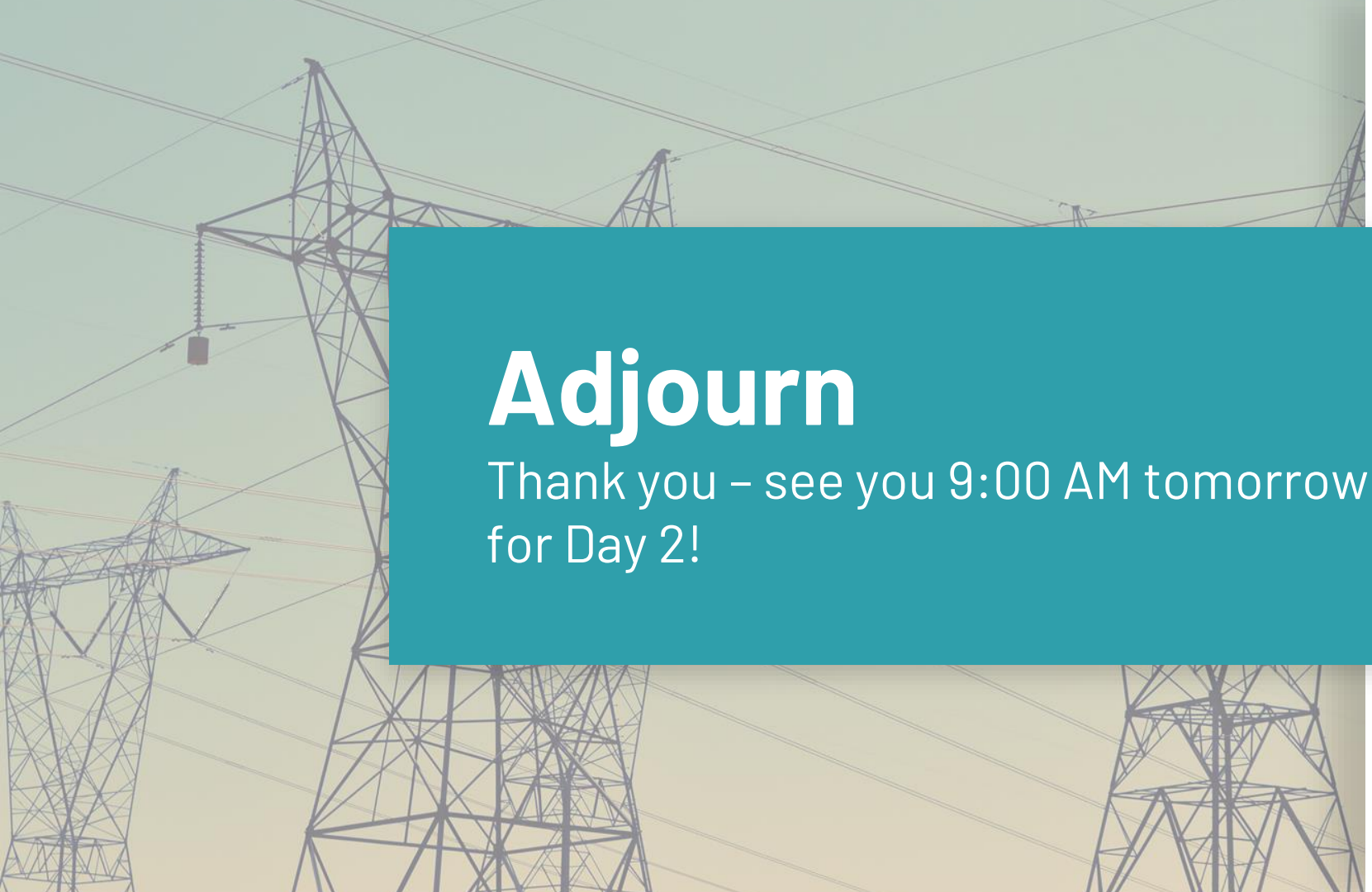
Please return at 10:35 AM

Facilitated Discussion

Challenges and opportunities, both near- and long-term

Day 1 Wrap Up

Closing remarks



Adjourn

Thank you – see you 9:00 AM tomorrow for Day 2!

Welcome!
Transmission Corridors Work Group

Meeting #3

Day 2: December 9, 2021, 9 AM -12 PM

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Welcome and Day 2 agenda

Rob Willis, TCWG co-facilitator, Ross Strategic
Kathleen Drew, EFSEC

Opening Remarks

Kathleen Drew, EFSEC, TCWG Chair

A few quick reminders....

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Agenda Review

Today's agenda

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9:35 AM	Emerging Principles for Meeting Near-term Transmission Needs: • Walk through draft list of emerging principles • Facilitated discussion to vet, revise, annotate, confirm
10:25 AM	Break (10 mins)
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11:50 AM	Public Comment Opportunity (up to 2 mins per person)
12:00 PM	Looking Forward, Wrap-up, and Adjourn

Perspectives shared

Reminder from yesterday (Day 1):

- *Chris Jones, BPA* - Transmission service requests and contracted transmission capacity vs actual RE generation onto line
- *Amer Nizam, WSDOT* - Challenges to siting within in ROW

Today:

- *Will Power, IBEW 77* - Labor needs and shortages in the PNW and what it means for transmission upgrades

Challenges/Opportunities to improving the existing transmission system

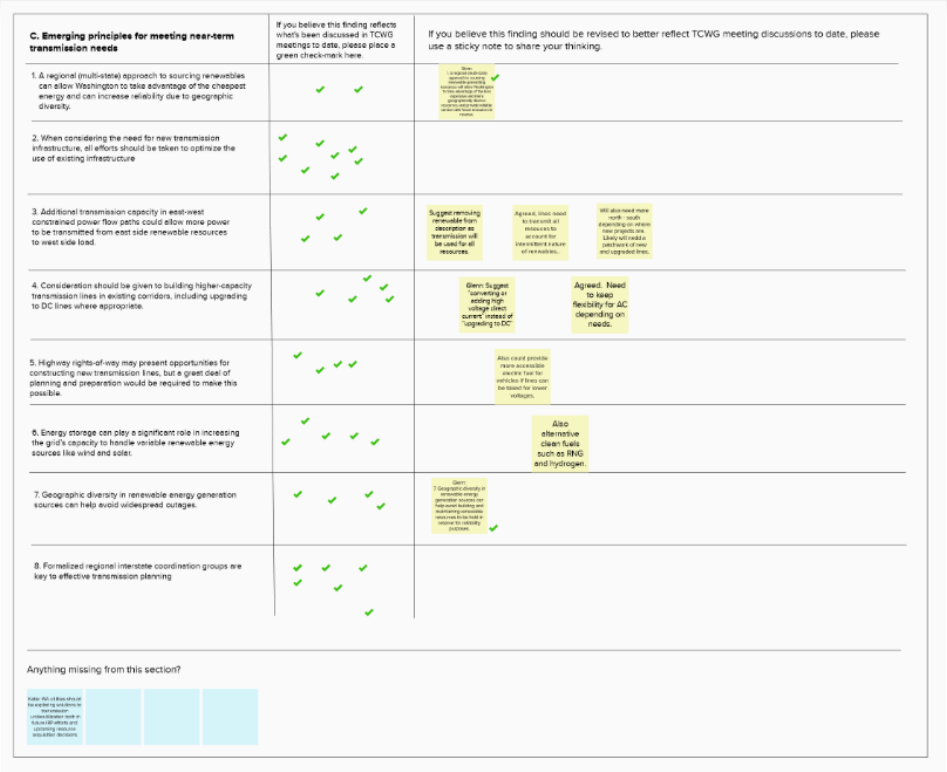
Will Power, IBEW 77

Brief Q&A

Emerging Principles for Meeting Near-term Transmission Needs:

Facilitated discussion

Feedback from Mural



C. Emerging principles for meeting near-term transmission needs	If you believe this finding reflects what's been discussed in TCWG meetings to date, please place a green check-mark here.	If you believe this finding should be revised to better reflect TCWG meeting discussions to date, please use a sticky note to share your thinking.
1. A regional (multi-state) approach to sourcing renewables can allow Washington to take advantage of the cheapest energy and can increase reliability due to geographic diversity.	✓ ✓	Slow - a regional (multi-state) approach to sourcing renewable generation can allow Washington to take advantage of the least expensive generation resources, and can increase reliability due to geographic diversity. ✓
2. When considering the need for new transmission infrastructure, all efforts should be taken to optimize the use of existing infrastructure	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	
3. Additional transmission capacity in east-west constrained power flow paths could allow more power to be transmitted from east side renewable resources to west side load.	✓ ✓ ✓	Suggest removing renewable from description as transmission will be used for all resources. / Agreed, lines need to be built at resources to account for intermittent nature of renewables. / Will also need more north - south depending on where new projects are. Likely will need a patchwork of new and upgraded lines.
4. Consideration should be given to building higher-capacity transmission lines in existing corridors, including upgrading to DC lines where appropriate.	✓ ✓ ✓ ✓	Glenn Suggest "converting or adding high voltage direct current" instead of "upgrading to DC" / Agreed. Need to keep flexibility for AC depending on needs.
5. Highway rights-of-way may present opportunities for constructing new transmission lines, but a great deal of planning and preparation would be required to make this possible.	✓ ✓ ✓ ✓	Also could provide more accessible electric fuel for vehicles if lines can be tapped for lower voltages.
6. Energy storage can play a significant role in increasing the grid's capacity to handle variable renewable energy sources like wind and solar.	✓ ✓ ✓ ✓ ✓	Also alternative clean fuels such as RNG and hydrogen.
7. Geographic diversity in renewable energy generation sources can help avoid widespread outages.	✓ ✓ ✓ ✓	Glenn: ? Geographic diversity in renewable energy generation sources can help avoid building and maintaining renewable resources to be held in reserve for reliability purposes. ✓
8. Formalized regional interstate coordination groups are key to effective transmission planning	✓ ✓ ✓ ✓ ✓ ✓	
Anything missing from this section?		

Feedback on Principles

- Yes keep – Why?
- Lukewarm – What would improve?
- No – Why?

- I would like to hear from at least 4 TCWG members on each principle.

Break

Please return at 10:50 AM

For those wishing to provide public comment at 11:50 AM:

- Log into the Zoom meeting at 11:45 AM by typing this address into your browser:
  https://www.zoomgov.com/j/1617054984
  Passcode: 444336
- You can also join by phone:
  Phone number: (669) 254-5252
  Meeting ID/Passcode: 161-705-4984/444-336

Emerging Principles for Siting, Permitting, and Constructing Transmission Upgrades:

Facilitated discussion

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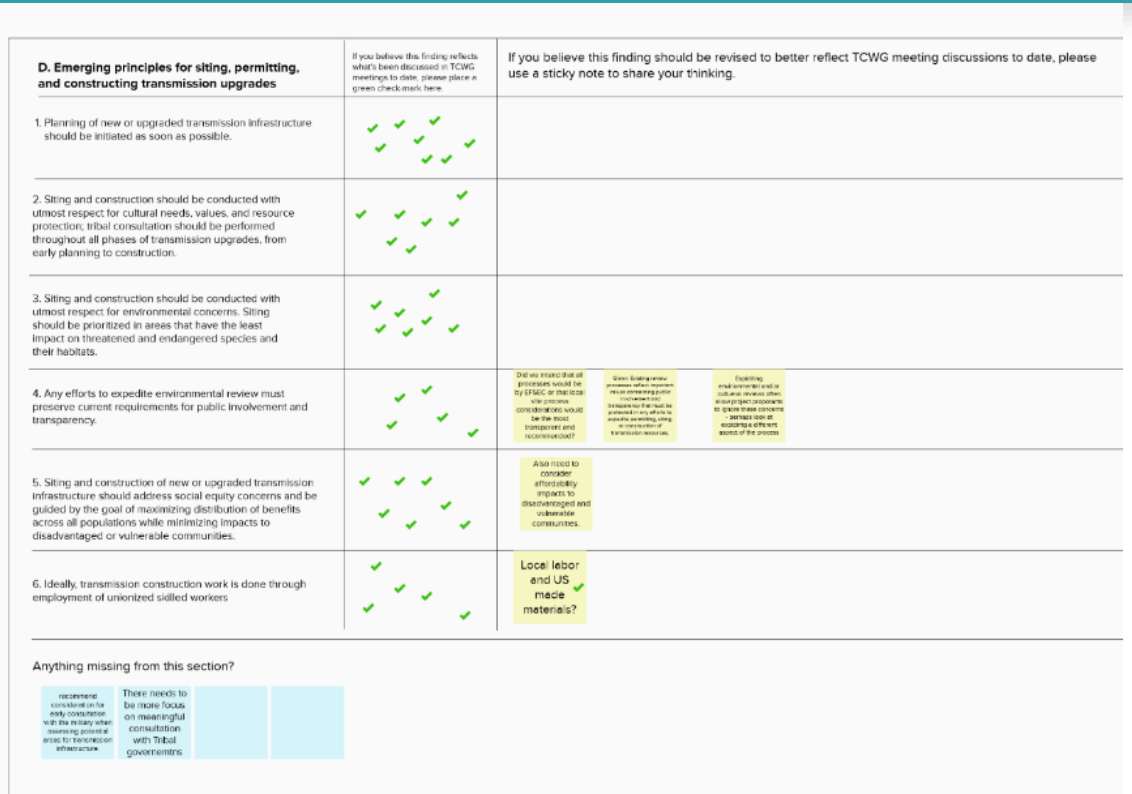
Feedback from Mural



D. Emerging principles for siting, permitting, and constructing transmission upgrades	If you believe this finding reflects what's been discussed in TCWG meetings to date, please place a green check mark here.	If you believe this finding should be revised to better reflect TCWG meeting discussions to date, please use a sticky note to share your thinking.
1. Planning of new or upgraded transmission infrastructure should be initiated as soon as possible.		
2. Siting and construction should be conducted with utmost respect for cultural needs, values, and resource protection; tribal consultation should be performed throughout all phases of transmission upgrades, from early planning to construction.		
3. Siting and construction should be conducted with utmost respect for environmental concerns. Siting should be prioritized in areas that have the least impact on threatened and endangered species and their habitats.		
4. Any efforts to expedite environmental review must preserve current requirements for public involvement and transparency.		Did we intend that all processes would be by EFSEC or that local site process considerations would be the most transparent and recommended? / Given Existing review processes reflect important [illegible] public involvement and [illegible] that must be protected in any efforts to expedite permitting, siting, or construction of transmission resources. / Exploiting environmental and/or cultural reviews often as our project proponents to ignore these concerns - perhaps look at escalating a different aspect of the process
5. Siting and construction of new or upgraded transmission infrastructure should address social equity concerns and be guided by the goal of maximizing distribution of benefits across all populations while minimizing impacts to disadvantaged or vulnerable communities.		Also need to consider affordability impacts to disadvantaged and vulnerable communities.
6. Ideally, transmission construction work is done through employment of unionized skilled workers		Local labor and US made materials?

Anything missing from this section?

recommend consideration for early consultation with the military when assessing potential areas for transmission infrastructure.

There needs to be more focus on meaningful consultation with Tribal governments

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Public Comment Opportunity will start at 11:50 AM

Public Comment Opportunity

Public Comment Opportunity

- Each commentor has up to 2 minutes to provide comment.
- Please raise your virtual hand to indicate you would like to comment. (Alt-Y)
- The facilitation team will call on commenters when it is their turn to speak. You will be muted until your turn.
- Commenters may also email comments to **transmissioncorridors@rossstrategic.com** by Dec 23

Looking Forward and Wrap Up

Looking Forward and Wrap Up

- Action items/next steps
- Meeting #4 currently scheduled for February 2, 2022 (all day)
- Propose moving to following week to accommodate members' conflicts
- Continue with two-day format?
- Mural invitation to engage on revised/updated principles

Closing remarks

Thank you!

Please direct group member questions and public comments to:
transmissioncorridors@rossstrategic.com