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# Northwest Pipeline Shipper Advisory Board

Fall 2023





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# Welcome and Safety Moment

Camilo Amezquita, VP/GM Williams Northwest Pipeline



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# WoodFibre LNG Project Update

Ron Bailey, Executive Vice President, Pacific Energy



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# Decarbonization Opportunities in the Pacific NW

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Jordan McDonough, Commercial Optimization

Aubrey Wolfe, Environmental Services Engineer

Camilo Amezcuita, VP/GM Williams Northwest Pipeline

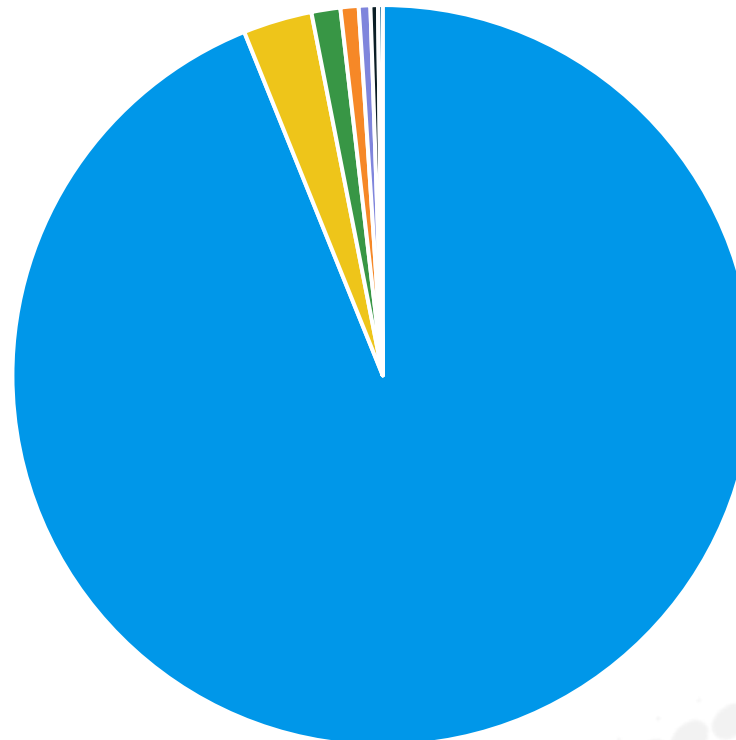
# Washington Climate Commitment Act Update

- Northwest participated in each current vintage and reserve auction to date and has purchased allowances covering estimated emissions through July 2023
- Northwest Pipeline's Q2 2023 FERC Form 3-Q reported a \$7.6 million Regulatory Asset for purchased emission allowances and associated accumulated interest
- Ecology is considering linkage with the California and Quebec carbon market and recently completed a preliminary analysis report
  - Nodal Exchange reports forward pricing for 2023 allowances at \$51.75 (as of 10/17/2023)
  - California and Quebec's most recent auction for current vintage allowances settled \$35.20

# WA Scope 1 GHG Sources & Impacts of EPA Proposed GHGRP Changes

- Subpart W/C (Combustion) - Stationary Fuel Combustion Sources , 94%
- Subpart W - Blowdown Vent Stacks, 3%
- Subpart W - Pneumatic Device Venting, 1.2%
- Subpart W - Equipment Leaks , 0.8%
- Subpart W - Centrifugal Compressor Venting, 0.5%
- Subpart W - Reciprocating Compressor Venting , 0.3%
- Subpart W - Storage Tanks, 0.2%

Avg. Sum of mt CO2e / Yr from reporting years 2018-2022



Source	GHGRP Impact
Combustion	+
Blowdown	Negligible
Pneumatic Device	+/-
Equipment Leaks	+/-
Compressor Venting	+
Storage Tanks	Negligible

**Notes:**

- New source categories
  - Crankcase venting
  - Large release events
- Impacts of Proposed GHGRP changes are NOT comprehensive of all proposed rule changes and can be site dependent.

# GHG Reduction Opportunities

Targeted Source	Reduction Opportunity
Combustion	<ul style="list-style-type: none"> <li>Scheduled model to optimize run time &amp; fuel consumption (5%+ decrease)</li> <li>Hydrogen fuel blending</li> <li>Compressor re-wheel for turbines                             <ul style="list-style-type: none"> <li>Efficiency improvement</li> </ul> </li> </ul>
Blowdown Vent Stacks	<ul style="list-style-type: none"> <li>Recompression units</li> <li>Extended pressurized hold on compressors</li> <li>Station ESD testing</li> </ul>
Equipment Leaks	<ul style="list-style-type: none"> <li>Utilize OGI equipment to identify leaks and repair opportunities</li> </ul>
Pneumatic Device Venting	<ul style="list-style-type: none"> <li>Replacing gas-driven pneumatic controllers</li> </ul>
Centrifugal Compressor Venting	<ul style="list-style-type: none"> <li>Seal vent recompression/control</li> </ul>
Reciprocating Compressor Venting	<ul style="list-style-type: none"> <li>Control rod-packing vent emissions</li> <li>Crankcase Vent Emissions (still in development)</li> </ul>

- Key considerations:**

- Hold safety paramount
- Minimize customer impact on volumes
- Maintain operational reliability
- Transparency between operations and shippers regarding project timelines





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# Market Fundamentals

Benjamin Zwirek, Commercial Optimization

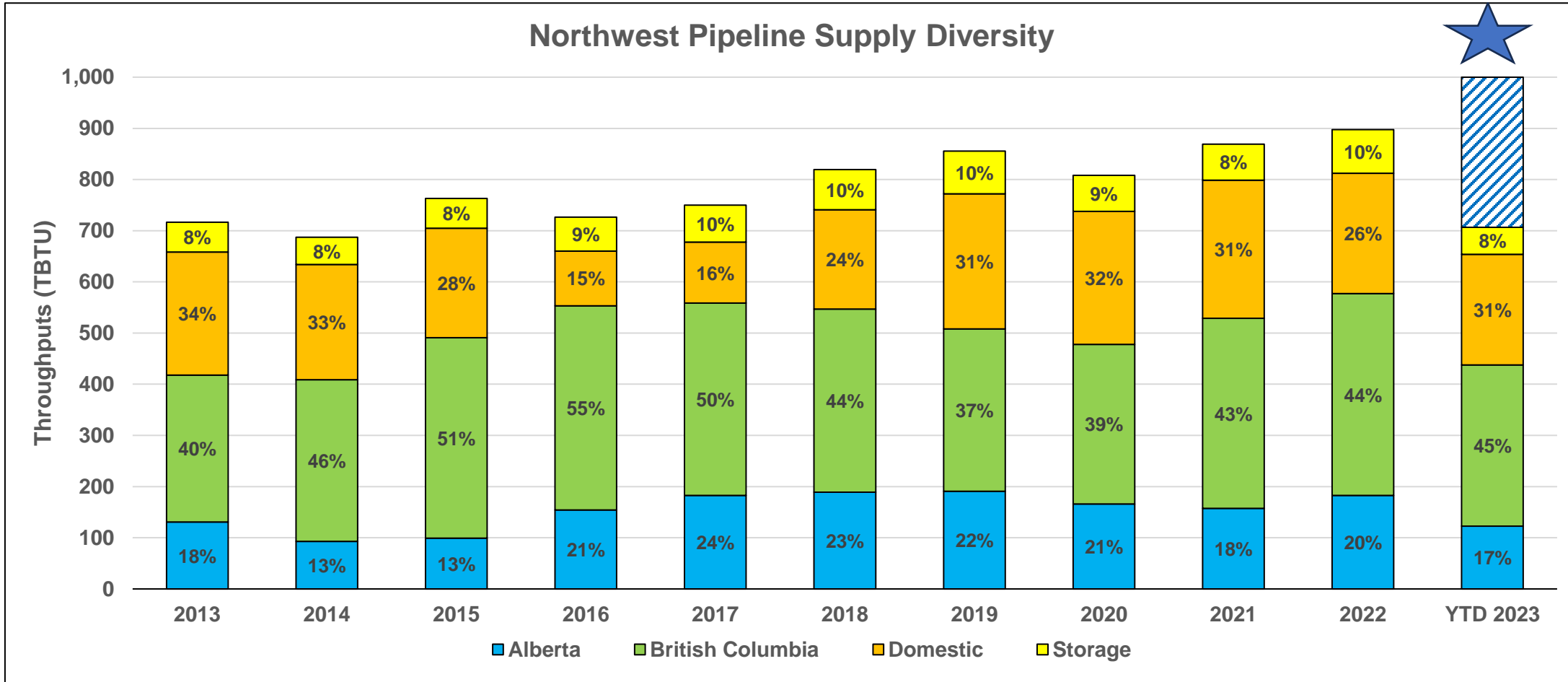


# Overview

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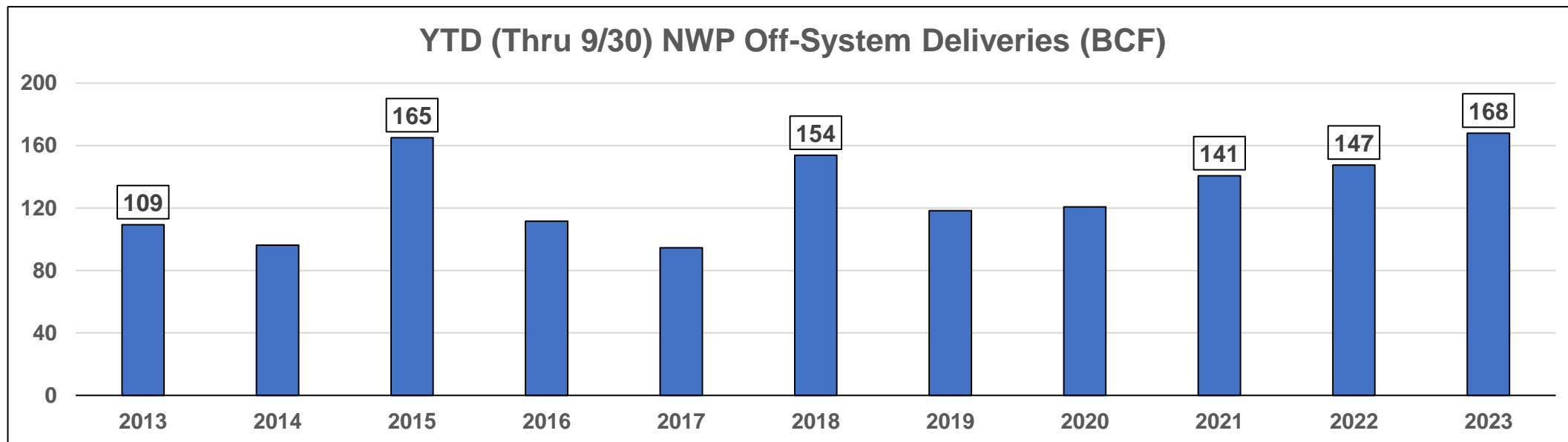
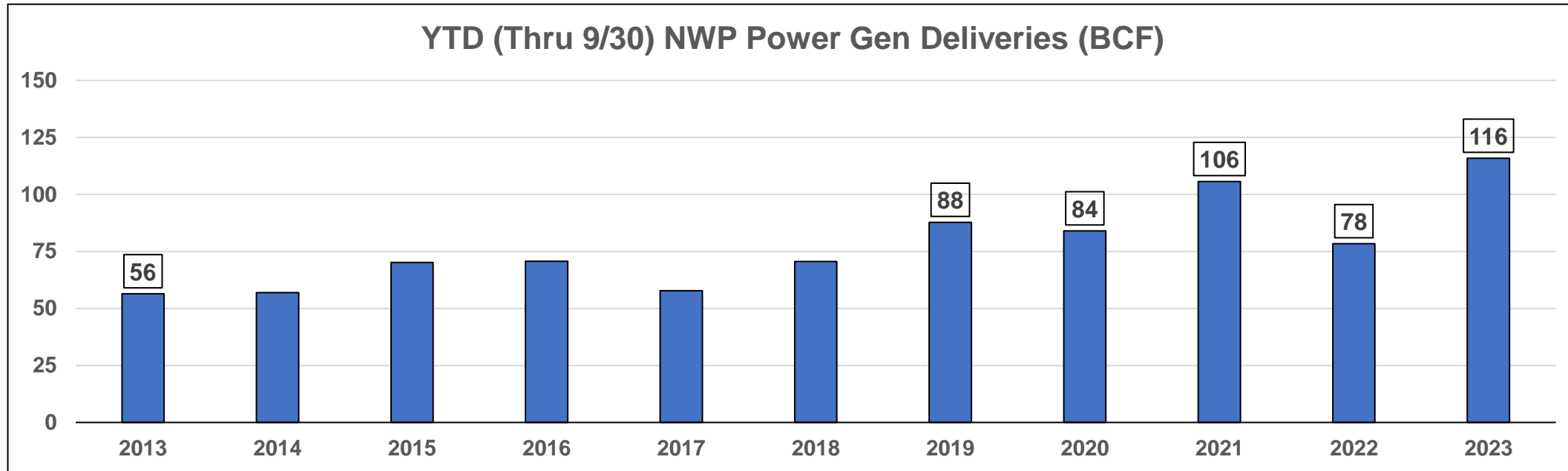
- **Year-To-Date NWP System Update**
  - Record NWP Throughputs
  - Supply Diversity
  - Demand Segments Driving Gains
- **Western Gas Market Snapshot**
  - Regional Gas Demand
    - Pacific NW & Total Western Demand At 10-Year Highs
  - Regional Gas Supply
    - US Western Gas Supply & Rig Counts At 10-Year Lows
    - Permian Production & Western Canadian Gas Imports At 10-Year Highs
  - Regional Gas Storage
    - Aggregate (Pacific/Mountain) Storage Is Filling Up Fast
    - Jackson Prairie & Clay Basin Are Full
    - California Storage Is Starting Winter Higher Than Last Year
- **Brief Winter Outlook & Closing Thoughts**
  - Weather Forecast
  - Historical Winter Prices & Forward Prices
  - Closing Thoughts

# 2023 Is Looking Like Another Record Throughput Year



2023 Throughputs On Pace to Exceed 1 TCF

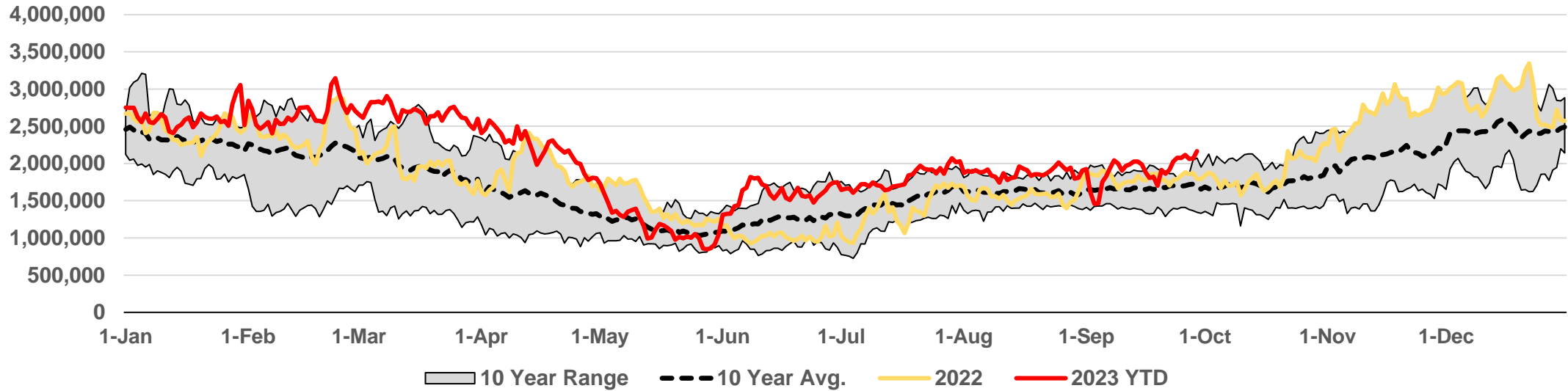
# YTD, Power Generation & Off-System Deliveries Are Driving Record Throughputs





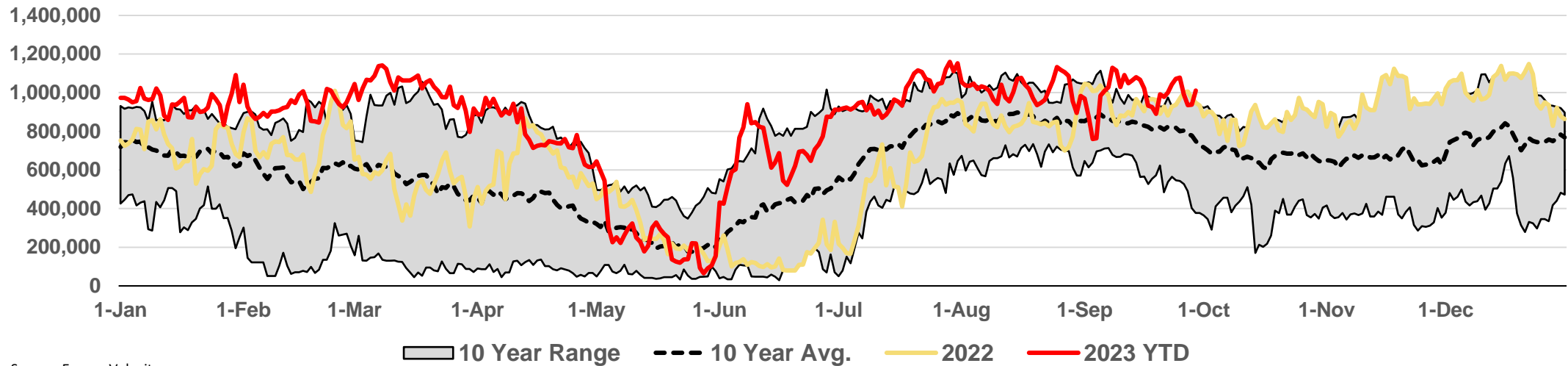
# NWP Throughputs Mirror Pacific Northwest Demand (WA, OR, ID)

## Total PNW Gas Deliveries (DTH)



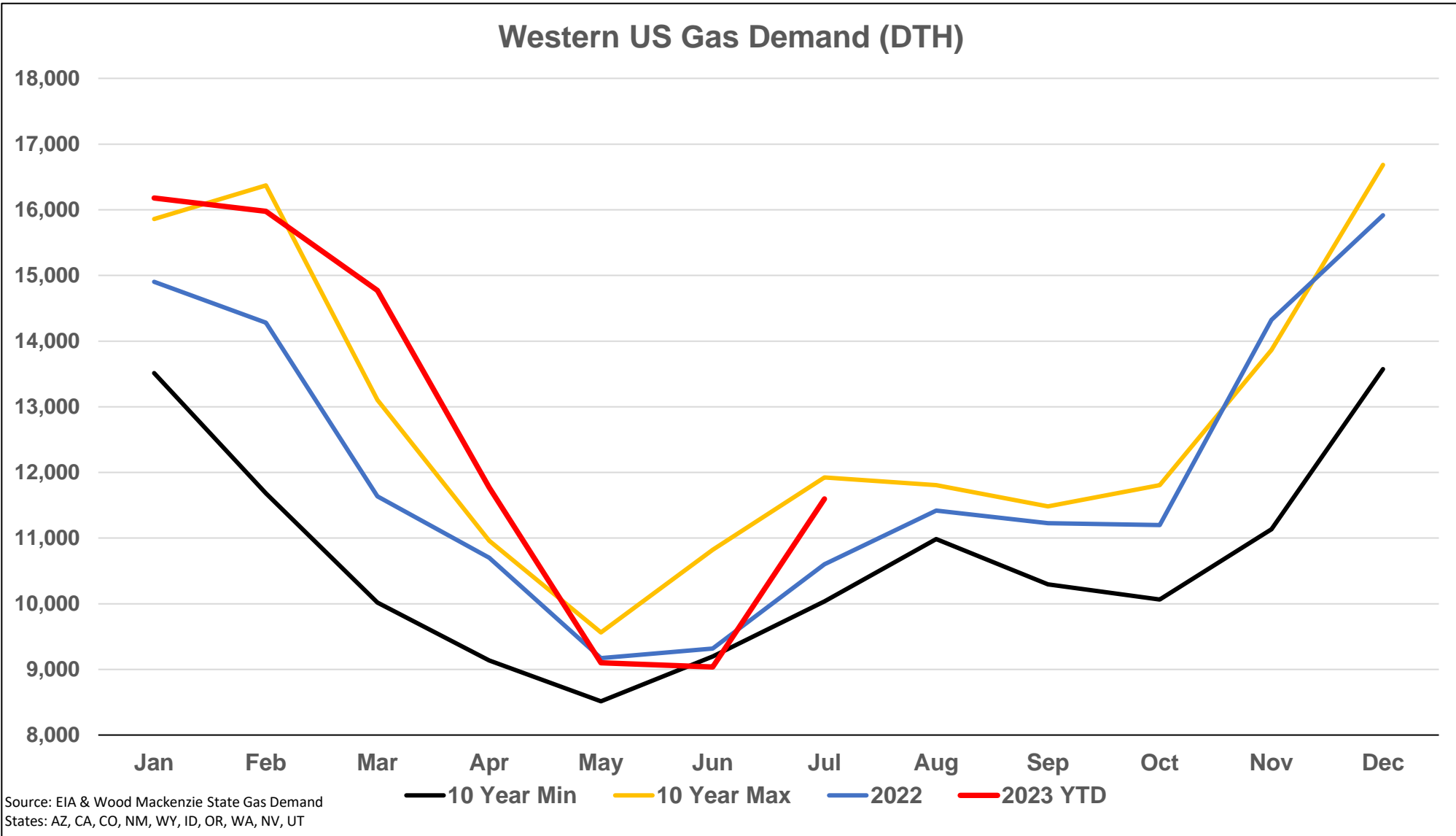
Source: Energy Velocity

## Total PNW Gas-Fired Power Deliveries (DTH)



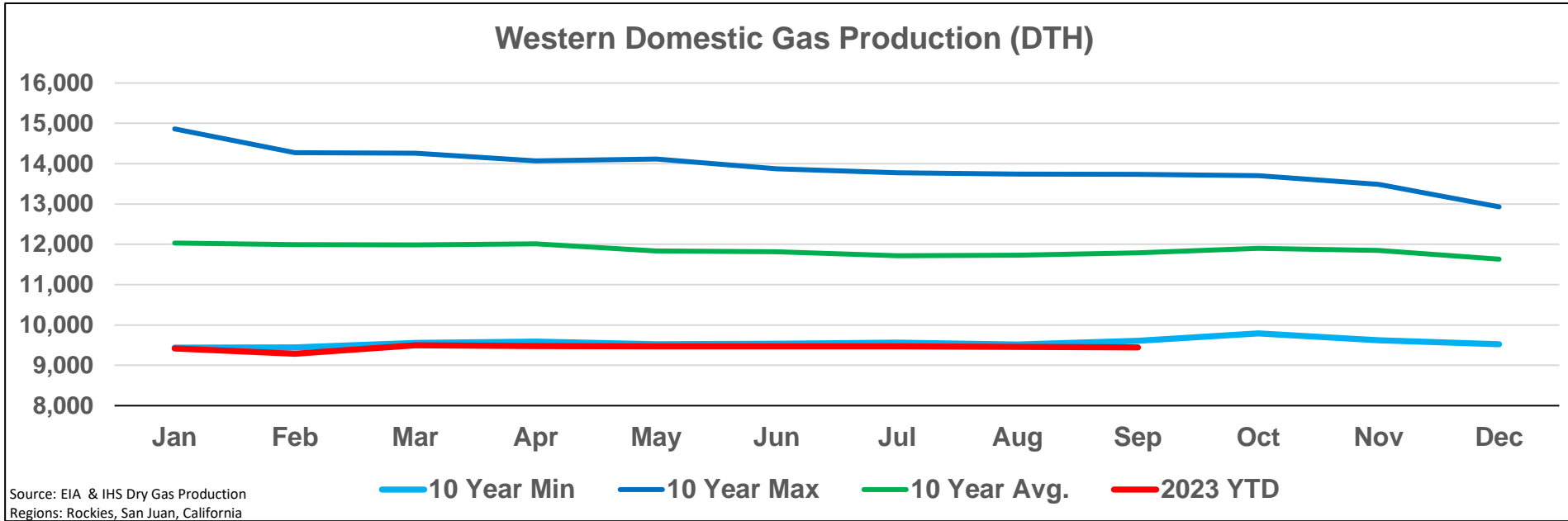
Source: Energy Velocity

# Total Western US Natural Gas Demand At 10 Year High

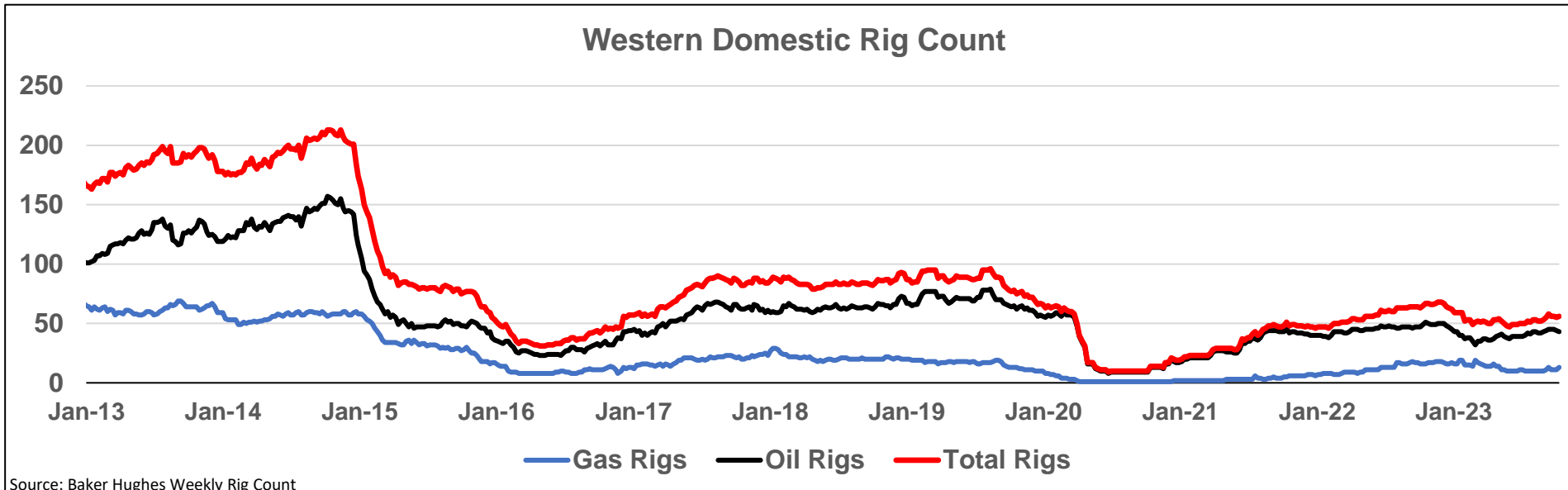


- All western US states minus California have seen their gas consumption increase in the past 10 years
- The Southwest region has seen the largest growth, primarily driven by AZ & NV gas-fired power generation
- The Intermountain (UT/WY/CO) has seen solid growth, also driven by gas-fired power generation & coal-fired power retirements
- Winter 22-23 saw record cold temperatures throughout the west

# And Western US LOCAL Gas Production Is At 10 Year Low

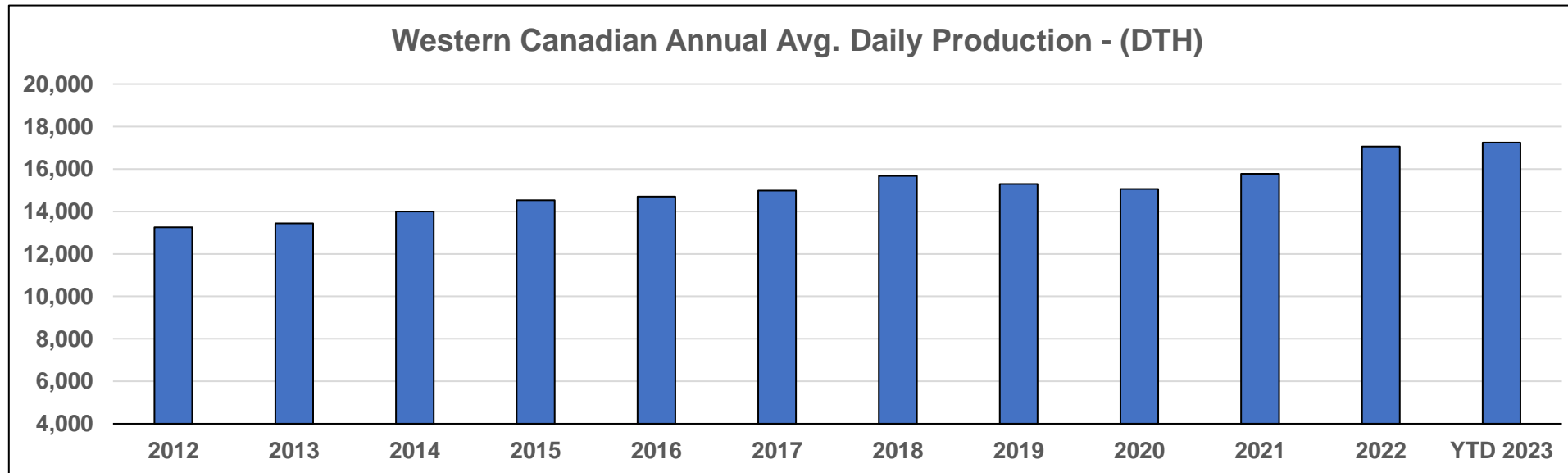
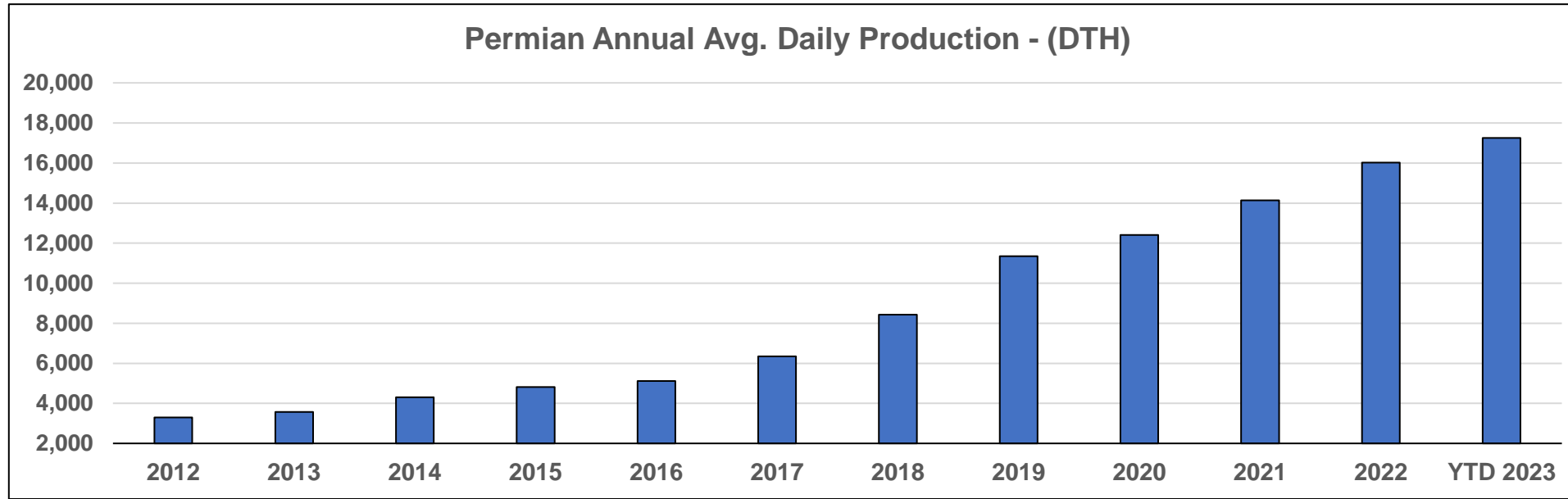


- US Western gas production is a combination of associated plays (DJ Basin, Powder River, Uinta) & non-associated plays (Piceance, Green River, San Juan)
- Rockies non-associated plays dominated by private operators as public E&Ps divested in the past decade to focus on more profitable basins
- Current total US Western gas production is at a 10-Year (2012-2021) low with slow declines from almost every basin
- DJ Basin (East Rockies) only basin to see gas growth in the past decade
- The Uinta Basin has seen some of the most significant **oil** production growth amongst North American plays since 2020 hitting all-time highs
- As a result of record oil production growth & activity, the Uinta Basin has seen an uptick in gas production since decade lows





# While Permian & Western Canadian Production Is At All-Time High

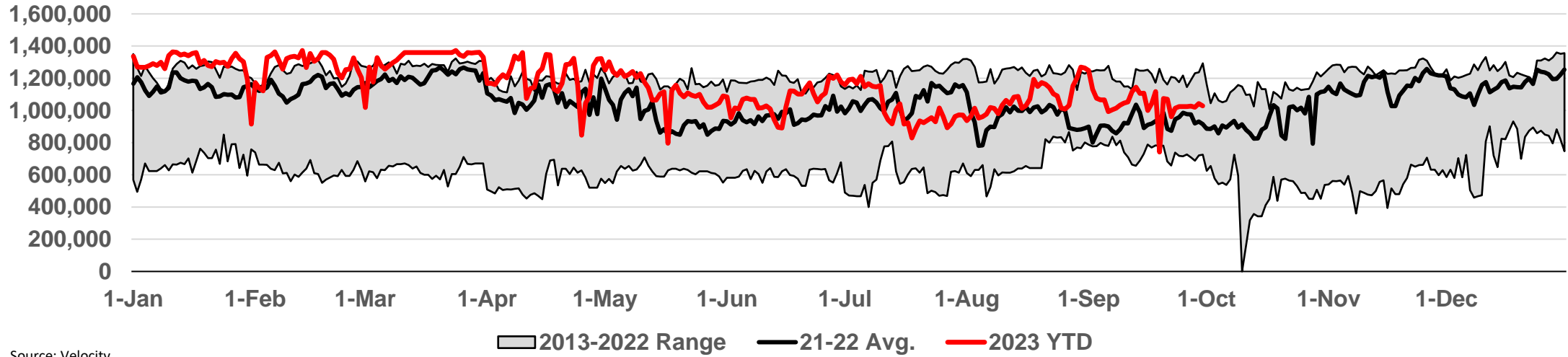


- The Permian Basin (associated play) has seen significant gas growth in the past decade, hitting all-time highs in 2023
- As Permian gas production has increased, westbound flows on the major pipelines (El Paso/Transwestern) have increased
- Total westbound Permian flows have recently exceeded the 10-year avg. (3-3.5 Bcf/d)
- Western Canadian gas production has seen solid growth, hitting all-time highs in 2023
- Western Canadian gas imports have increased to the PNW (Westcoast & GTN)
- Domestic US production declines (Rockies) have led to the West increasingly relying on Permian & Western Canadian imports

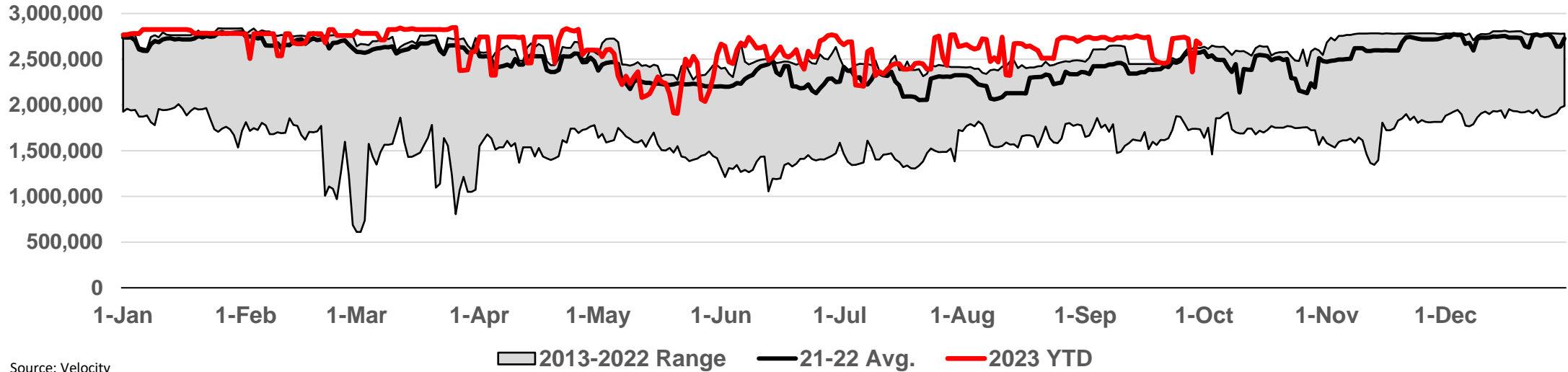
Source: EIA & IHS

# With Western Canadian Gas Imports At 10-Year Highs

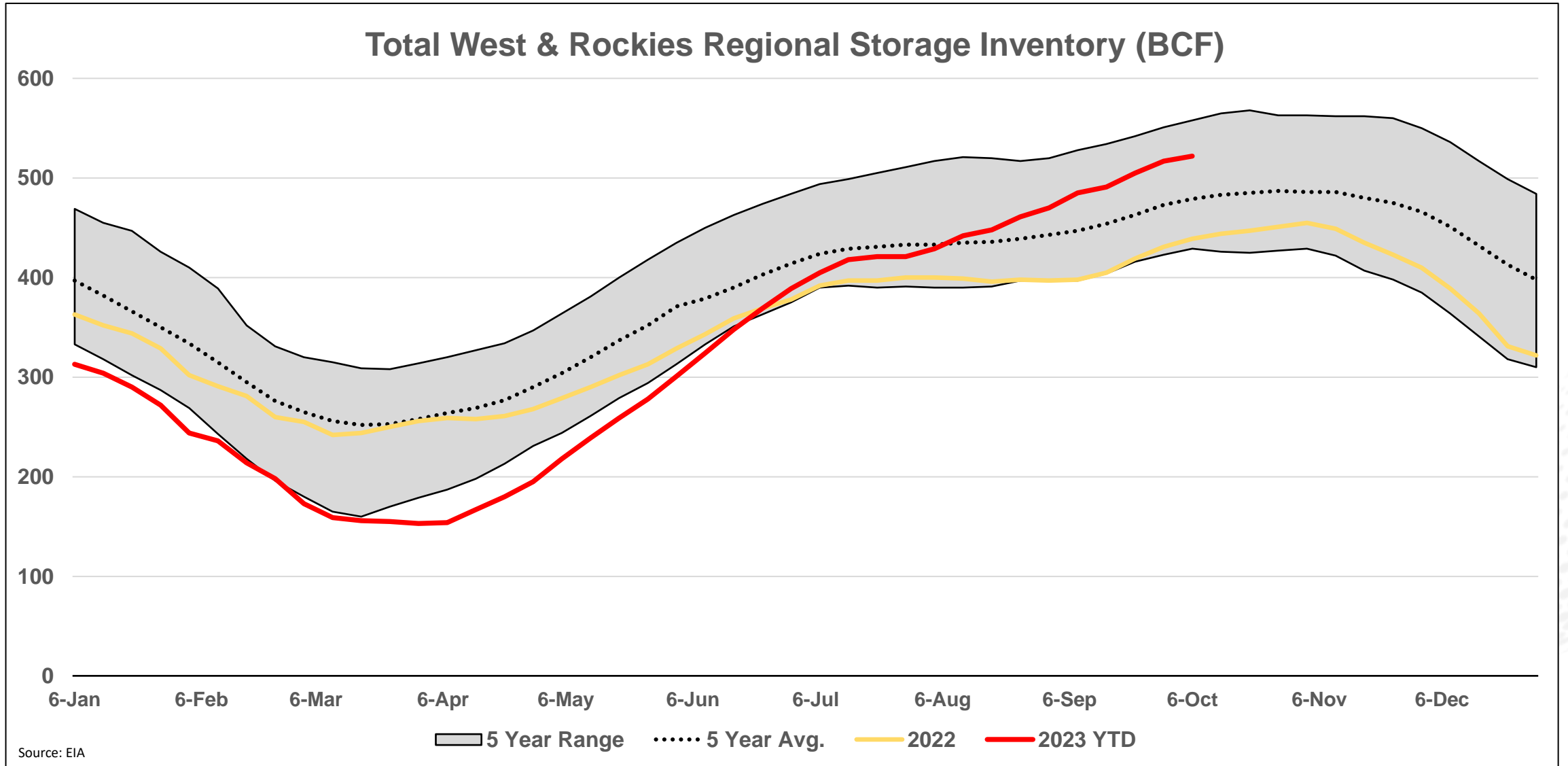
## Westcoast Deliveries At Sumas (DTH)



## Deliveries to GTN At Kingsgate (DTH)

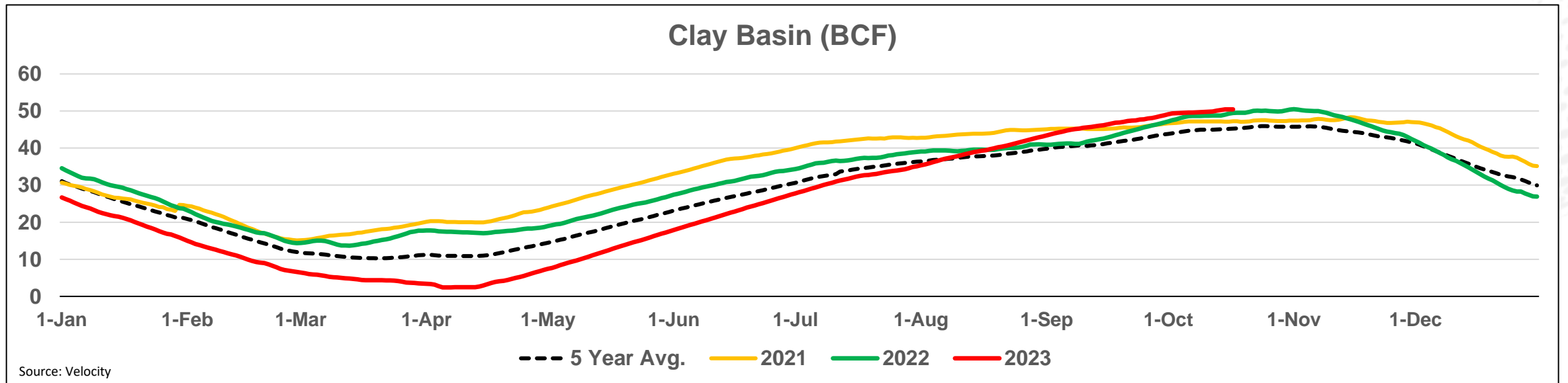
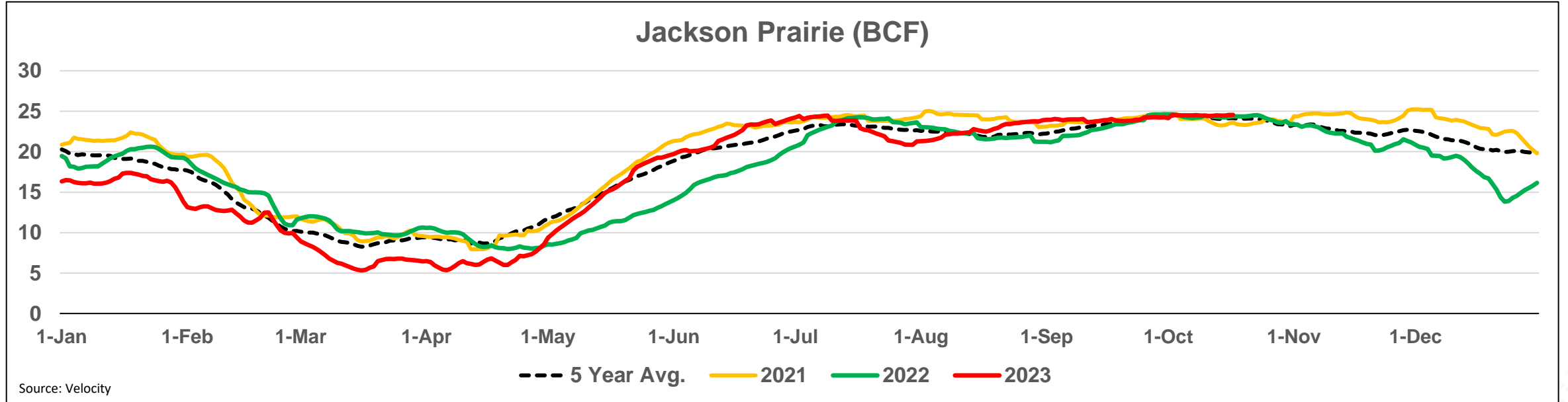


# Western & Rockies Storage is filling up fast!

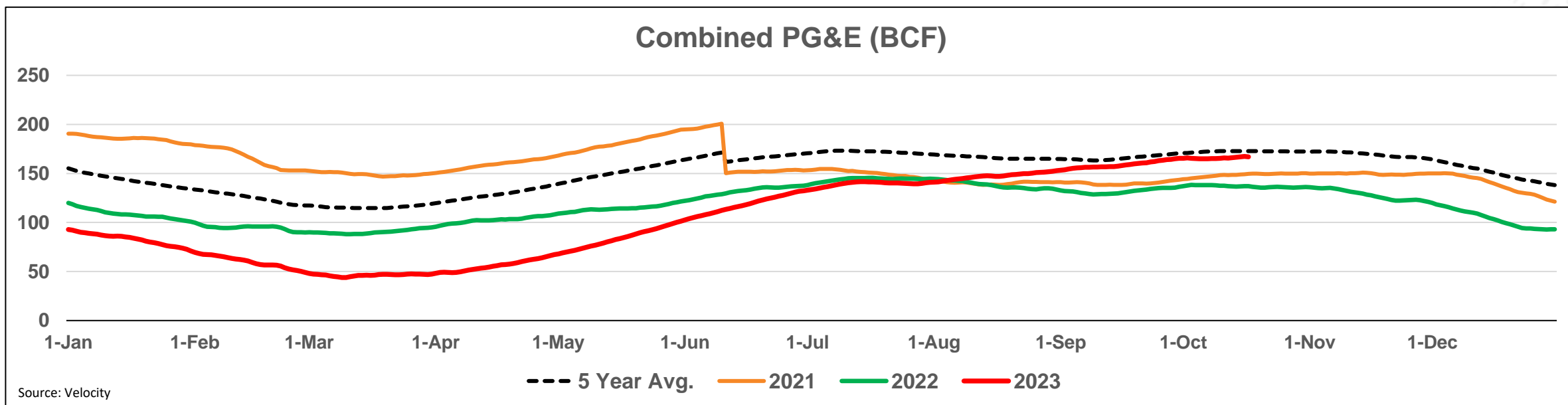
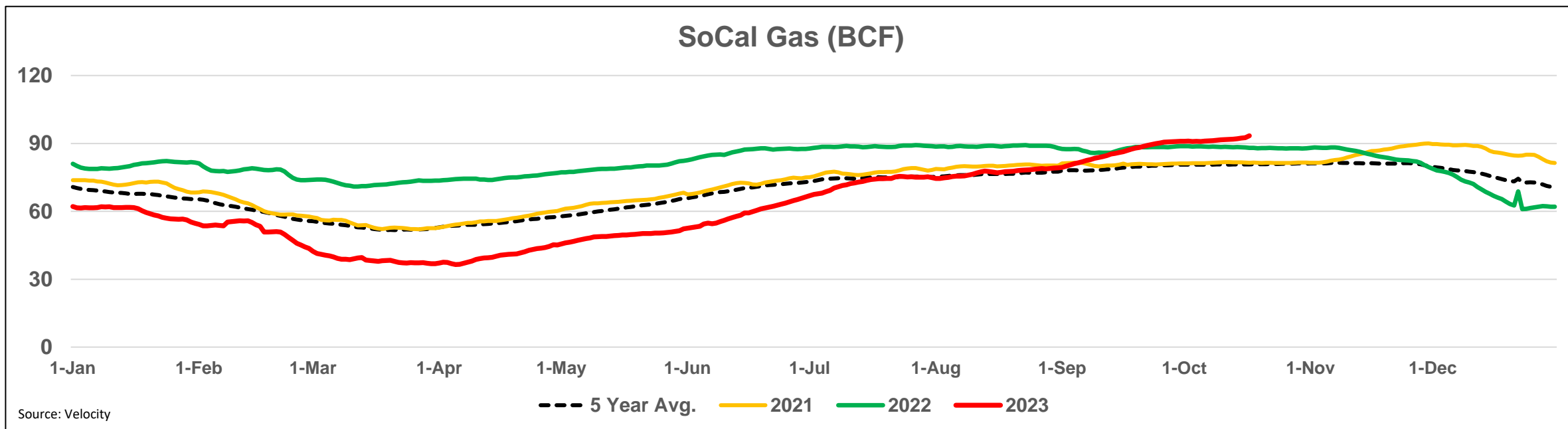




# Jackson Prairie & Clay Basin Are Filled Up

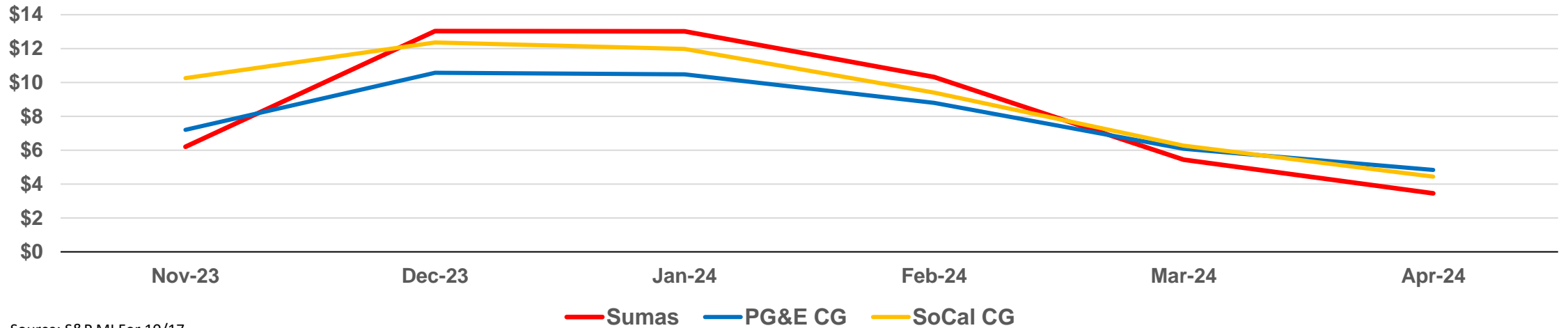


# California Gas Storage is Coming Into Winter 23-24 Much Higher Than Last Year



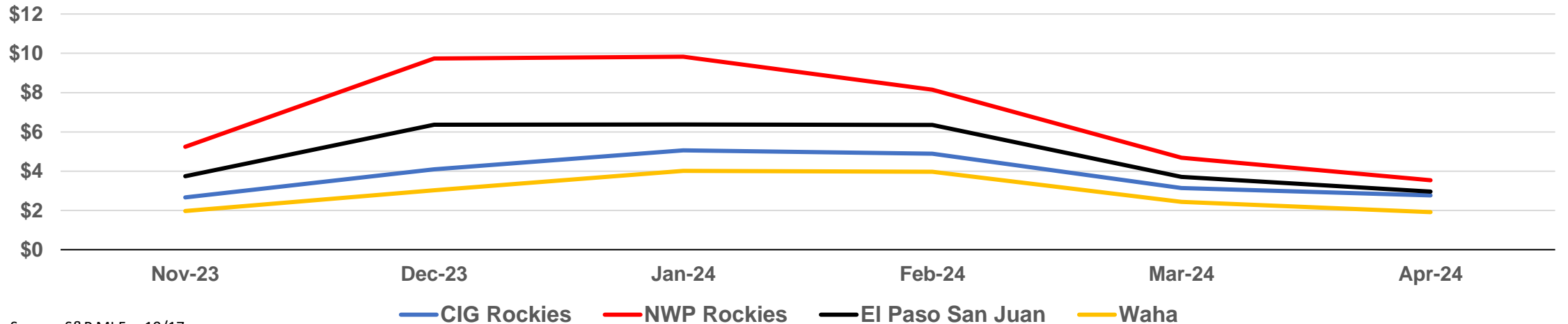
# Western Winter 23-24 Price Forwards

## Western Demand Locations



Source: S&P MI For 10/17

## Western Supply Locations

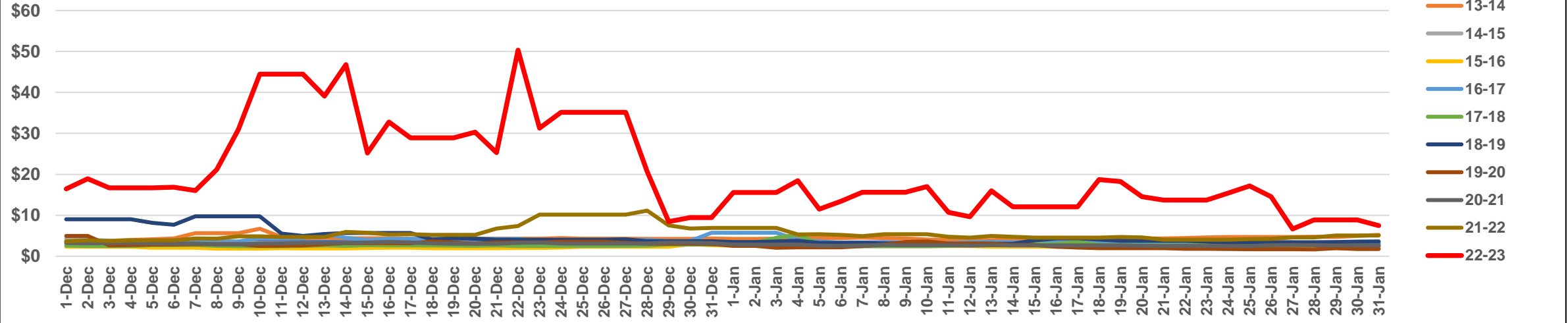


Source: S&P MI For 10/17

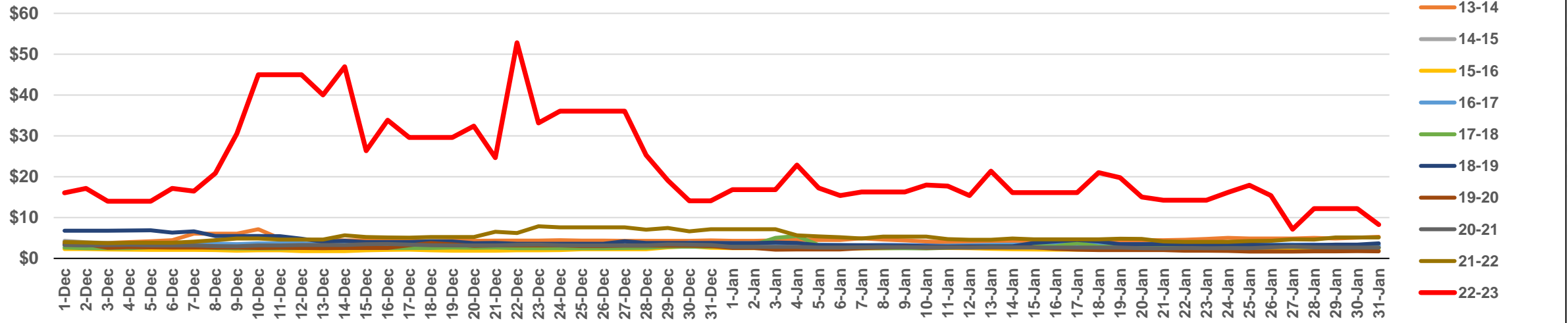


# Historical Western Winter Prices (December - January)

## Sumas



## Opal

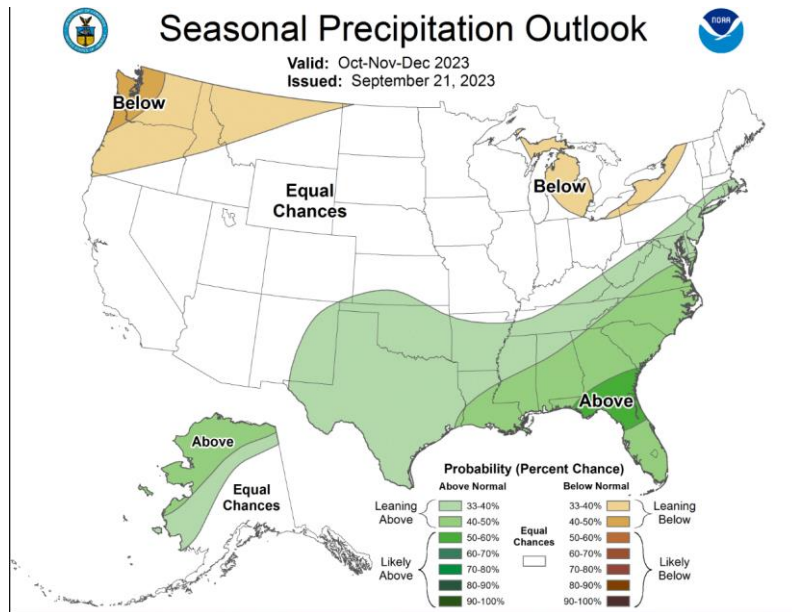
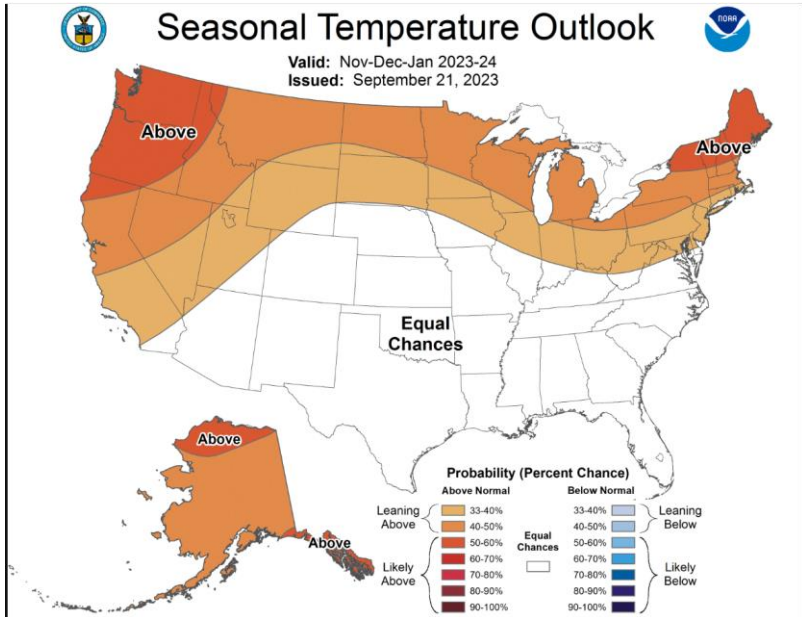


Source: Velocity

## Ned Stark Knows..



# What An El Nino Looks Like For The PNW



Oct 10, 2023 - News

## El Niño may bring extreme weather to West Coast, models suggest

**Be smart:** El Niño predictions are based on a composite of information, including different forecast models, data from the last 15 years and the 30-year climate trend, said Handel. That said, no two El Niños are the same and it's impossible to predict precisely what will happen, he said.

**Details:** Generally, El Niños bring drier, warmer winter conditions to the Pacific Northwest and wetter conditions to the southern two-thirds of California, said Handel. State officials and climate experts on the West Coast expect varying conditions by state.

- **For Seattle and Western Washington**, this could mean less rain and less of our critically important snowpack this winter.
- **In Portland and Northwest Oregon**, warm and dry conditions could impact the ski season and aggravate existing drought conditions.
- **San Francisco and southern Oregon** are the wild cards, as the region is right at the dividing line between the expected drier conditions of the Northwest and the potentially wetter conditions of the Southwest.
- **San Diego and the rest of Southern California** could see much higher than normal levels of precipitation and flooding.

**How it works:** In the simplest terms, you can think of El Niño as generating atmospheric ripples that spread out from areas of tall tropical thunderstorm clouds that form over a blob of unusually warm water in the Pacific Ocean, said Swain.

# Winter 23-24 Closing Thoughts

- **Difference Between This Winter & Last Winter**

- 2022-2023 Winter:
  - Colder Than Average Winter (La Nina)
  - Low Pacific Gas Storage
  - EPNG South Mainline Force Majeure Limited Westbound Flows
- 2023-2024 Winter:
  - El Nino Weather Forecast
  - Western Gas Storage is Starting 50 BCF Higher Y/Y
  - Aliso Canyon Capacity Expansion
  - No Major Pipeline Force Majeures (Fingers Crossed)

- **Potential Wildcards**

- Supply interruptions (freeze-offs, etc.)
- Pipeline Force Majeures
- Colder than expected winter



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# System Update

Carolyn Arens, Manager Commercial Services



# OFO Change Proposal Update

- Current state challenge of open space at OFO locations in constrained directions
  - Due to OFO over-compliance and new displacement noms post-Timely cycle
- Spring 2023 SAB Proposal
  - Remove Tariff lock-in of displacement nominations in Timely cycle
  - Add intraday OFO option
  - Allow newly opened intraday space to be filled on a first come, first serve basis
- One-on-one discussions
- After thoughtful deliberation, NWP decision is a “wait-and-see”
  - Strong proposal in theory, little interest among shipper group to fill intraday space in practice
  - Encourage all nominations in Timely cycle to predict most accurate view of Gas Day as possible

# A Full Year of Maintenance!

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## Planned...

- Gorge SCCDA Digs, 25 days
- DOT Pipe Replacement @ Lava, 14 days
- Spokane Pipe Replacement, 37 days
- Lava and Pegram ERP Turbine Upgrade projects, 4 months
- Sumas Heater Replacement, 7 days
- Mtn Home and Caldwell PLC Upgrades, 24 days
- Sumner, Chehalis, and Snohomish Electric Start System, 18 days each
- Vernal Hydrotest, 10 days
- Numerous tool runs and digs with restrictions

## ...and Unplanned

- Spokane Lateral Emergency Digs
- Baker to Meacham Emergency Digs
- Oregon City Compressor Challenges
- Caldwell, Idaho Line Strike
- Plymouth Liquefaction Shutdowns

# Plymouth LNG Delays

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- 2.4 BCF Peaking facility
- 4 shippers, 8 contracts
- Nominations don't always match actual changes to the tank, as shown on Portal Storage tab
- Unplanned maintenance occurred on both liquefiers once NWP was ready to inject
- Evaluating opportunities to upgrade liquefiers
- Confidence in winter deliveries



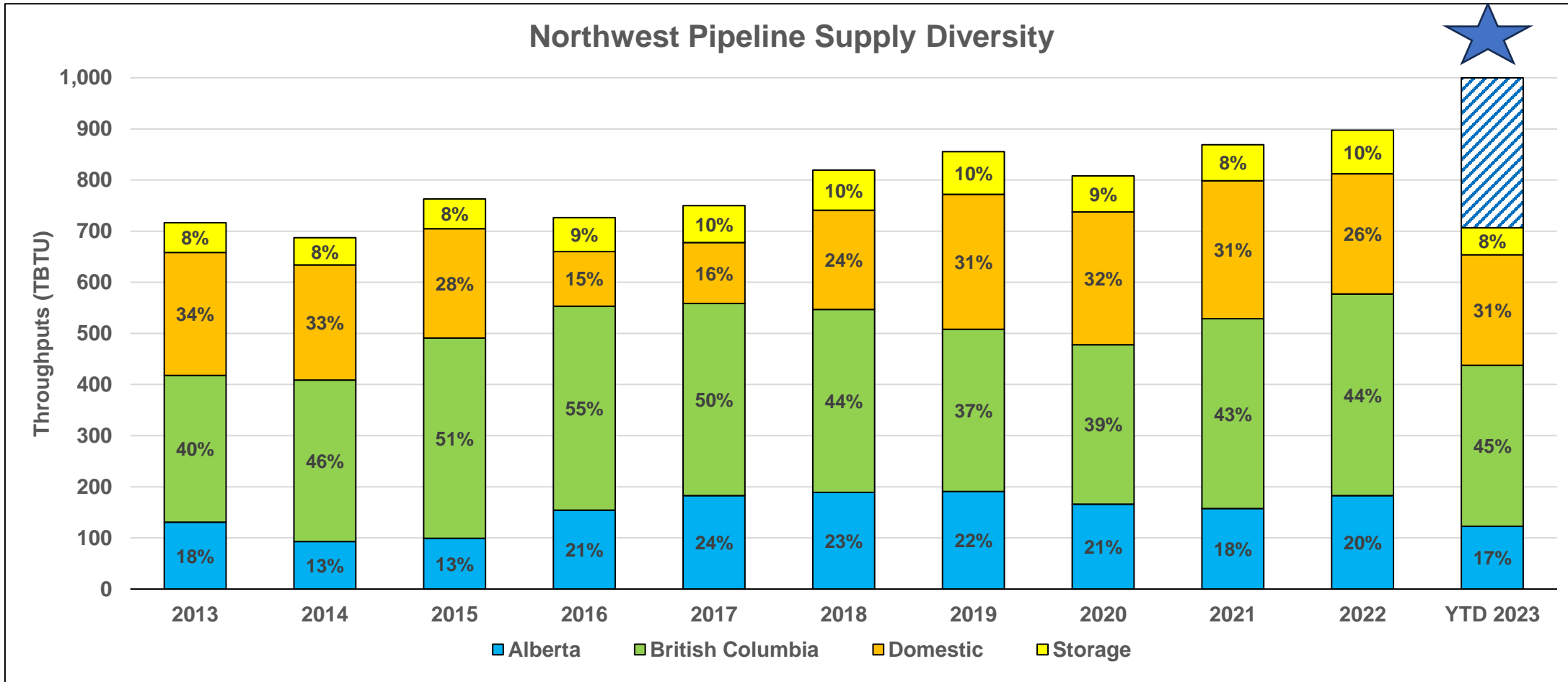
# The Year of the ~~Rabbit~~ Entitlement

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- Jan 29 – Feb 3 Overrun Entitlement Warning
- Feb 15 – Feb 21 Overrun Entitlement Warning
- Feb 22 – Feb 24 8% Overrun Entitlement
- Feb 25 – Apr 12 Overrun Entitlement Warning
- May 5 – May 9 Underrun Entitlement Warning
- May 13 – May 23 Underrun Entitlement Warning
- May 24 – Jun 5 8% Underrun Entitlement
- Jun 21 – Jul 16 8% Underrun Entitlement
- Jul 17 – Jul 23 Underrun Entitlement Warning
- Aug 26 – Sept 1 Underrun Entitlement Warning
- Sept 2 – Sept 20 8% Underrun Entitlement
- Sept 21 – Sept 30 Underrun Entitlement Warning
- Oct 1 – Oct 23 13% Underrun Entitlement



# 2023 Is Looking Like A Record Year



2023 Throughputs On Pace to Exceed 1 TCF



# Light at the End of the Tunnel





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# Signpost Update

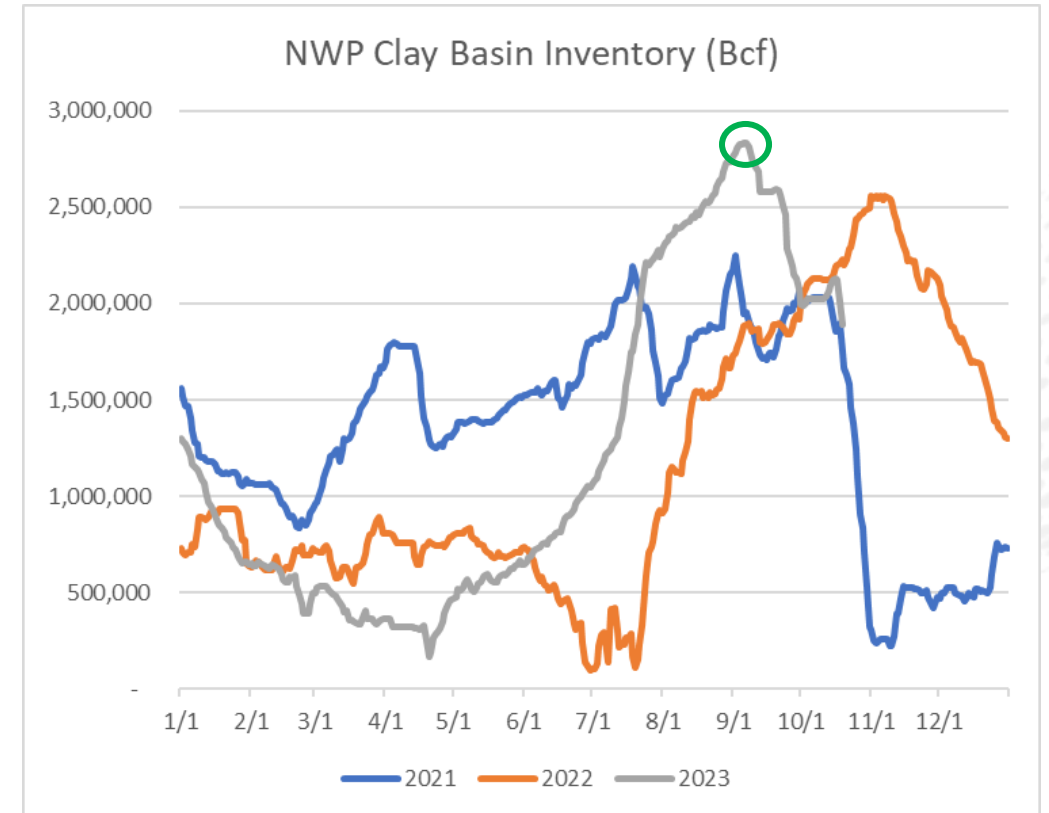
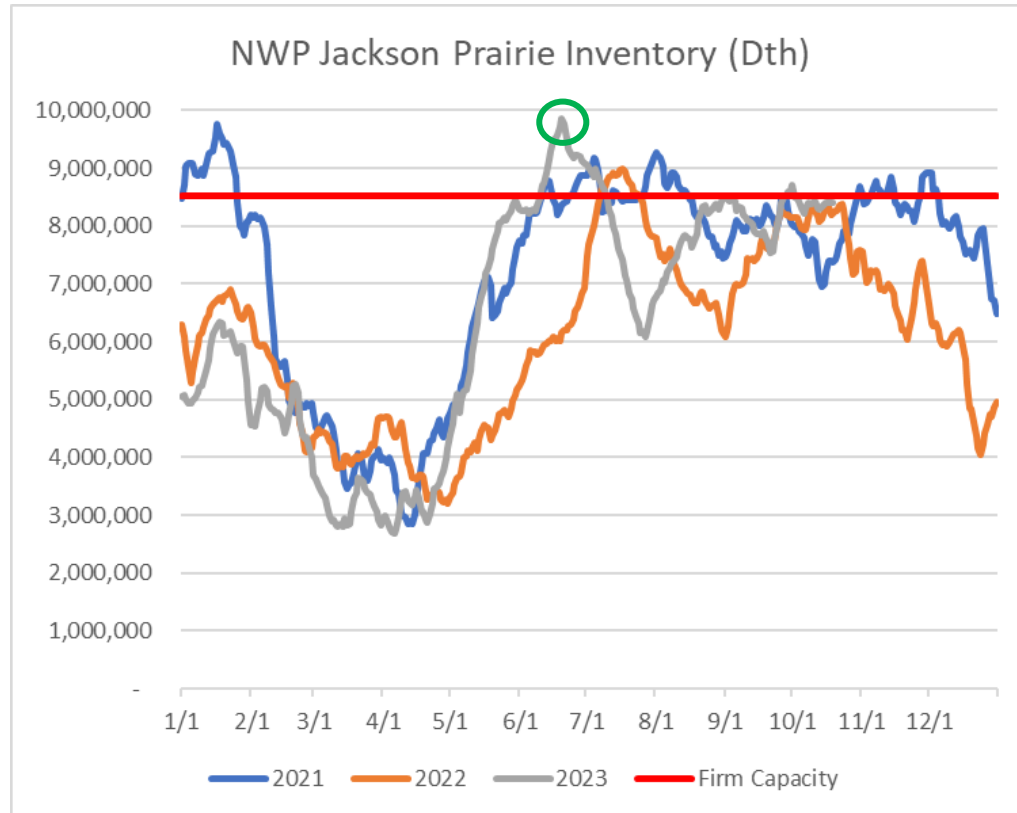
Jordan McDonough, Commercial Optimization Lead

# Tools and Signposts to Manage Daily Business

- NWP committed during Spring SAB to “provide customers with the necessary tools and signposts to manage daily business”
- Data and notices on Portal show updated system inventory, balances and events:
  - System Balance
  - Storage Account Trend North of Kemmerer is NWP’s JP and Plymouth storage balance
  - Jackson Prairie Facility Working Gas Inventory showing facility wide and NWP inventory
  - Storage Account Trend Clay Basin
  - Plymouth Activity showing customers nominations and actuals
  - Critical notifications and planned maintenances postings
- NWP uses this same information to guide pipeline balancing decisions

# Connecting Data to Decisions

- NWP Jackson Prairie inventory and Clay Basin inventory, reported on EBB under “Storage Levels” tab, shows inventory reached higher levels sooner than past summers



# Planned Maintenances and Published Notices Show Impact on Flexibility

- Examples from this past summer:
- Vernal Corridor Hydrotest – A maintenance event this summer that limited all injections and withdrawals between NWP and Clay Basin, limiting a key balancing facility
- Clay Basin Annual Injection Test – Semi Annual test by Mountain West shutting in Clay Basin
  - Clay Basin is not owned/operated by Northwest, we do not issue a critical notice but did publish a note on the DOR under Pipeline Conditions as a courtesy to NWP shippers that may not be aware of Mountain West's notice
- Jackson Prairie Maintenance – Annual test by Puget Sound Energy shutting in the facility
  - Puget Sound Energy, operator of Jackson Prairie, notifies NWP and NWP post a critical notice
- Plymouth LNG Storage Unplanned Maintenance – Critical notice issued about intermittent shutdowns of both liquefiers impacting ability to liquefy gas.
  - “Based on physical limitations of all system storage facilities, Northwest may have limited ability to accept imbalance gas that negatively impacts operations as we approach the heating season”



# Going Forward

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- Continue posting inventory and balancing information on DOR
- Evaluate providing historical data to assist customers
  - Potentially include previous year information
  - For example, Mountain West provides 90 days of data for Clay Basin facility information that includes previous year for some datapoints
- Balances and inventory must be considered along with upcoming weather and known and unknown NWP and third-party operational issues



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# Changes to Southend Capacity

Alexis Ortiz, Commercial Optimization

# Southend Capacity

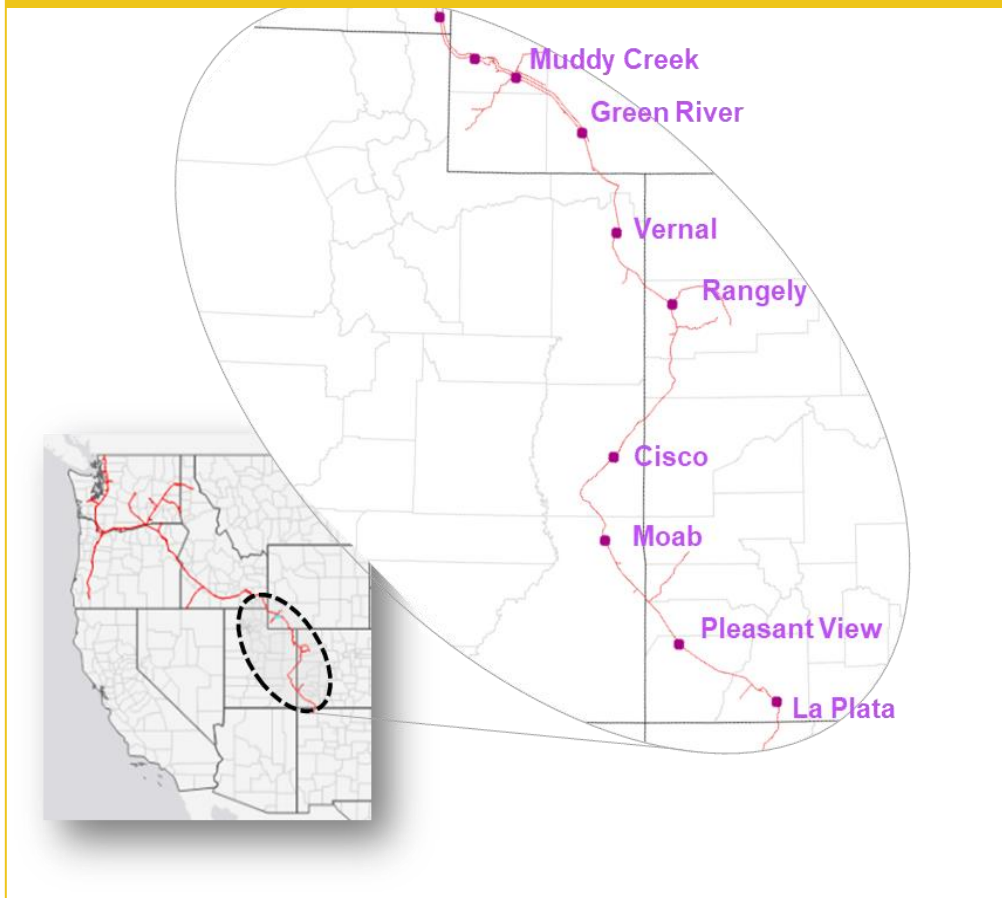
## Historical Overview

- In 1992 the FERC Order 636 separated shippers and transporters
- In 2001 the displacement settlement was entered into between NWPL and shippers to establish a maximum contracted capacity
- Historically North flows on the Southend of the system are above operational availability driven by market conditions
- Compressors above operational availability during the 2022-2023 Winter season (November - March)
  - Green River – 92 days above operational availability
  - Rangely – 42 days above operational availability
- Contractual rights specified in the displacement settlement requires the South flow contracts to displace the heavy North flows through compressors
- Operational flow orders (OFOs) require contract specific, realignment and must flow obligations in that order to provide displacement
- NWPL heard the voice of the customer to provide solutions to reduce OFOs
- The 2022 rate case settlement agreement includes the subordination of capacity on the Southend of the system, which eliminates the need for displacement in the Green River to Ignacio/La Plata corridor



# Southend Displacement Fix Effective April 2024

## No More OFO's Between Green River and LaPlata



## South Flow Contracted Capacity Changes

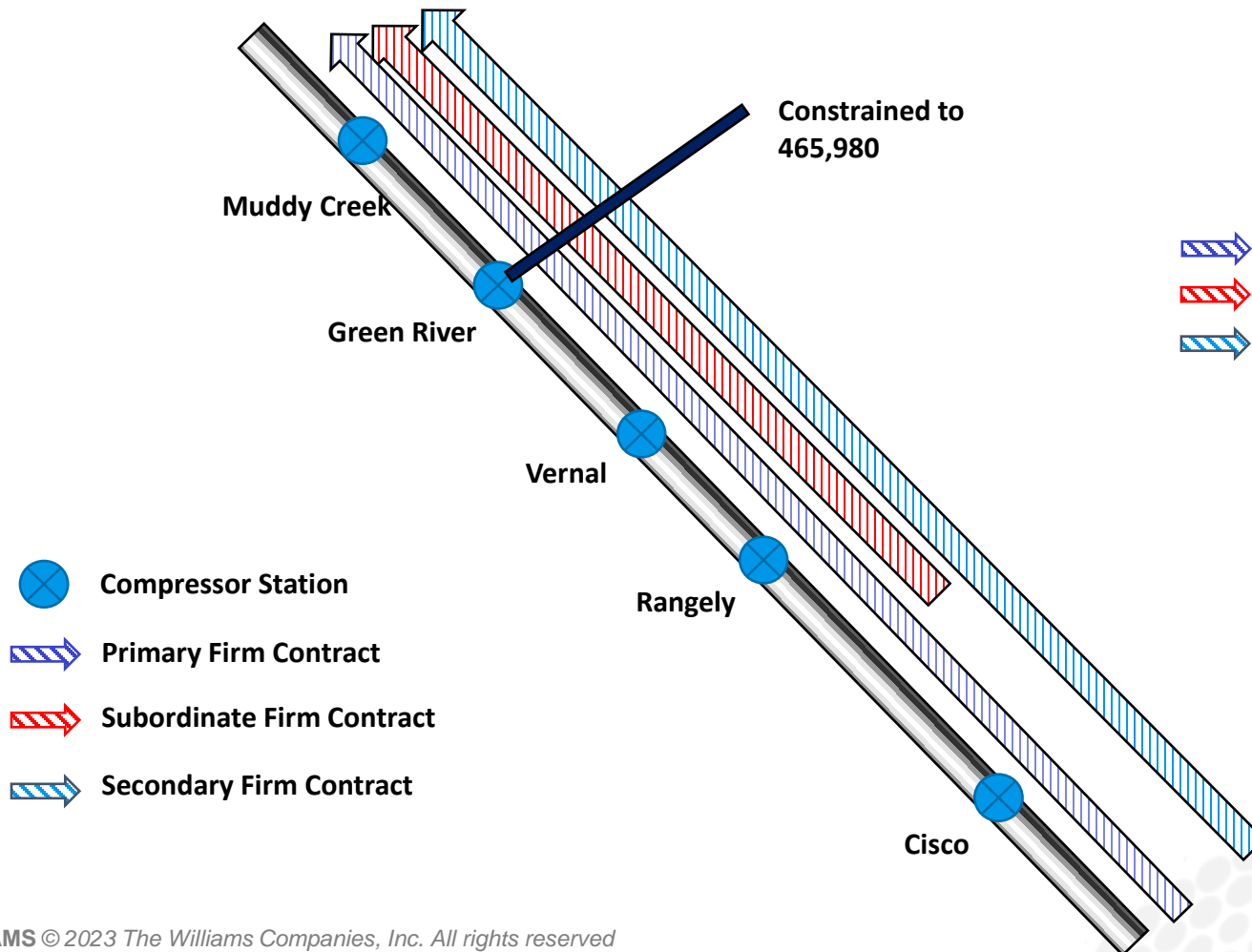
	<b>31-Mar-24</b>	<b>1-Apr-24</b>	<b>Change</b>
Muddy Creek	693,673	693,673	-
Green River	660,673	599,673	(61,000)
Vernal	384,876	318,876	(66,000)
Rangely	358,761	292,761	(66,000)
Cisco	371,089	354,089	(17,000)
Moab	369,019	352,019	(17,000)
Pleasant View	367,966	350,966	(17,000)
LaPlata	365,426	348,426	(17,000)

## North Flow Contracted Capacity Changes

	<b>31-Mar-24</b>	<b>1-Apr-24</b>	<b>Change</b>
Muddy Creek	720,812	720,812	-
Green River	567,980	465,980	(102,000)
Vernal	452,855	350,855	(102,000)
Rangely	454,655	352,655	(102,000)
Cisco	384,802	282,802	(102,000)
Moab	388,910	286,910	(102,000)
Pleasant View	379,315	277,315	(102,000)
LaPlata	380,051	278,051	(102,000)



# Priority of Service – South End Example



Contract Priority	Timely Nom	Timely Cut	Timely Sched
Primary Firm	400,000	0	400,000
Subordinate Firm	75,000	9,020	65,980
Secondary Firm	50,000	50,000	0
<b>Total</b>	<b>525,000</b>	<b>59,000</b>	<b>465,980</b>

**Scenario: Pipeline is constrained moving Northbound at Green River; all primary firm flows, subordinate firm flows up to capacity constraint level, all secondary firm cuts. No OFO is required due to subordinate firm being cut down to set capacity constraint.**



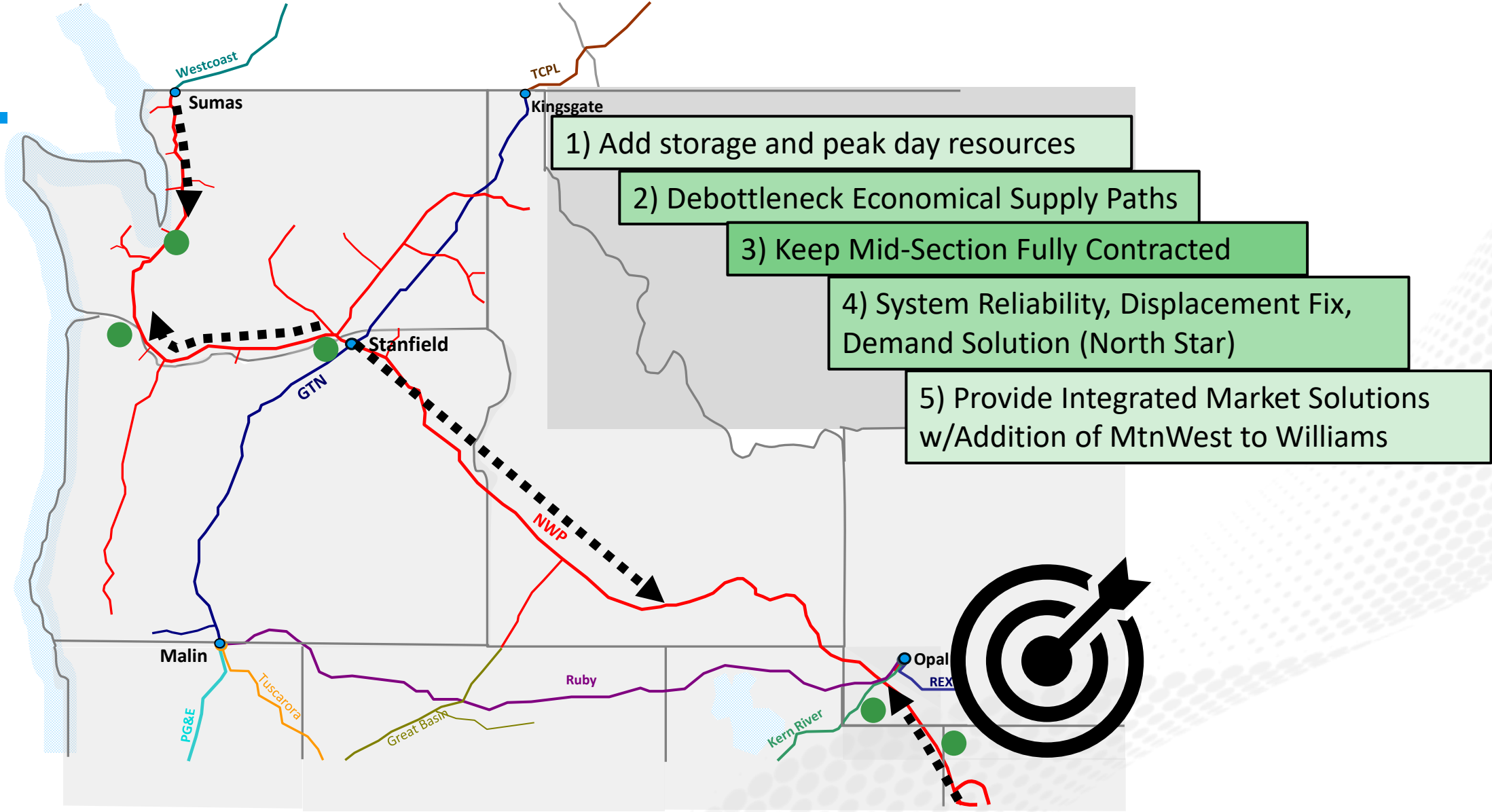


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# Business Development Update

Gary Venz, Director Commercial Services

# Northwest Pipeline Business Development Update





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# Questions?

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# Thank you!