

# Permian Basin Outlook: Regulations, Markets, and an Evolving Industry

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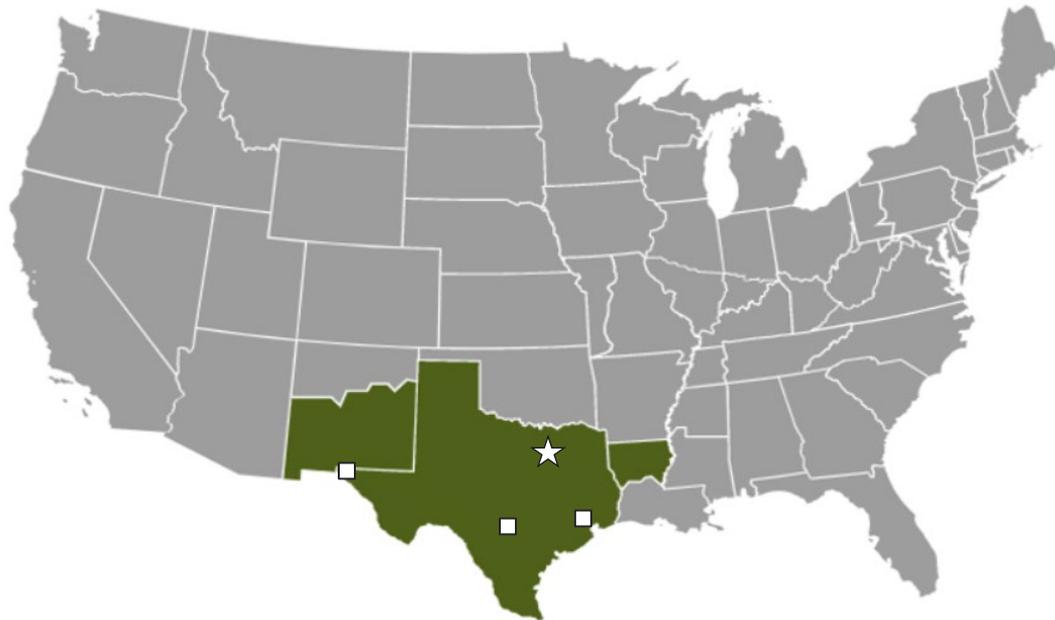


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- Advise Dallas Fed President Robert Kaplan on monetary policy and the regional economy
- *Dallas Fed Economics* blog features short research notes on energy, monetary policy, banking, housing, employment, and other economic topics
- Quarterly Dallas Fed Energy Survey is one of the most widely-watched barometers of the shale industry



# Federal Oil & Gas Production

- Production from federal and tribal leases averaged 2.9 mb/d in FY2020, or 25% of total U.S. supply
  - Onshore leases averaged 0.8 mb/d in 2020
  - Federal Gulf of Mexico oil production averaged 1.7 mb/d
  - Native American leases produced 0.3 mb/d
- Leasing and permitting must comply with National Environmental Policy Act, Endangered Species Act, and National Historic Preservation Act, among others
- Leases are offered quarterly in competitive auctions
- 2020 was a blockbuster year in leasing and permit acquisition as companies “banked” drilling rights in anticipation of a different regulatory environment in 2021
- In the Lower 48, revenue from royalties and bonus bids is split 50/50 between U.S. Treasury and the state in which the lease is located

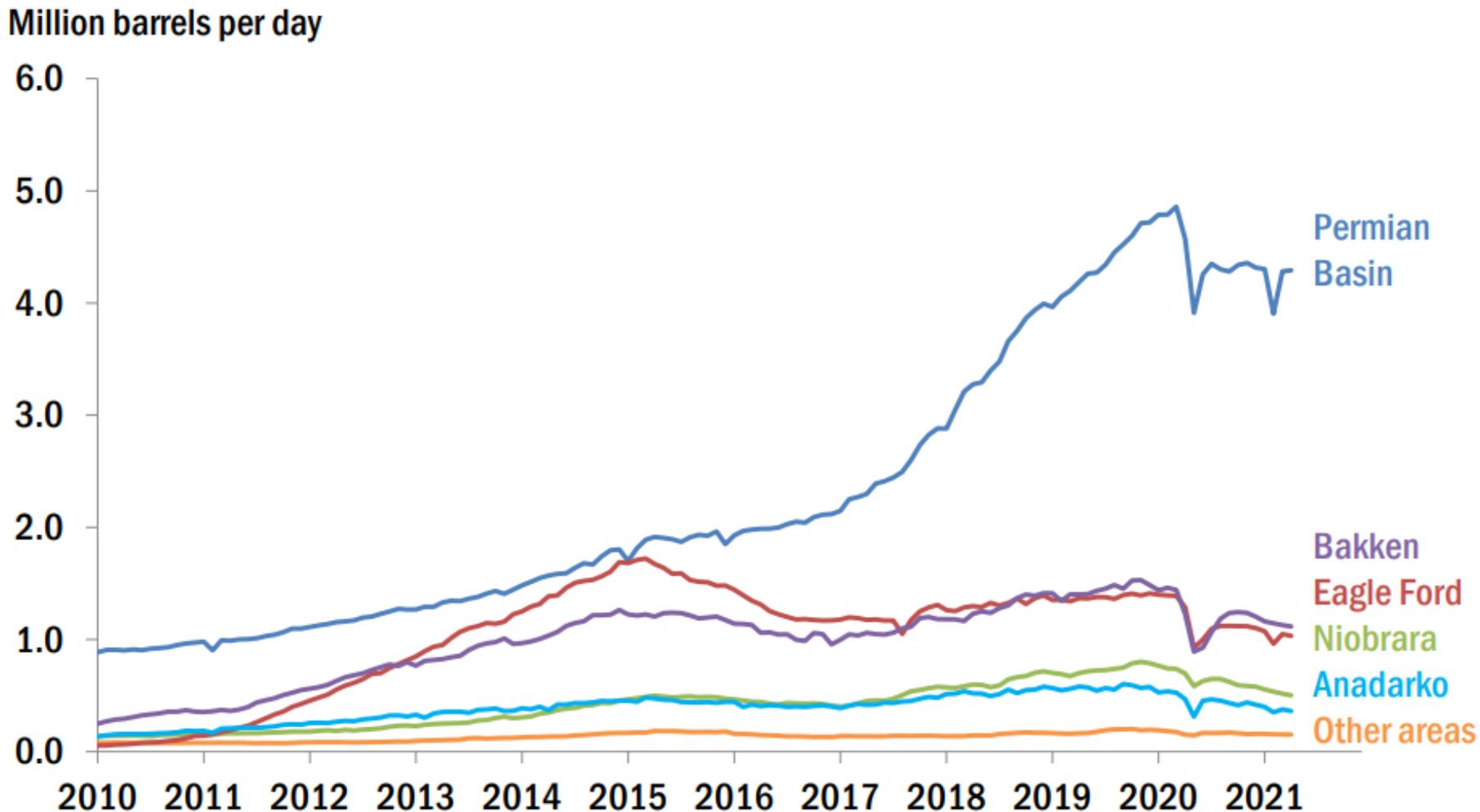


# Federal Proposals

- **January 20, 2021: Secretary of Interior Order paused all federal oil and gas permitting for 60 days unless authorized by senior DOI officials**
  - This included pipeline rights-of-way and routine permit modification
  - Later clarified to exclude Native American lands
  - In late March field offices were re-granted authority to issue permits
  - Permit applications and approvals have accelerated since the moratorium ended
- **January 27, 2021: Executive Order indefinitely paused new federal oil and gas leasing “pending completion of a comprehensive review and reconsideration of federal oil and gas permitting and leasing practices”**
  - Public forums have been held and an initial report is expected in early summer
  - On June 15 a federal judge issued a preliminary injunction blocking plans to pause future lease sales



# Production by Shale Basin



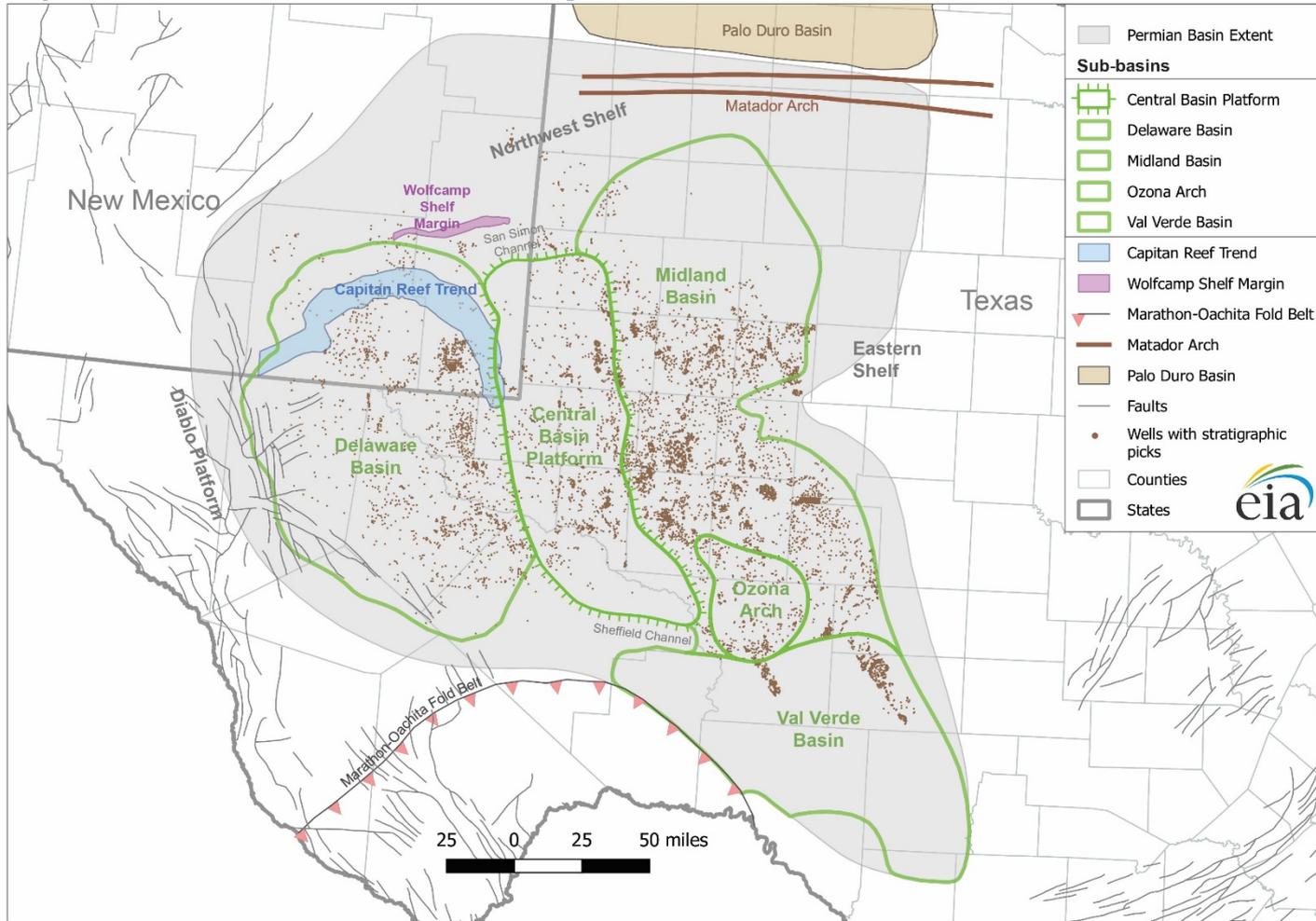
SOURCE: Energy Information Administration



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# Permian Basin Overview

Major structural and tectonic features in the region of the Permian basin



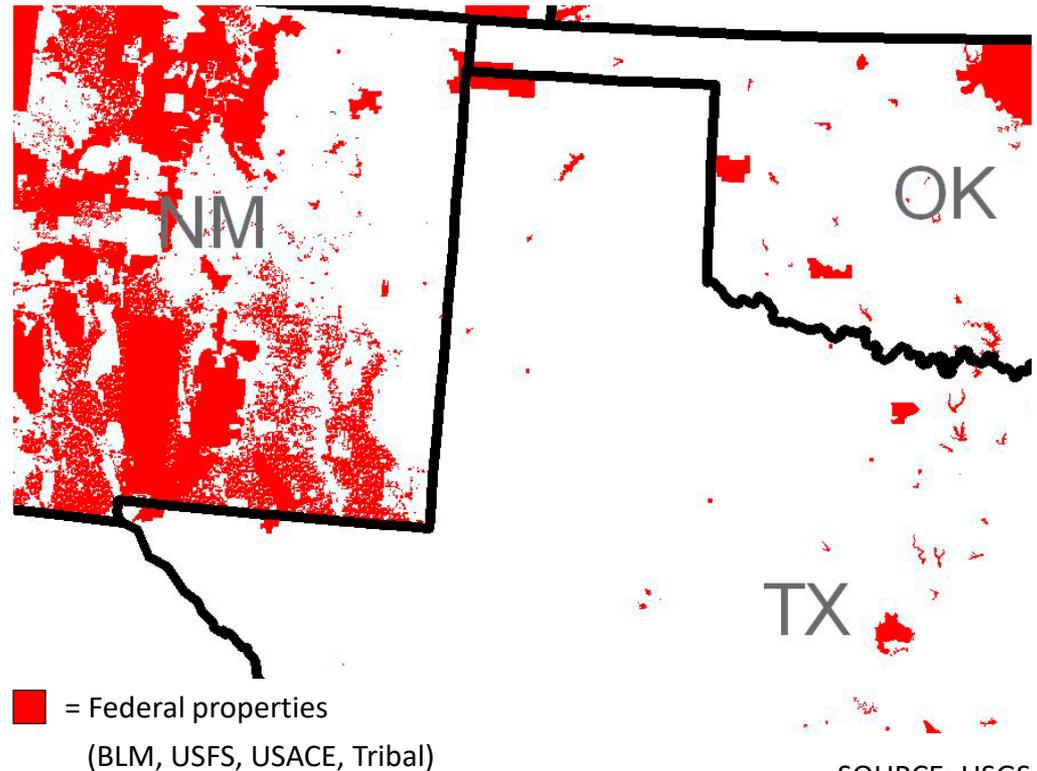
Source: U.S. Energy Information Administration based on DrillingInfo Inc., Bureau of Economic Geology, U.S. Geological Survey.



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# Federal Lands in the Permian

- Half of NM oil production is on federal lands; virtually all TX activity is on private and state lands
- The Delaware Basin generally contains more productive acreage than the Midland Basin, but wells also have higher gas content
- Federal royalty rates are 12.5% while most private owners receive 18-20%. Texas University Lands receive 25%.
- Many companies on NM federal lands accept the higher regulatory burden in exchange for lower costs and higher well productivity



SOURCE: USGS



# Assumptions & Methodology

- Our initial study was conducted in February; we have updated production data, oil prices, and regulatory decisions since then in the forecasts presented today
- We conducted outreach with oil and gas producers, environmental groups, and trade associations to gauge the likely outcomes of the permitting pause and leasing review
- Our discussions led to us evaluate three scenarios:
  1. A Reference Case where drilling and completion activity continues at its June 2021 pace
  2. A Hybrid Case where federal oil and gas leasing ends but drilling permits on existing leases are issued
  3. A Restrictive Case where federal leasing ends and permit extensions are not granted for existing leases starting in 2024
- We used our existing Permian Basin production model to split drilling and completion rates between Texas and New Mexico based on the above scenarios
- We assume federal permitting slows in 2022 due to increased scrutiny of applications and changes to the NEPA process
- Some drilling rigs and frac spreads relocate from New Mexico to Texas under both regulatory scenarios
- For field employment estimates we assume 240 workers are required on a standard 3-well pad (construction, drilling, completion)

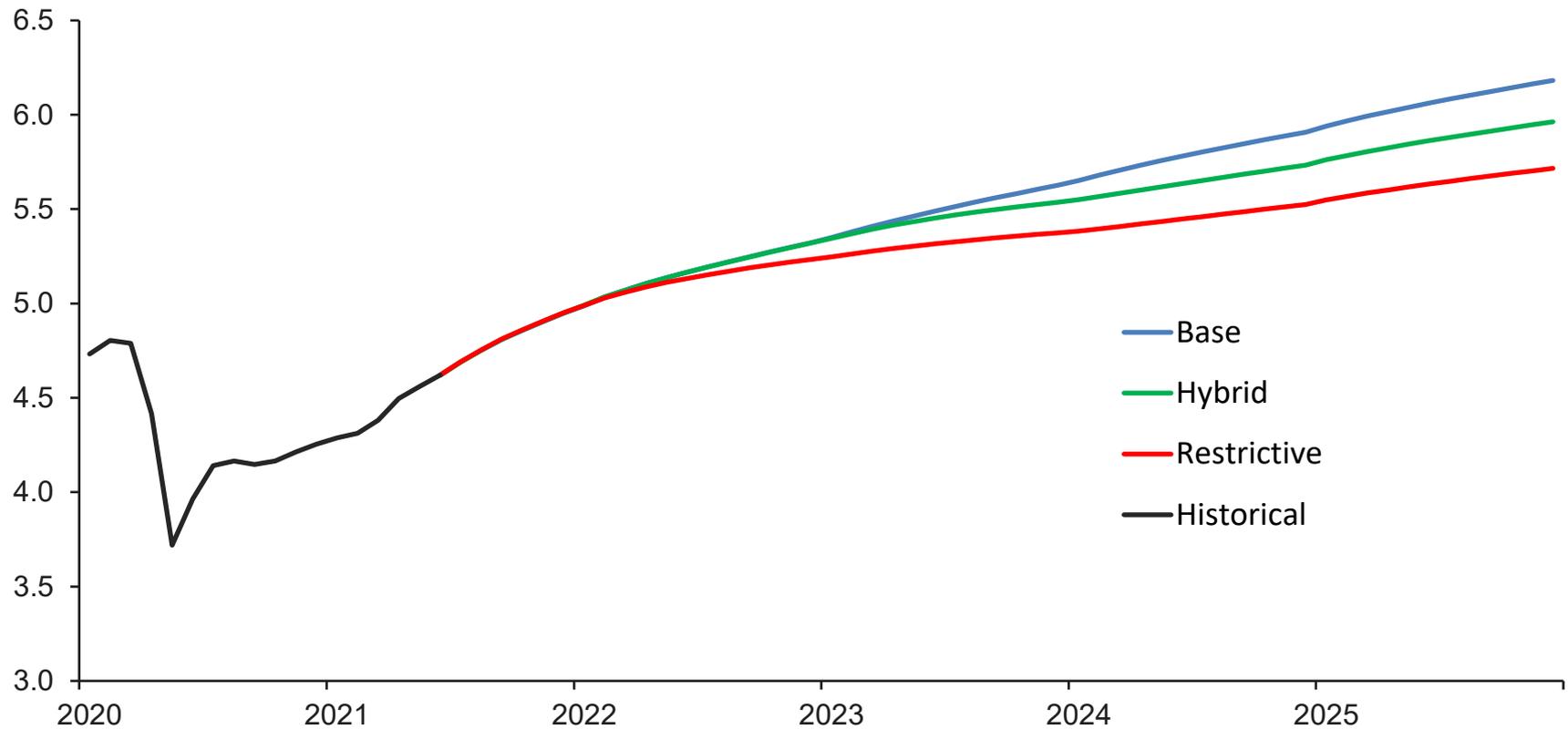


# Permian Production Forecasts

Chart 1

## Forecast Scenarios for Total Permian Basin Production Under Greater Federal Limits

Million barrels of oil per day



SOURCES: Kayrros; WellDatabase; Federal Reserve Bank of Dallas estimates.

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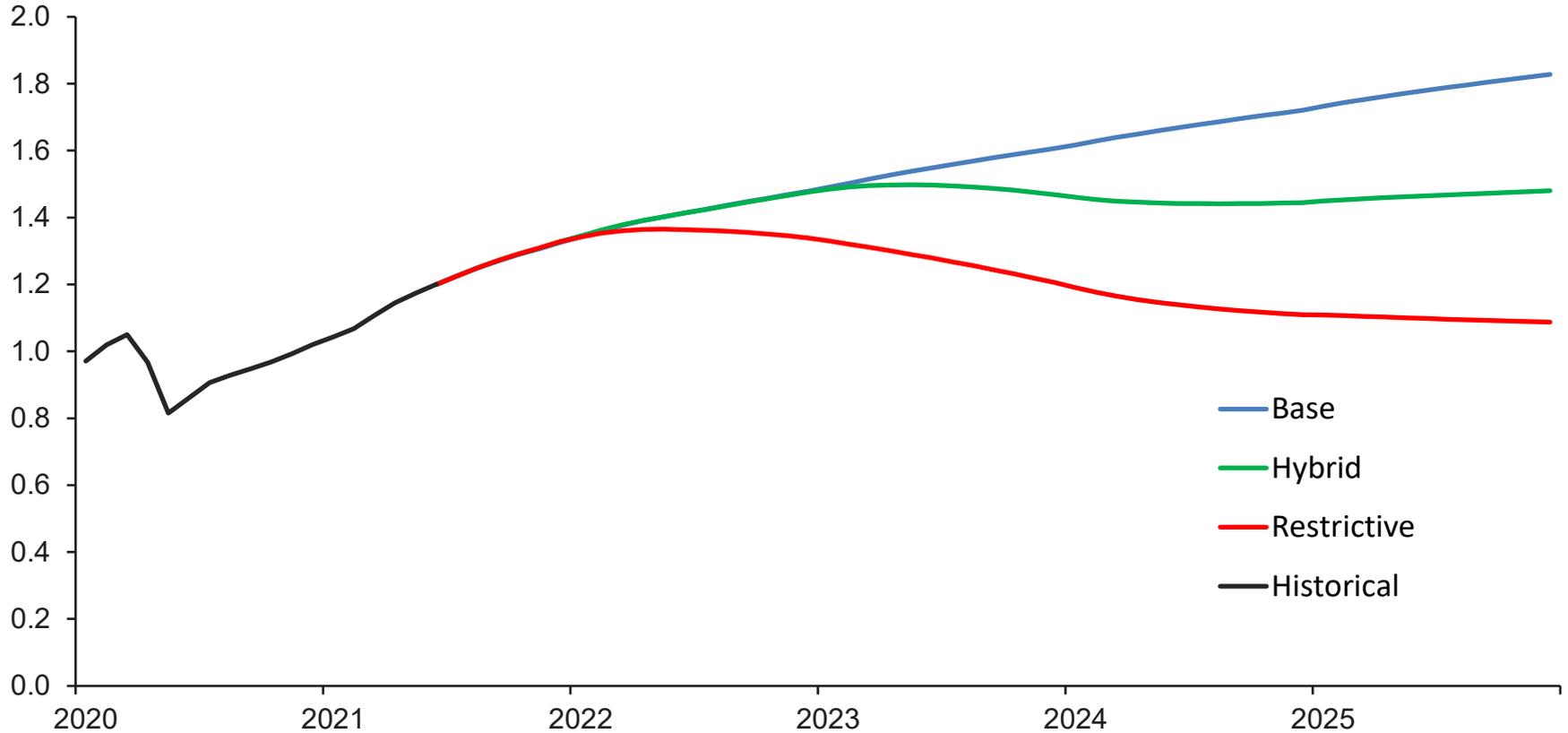
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# NM Production Forecasts

Chart 2

## Forecast Scenarios for New Mexico Permian Basin Production Under Greater Federal Limits

Million barrels of oil per day



SOURCES: Kayrros; WellDatabase; Federal Reserve Bank of Dallas estimates.

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# Employment Impacts

- Between June 2021 and the December 2025, New Mexico will require between 4,780 and 6,800 fewer rig and frac crew workers in the Hybrid and Restrictive Cases, respectively
- The job projections do not include additional service needs – tank batteries, gathering systems, water hauling, etc. – that would also shift from NM and TX
- The overall jobs impact is much larger due to the industry’s multiplier effect. Retail, hospitality, and construction sectors would likely see the most impact from these shifts in drilling activity and employment.



# Other Impacts

## State Revenues

- New Mexico received \$2.6 billion directly from oil and gas industry taxes, royalties, and fees in 2019; \$809 million of this figure came from royalties on federal lands
- Regulatory scenarios result in an eventual cap and decline in federal royalties

## Environmental

- Each drilling pad requires 1,200 heavy truck trips on average; New Mexico would see a drop in this traffic while Texas will experience more
- New Mexico is implementing stringent flaring rules while Texas is doing little on this front; production shifting into Texas may cause higher pollution from flaring

## Downstream

- Gulf Coast refineries invested heavily to take more light crude from the Permian; assuming steady demand, higher imports from West Africa and the Arabian Gulf will be needed
- Likewise, ports have expanded loading capacity for the export market; foreign customers would need to replace Permian barrels with others



# Going Forward

- **When will the federal review of fossil fuel policies conclude and what rulemakings will result?**
- **If royalty rates are increased, will that impact well-level economics in the Delaware Basin enough to discourage investment?**
- **Would higher royalty rates offset lower activity levels to preserve federal and state revenues?**
- **How much will producer capex budgets change in this higher price environment? How would that shift production between TX and NM under our scenarios?**





# Questions

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