

DOCKETED

Docket Number:	23-IEPR-03
Project Title:	Electricity and Gas Demand Forecast
TN #:	249714
Document Title:	Natural Gas Preliminary Price Projections
Description:	Presentation by Anthony Dixon at April 18, 2023, IEPR Staff Webinar
Filer:	Stephanie Bailey
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	4/17/2023 11:33:06 AM
Docketed Date:	4/17/2023



California Energy Commission

Title: Natural Gas Preliminary Price Projections

Presenter: Anthony Dixon

Date: April 18, 2023



Natural Gas Price Projections: Purpose

A requirement of Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) is for the CEC to assess major natural gas trends and issues as part of the Integrated Energy Policy Report

CEC price projections support:

- CA Natural Gas Demand Forecast
- CEC's production cost modeling
- CPUC proceedings on Aliso Canyon and Natural Gas Long-Term Planning
- California ISO planning
- Western Electricity Coordinating Council (WECC) production cost modeling / policy and planning
- Northwest Power Association policy and planning



NAMGas Model: Construction and Updates

- North American Market Gas Trade (NAMGas)
- Created in the Deloitte MarketBuilder platform
- General equilibrium modeling logic is well-vetted
- Updates for 2023:
 - Returned to annual model
 - 2021 California Natural Gas Demand forecast (adopted as part of 2021 IEPR)
 - Most recent gas demand for electricity generation in the WECC (production cost model)
 - Revised information on gas reserves and costs



Simplified View: NAMGas Model

NAMGas components:

Natural Gas Supply Basins
Connected to
**Interstate and Intrastate
Pipelines**
Connected to
Demand Centers



- Supply
- Transmission
- Demand

- **Model iterates between the three components to find economic equilibrium at all nodes at all time periods.**
- **Results give prices, demand, and supply at equilibrium.**



2023 Gas Price Cases

The price projections are North America-wide and include Northern Mexico and Canada

- The gas system is integrated; CA prices are impacted by events in other regions.
- Scenarios/cases

Base Case

- Continuation of business as usual

High Natural Gas Supplies

- High availability of natural gas
- Low production costs
- High technological advancements in production
- Changes to demand growth rates

Low Natural Gas Supplies

- Low availability of natural gas
- High production costs
- Low technological advancements in production
- Changes to demand growth rates.



Gas Price Cases: Key Demand Assumptions

Input	Base Case	High Natural Gas Supplies Case	Low Natural Gas Supplies Case
Demand	2022: 31.9 Tcf 2050: 36.2 Tcf	2022: 31.9 Tcf 2050: 45.4 Tcf	2022: 31.9 Tcf 2050: 31.1 Tcf
Demand Growth Rates (Source: US Energy Information Administration's 2022 Annual Energy Outlook)			
Residential	-1% per year	.02% per year	-.2% per year
Commercial	.2% per year	.3% per year	-.1% per year
Industrial	.8% per year	1.2% per year	.2% per year
Electric Generation	4.7% per year	.7% per year	-2.1% per year
Transportation	4.7% per year	4.5% per year	3.9% per year



Gas Price Cases: Key Supply Assumptions

Input	Base Case	High Natural Gas Supplies Case	Low Natural Gas Supplies Case
Supplies	2022: 625.4 Tcf 2050: 1,300Tcf	2022: 625.4 Tcf 2050: 1,983.8 Tcf	2022: 625.4 Tcf 2050: 289.7 Tcf
Growth Rate	5% per year to 2037, then 0% to 2060	8% per year to 2037, then 0% to 2060	-5% per year to 2037, then 0% to 2060
Costs	-3% per year to 2037, then 0% to 2060	-10% per year to 2037, then 0% to 2060	10% per year to 2037, then 0% to 2060
Technology	.5% per year	2% per year	-1% per year

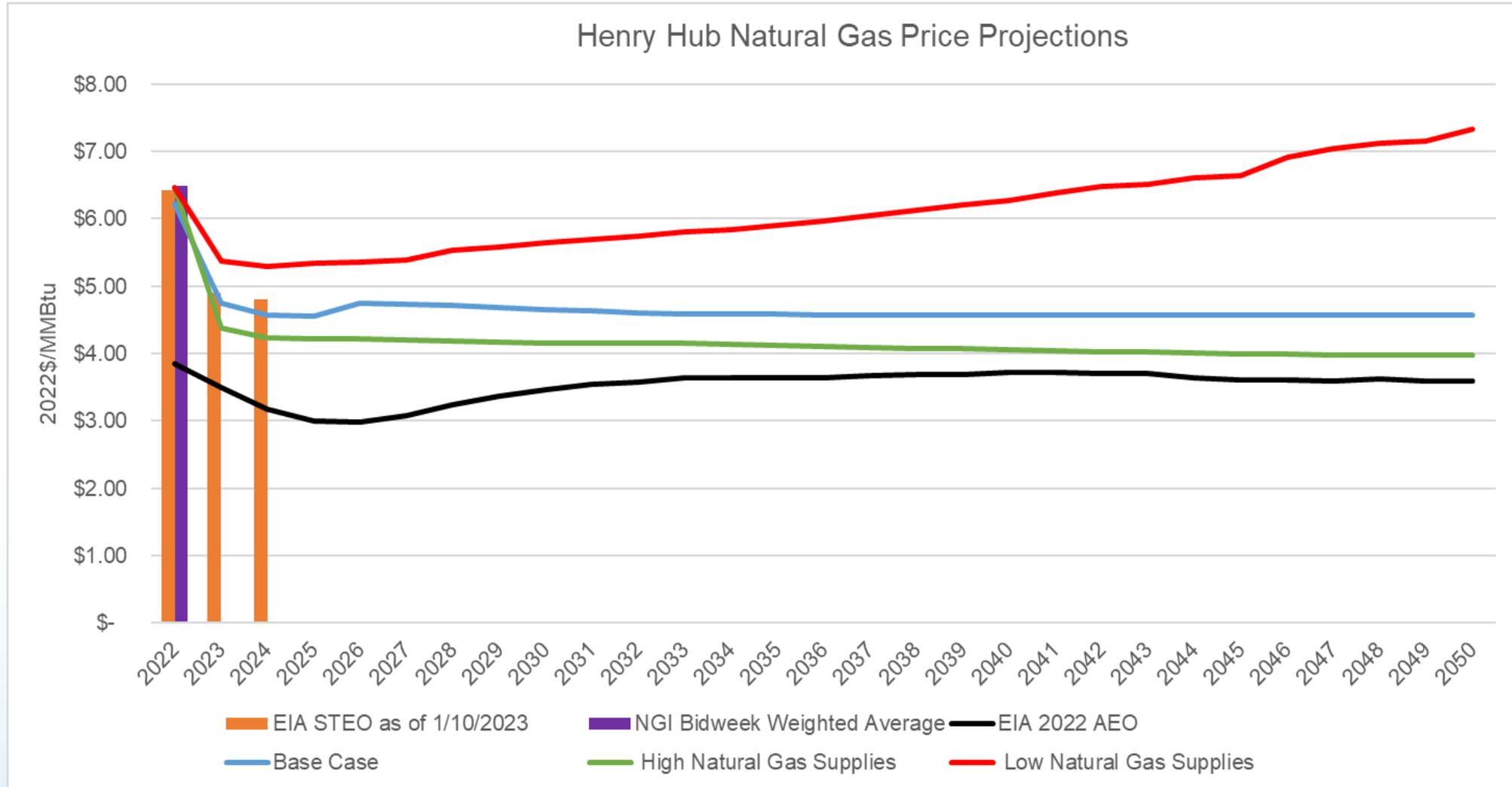


Preliminary Price Results

- Henry Hub (national benchmark)
 - 2022 backcast of U.S. Energy Information Administration (EIA) Short Term Energy Outlook (STEO) and NGI Bidweek Average prices
 - 2023 and 2024 U.S. EIA STEO prices for comparison
 - CEC's three Gas Price Cases' projections compared to 2022 U.S. EIA Annual Energy Outlook (AEO) projections
 - Projections to 2050
- California-specific hubs
 - CEC's three Gas Price Cases out to 2050

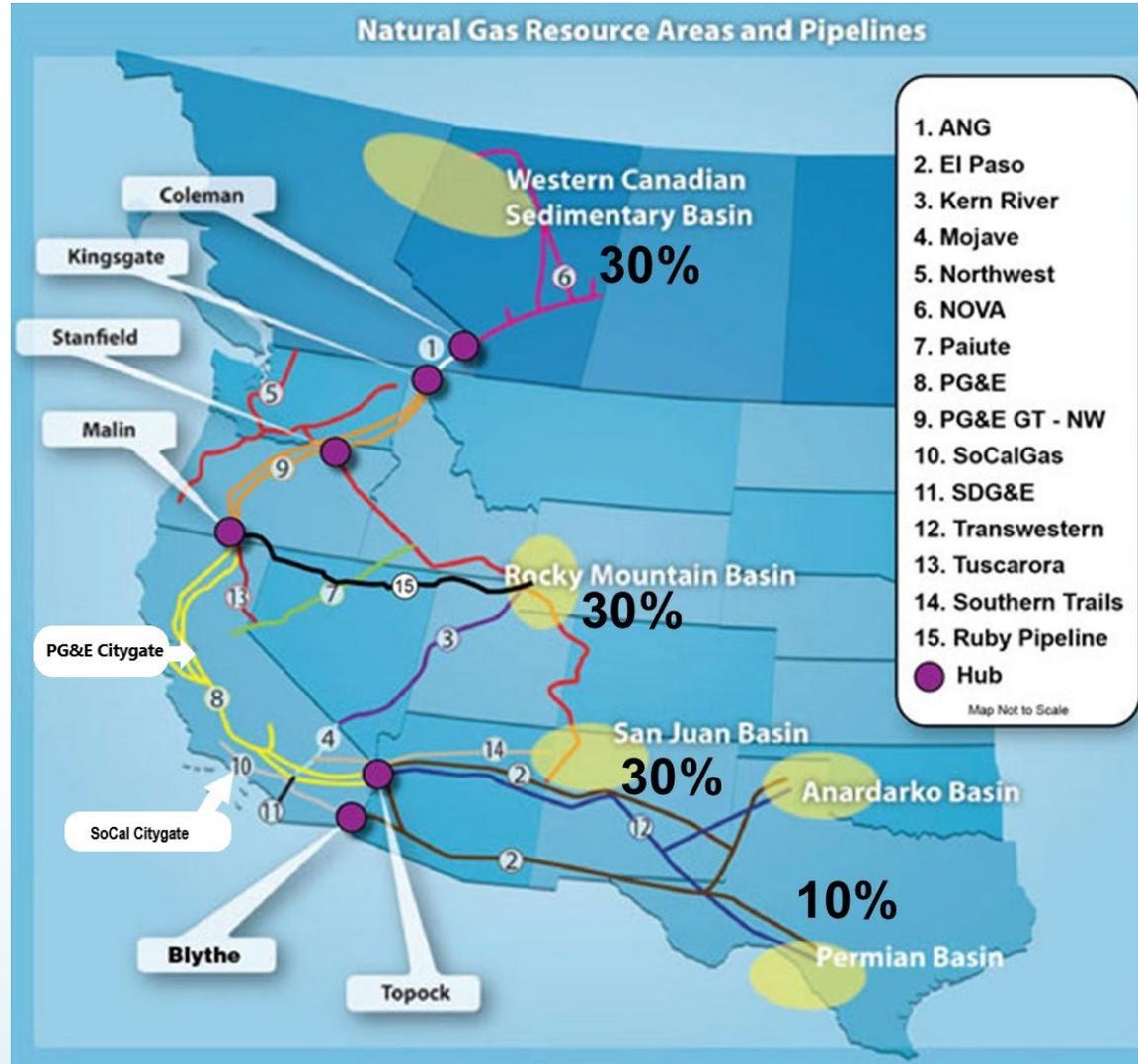


Henry Hub (Louisiana)



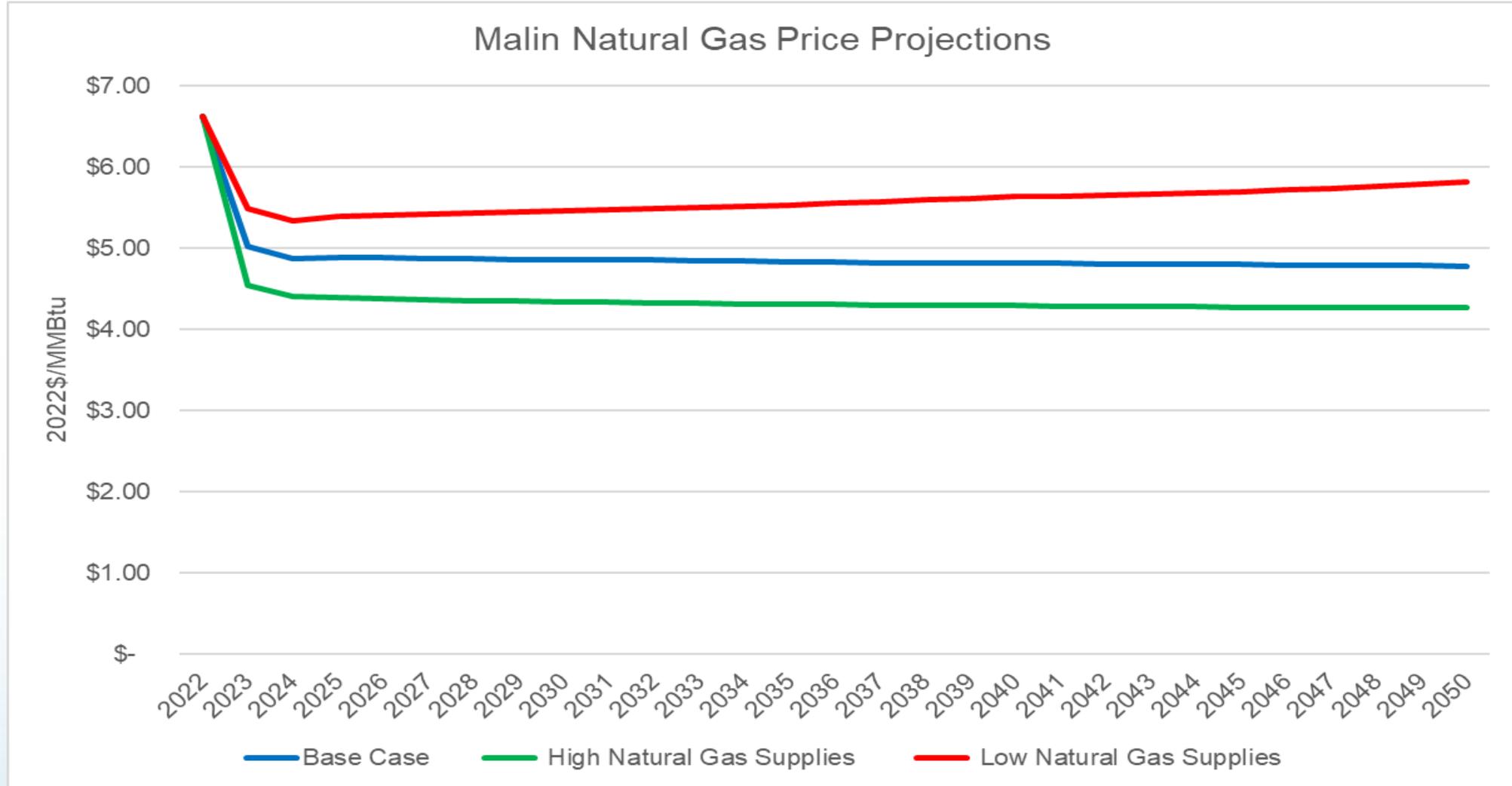


California Supply Snapshot: Border Hubs, Pipelines, and Supply Basins



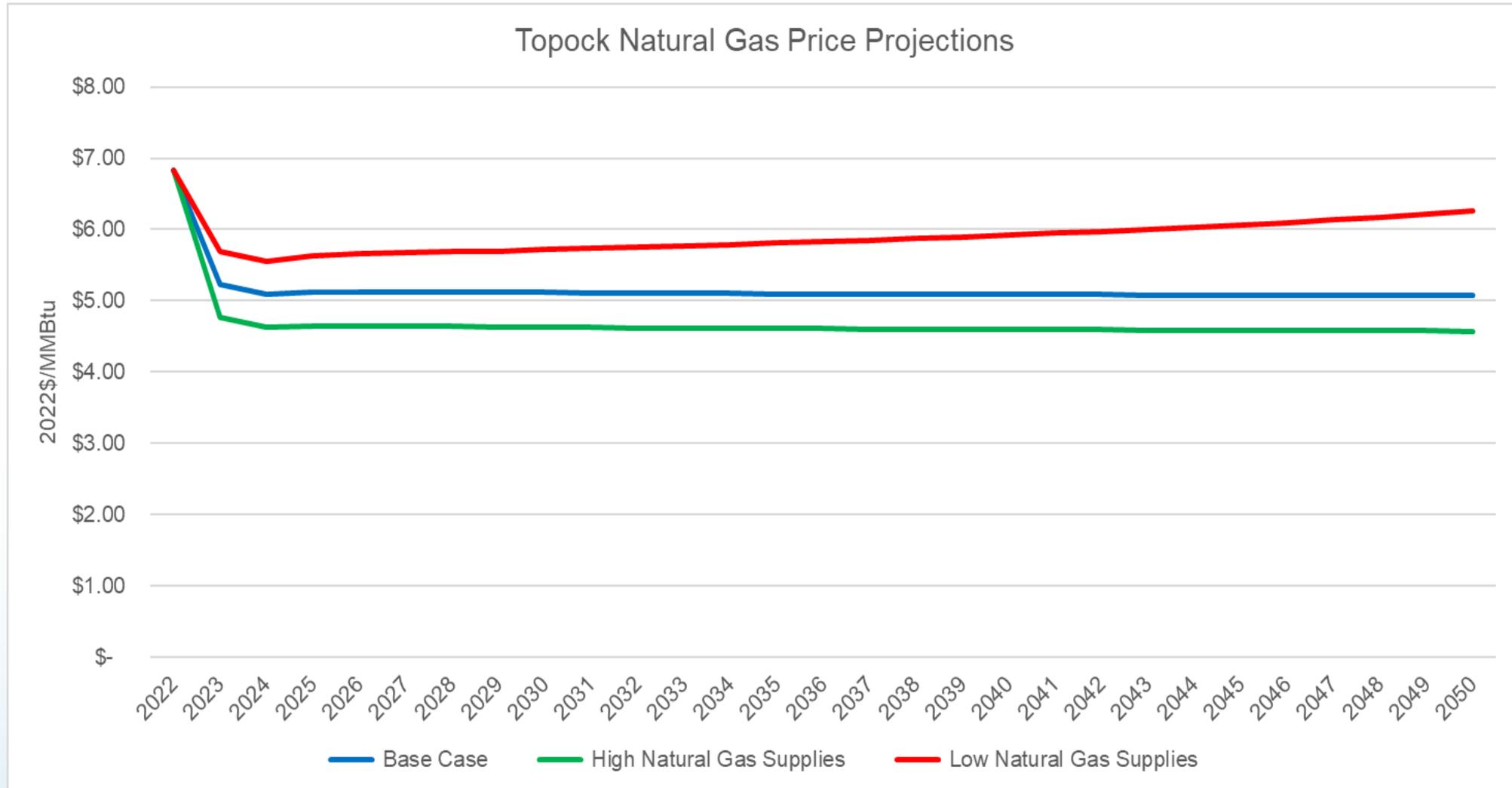


California-specific Malin, OR



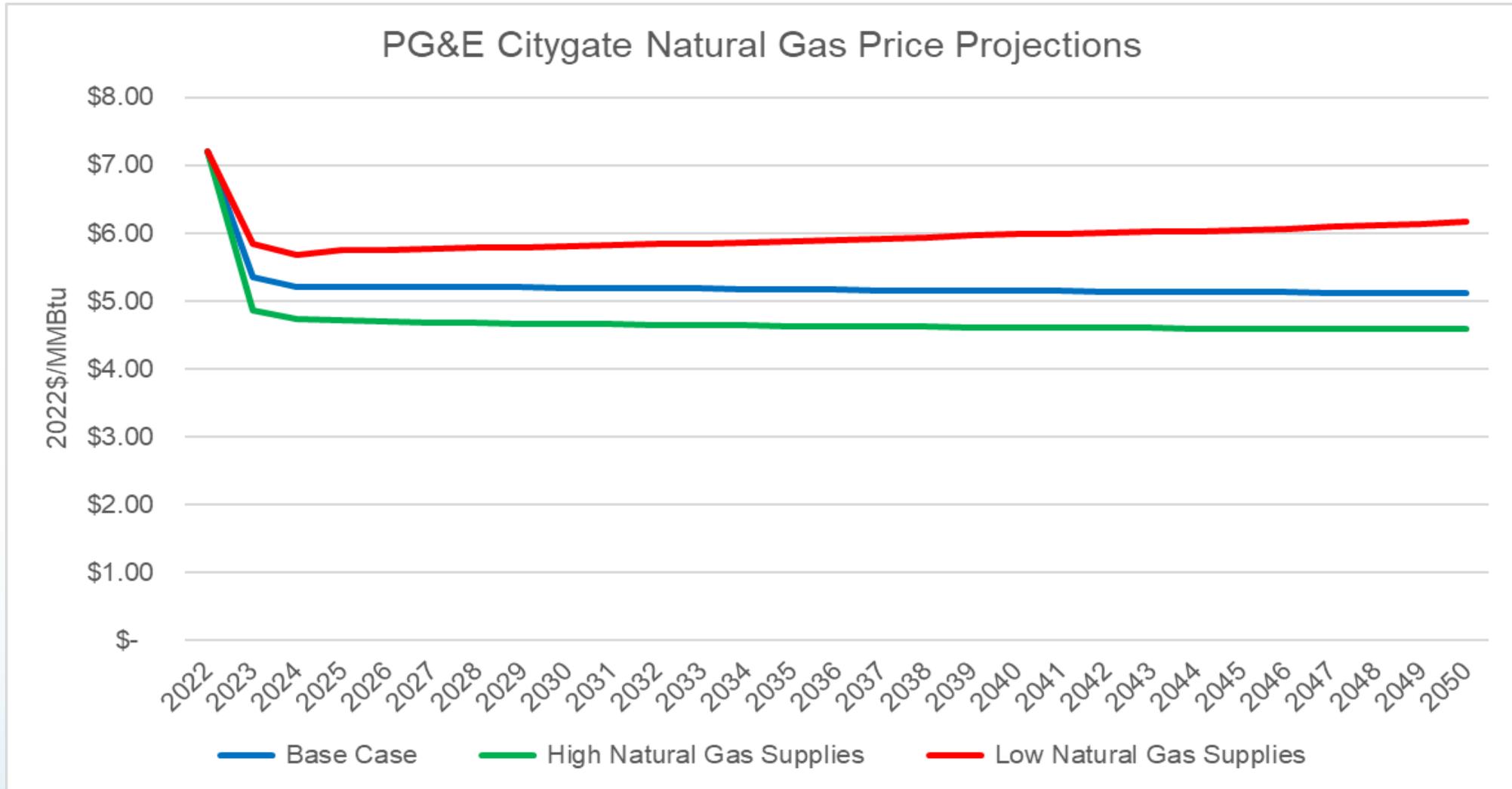


California-specific Topock, AZ



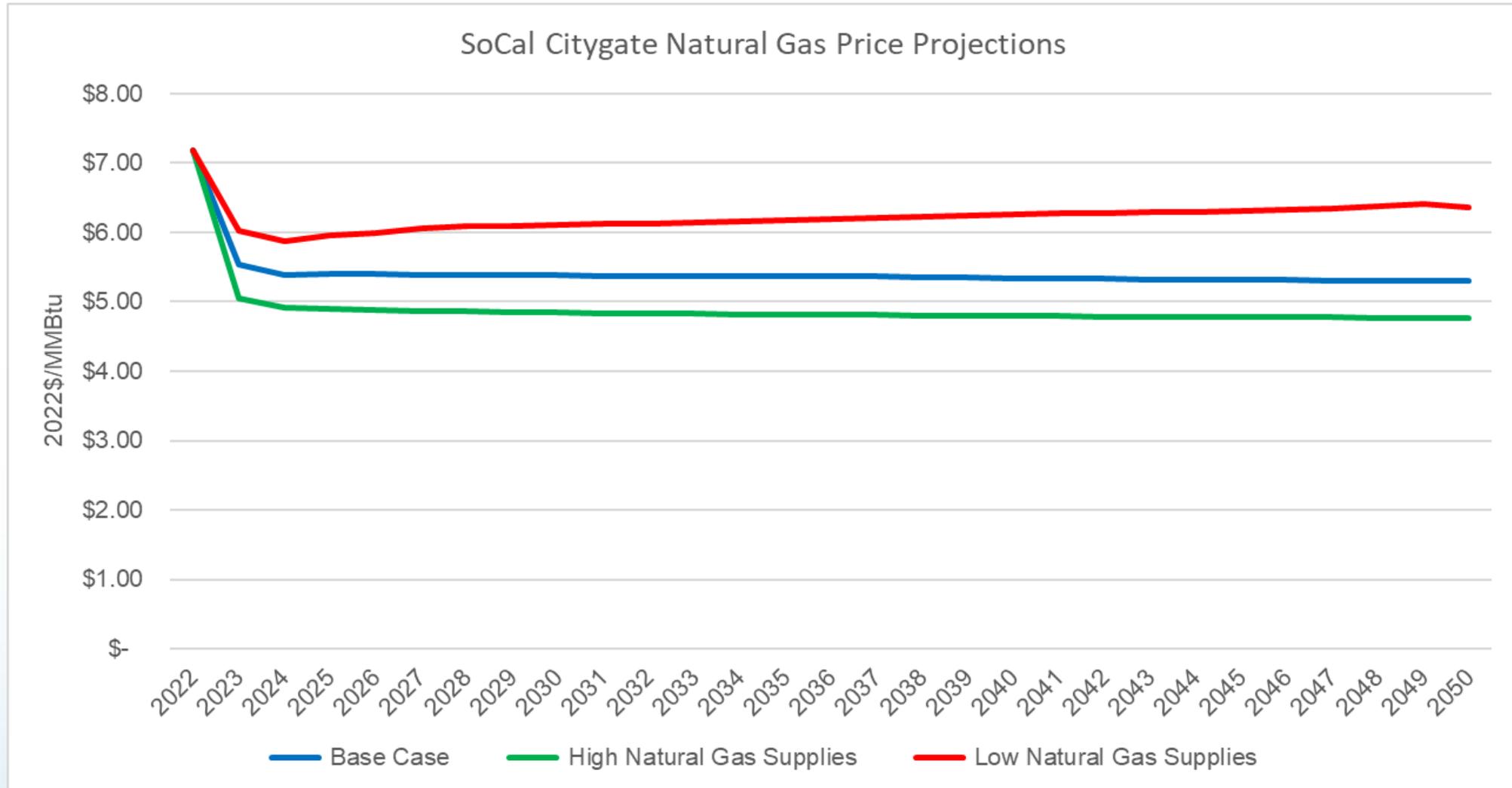


California-specific PG&E Citygate





California-specific SoCal Citygate





Conclusions

- Prices are seen to decline in 2023 compared to 2022 due to production returning not only to pre-covid levels but also reaching record levels.
- Build out of LNG capacity could put upward pressure on domestic natural gas prices; however, LNG facilities take years to build & come online, giving time to increase domestic production and pipelines and reduce consumption to offset the increase in LNG demand.
- **Base Case:** Prices remain relatively flat due to abundant natural gas proved resources.
- **High Natural Gas Supplies Case:** Prices remain relatively flat but about 50 cents lower than the Base Case.
 - Due to high levels of natural gas proved resources and lower cost to produce them.
- **Low Natural Gas Supplies Case:** Prices start about 50 cents higher and grow about 1 percent per year to 2050.



Next Steps

- Written comments due **May 2, 2023, by 5:00 p.m.** (Docket # 23-IEPR-01)
- Update model with the following inputs to produce revised results:
 - 2023 EIA AEO data – **June 2023**
 - 2022 EIA historical data – **June 2023**
 - New natural gas supply data (growth by basin) – **July 2023**
 - Other Possible Scenarios
 - Revised NAMGas price projections workshop – **August 2023 (tent.)**



Thank You!

Anthony Dixon
Anthony.Dixon@energy.ca.gov