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Description:	*** THIS DOCUMENT WAS ERRONEOUSLY FILED IN 15-IEPR-03; TN 206463-1 *** - 11.03.2015 IEPR Commissioner Workshop on Revised Natural Gas Outlook
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Description:	11.03.2015 IEPR Commissioner Workshop on Natural Gas Outlook Report
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Integrated Energy Policy Report Commissioner Workshop: Highlights of the Natural Gas Outlook Report

November 03, 2015

**Ivin Rhyne
Supply Analysis Office
Energy Assessment Division**



Overview

- **Changes from last workshop**
- **California Prices/ Demand**
- **National Prices/ Demand**
- **Imports, Exports, and LNG**
- **Conclusions**



Revised Assumptions Since September 21

- Paired high costs with low demand and low costs with high demand
- Coal retirement aligned with 111(d)
- State RPS goals met on time
- September Bidweek forward price curve used
- Adjustments to deal with minor issues
- Adjustments to national demand to align with US Energy Information Administration



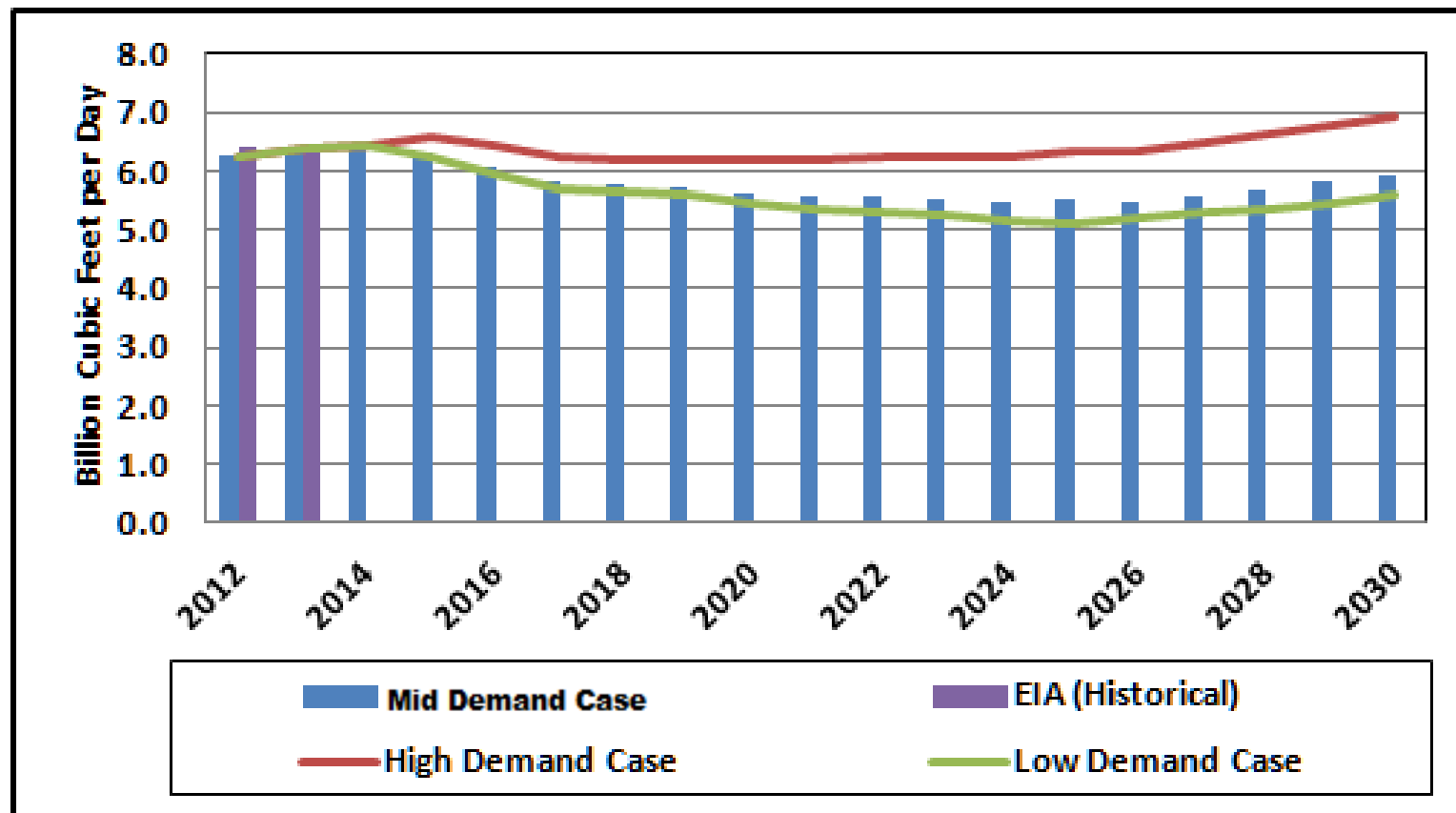
CALIFORNIA PRICES AND DEMAND



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CA Total Natural Gas Demand:

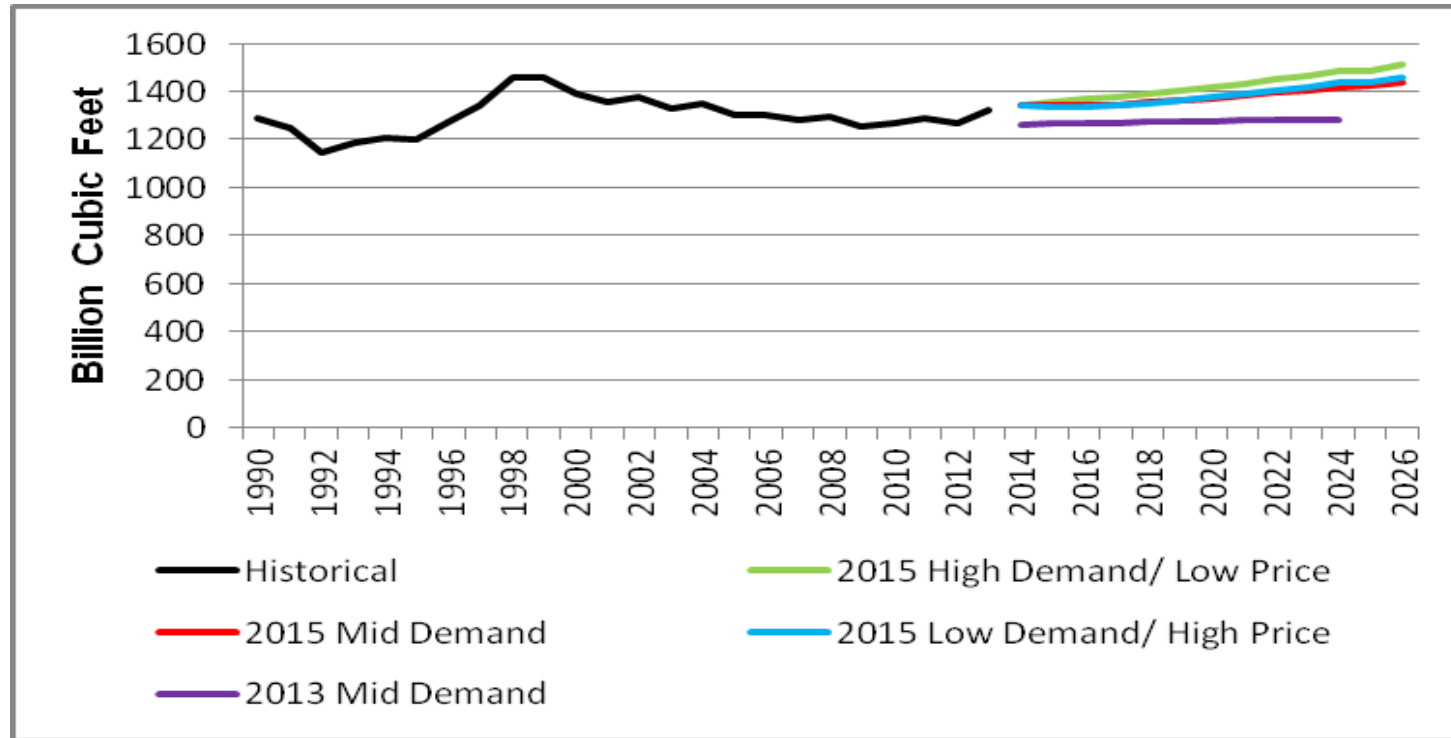
Implementation of renewable generation dampens California's demand





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California End-Use Natural Gas Demand: Higher than 2013 Forecasts

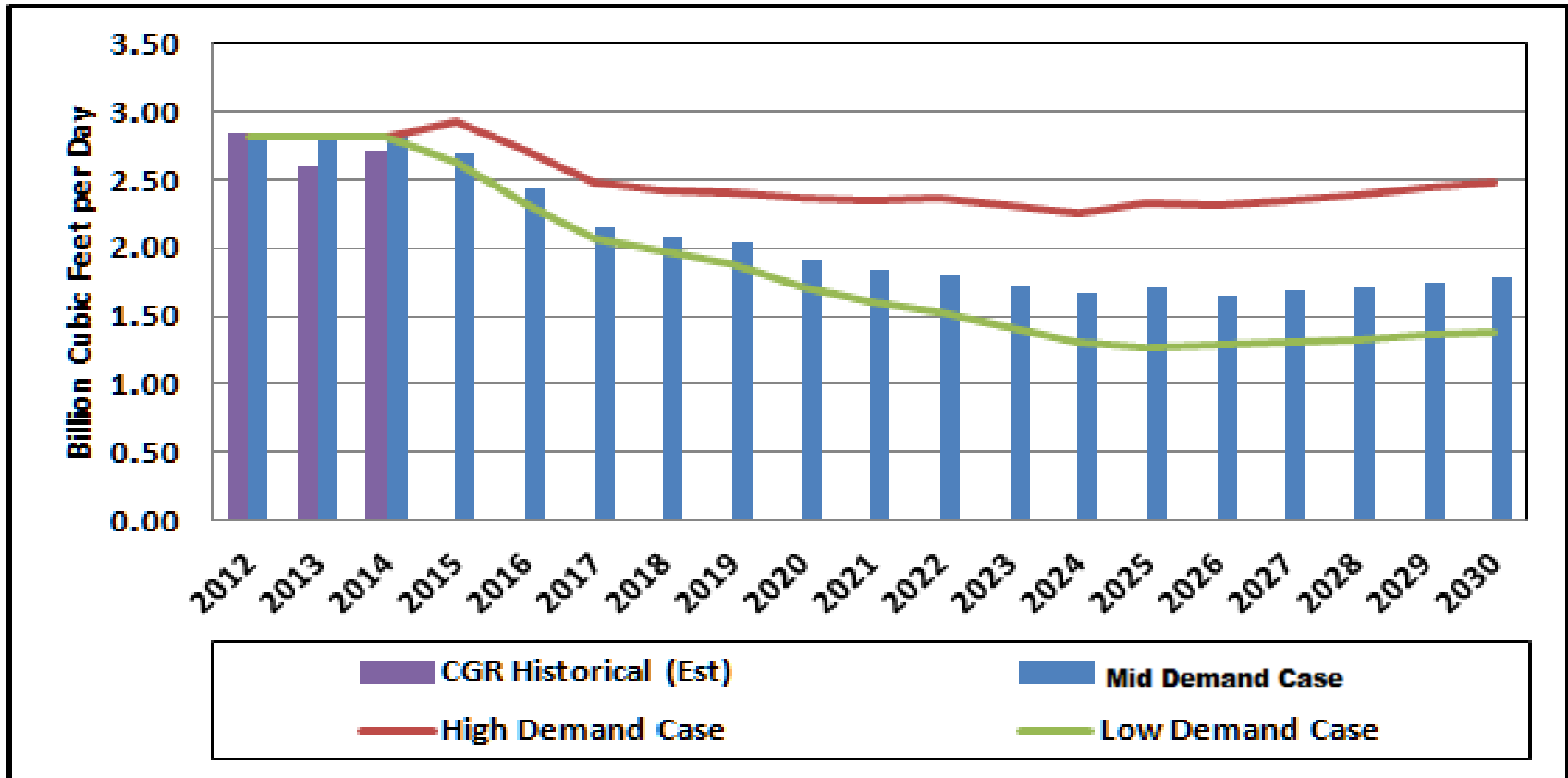


- Starting point higher than 2013 CED forecasts
- Actuals differ from 2013 forecasts - price increases in 2013 did not materialize
- Transportation sector growth rate driving demand growth rate higher



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Natural Gas Demand (CA) for Power Generation: Power Generation Demand Falls as Renewable Generation Increases





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California Supply Portfolio (2025)

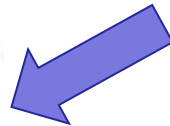
In-state Production Expected to Provide About 2% of Demand Requirements



Canadian & Rockies Imports
(Malin):
2.63 Bcf/d



Rocky Mountain:
0.85 Bcf/d



Southwest:
2.01 Bcf/d



Mid-Demand Case

- Demand satisfied by:
 - Imports (Malin)
 - Rocky Mountain Supplies
 - Southwest Supplies
 - Local Production

California

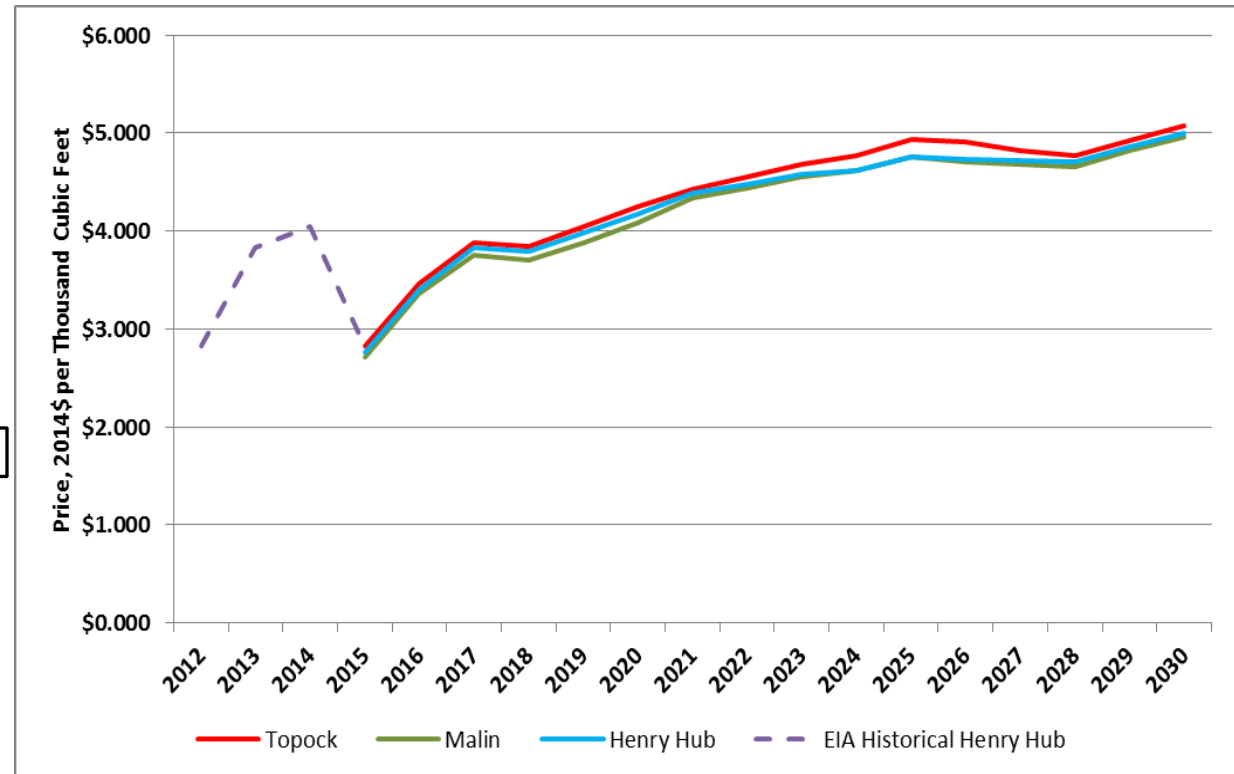
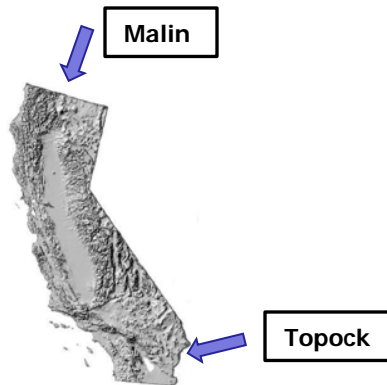
Production: 0.13 Bcf/d
Demand: 5.52 Bcf/d



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California Price Performance

Price Growth Rate at Topock and Malin Hubs Parallels Henry Hub

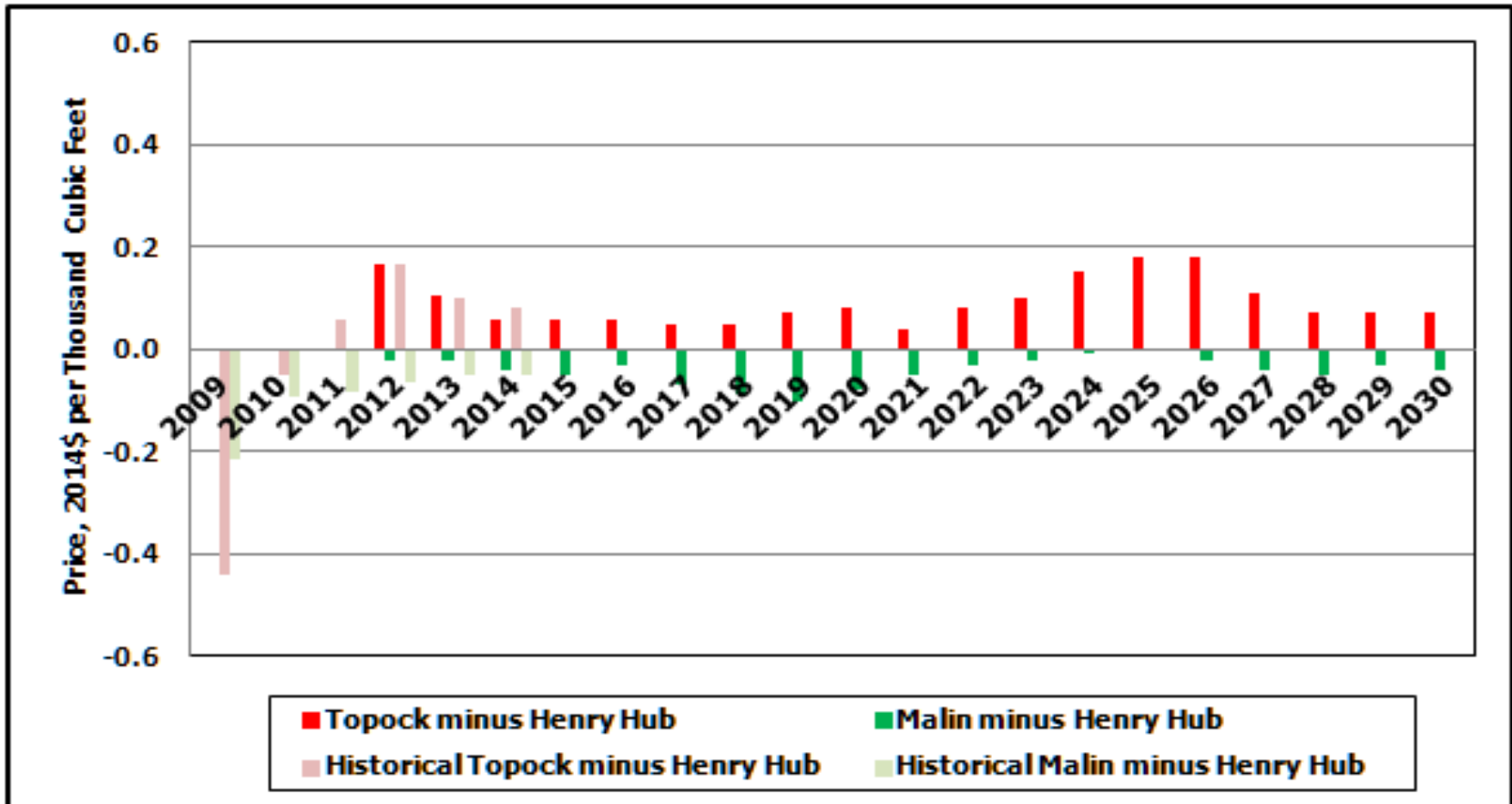


- California's gas sources and Henry Hub gas are physically separate but linked by the market influence Henry Hub has in the larger United States market.



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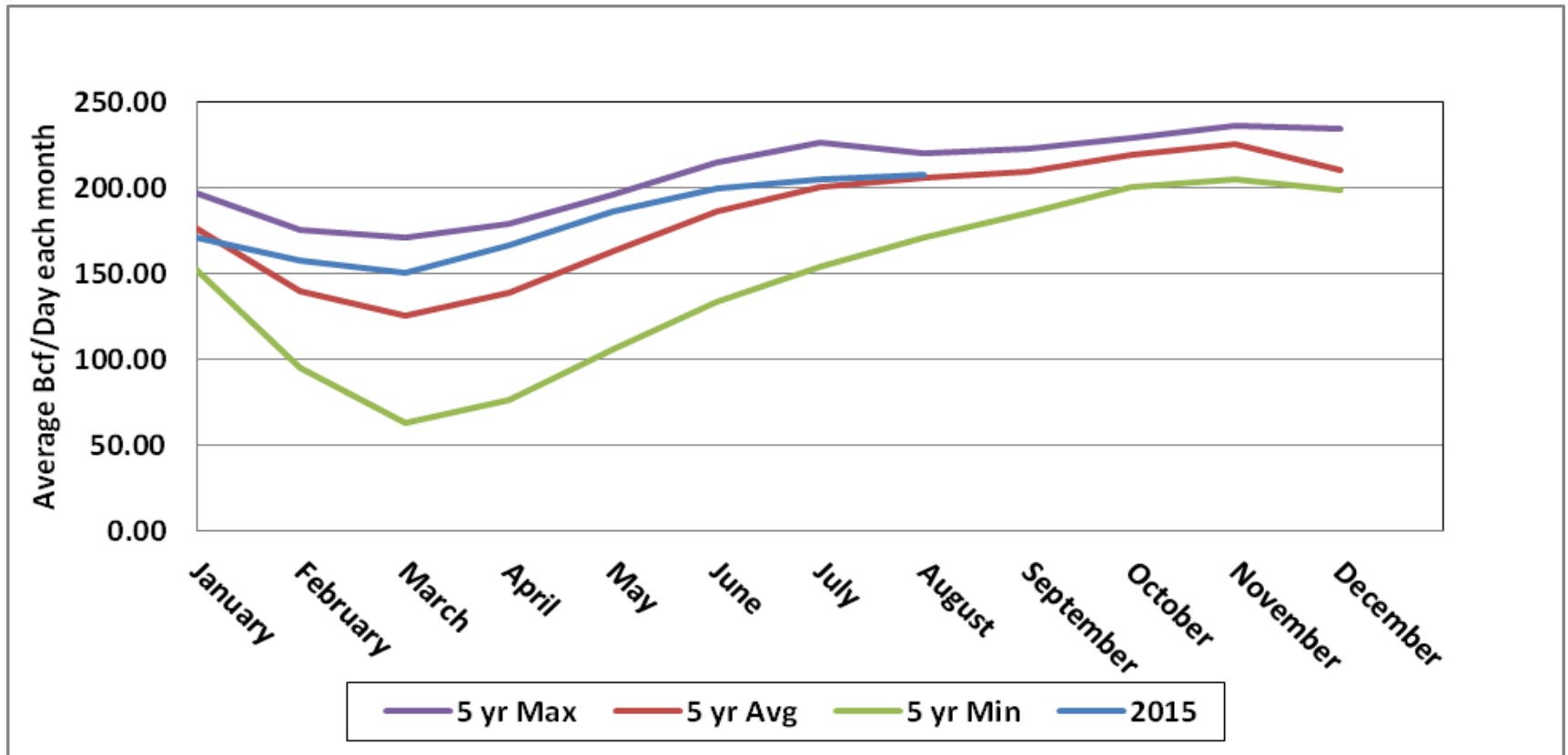
California Price Points: Prices at Southern Border Slightly Higher Than Northern





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California Natural Gas Storage: Aligns with the 5 Year Average for August



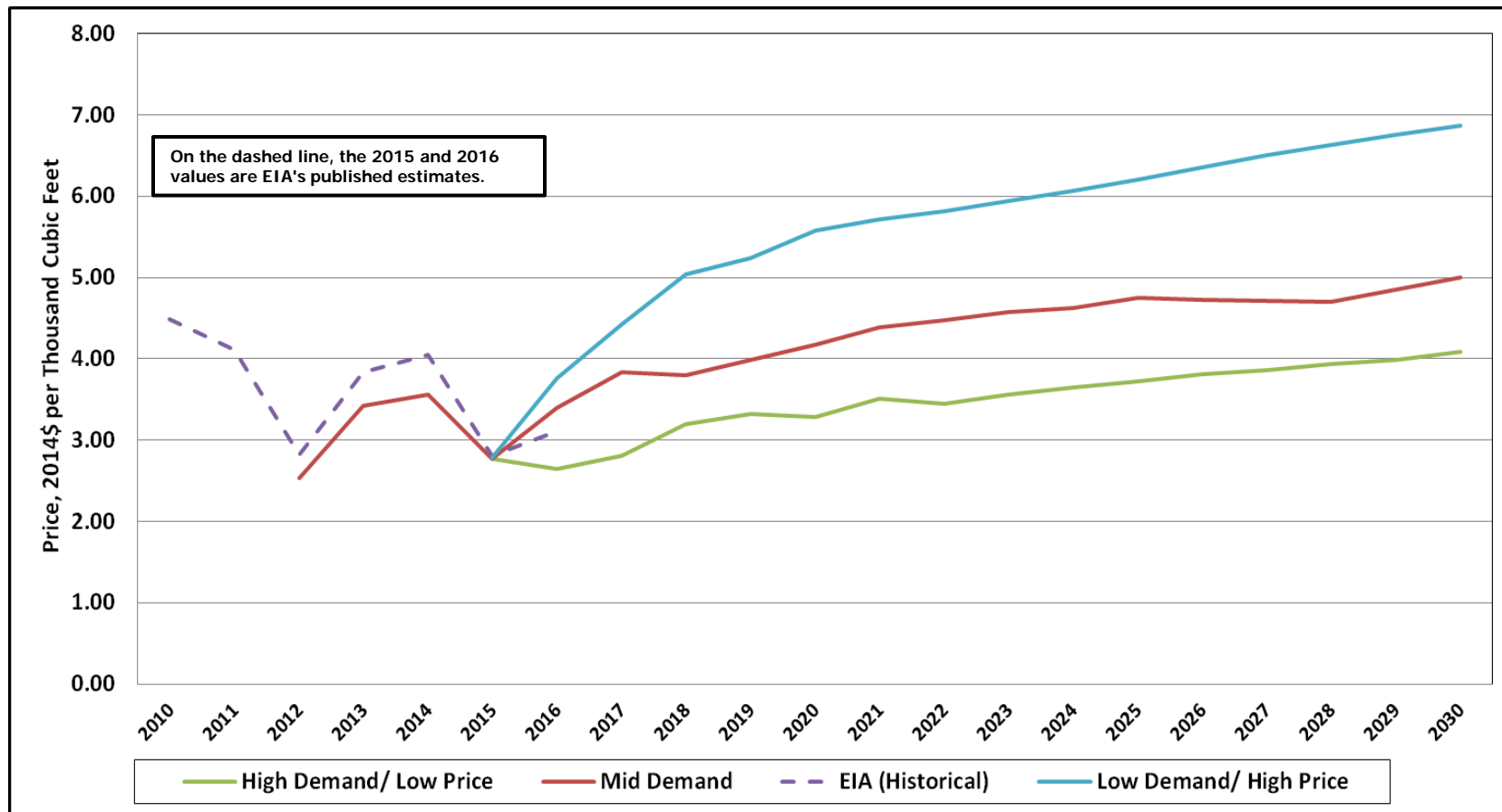


NATIONAL PRICES AND DEMAND



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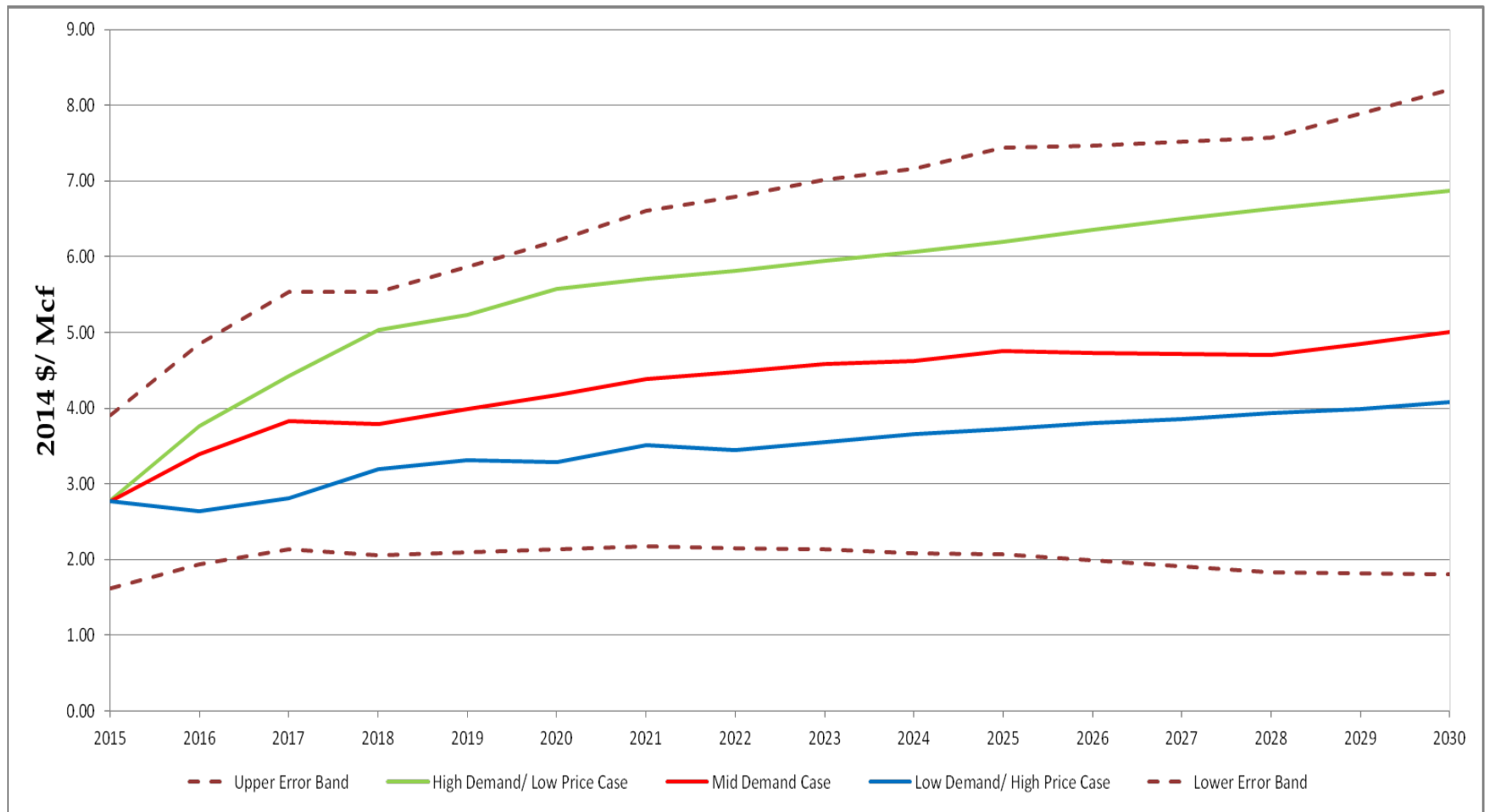
Revised Price Results: Long term Henry Hub Prices Grow at About 2.6%





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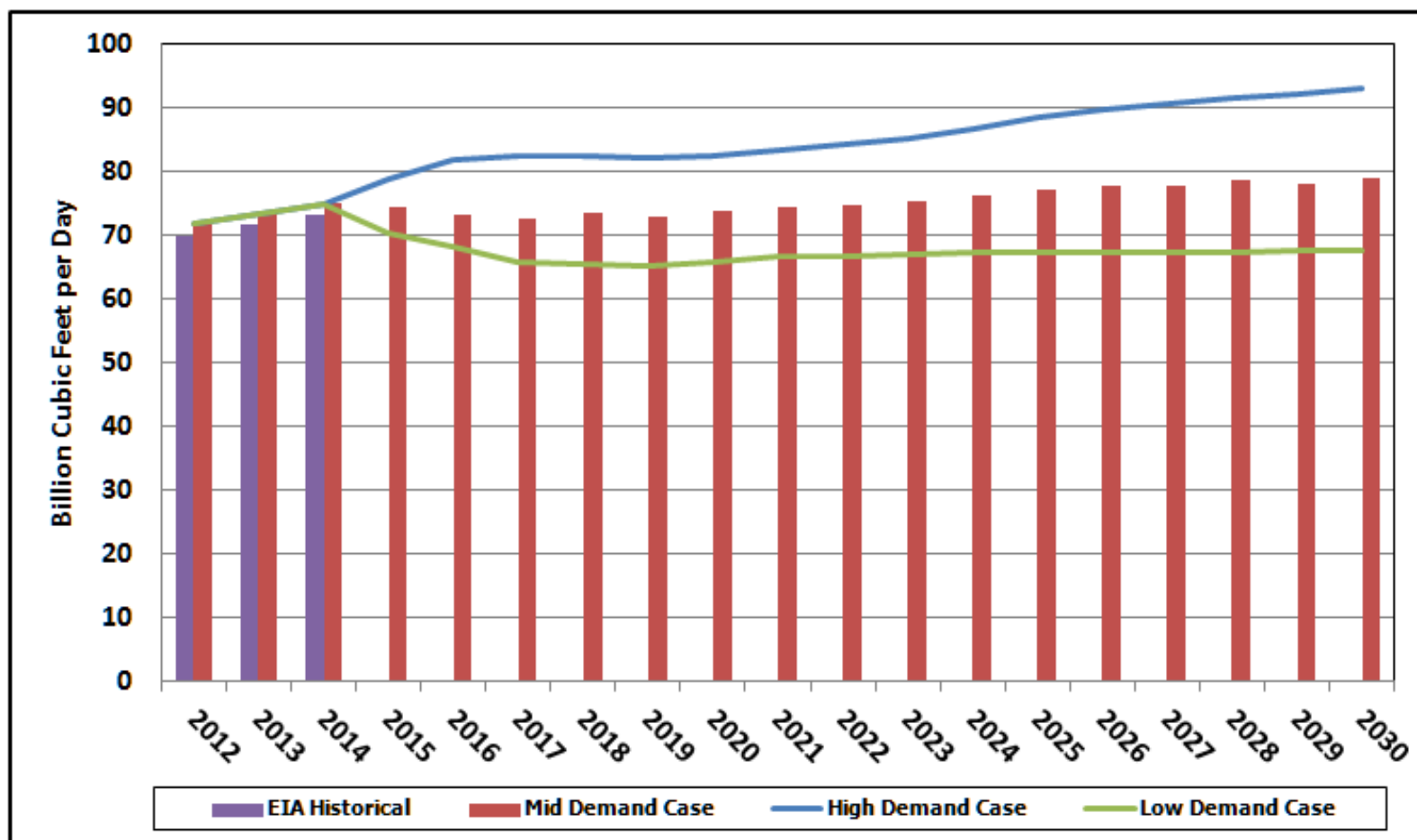
Price Uncertainty: Single Year Prices May Range from \$8.21 to \$1.80 Mcf in 2030





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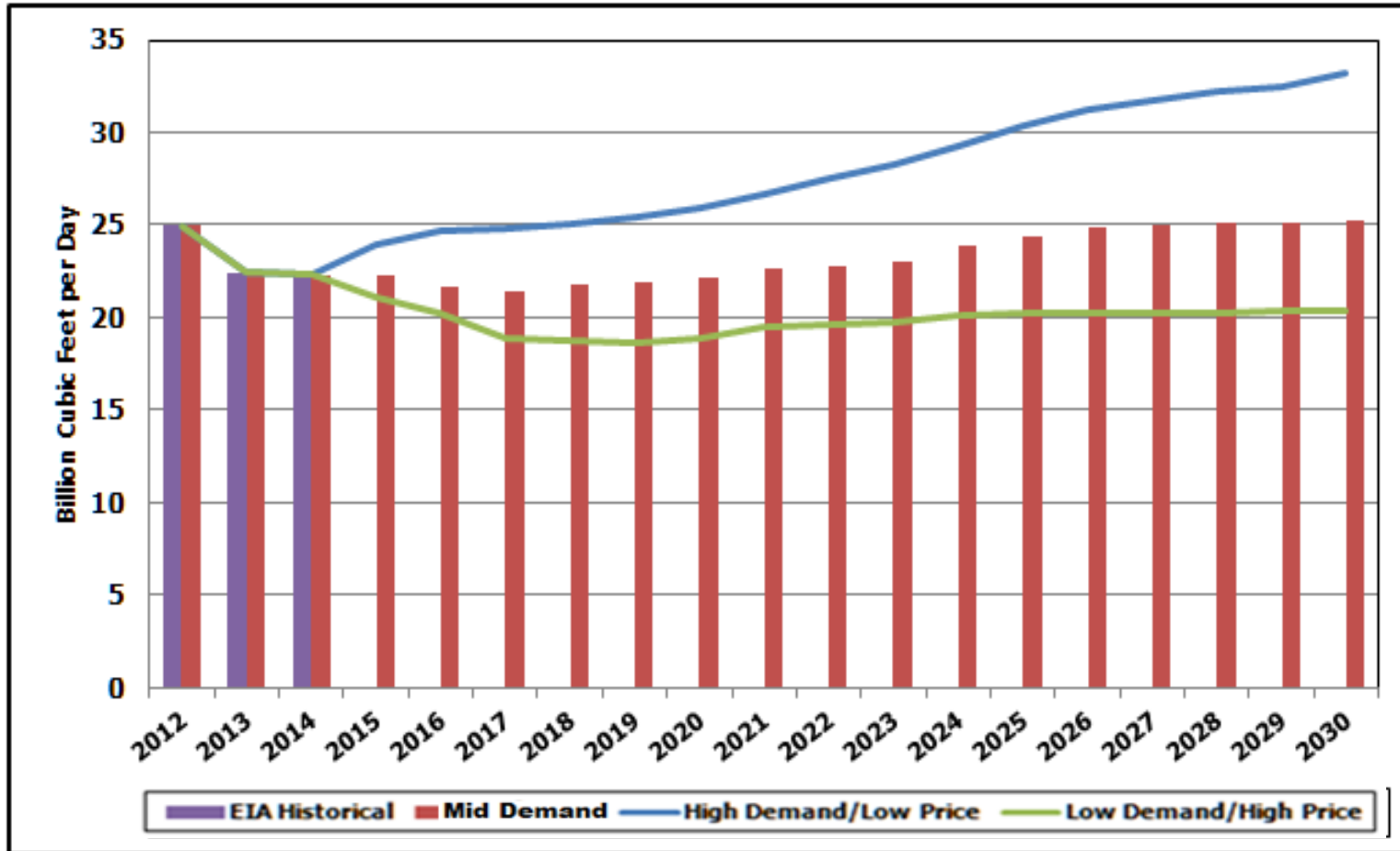
US Total Natural Gas Demand: Cost Environment Pushing Demand Growth





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US Power Generation Demand for Natural Gas: Coal Switching to Gas Offset by Renewables

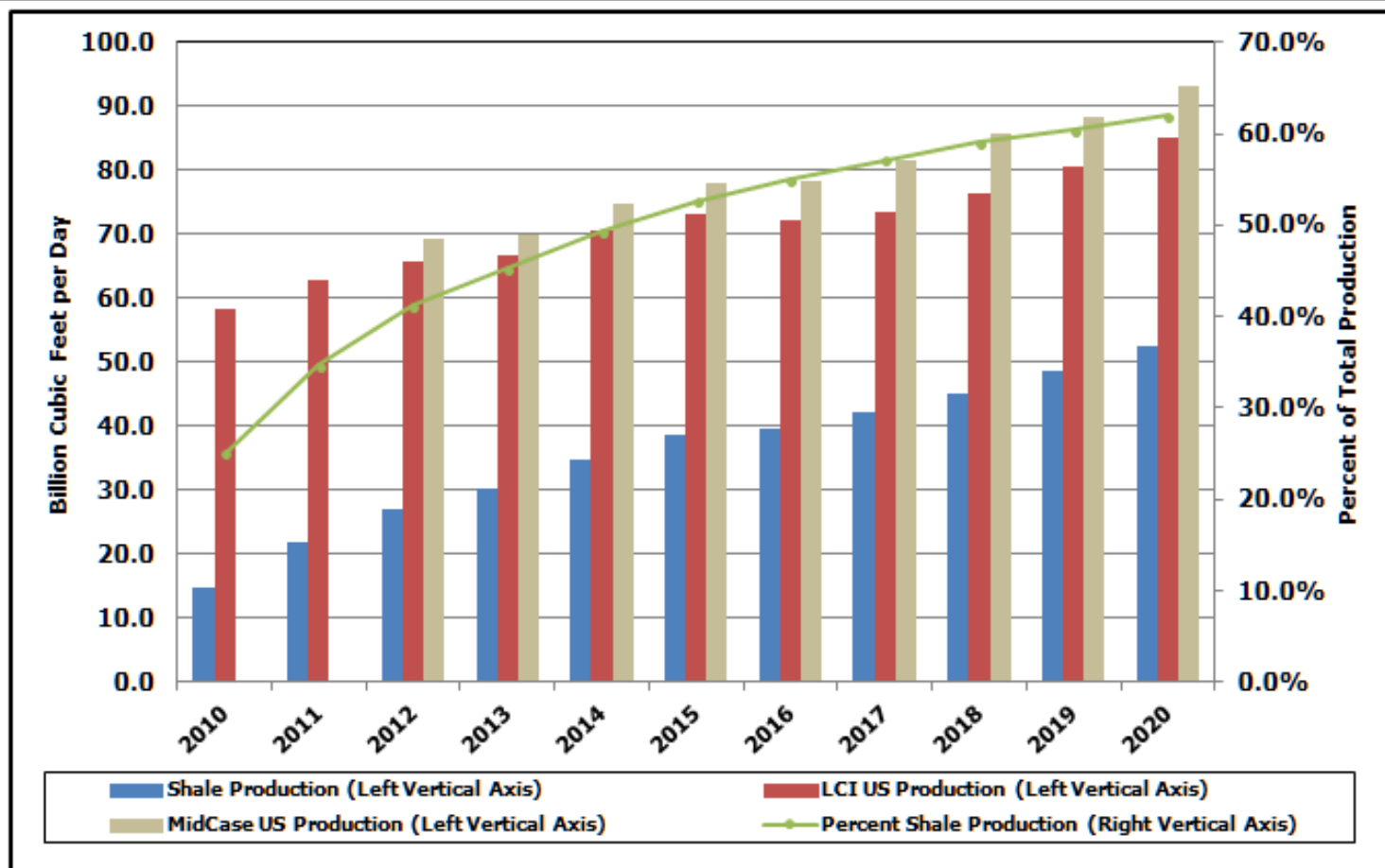




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US Shale Gas Production:

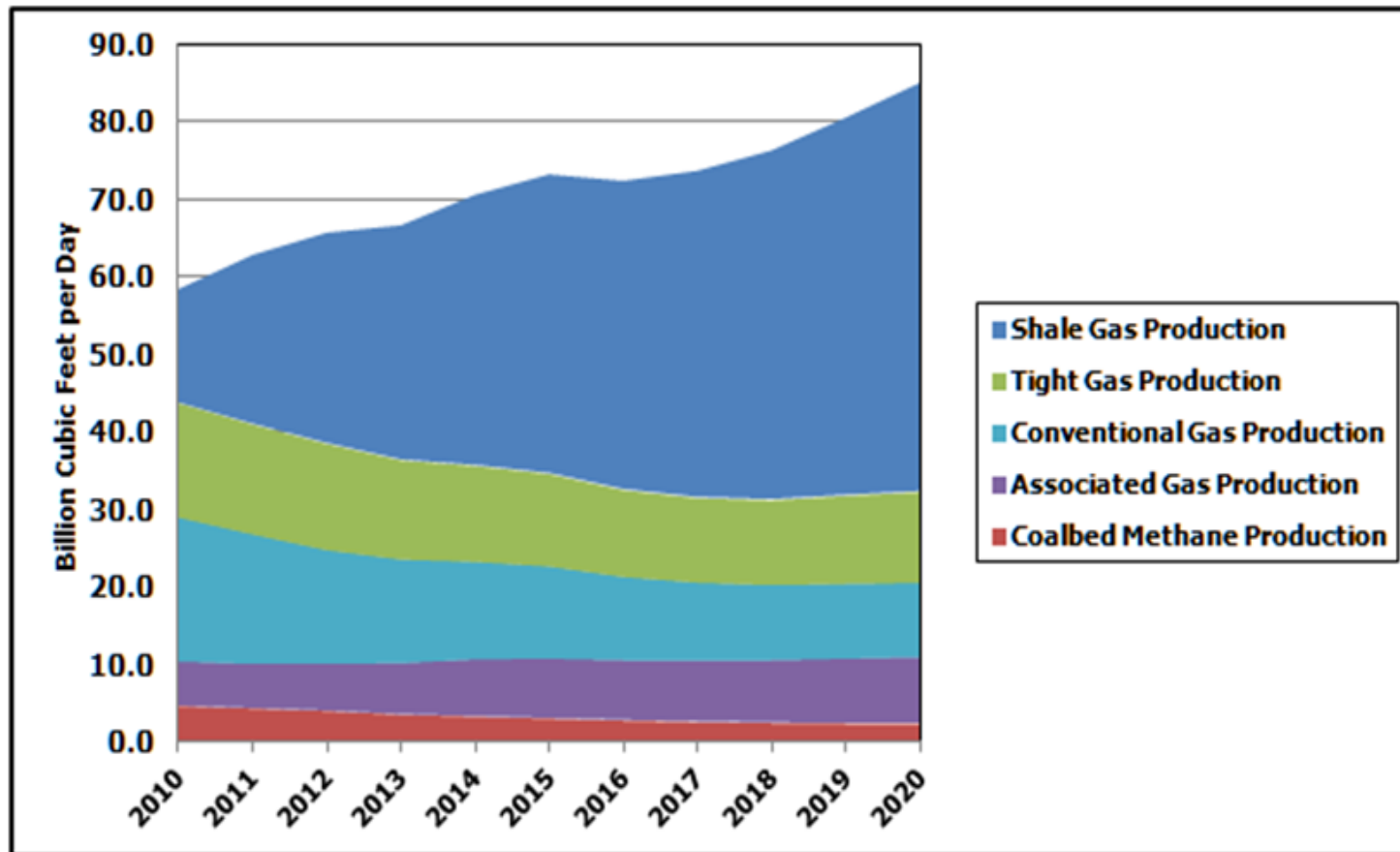
US Natural Gas Production Rising - Shale Becomes Larger Percentage of Supply Portfolio





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Natural Gas Resources and Infrastructure: Expanding Resource Base



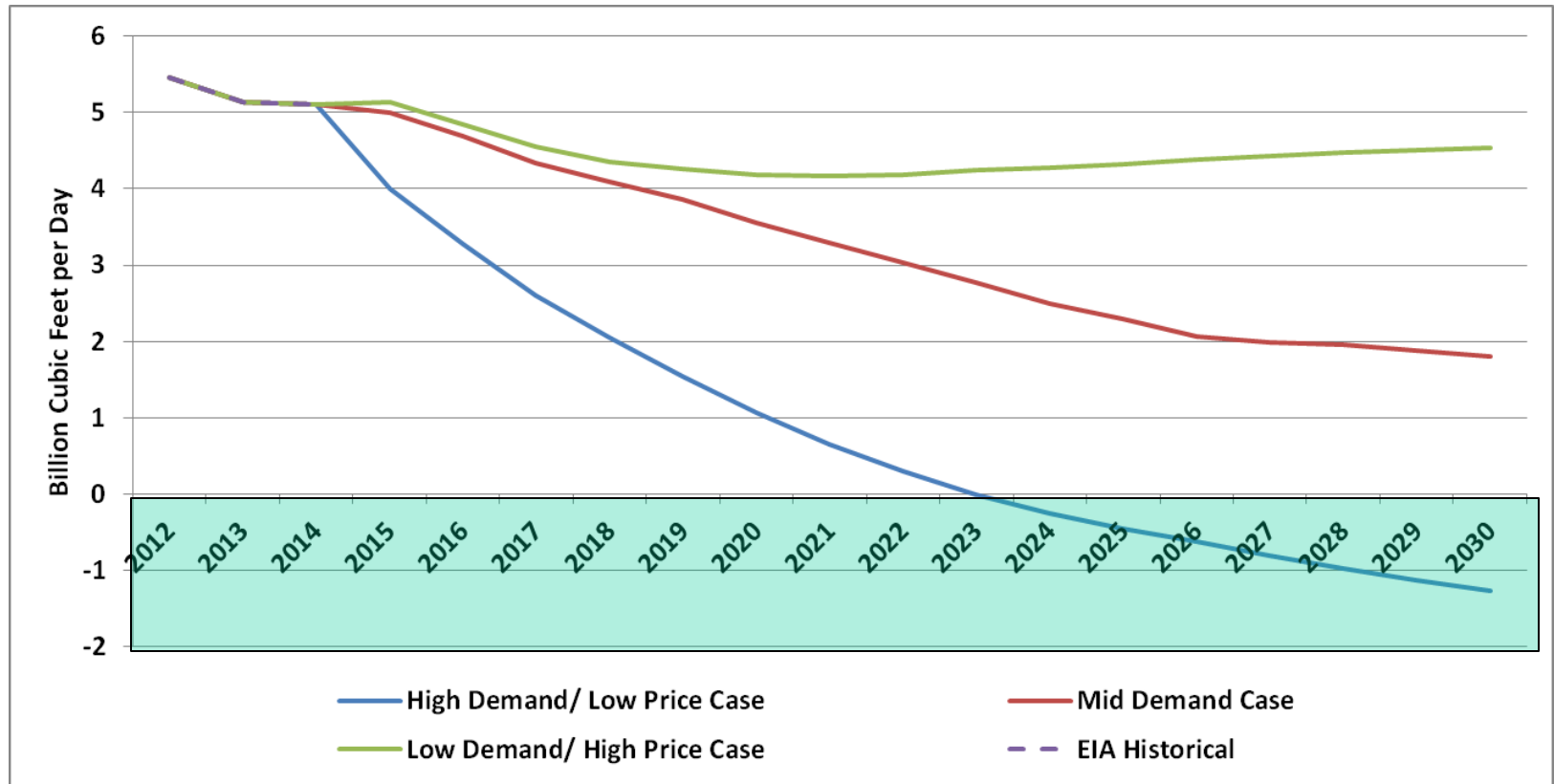


IMPORTS, EXPORTS, AND LNG



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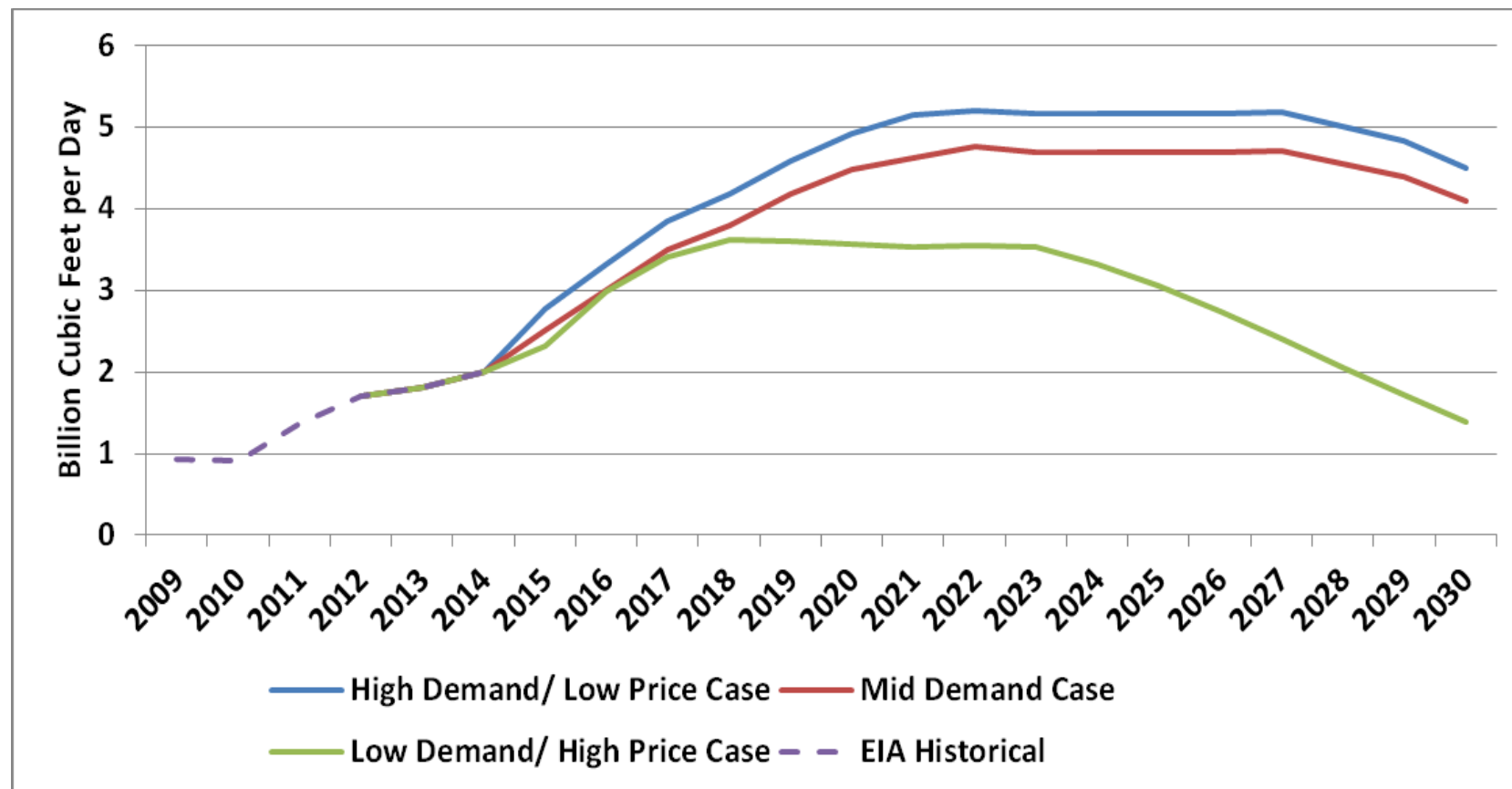
Net Canadian Natural Gas Imports: In Low Price Case, US May Become Net Exporter to Canada





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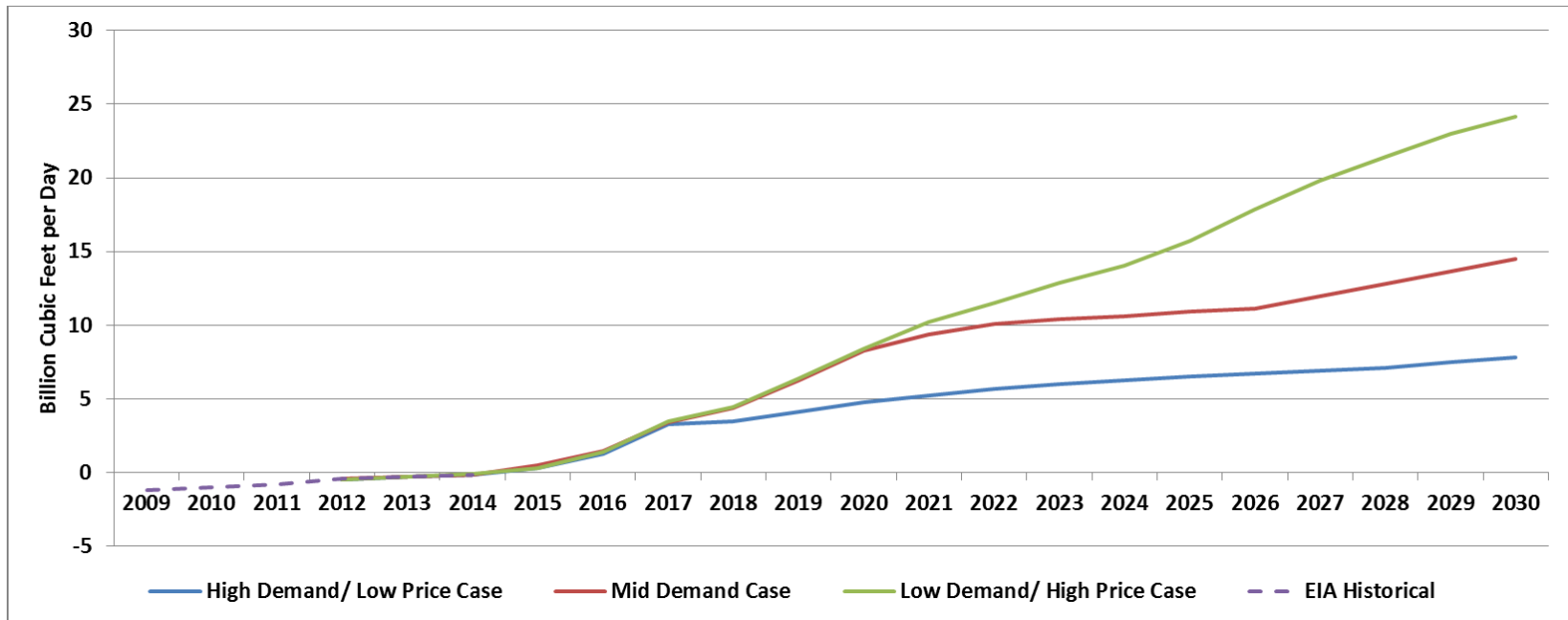
International Results: Gas Development in Mexico Reverses US Export Trend





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International Results: Net LNG Exports Expected to Increase



- 14 LNG liquefaction terminals approved by U.S. DOE.
- Jordan Cove LNG expecting final FERC approval by end of the year.
- Sabine Pass expected to export LNG early next year.
- Cameron LNG filing to expand LNG export capacity.



CONCLUSIONS



Revised Results Conclusions

- Total US natural gas demand grows at an annual rate of 1.4% between 2015 and 2030, reaching about 80 Bcf/d in the mid-case.
- Total California natural gas declines to about 5.8 bcf/d by 2030, remaining below the 2015 level.
- Implementation of renewables and energy efficiency suppresses California's total natural gas demand, declining at annual rate of 0.63% between 2015 and 2026.
- Henry Hub prices range between \$4.08 and \$6.87 (2014\$)/Mcf by 2030, representing an annual growth rate of 2.6% between 2020 and 2030.
- Coal retirements outside of California contribute to higher natural gas demand and prices.
- US exports expected to grow, including LNG, Mexico, and even possibly Canada.



E-filing your comments in 2015 IEPR

- Due by November 18, 2015
- Energy Commission using new electronic commenting system
- Visit website: http://www.energy.ca.gov/2015_energypolicy/
- Click on the "Submit e-Comment" link in the "Proceeding Information" box
- From the drop down menu, please select the appropriate docket number
- For this workshop, please select docket 15-IEPR-03—Electricity and Natural Gas Demand Forecast.



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Revised Results Common Cases

Questions and Comments