California Energy Commission

2013 IEPR Preliminary Electricity and Natural Gas Demand Forecast

General Approach and Assumptions

IEPR Workshop

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Chris Kavalec
Demand Analysis Office
Electricity Supply Analysis Division
Chris.Kavalec@energy.ca.gov / 916-654-5184

Presentation

- Timeline
- Modeling Approach
- Economic/Demographic Assumptions
- Other Assumptions

IEPR E&NG Forecast Process/Timeline

- Biennual forecast, with updates as needed for resource adequacy proceedings
- Demand Forms and Instructions requested from LSEs at the end of the year prior to forecast (to be filed April 15)
- Workshop on forecast assumptions
- Preliminary forecast/workshop (May 2013)
- Revised forecast/workshop (August 2013)

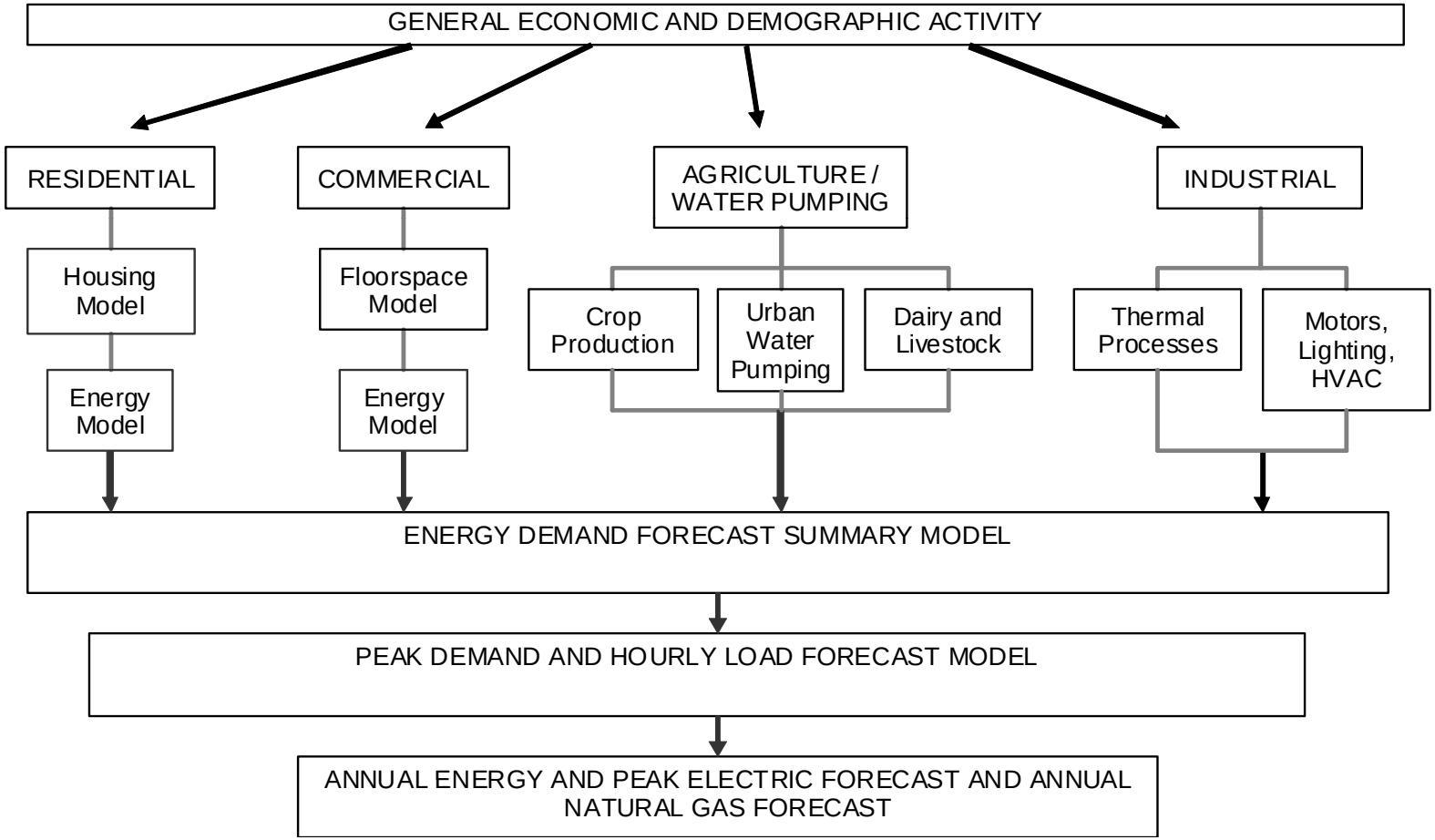
IEPR Forecast Methodology

Individual sector models for:

- Residential (end use, econometric)
- Commercial (end use, econometric)
- Industrial (econometric/end use, econometric)
- Agricultural (econometric)
- Transportation, communications, and utilities and street lighting (trend)

Summary and Peak models

Demand Forecast Structure



Changes/Improvements to Forecast Methods

- Revamped industrial econometric/end use model
- Commercial self-generation model
- Further incorporation of climate change: energy and extreme weather
- Natural gas econometric models
- Climate zone results

Electricity and Natural Gas Demand Forecasts: Defining a Range

- High economic and demographic growth, lower rates, low efficiency program impacts, low self-generation impacts, strong climate change impacts (*high demand scenario*)
- Mid econ-demo growth, mid rates, mid efficiency program impacts, mid self-generation impacts, “likely” climate change impacts (*mid demand scenario*)
- Lower econ-demo growth, high rates, high efficiency program impacts, high self-generation impacts, moderate or no climate change impacts (*low demand scenario*)

Economic and Demographic Variables Used

- Residential: Personal income, growth in households, persons per household, unemployment rate
- Commercial: floor space (function of employment, population, GSP, personal income), employment, GSP
- Industrial: employment or output by NAICS grouping
- Other: population, financial variables

Economic Scenarios Available

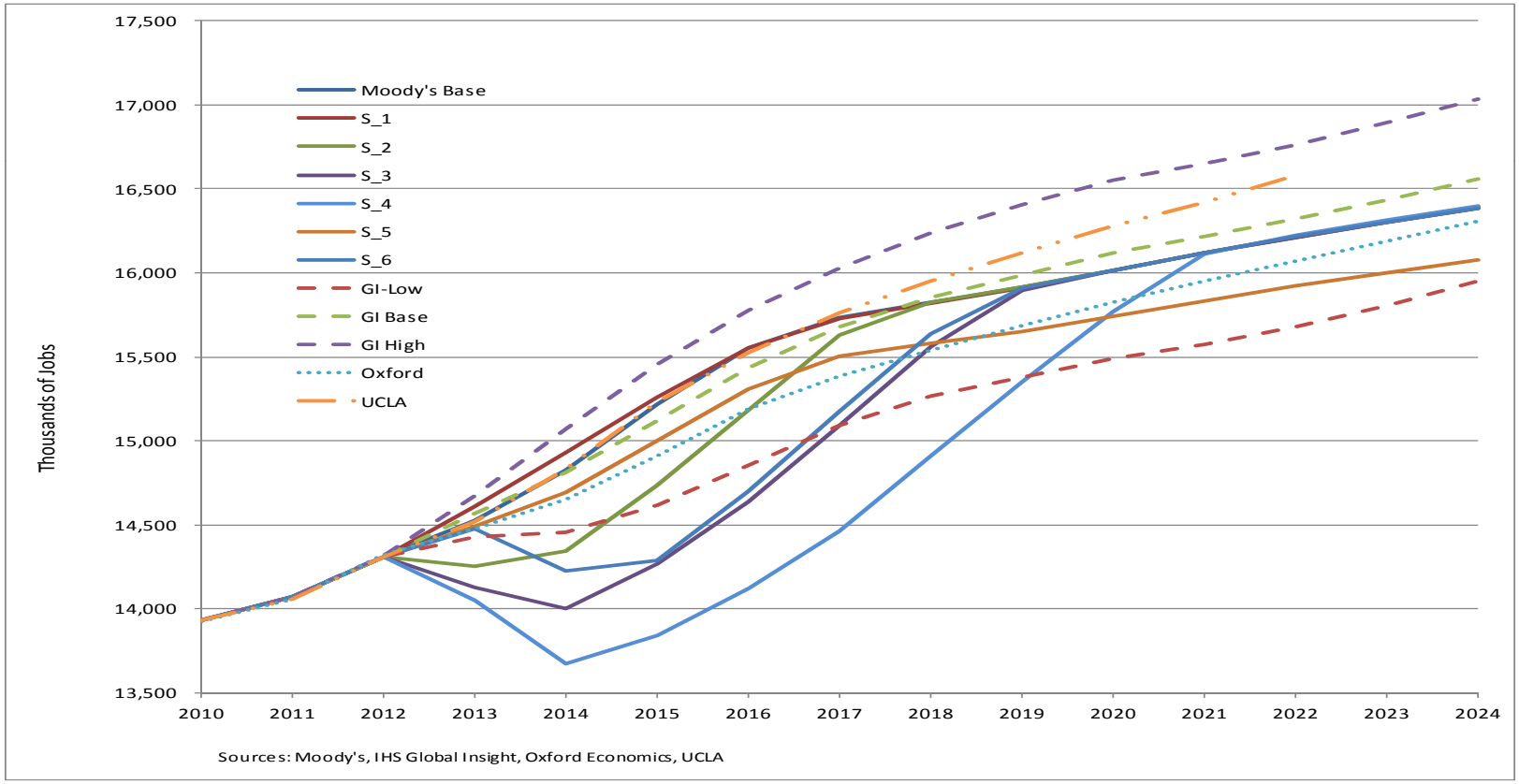
- Moody's
  - Base
  - S1: Stronger Near-Term Rebound
  - S2: Mild Second Recession
  - S3: Second Recession
  - S4: Protracted Slump
  - S5: Below-Trend Long-Term Growth
  - S6: Oil Price Increase—Inflation

Economic Scenarios Available

- IHS Global Insight
  - Base
  - High
  - Low
- Oxford Economics Base Case
- UCLA Base Case

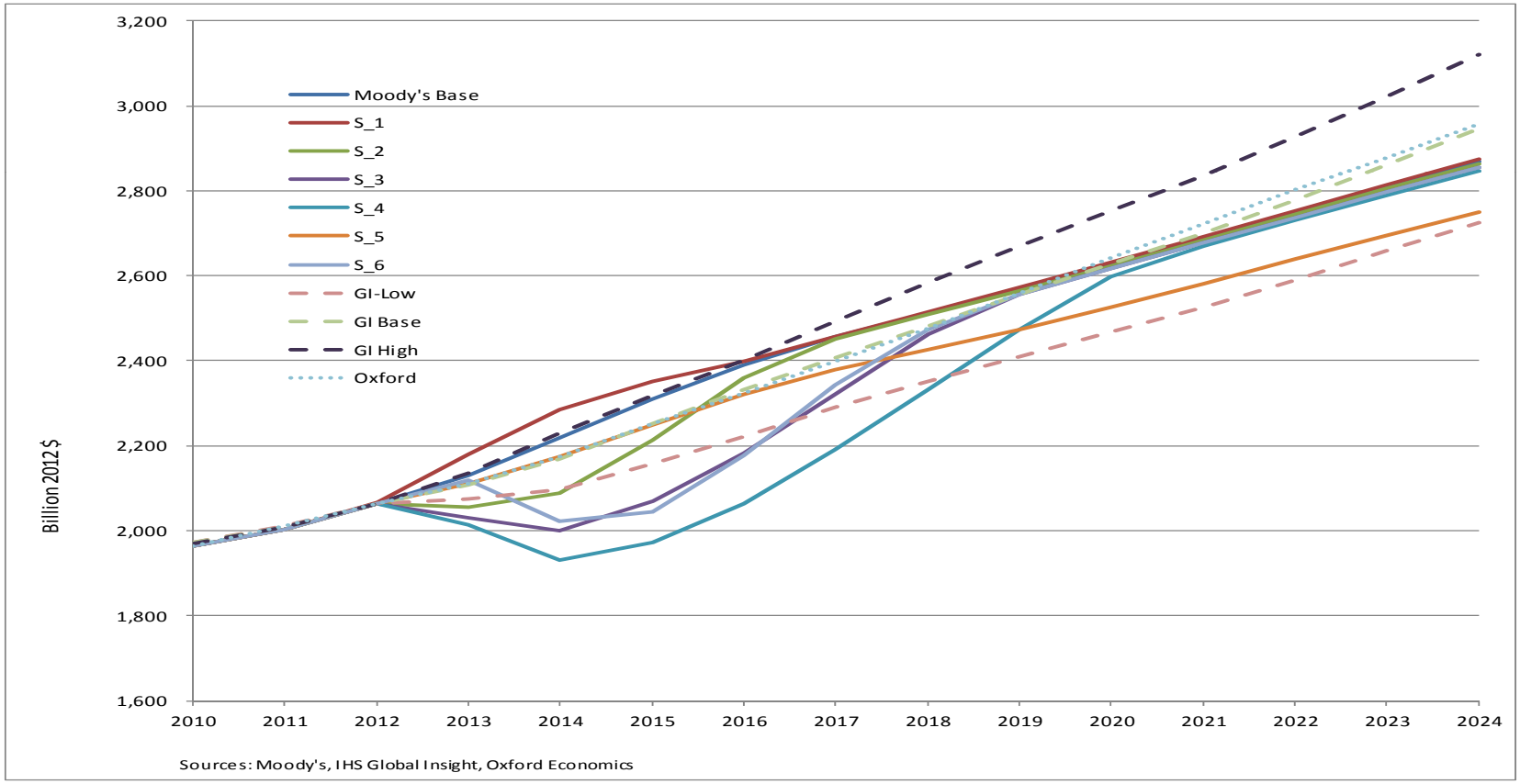
Statewide Employment Scenarios

~ 1 Million Difference in 2024, Highest and Lowest



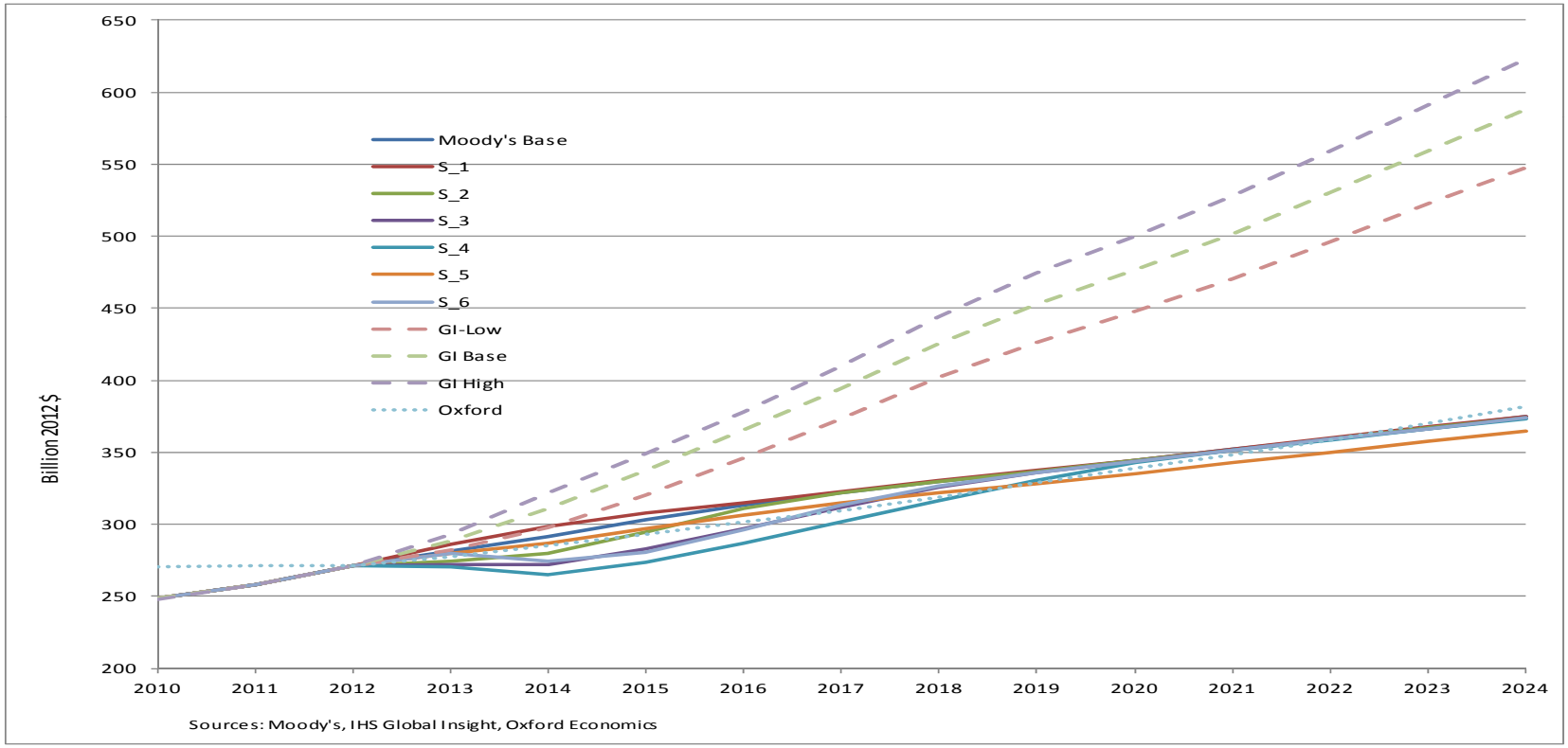
Statewide GSP Scenarios

15 Percent Difference Highest and Lowest, 2024



Statewide Manufacturing Output Scenarios

Highest 70% Above Lowest, 2024



Staff Proposed Scenarios

- High Economic Growth: IHS Global Insight High
- Mid Economic Growth: Moody's Base
- Low Economic Growth: Moody's S3 (second recession) combined with Moody's S5 (below-trend long-term growth)

Staff Proposed Scenarios: Assumptions

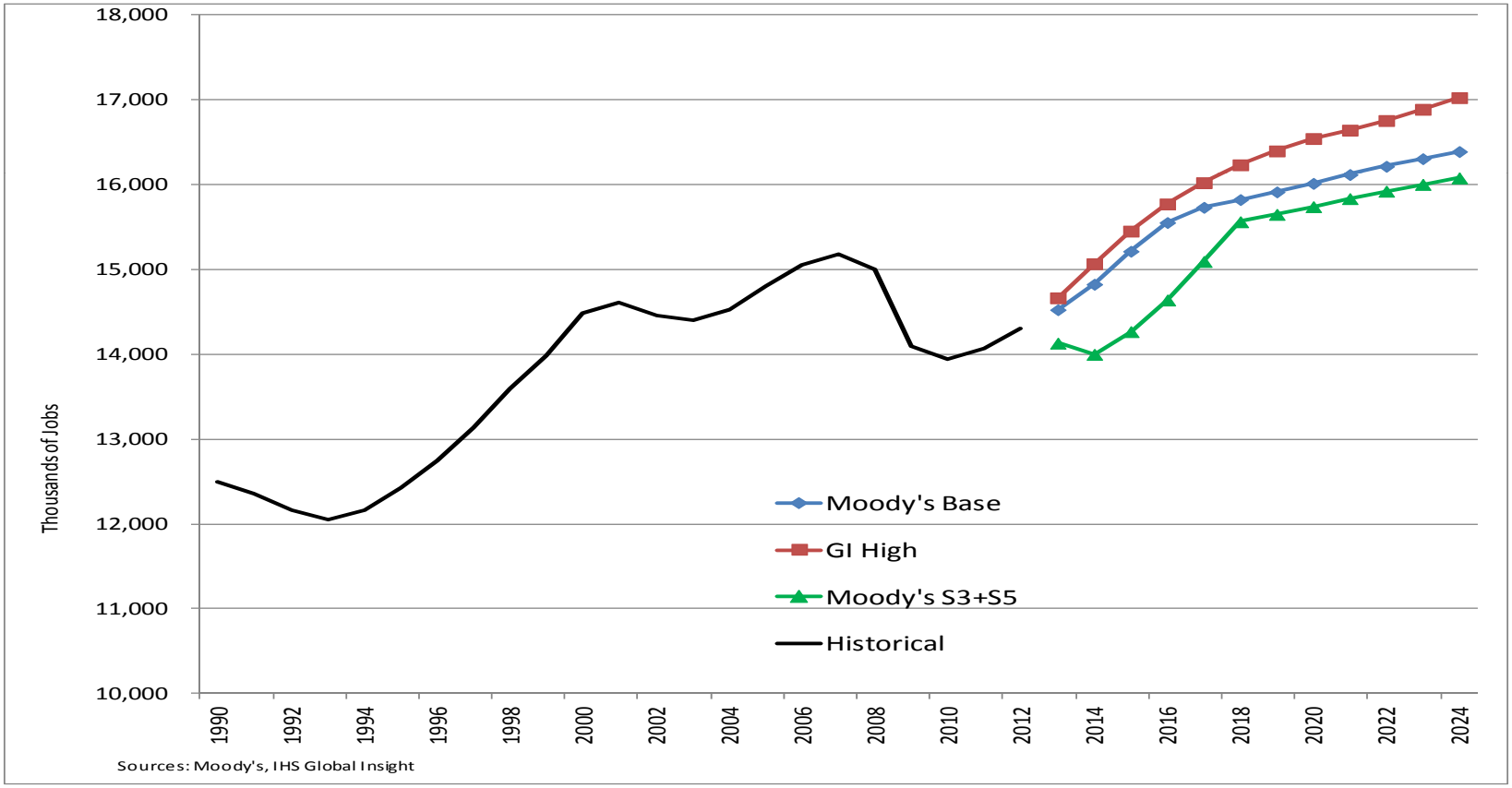
- High Economic Growth
  - European debt crisis resolved
  - Unemployment rate below 7% by mid-2013
  - Strong recovery in residential construction
- Mid Economic Growth
  - Strong U.S. dollar
  - Unemployment rate stays below 8% in 2013
  - Continued housing recovery

Staff Proposed Scenarios: Assumptions

- Low Economic Growth
  - Second recession—unemployment up to 11 percent
  - Housing market weakens
  - Fiscal contraction, persistent European debt problems

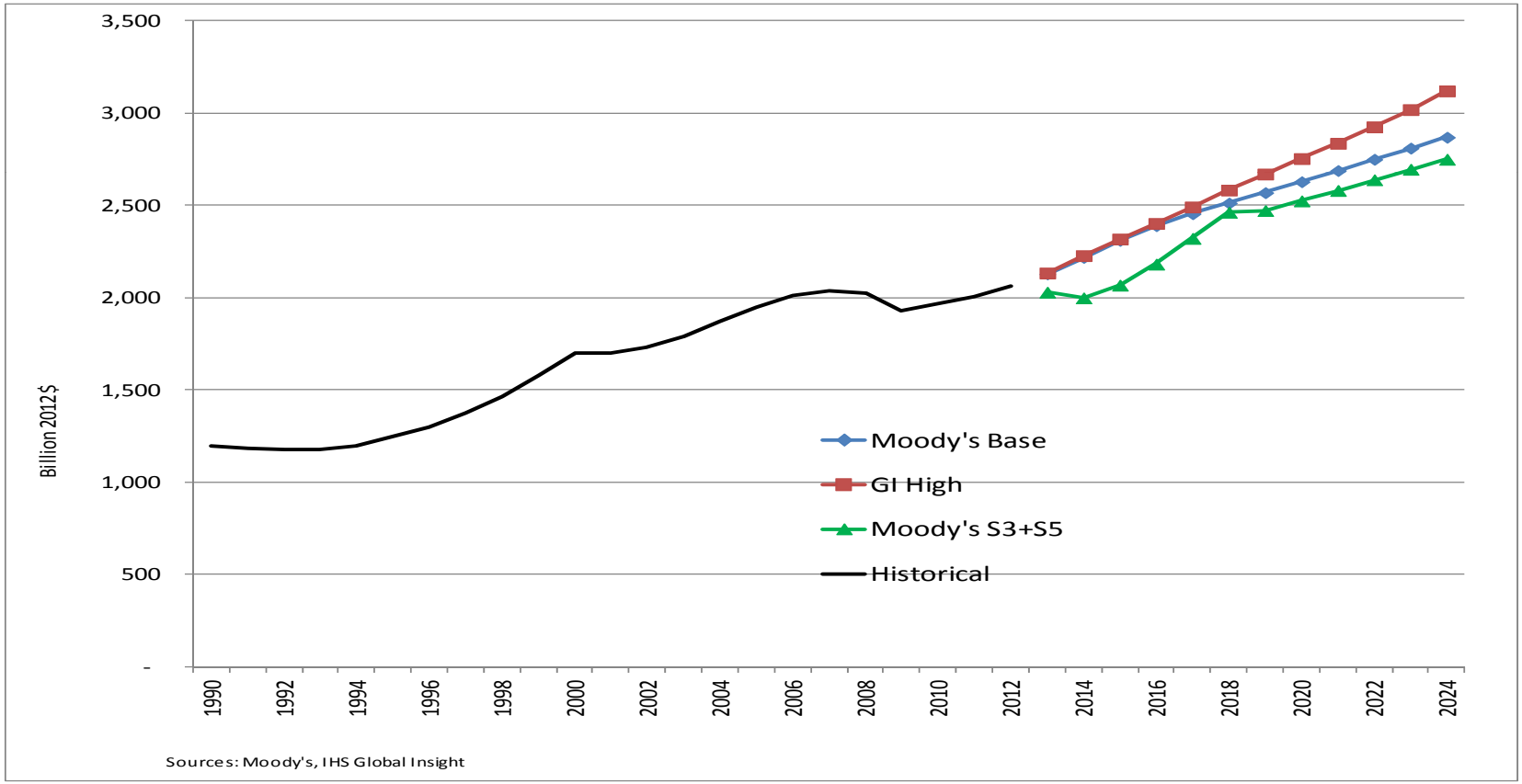
Statewide Employment

Three Proposed Scenarios



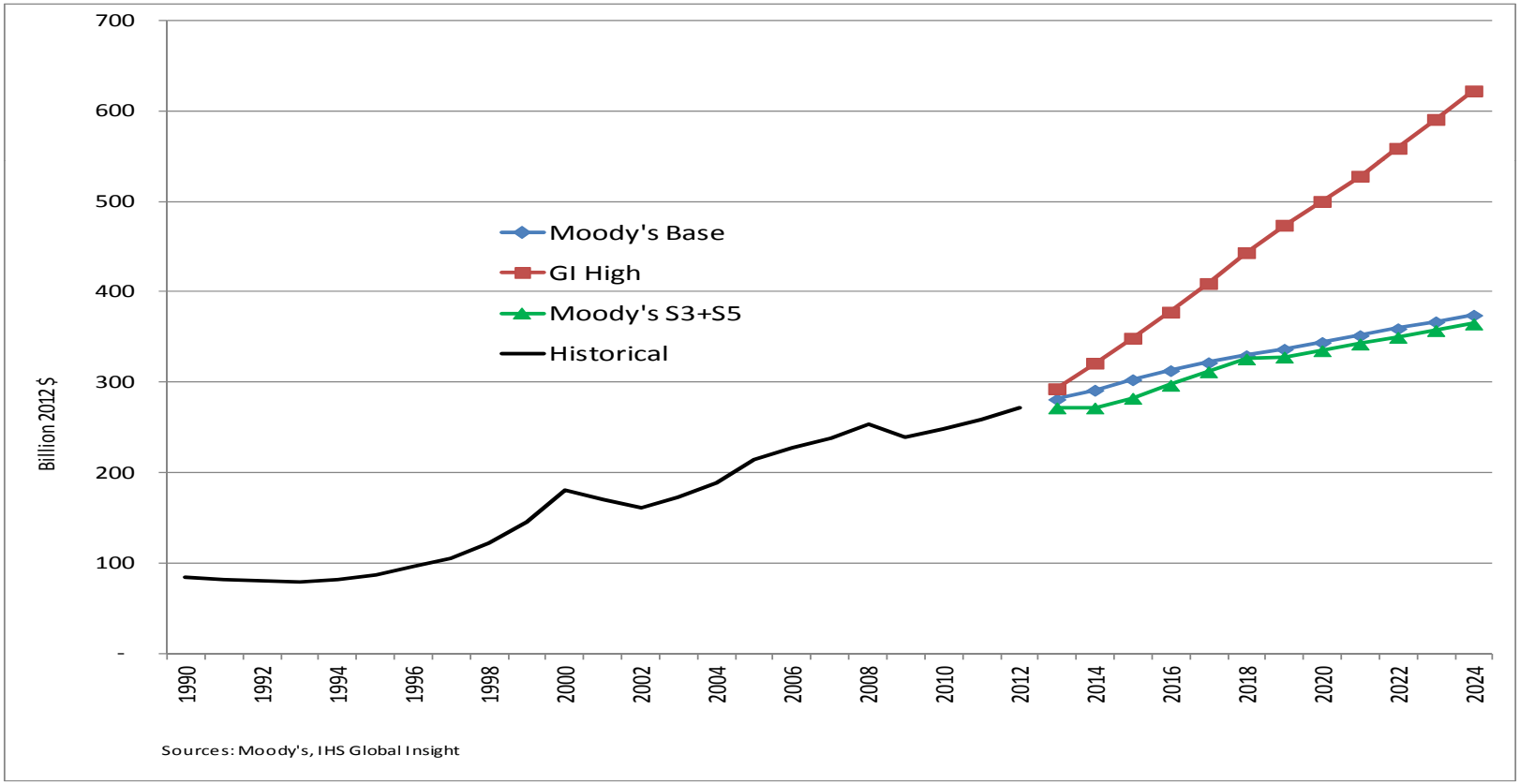
Statewide GSP

Three Proposed Scenarios



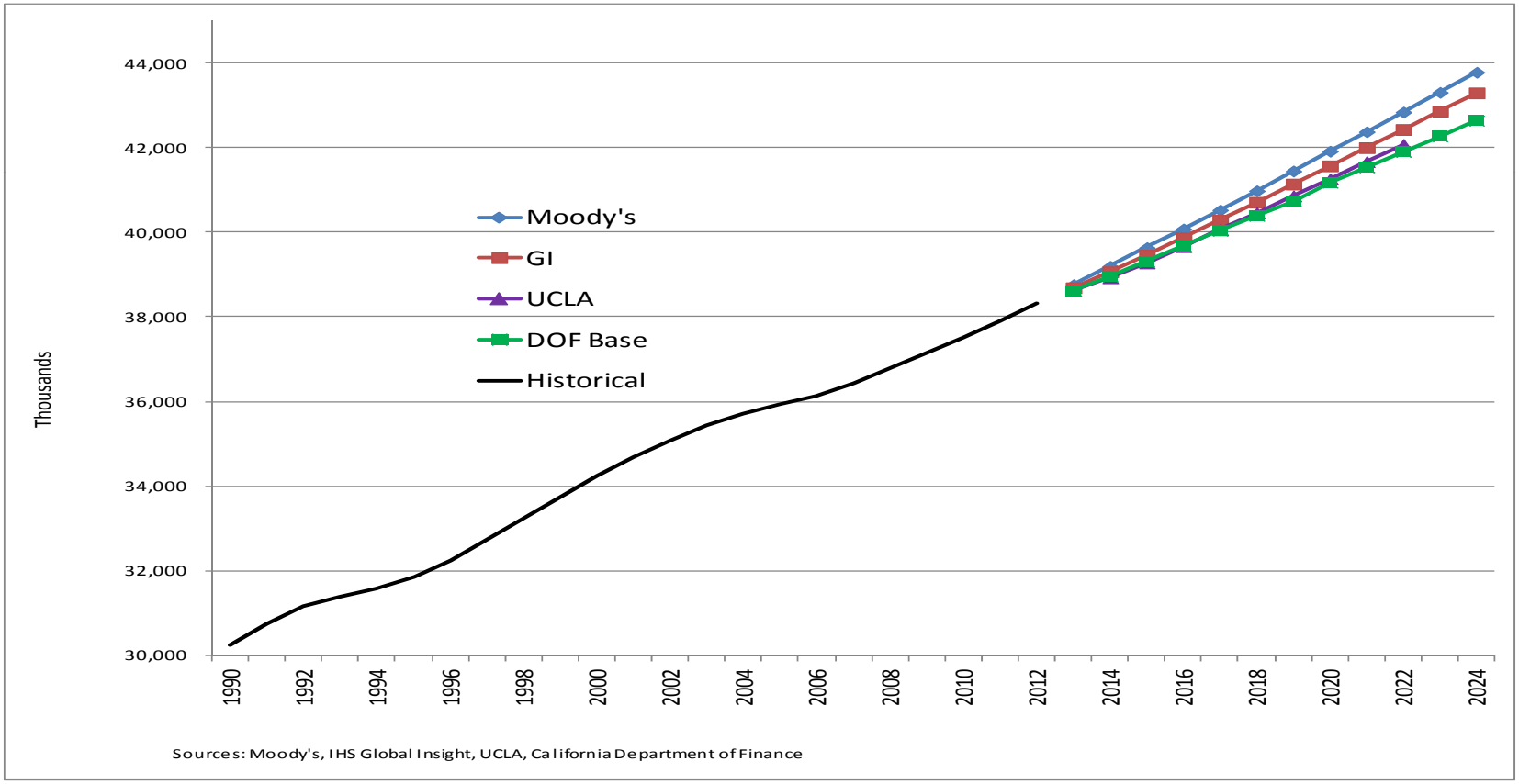
Statewide Manufacturing Output

Three Proposed Scenarios



Statewide Population

Possible Scenarios



Efficiency

- "Committed" and "Uncommitted" or "Achievable"
- Some previously achievable initiatives become committed
  - Latest Title 24 and appliance standards
  - 2013-2014 IOU programs
  - 2012 POU programs
- Standards savings increase with demand

Proposed Efficiency Program Scenarios for 2013-14 Programs

- Mid efficiency program savings: use utility forecast net savings
- Low efficiency program savings (high demand scenario): 10 percent lower
- High efficiency program savings (low demand scenario): 10 percent higher
- 10 percent adjustment comes from scenario analysis for incremental uncommitted in 2012

Uncommitted or Achievable Efficiency

- Not included in preliminary forecast; will be incorporated in revised version (August)
- Will rely on CPUC 2012 Goals and Targets Study
- Staff will begin work in May with Navigant and CPUC staff to develop incremental achievable efficiency savings; CAISO will be involved
- Adopted along with revised baseline forecast

Self-Generation

- Predictive models for residential and commercial sectors
- Adoption based on payback
- Within scenarios, two opposing effects
  - Higher rates, more adoption
  - Higher population growth (higher demand), more adoption