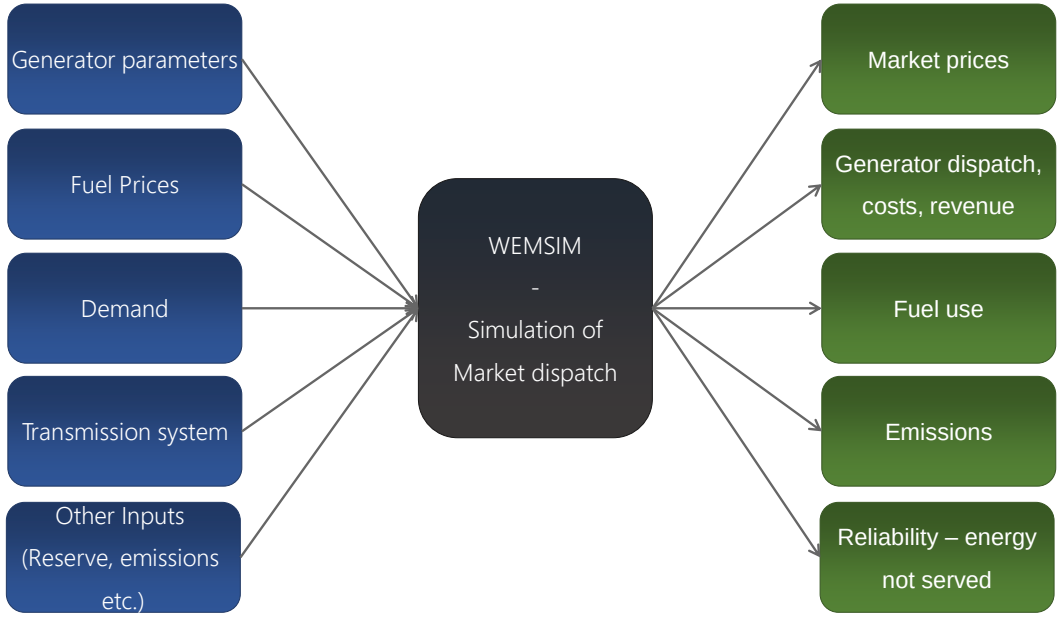
ROBINSON BOWMAKER PAUL

2023 GSOO GPG UPDATE

16 November 2023

Methodology

- We use our in-house dispatch optimisation tool WEMSIM to conduct the analysis to produce the forecast.
- WEMSIM is a Wholesale Electricity Simulation model, developed from the ground up by PA Consulting Group (and its predecessors) and licensed to RBP
  - We have complete understanding of the model
  - We can adapt it to meet specific client requirements
  - We have made specific customizations to model the SWIS
- It is used to simulate outcomes in competitive electricity markets. Its applications include:
  - Simulating the effects of introducing a competitive market structure
  - Forecasting market prices
  - Forecasting a generator's future costs and revenue
  - Forecasting fuel use and emissions
  - Simulating the effects of regulatory changes



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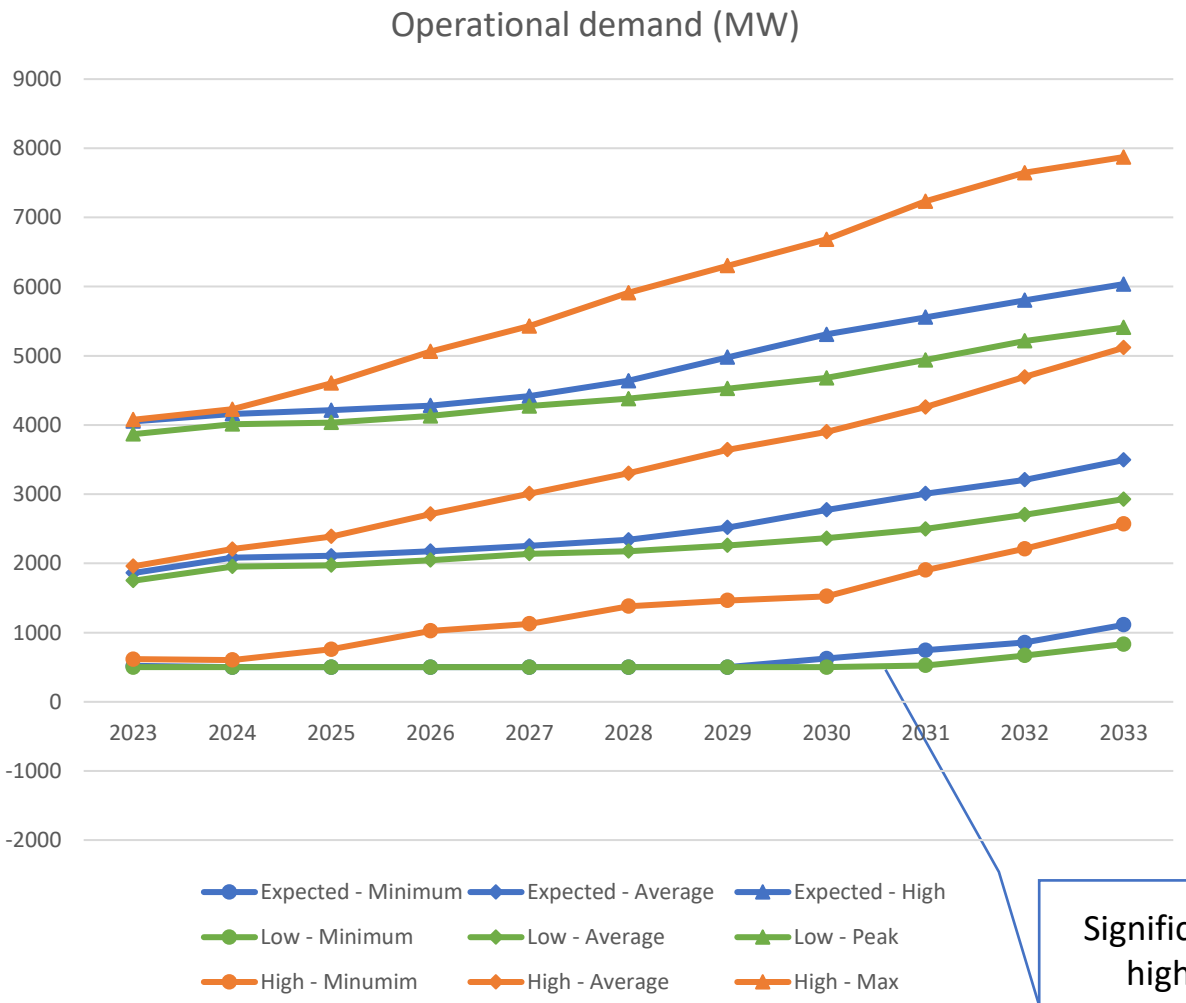
Significant changes since last year

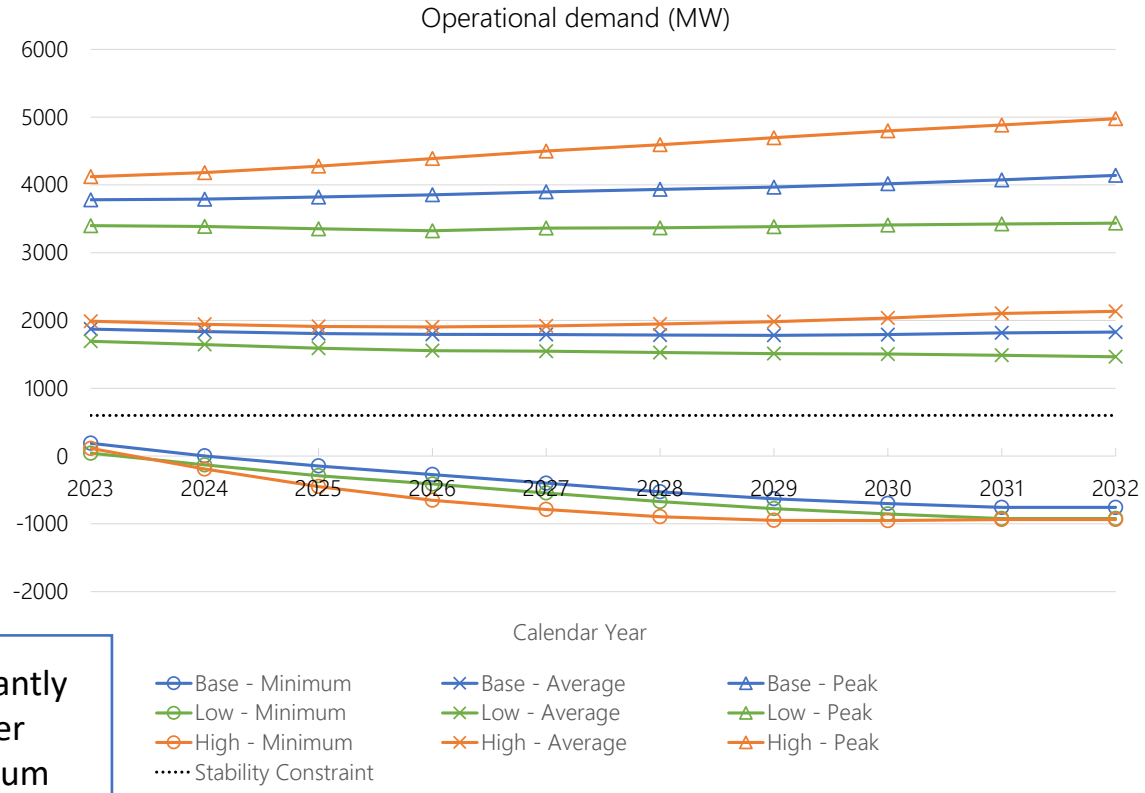
- Significantly higher minimum demand forecasts
- Significantly higher peak demand and annual energy forecasts
- 10% POE Demand is used for all scenarios
- Capacity is built to meet the Reserve Capacity Target – much more capacity enters the system
- New ESS constraints allow for system stability with lower levels of synchronous generation
- Fuel prices and retirement schedule are updated

Operational demand – changes from 2022 forecast

2023 Forecast:



2022 Forecast:

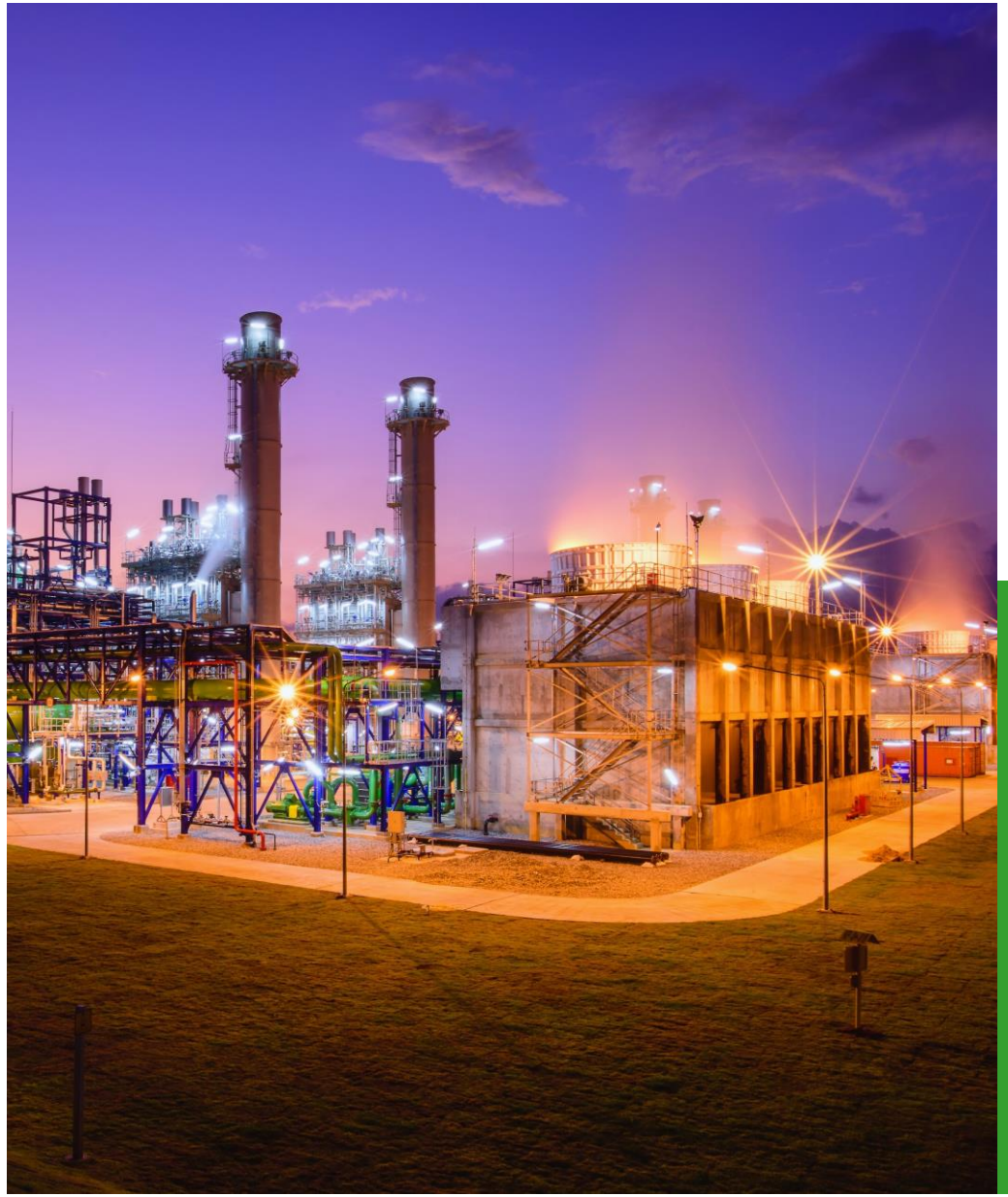


Significantly higher minimum demand levels

Significant changes since last update

- New build assumptions have been revised
  - Less wind
  - More batteries
  - Some High Efficiency Gas Turbines (HEGT)
- New gas build previously wasn't included as regular OCGTs are likely to be excluded from the capacity market due to emissions penalties.
- HEGTs are efficient enough to avoid the proposed emissions penalties

- Intermittent profiles were previously smoothed to monthly-hourly averages. New intermittent profiles stochastically drop output to simulate intermittent variability.
- Coal fuel availability is limited to 2022-2023 levels



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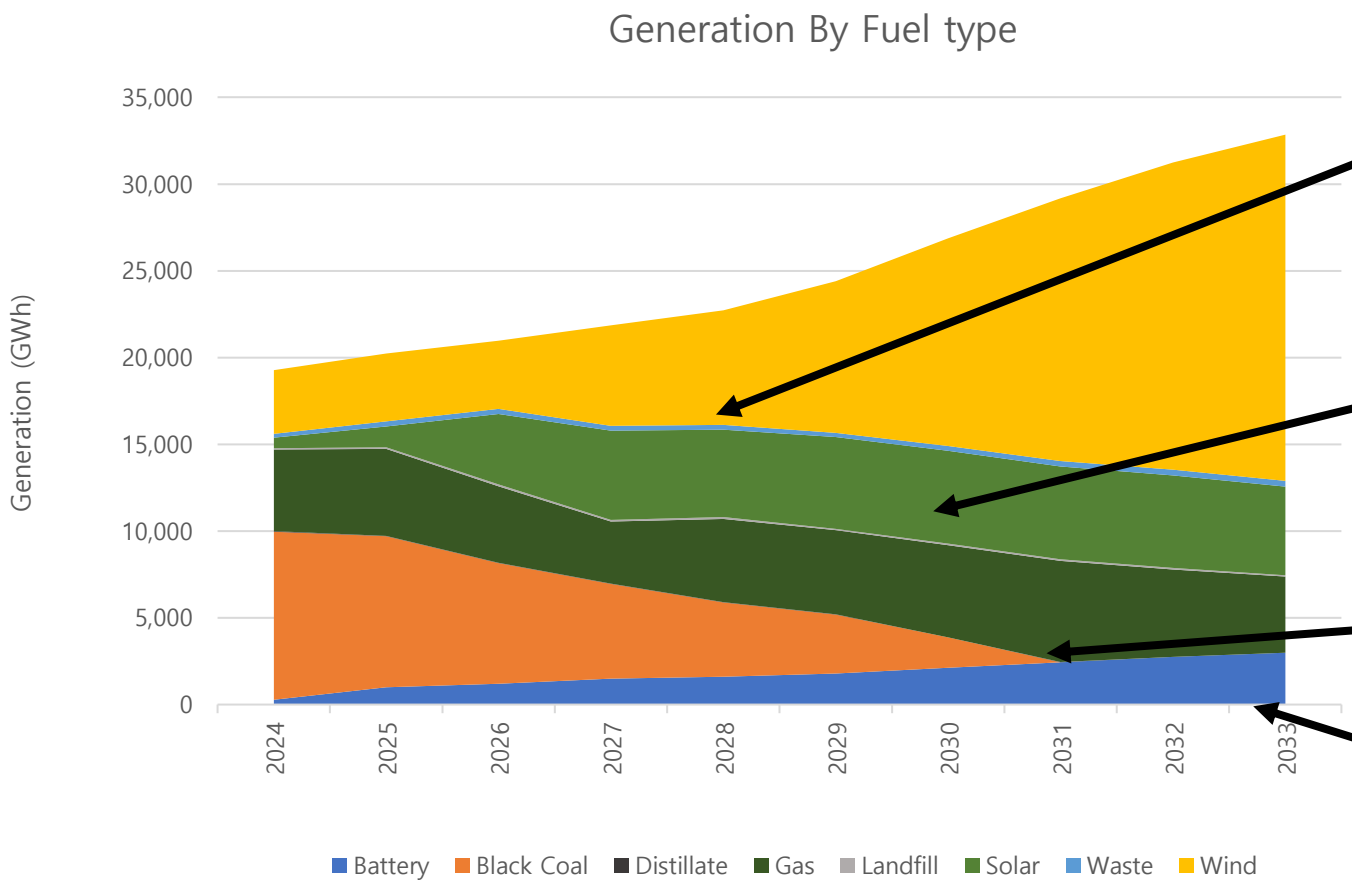
RESULTS

Draft Expected Case – Generation by Technology



Wind generation begins to make up the majority of the energy mix

Wind and solar fills the gap as coal generation retires

All coal retires

Battery usage increases steadily over time

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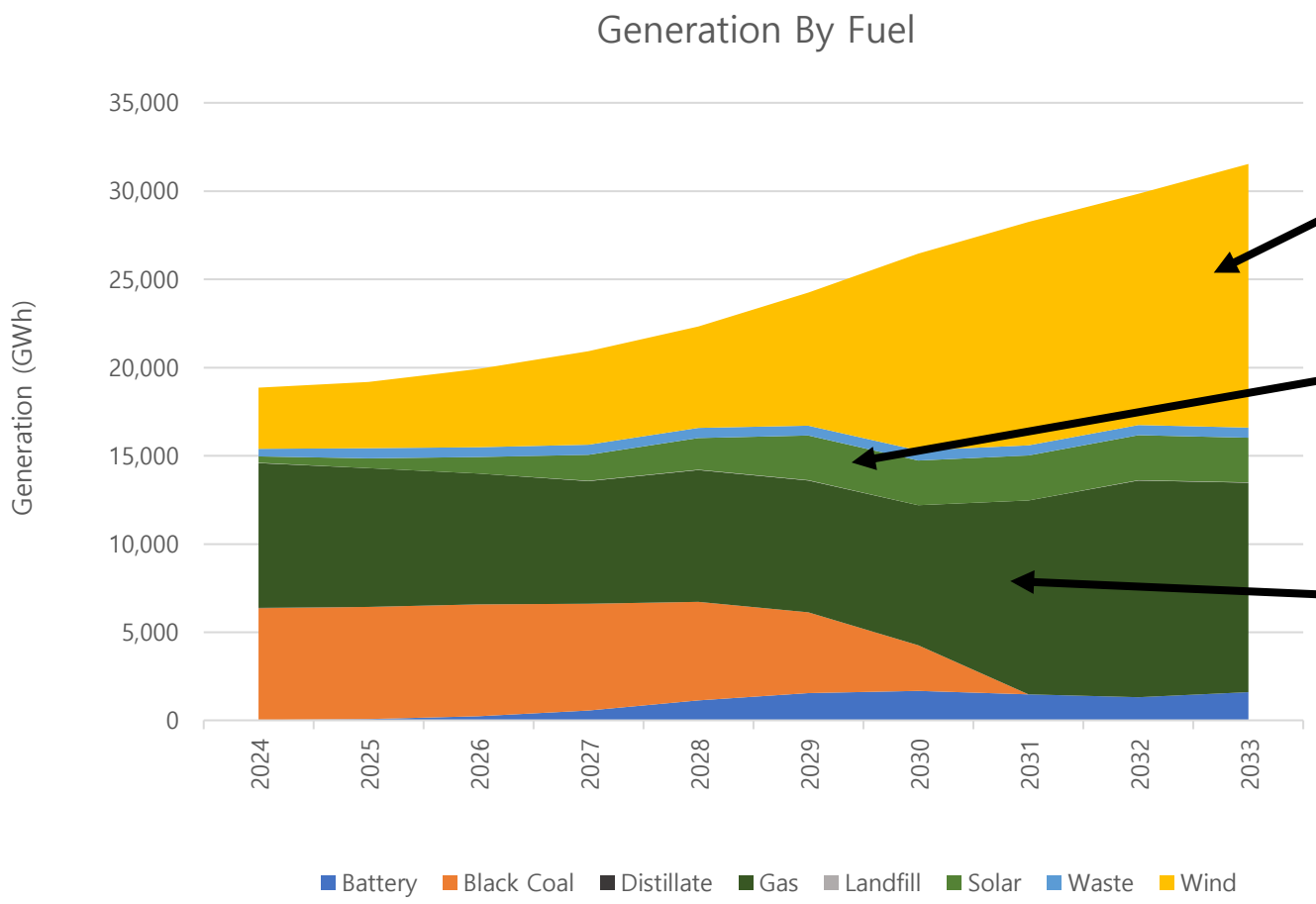
Updated Expected Case – Generation by Technology



Wind generation begins to make up the majority of the energy mix

Solar plays less of a role

Gas generation fills the gap for coal generation

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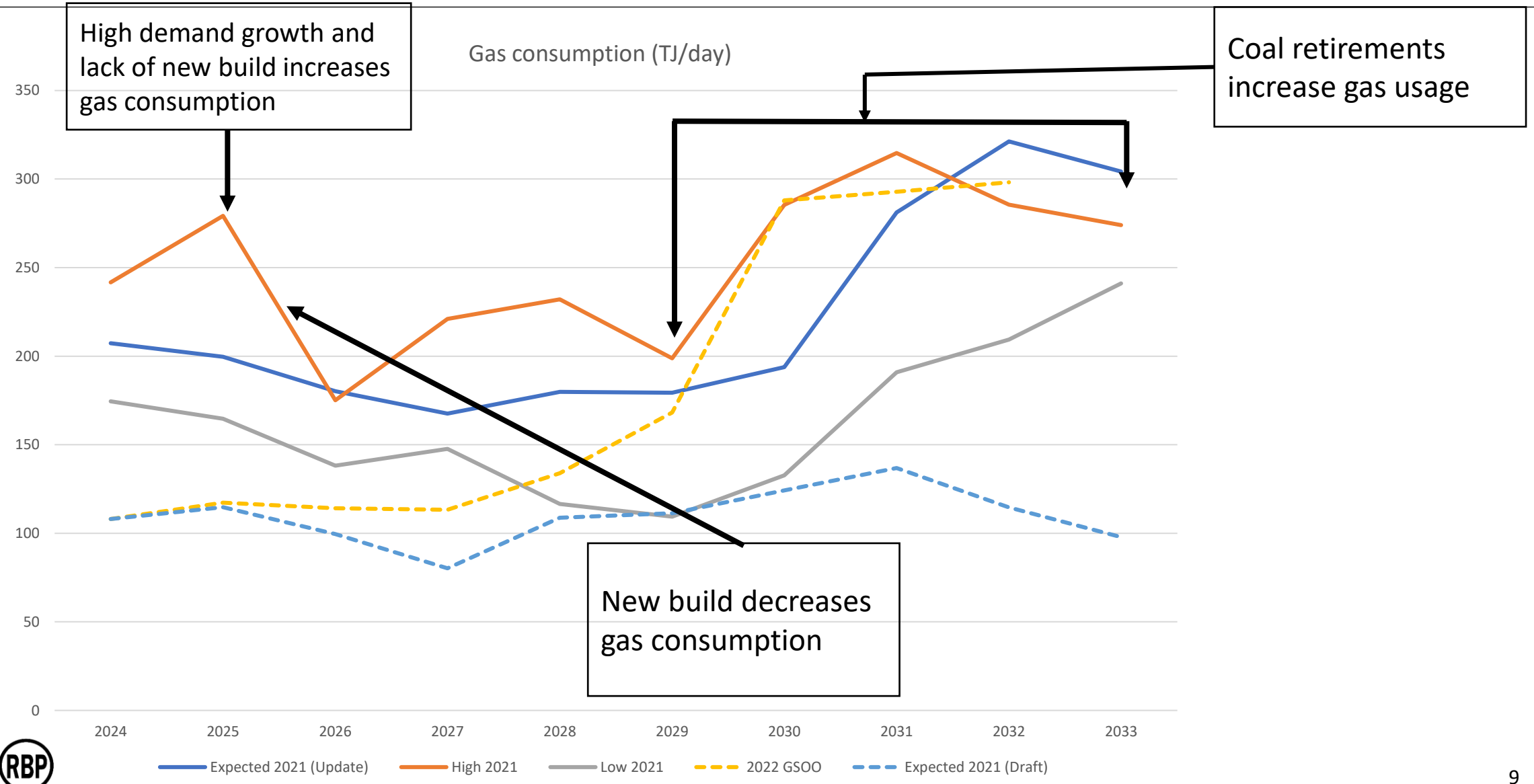
All Scenarios – GPG gas consumption



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Results - Commentary

- In the short-term gas generation is likely to drop slightly or plateau as new capacity enters the market
- In the long term, the retirement of coal increases the demand for gas generation.