
**2006 Long-Term Procurement Plans
Energy Division Workshop
R. 06-02-013**



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Key objectives

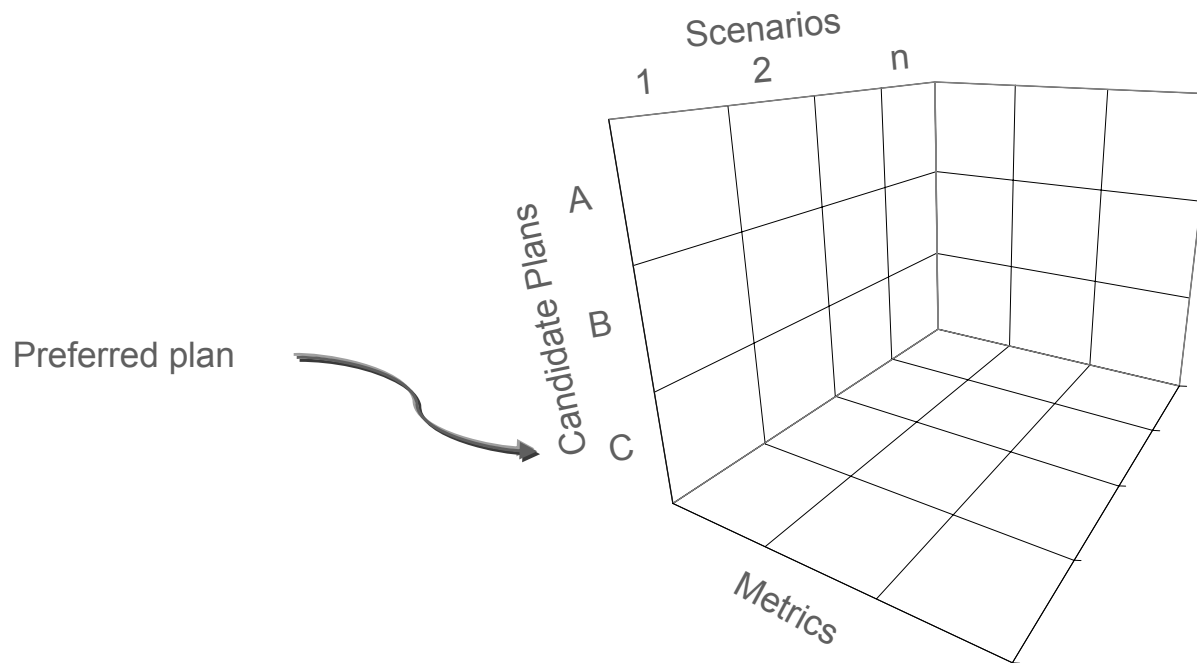
- PG&E's procurement process follows the loading order and balances:
 - Managing customer price
 - Assembling a portfolio of reliable and operationally flexible resources
 - Supporting development of environmentally preferred resources

Planning framework – key elements

- Candidate plans: possible combinations of PG&E actions (e.g., mix of demand-side, supply–side and transmission actions)
- Scenarios: combinations of uncertainties affecting the procurement (e.g., load, market prices, hydro, market availability of demand-side, supply-side resources and transmission at different costs)
- Metrics: measures used to determine feasibility and performance of candidate plans

Planning framework

- Select a plan from a number of candidate plans based on evaluation against feasibility and performance metrics across multiple scenarios



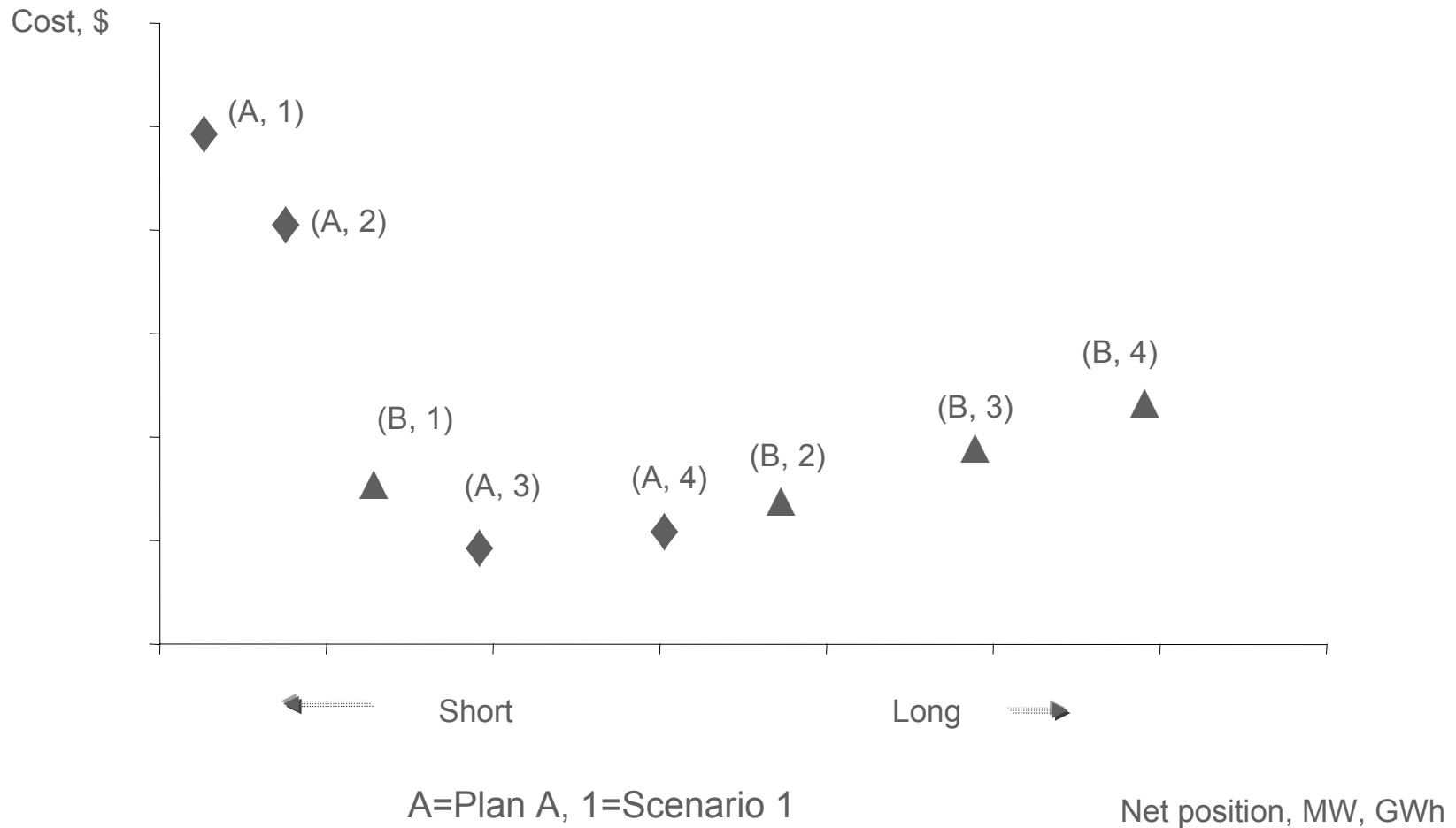
Planning framework – scenario uncertainties

- Uncertainties include:
 - Short-term cyclical (covered by planning reserves)
 - Limited weather variations from 1 in 2 temperature
 - Limited hydro variations
 - Resource outages
 - Long-term, structural (not covered by planning reserves)
 - Long-term load growth
 - Direct access, CCA, and core/non-core penetration
 - Structural changes in market prices
 - Market availability of CEE, DR, renewables and DG
 - Operating reserves to accommodate large increases in intermittent resources
 - Commercial (not covered by planning reserves)
 - New generation lead times
 - Execution
 - Regulatory approval

Planning framework – metrics

- Metrics include:
 - Feasibility:
 - Meets RA requirements
 - Follows the State Loading Order requirements
 - Complies with emissions reduction goals (GHG)
 - Operational feasibility
 - Performance:
 - Cost (customer rate)
 - Risk (range of customer rate due to cyclical changes in weather impacts and market price volatility)
 - Portfolio fit
 - Execution risk
 - Renewable procurement as percentage of bundled sales
 - GHG emission levels

Planning framework - impact of planning uncertainties



Available resources

- Demand-side
 - Energy efficiency (CEE)
 - Price demand response, interruptible load
 - Distributed generation
- Supply-side
 - Intermittent resources, such as wind, have generation patterns that vary both seasonally and with highly variable daily patterns
 - Base load units - non-dispatchable resources such as run-of-river hydro, must-take contracts such as QF cogeneration, geothermal
 - Shaping (intermediate or “cycling”) units - can be cycled on a daily or weekly basis
 - Peaking units - short-start units with high ramping capability (e.g., a combustion turbine)

Procurement products

- Energy/capacity products
 - Intermittent
 - Baseload
 - Shaping
 - Peaking
- Ancillary Service products for real-time operational flexibility
 - Spinning Reserve
 - Regulation and ramping capability
 - Replacement Reserve
 - Quick start
 - Black Start
 - Reactive Power and Voltage Control

Procurement products

- Operational flexibility is essential:
 - to meet hourly/daily load patterns
 - to integrate greater amounts of renewable resources
 - for sudden system changes such as the loss of a large generating unit, or a major transmission line
 - to allow for day ahead forecast error of load or intermittent resources
 - to manage large swings in CA ISO or Northwest hydro

Electric transmission

- The 2006 Phase 2 filing will include:
 - Discussion of transmission limitations impacting PG&E's ability to access renewable resources
 - PG&E's transmission strategy to support RPS goal
 - Local capacity requirements
 - Overall integration of Transmission with supply-side and demand-side resources
- PG&E's transmission strategy
 - Candidate plans
 - Evaluation of alternative strategies
 - Proposed transmission strategy

Summary

- PG&E's procurement plan will follow the loading order and balance:
 - Customer price
 - Reliability and operational flexibility
 - Supporting development of environmentally preferred resources
- PG&E's planning framework:
 - Identify inputs (scenarios and metrics)
 - Quantify the trade-offs between cost, risk, environmental impact of candidate plans
 - Lead to better decision for its procurement plan