California Energy Commission
IEPR Workshop
Natural Gas Activities

May 14, 2009

Pacific Gas and Electric Co

Pacific Gas and Electric Company

Focus of Today's Presentation

Natural Gas Pipelines and Infrastructure

- What additional natural gas storage might be constructed or expanded in California? (CEC question)
- PG&E infrastructure plans and concerns.
- How could daily natural gas demand change as renewable technologies are added to the electric resource mix? (CEC question)
- PG&E observations about natural gas supply.

Northern California Storage Development

	Inventory (MMDth)
PG&E	47.8
Wild Goose (plus proposed expansion)	29 + 21
Lodi Sherman Island Kirby Hills Total	 17 12 29
Sacramento Natural Gas Storage (SNGS)	7.5
Gill Ranch Phase 1	20

Note: SNGS and Gill Ranch are proposed fields that have been included since they have filed CPCNs. Wild Goose recently filed a CPCN for an expansion.

Gas storage development in northern California and backbone capacity

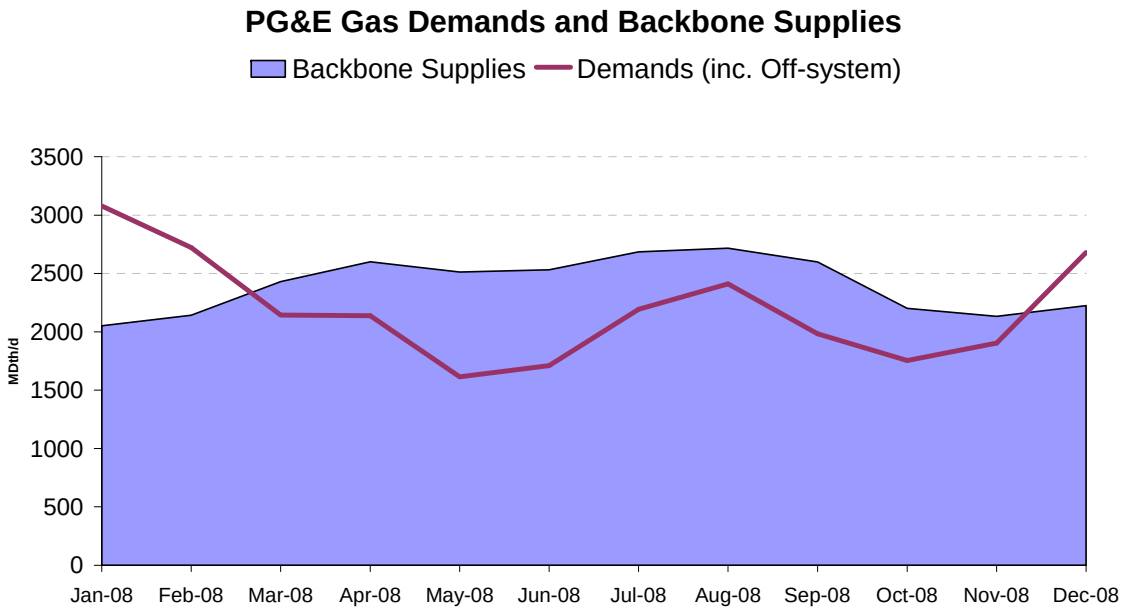
- Table shows the increase in injection and withdrawal capabilities if all storage projects proceed
- Use of all this injection capability will start to strain summer backbone capacity

Maximum storage capabilities (MMcf/d)
2003 vs. 2010 and beyond

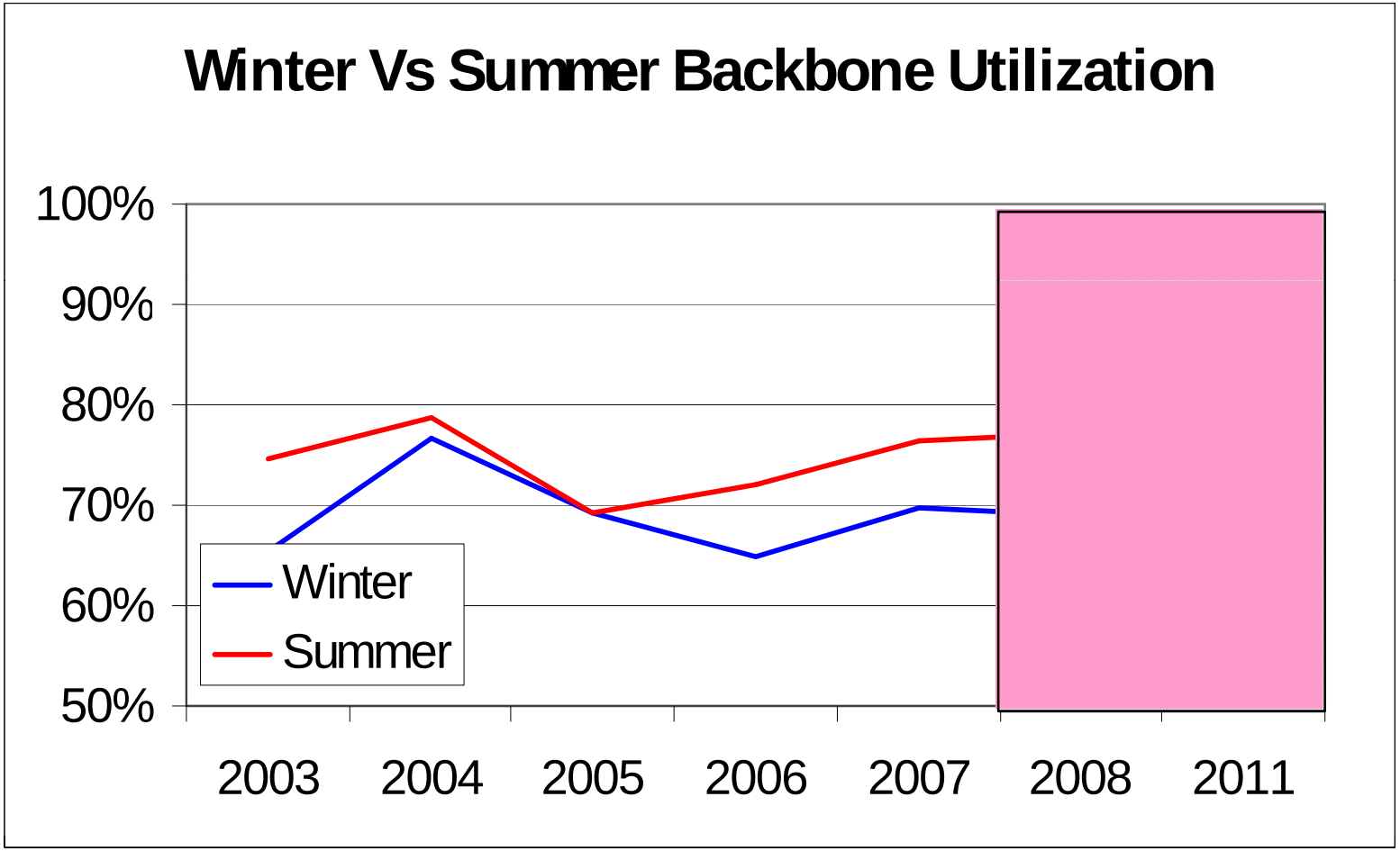
2003		2010+	
Injection	Withdrawal	Injection	Withdrawal
1,110	2,370	~1,600	~4,200

End use demand vs flowing supply

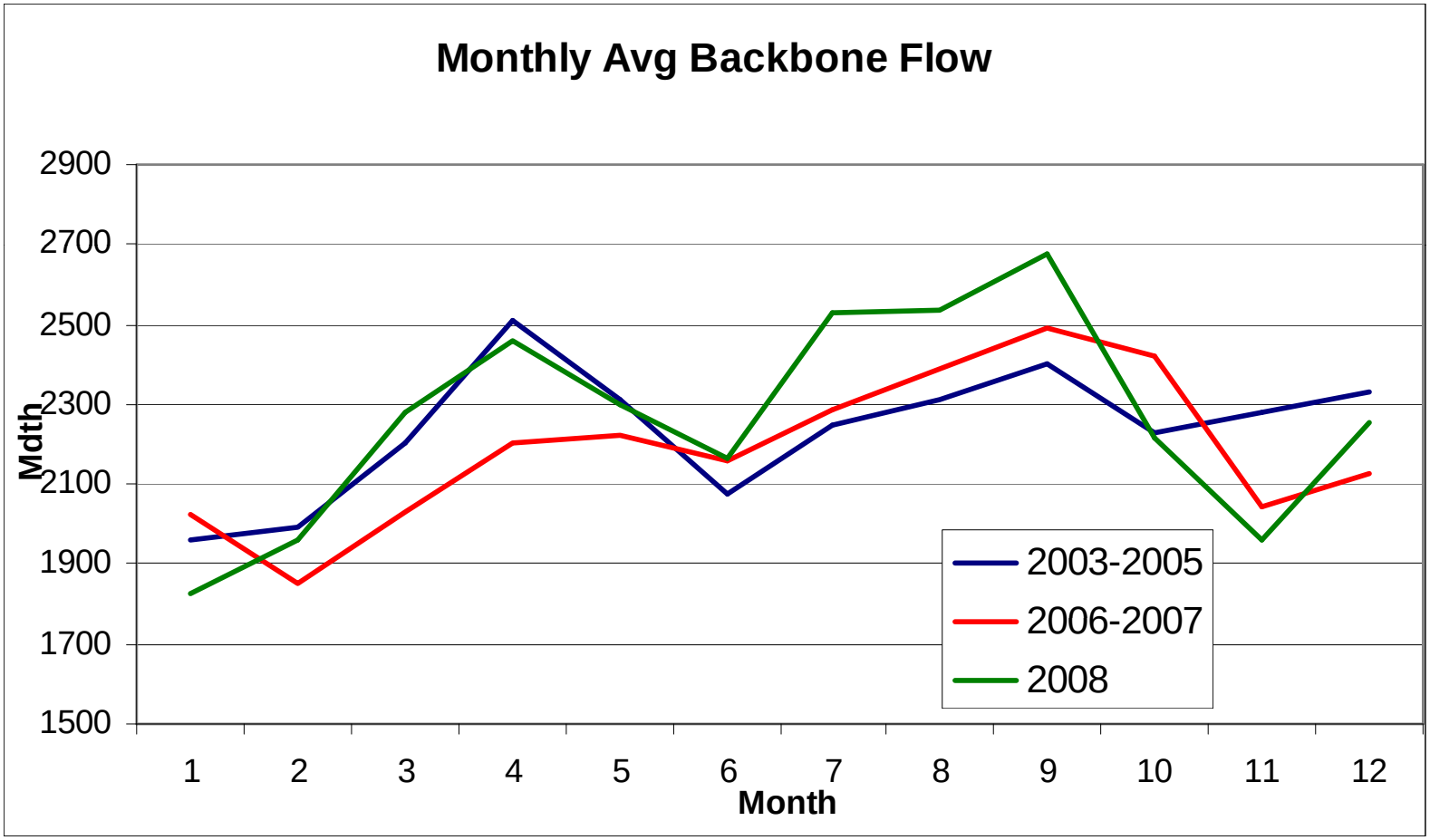
- PG&E's gas demands peak in the winter and in August
- Gas receipts peak in the Spring and Fall
- This trend is likely to continue as new storage projects are developed
- As a result, market may have an interest in an expansion.



PG&E's Backbone Utilization



Monthly Average Backbone Utilization



Backbone Capacity Reserve Margin – 2008 analysis

- PG&E's July 1, 2008 compliance filing resulting from Phase II of 2004 Gas OIR
- The Commission guideline for backbone transmission capacity:
  - Requires the utilities to assure adequate backbone transmission capacity under 1-in-10 cold and dry conditions
  - Adequate capacity exists if utilization is less than 80-90% in a 1-in-10 cold and dry year
  - An expansion may be warranted if utilization exceeds 80-90%

Year	Average Demand (MMcf/d)	1-in-10 Cold and Dry Year Demand (MMcf/d)	Backbone Receipt Capacity (MMcf/d)	Capacity Utilization Cold and Dry Year Demand
2009	2167	2341	3249	72%
2010	2195	2372	3249	73%
2011	2226	2405	3249	74%
2012	2158	2337	3249	72%
2013	2153	2336	3249	72%
2014	2128	2311	3249	71%
2015	2120	2305	3249	71%
2016	2143	2326	3249	72%
2017	2170	2358	3249	73%
2018	2199	2390	3249	74%

Reserve Margin Conclusions

- PG&E has adequate backbone capacity to accommodate forecast demand on a system-wide basis.

- Expansions can provide benefits to customers even when total backbone capacity is adequate. Examples might include:

  – Customers have an interest in accessing new gas supplies

  – As more storage is developed, customers may increase use of backbone in summer for storage injections

Future infrastructure expansions

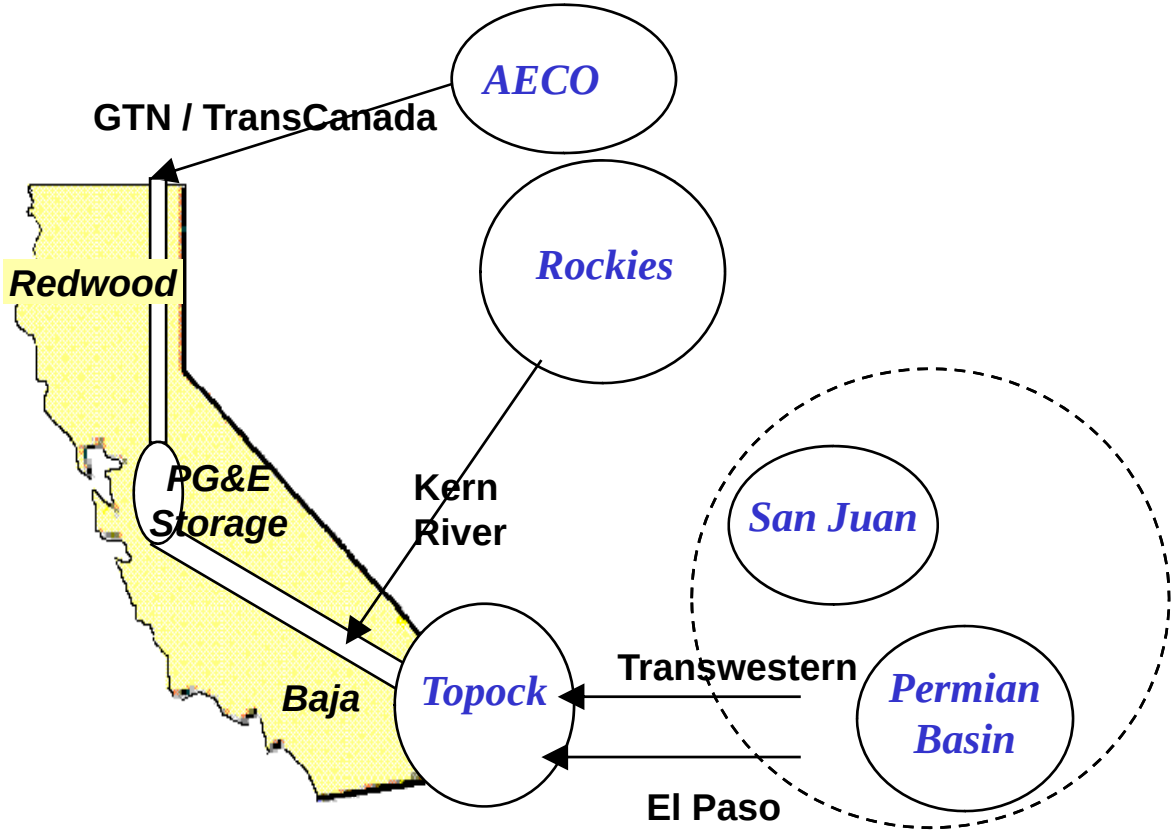
- Longer-term Baja path expansion
  - Market may have an interest
  - Expect to hold Open Season in near future.
  - An expansion would be done in conjunction with the next GT&S Rate Case
    - To be filed sometime between September 2009 and February 2010
  - We believe the Baja Path will be in high demand even as new Northwest projects deliver additional gas to Malin.

Impact of intermittent generation

- Increased use of renewable resources requires more gas fired backup capability because:
  - * Wind can change suddenly during the day and has large forecast error.
  - * Solar stops when the sun sets, or slows due to cloud cover and fog.
- Stresses on gas system created by renewable generation:
  - * Hourly and daily changes in the ramping of EG gas demand.
  - * Changes in forecast error
- Existing generation may need to operate differently; new gas fired projects may be necessary.
- We encourage the CEC to analyze these intra-day impacts in the IEPR.

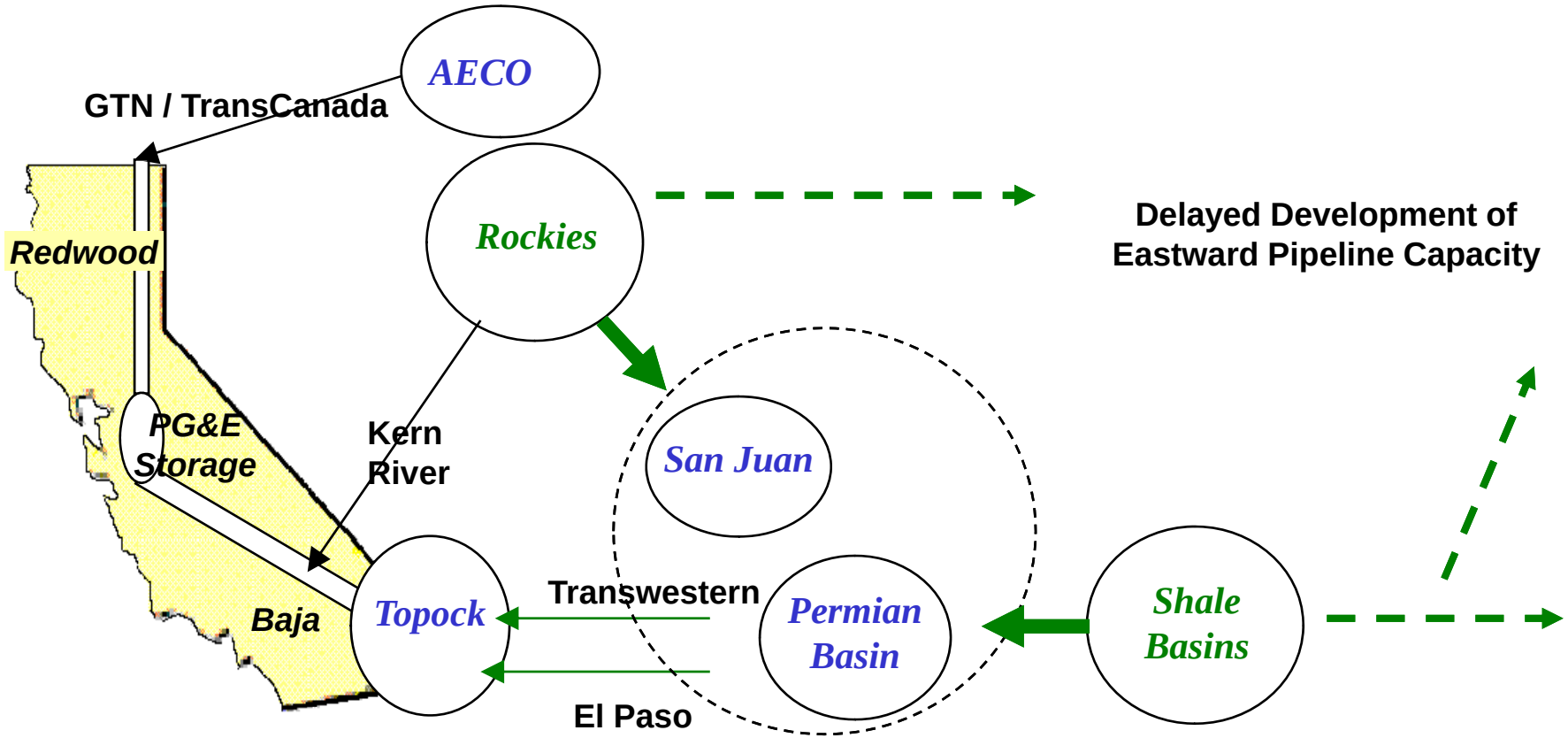
Sources of Gas Available for PG&E Procurement

PG&E has direct access to a diverse set of supply basins and storage in its local market



Current Impacts of Growing Basins

PG&E procurement benefits from indirect access to incremental Rockies and Shale production



New Infrastructure Affecting PG&E Procurement

Ruby pipeline development offers PG&E access to growing Rockies production

- Improves supply reliability
- Increases gas-on-gas price competition