



California Energy Commission

San Bruno Reliability Implications and Natural Gas Environmental Issues

Staff Workshop
Hearing Room A

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DOCKET

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Staff Following the Proceedings

- NTSB Hearings/CPUC OIR
 - may result in new regs in how MAOP determined and strength testing requirement for HCAs
- PG&E records search indicates
 - 151 miles of transmission pipe to test or replace in 2011 and another 435 miles to further evaluate
- CAISO coordination
 - understanding gas transmission system and power plants to help them consider potential outages



ESAD Considering What It Can Do

- RWGTM captures backbone transmission
 - model scenario in which cut capacity by % to reflect reduced operating pressure
 - assume extreme weather so assess lower pressure on a stressed day for 1 to 3 years
 - annual ... way to do daily?
- Scoping potential application of more detailed gas flow modeling
 - support to implement PG&E test/replace plan
 - not likely available in time to be part of staff's assessment



Ballpark Rate Impact of \$1 Billion

- Very Preliminary calculations on cents per therm impact to average transportation rate:

\$1B @ 10% over 20 years = \$0.18/mcf or 8%

Debt /Equity Split	70/30
Principal Cost	\$ 1,000,000,000
Cost of Debt	8.00%
Cost of Equity	11.35%
Wtg Avg Cost of Capital	9.01%
Amortization Years	20
Annual Pmt	(\$109,585,510)
Annual Tput MMcf	862,495
Sys Avg Rate per MMcf	-127.0564
Sys Avg Rate per Mcf	\$ (0.13)



Recognizing Environmental Issues

- Hydraulic Fracturing concerns
 - fear of fracturing liquids contaminating groundwater, water use, water disposal, more truck trips (noise, dust and diesel emissions), benzene emissions and seismic activity
 - fines levied in PA by DEP and in TX by EPA
 - EPA study may expand beyond “Halliburton exemption” to SDWA
 - High Btu-content liquids, more workovers and CH₄ emitted in flowback water means **higher** GHG
- Macondo delays announced OCS expansion



Additional Efforts at EPA

- ANPR to reduce PCBs authorized in pipelines
 - standard drops from 50 ppm to 1 ppm
- NSPS and Transport rules plus potential rules on coal ash and Hg and NO_x/SO_x monitoring
 - push changes in electricity resource portfolios
- GHG emissions reporting amended to cover
 - LDCs and upstream transportation, storage and production
 - Doubles the number of covered entities so that 2800 will now report CH₄, CO₂, and N₂O; goal is to reduce leaks and venting
 - first reports covering calendar 2011 due March 31, 2012



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EPA Finds 1996 Emissions and Sinks Study Understated F&P GHG

Table 2: Comparison of Process Emissions from each Segment of the Natural Gas and Petroleum Industries

Segment Name	U.S. GHG Inventory ¹ Estimate for Year 2006 (MMTCO ₂ e)	Revised Estimate for Year 2006 (MMTCO ₂ e)
Production ²	90.2	198.0
Processing	35.9	39.5
Transmission and Storage	48.4	52.6
Distribution	27.3	27.3

1. U.S. EPA (2008) *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006*.

2. Production includes equipment leaks and vented emissions from both the natural gas and petroleum sectors' onshore and offshore facilities.

EPA says 2006 update understated because tight gas wells not broken out.



Additional Notes

- Preliminary Reference Case doesn't explicitly assume GHG regulation US-wide or adjust for CA AB 32 program adding gas utilities in 2015
 - No adjustment to demand
 - BUT very high EG gas burn at historical growth rate
 - No inclusion of price for carbon allowances in gas transportation rates – not entirely sure this would be right treatment
- Growing recognition that by 2050, gas role must be further reduced in order to achieve GHG targets