

# **San Diego Gas & Electric Southern California Gas Company Gas Quality Update**

**Natural Gas Interchangeability  
Stakeholder Advisory Committee Meeting  
October 29, 2007  
Sacramento, California**

**Kevin Shea, Project Manager  
Southern California Gas Company**

## Planning for New Gas Supplies

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- ❑ Regulatory Filings & Decisions - **Complete**
  - Appeal of D.06-09-039 Pending
  
- ❑ Planning for Delivery of Costa Azul Supplies - **In Progress**
  
- ❑ Additional Post Delivery Studies – **In Progress**
  
- ❑ California Air Resources CNG Fuel Specification - **In Progress**
  - D.06-09-039 states
    - SDG&E and SoCalGas should work with the owners of older CNG vehicles and relevant governmental agencies so that the natural gas vehicle fleet in Southern California gets the gas supplies it needs.<sup>1</sup>

# GAS QUALITY STUDIES & WORKSHOPS 2003 – 2007

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“Commission should adopt a gas quality standard that is consistent with the best information currently available. We agree that further research is needed to fully understand the impacts of higher Wobbe Index gas on emissions and end-use equipment performance.” (Page 158, D.06.09.039)

## SDG&E/SoCalGas Studies

- Gas Quality and LNG Research Study
- California Gas Quality Working Group
- Natural Gas Legacy Fleet Vehicles Studies
- Other Equipment Studies
- Air Emissions Impact Studies

## State & National

- Natural Gas Council Interchangeability Task Group
- FERC Natural Gas Interchangeability
- Combined Cycle Electric Generation: GE & SiemensWestinghouse
- California Energy Commission – Large Commercial/Industrial Burner Study
- Department of Energy/National Energy Technology Laboratory’s Research for FERC on Natural Gas Interchangeability

<http://www.socalgas.com/business/gasquality/>

# SDG&E / SoCalGas Wobbe Posting

GC Location/Description	Pipeline	Wobbe Index	Last Updated
<b>Line 85 Transmission Zone</b>			
Taft	Line 85	1338	10/24/2007 08:00 AM PCT
<b>Wheeler Ridge Transmission Zone</b>			
Bakersfield	Line 7200	1336	10/24/2007 08:00 AM PCT
Tupman 1	Line 225	1334	10/24/2007 08:00 AM PCT
Tupman 2	Line 7200	1333	10/24/2007 08:00 AM PCT
Wheeler Ridge	Line 225	1350	10/24/2007 08:00 AM PCT
<b>Coastal Transmission Zone</b>			
Ventura East 1	Line 404	1360	10/24/2007 08:00 AM PCT
Ventura East 2	Line 406	1360	10/24/2007 08:00 AM PCT
Ventura East 3	Line 324	1360	10/24/2007 08:00 AM PCT
<b>Southern Transmission Zone</b>			
Blythe	Lines 2000, 2001, 5000	1330	10/24/2007 08:00 AM PCT
Riverside/San Diego County Line	Lines 6900, 1027, 1028	1337	10/24/2007 08:00 AM PCT
<b>North Desert Transmission Zone</b>			
Kramer Junction	Line 6905	1363	10/24/2007 08:00 AM PCT
North Needles 1	Line 235	1307	10/24/2007 08:00 AM PCT
North Needles 2	Line 235	1328	10/24/2007 08:00 AM PCT
Topock	Line 3000	1335	10/24/2007 08:00 AM PCT
<b>Los Angeles Basin</b>			
El Segundo	Line 1170	1345	10/24/2007 08:00 AM PCT
Newhall	Line 120 South	1364	10/24/2007 08:00 AM PCT
San Clemente	Line 1018	1345	10/24/2007 08:00 AM PCT
Thousand Oaks 1	Line 404		
Thousand Oaks 2	Line 406		
Westside Station		1363	10/24/2007 08:00 AM PCT

# Gas Quality Overview - 2007

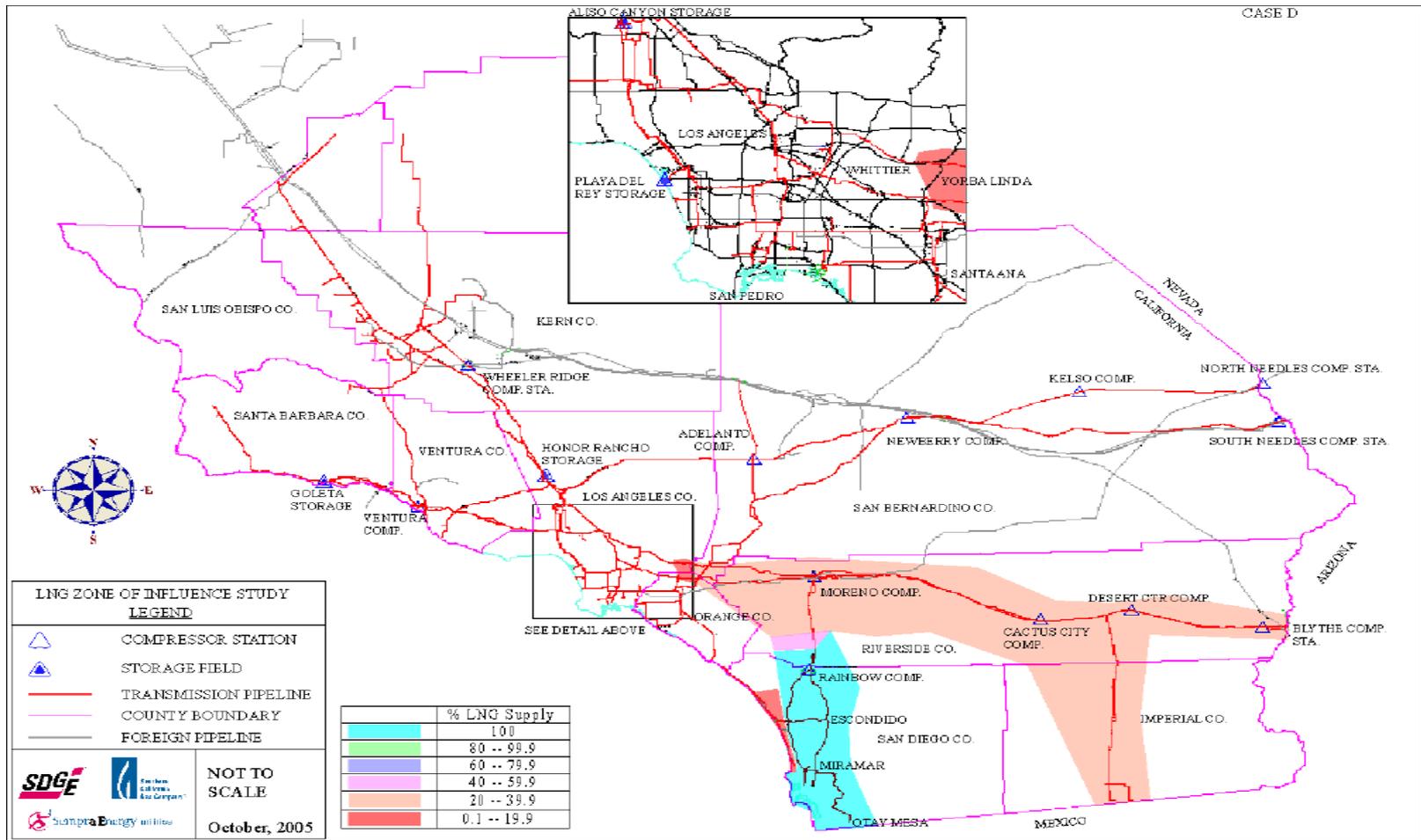
	<u>System Average 1997</u>	<u>System Average 2007</u>	<u>California Production<sup>1</sup></u>	<u>Potential New Supplies<sup>2</sup></u>	<u>Approved Gas Quality Specifications<sup>3</sup></u>
❖ Heating Value (btu/scf)	1020	1031	1007-1150	1031-1114	<u>990-1150</u>
❖ Total Inerts	1.95%	1.7%	.34 - 4.00%	0 – 2.7%	4.0 Max.
❖ Wobbe Index	1332	1342	1283-1431	1371-1385	<u>1279-1385</u>

<sup>1</sup> Acceptable Under Tariff Exemption into SCG System

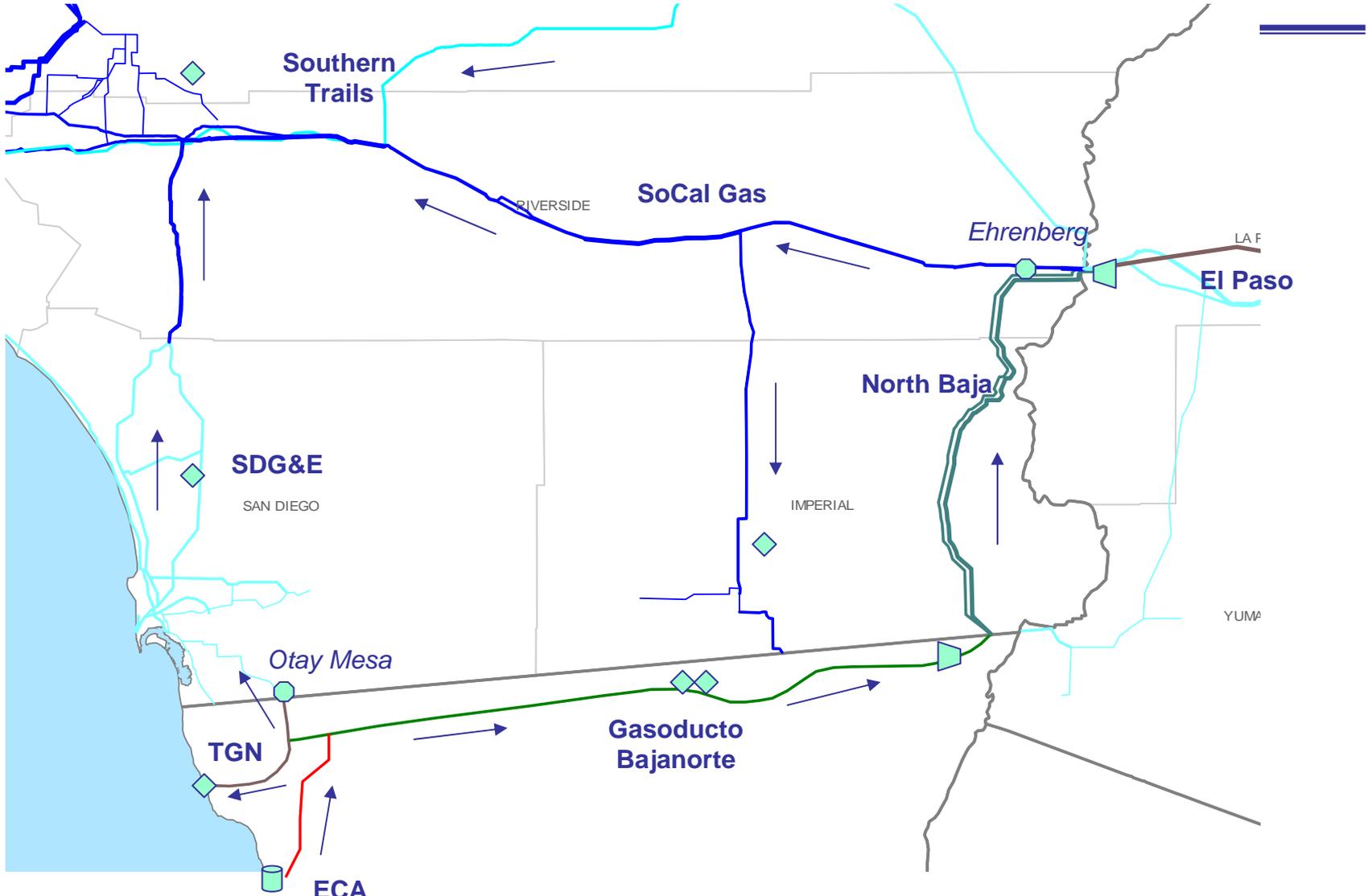
<sup>2</sup> Potential Gas Quality from Costa Azul LNG Terminal, Sempra LNG, ECA Terminal Start up Presentation.

<sup>3</sup> CPUC Approved SDG&E and SoCalGas Tariffs, Wobbe and min and max Heating Value are pursuant to Ordering Paragraphs 18-21, D.06.09.039

# Costa Azul Zone of Influence for Rollout Planning



# Energia Costa Azul & Pipelines to California



# Planning for New Gas Supplies SDG&E/SoCalGas

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- ❑ Core Markets
  - Residential
  - Small Commercial/Industrial
  - SDG&E Field Studies - 1<sup>st</sup> Quarter 2008
  - SoCalGas Field Studies – 2<sup>nd</sup> Quarter 2008
  
- ❑ Non Core Markets
  - Electric Generation – Currently working with Facility Operators and OEMs
  - Large Commercial/Industrial
    - Customer and Equipment database studies in progress
    - Customer Discussions and Field Work 4<sup>th</sup> Quarter 2007 and 1<sup>st</sup> Quarter 2008
  - Feedstock: Customer and Equipment database studies indicate no applications in zone of influence, follow up work to validate in progress.
  
- ❑ Air Quality & Emission Impact Assessments
  - San Diego Air Basin – Emissions Impact Analysis
  - South Coast Air Basin – CMB-04 Emissions Impact Assessment > 1360 Wobbe
  - Imperial - TBD

# Natural Gas Vehicles: Maintaining Compliance w/ CARB Fuel Specification

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- ❑ Blending is infeasible.
- ❑ A large number of CNG stations and vehicles may receive supplies from new sources of natural gas.
- ❑ A MN 80 exemption would provide additional flexibility in providing supplies while also safeguarding the entire CNG vehicle fleet.
- ❑ Additional Heavy Duty Engine Testing 2007/2008

# Electric Generation

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“Calpine and SCE are concerned that the newest low-emissions gas turbines that they own will be unable to handle high Wobbe Index gas.”  
(Page 160, D.06.09.039)

## □ Updated Information on Gas Turbines:

- Siemens – Fuel Specification Expansion
- GE Announces OpFlex Wide Wobbe for 7FA Turbines
- Fuel Flexibility in GE LM Turbines (Peakers)
- Solar – Operate Over Wide Range

## □ Large Boilers

- Concern of Fluctuating Wobbe
- Follow up work with Manufacturers and Facilities Planned

## Summary

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- Prepare for Introduction of New Gas Supplies from Energia Costa Azul LNG terminal in San Diego, Riverside and Imperial Counties
  
- Continue to work with Stakeholders
  - Regulatory Agencies: CPUC, ARB, CEC, Local Air Districts
  - CNG Fleet and CARB Fuel Specification Issues
  - Electric Generation Customers and Equipment Manufacturers
  - Commercial / Industrial Customers and Equipment Manufacturers
  - Residential