

California Air Resources Board
Natural Gas Transmission and Distribution Survey

**For additional information related to this survey, please see accompanying
General Instructions.**

Table 1
Entity Demographics
Calendar Year 2007
(Fill Out Once Per Entity)

Company Name:			
Division:			
Web Site:			
Address:			
City:	State:	Zip Code:	
Contact Person:		Title:	
Phone:		FAX:	Email:
Sector: (Check all that apply) <input type="checkbox"/> Transmission ¹ <ul style="list-style-type: none"> ▪ <u>Annual</u> Volume of Natural Gas Transported _____ (Mscf) ▪ Avg. CH₄ Conc. _____ (mole %) ▪ Avg. CO₂ Conc. _____ (mole %) <input type="checkbox"/> Distribution ² <ul style="list-style-type: none"> ▪ <u>Annual</u> Volume of Natural Gas Distributed _____ (Mscf) ▪ Avg. CH₄ Conc. _____ (mole %) ▪ Avg. CO₂ Conc. _____ (mole %) 	Number of Employees	California Direct Employees	California Contracted Employees
	None	<input type="checkbox"/>	<input type="checkbox"/>
	Between 1 and <10	<input type="checkbox"/>	<input type="checkbox"/>
	Between 10 and <100	<input type="checkbox"/>	<input type="checkbox"/>
	Between 100 and <250	<input type="checkbox"/>	<input type="checkbox"/>
	Between 250 and <500	<input type="checkbox"/>	<input type="checkbox"/>
	Greater than or equal to 500	<input type="checkbox"/>	<input type="checkbox"/>
What trade or professional group(s) or organization(s) is your company a member of: (Check all that apply)			
<input type="checkbox"/> American Gas Association (AGA) <input type="checkbox"/> Interstate Natural Gas Association of America (INGAA) <input type="checkbox"/> American Public Gas Association (APGA) <input type="checkbox"/> U.S. EPA Natural Gas STAR Program <input type="checkbox"/> Other: (Specify) _____			

¹Transmission volume includes natural gas the entity transports for a fee, sells directly to large end-users, or sells to other end-users in its distribution networks.

²Distribution volume includes natural gas the entity sells to various end-users in its distribution networks.

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Table 2
Pipelines
Calendar Year 2007
(Fill Out Once Per Entity)

Transmission Pipeline:		Length:
Cast Iron		_____ (miles)
Protected Steel		_____ (miles)
Unprotected Steel		_____ (miles)
Plastic		_____ (miles)
Transmission – Blowdowns: Note: <u>including</u> pigging blowdowns, but <u>excluding</u> compressor blowdowns (reported in Table 8)		Transmission – Accidents & Dig-Ins:
<u>Annual</u> Number of Blowdowns _____		<u>Annual</u> Number of Events _____
Sources:		<u>Annual</u> Volume Lost _____ (Mscf)
<input type="checkbox"/> Pipelines <input type="checkbox"/> Pigging <input type="checkbox"/> M&R Stations <input type="checkbox"/> Other: (Specify) _____ <input type="checkbox"/> Compressor Stations		Transmission – Pigging:
<u>Annual</u> Volume from Blowdowns:		<u>Annual</u> Number of Events _____
▪ Vented _____ (Mscf)		Number of Launchers and Receivers _____
▪ Flared _____ (Mscf)		
▪ Recovered _____ (Mscf)		
Distribution Mains Pipeline:		Length:
Cast Iron		_____ (miles)
Protected Steel		_____ (miles)
Unprotected Steel		_____ (miles)
Plastic		_____ (miles)
Distribution Services Pipeline:		Number of Services:
Copper		_____
Protected Steel		_____
Unprotected Steel		_____
Plastic		_____
Average Service Length		_____ (ft)
Distribution – Blowdowns: Note: <u>including</u> pigging blowdowns		Distribution – Accidents & Dig-Ins:
<u>Annual</u> Number of Blowdowns _____		<u>Annual</u> Number of Events _____
Sources:		<u>Annual</u> Volume Lost _____ (Mscf)
<input type="checkbox"/> Mains Pipeline <input type="checkbox"/> Pigging <input type="checkbox"/> Services Pipeline <input type="checkbox"/> Other: (Specify) _____ <input type="checkbox"/> M&R Stations		Distribution – Pigging:
<u>Annual</u> Volume from Blowdowns:		<u>Annual</u> Number of Events _____
▪ Vented _____ (Mscf)		Number of Launchers and Receivers _____
▪ Flared _____ (Mscf)		
▪ Recovered _____ (Mscf)		
Customer Meters:		Number of Units:
Commercial / Industrial		_____
Residential		_____

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Table 3
Metering and Regulation Station Counts
Calendar Year 2007
(Multiple Sheets Per Entity)

Air District:	
Facility Type:	Number of Units
Transmission M&R Station (Transmission Interconnects)	
Transmission M&R Station (Direct Sales or Farm Taps)	
Distribution M&R Station >300 psig inlet pressure, above ground	
Distribution M&R Station 100-300 psig inlet pressure, above ground	
Distribution M&R Station 40-100 psig inlet pressure, above ground	
Distribution Regulation Station >300 psig inlet pressure, above ground	
Distribution Regulation Station >300 psig inlet pressure, vault	
Distribution Regulation Station 100-300 psig inlet pressure, above ground	
Distribution Regulation Station 100-300 psig inlet pressure, vault	
Distribution Regulation Station 40-100 psig inlet pressure, above ground	
Distribution Regulation Station 40-100 psig inlet pressure, vault	
Distribution Regulation Station <40 psig inlet pressure, any location	
Distribution M&R or Regulation Station, <u>unspecified</u> pressure <u>and</u> location	

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Table 4
Combustion Facility Descriptions
Calendar Year 2007
(Fill Out Once Per Facility, Multiple Sheets Per Entity)

Unique Facility ID:		
Air District:		
Air District Facility ID: (if available)		
Address:		
City:	State:	Zip:
Contact Person:	Title:	
Phone:	FAX:	Email:
Is facility on the electrical grid? <input type="checkbox"/> Yes <input type="checkbox"/> No	Electrical Service: Voltage: _____ (V) Amperage: _____ (A) Phase: _____	
Facility Type: <input type="checkbox"/> Compressor Station <input type="checkbox"/> Dehydration Facility <input type="checkbox"/> Other: (Specify) _____		

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Table 5
Energy Consumption
Calendar Year 2007
(Fill Out Once Per Facility, Multiple Sheets Per Entity)

Unique Facility ID:	
Fuel Type:	<u>Annual Amount:</u>
Diesel	_____ (gallons)
Gasoline	_____ (gallons)
Natural Gas	_____ (Mscf)
Electricity:	
▪ Imported from Grid	_____ (MWh)
▪ On-Site Generated:	
- Own Use	_____ (MWh)
- Exported	_____ (MWh)
Other: (Specify) _____	_____ (units)

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Table 7
Electric Equipment Prime Mover
Calendar Year 2007
(Fill Out Once Per Piece of Equipment, Multiple Sheets Per Facility)

Unique Facility ID:	Unique Equipment ID:	
Manufacturer:	Manufacture Date:	
Rated Size: (hp)	<u>Annual</u> Hours Operated: (hours)	Average Load: (%)

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Table 9
Natural Gas Actuated Pneumatic Devices
Calendar Year 2007
(Fill Out Once Per Facility, Multiple Sheets Per Entity)

Unique Facility ID:					
Pneumatic Type	Actual Count	Estimated	Percent Low-Bleed (%)	Percent No-Bleed (%)	Percentage of Units on Gas Recovery
<u>Unknown Type:</u> (Excluding <u>Kimray Pumps</u> for Dehydrators)					
<input type="checkbox"/> Pneumatic Devices (Actuators and Controllers of unknown type)	_____	_____	_____ %	_____ %	_____ %
<u>Known Type:</u> (Excluding <u>Kimray Pumps</u> for Dehydrators)					
<input type="checkbox"/> Continuous Bleed Pneumatics (Controller)	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Turbine Valve Operator	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Pneumatic/Hydraulic Valve Operator	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Isolation Valve Operator	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Compressor Station Control Loop	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Piston Pump	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Diaphragm Pump	_____	_____	_____ %	_____ %	_____ %
<input type="checkbox"/> Other: (Specify) _____	_____	_____	_____ %	_____ %	_____ %
Please briefly describe the equipment maintenance and inspection program, including schedule and recordkeeping:					

Table 10
Natural Gas Dehydration
Calendar Year 2007
(Fill Out Once Per Facility, Multiple Sheets Per Entity)

Unique Facility ID:		
Dehydrator Type:		
<input type="checkbox"/> Glycol	<input type="checkbox"/> Other: (Specify) _____	
Annual Volume of Natural Gas Dehydrated:		
_____	(Mscf)	
For <u>Glycol</u> Dehydrators Only:		
Glycol Circulation Rate	_____	(gallons/hour)
Average Flash Tank Pressure	_____	(psia)
Average Contactor Pressure	_____	(psia)
Gas Assisted Pump (i.e., Kimray Pump)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Stripping Gas Used	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Vapor Recovery System:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

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Table 11
Vapor Recovery & Emergency Flare
Calendar Year 2007
(Fill Out Once Per Facility, Multiple Sheets Per Entity)

Unique Facility ID: _____	
Type: <input type="checkbox"/> Flare <input type="checkbox"/> Incinerator <input type="checkbox"/> Thermal Oxidizer <input type="checkbox"/> Carbon Adsorber	Use: <input type="checkbox"/> Vapor Recovery <input type="checkbox"/> Emergency
Flares, Thermal Oxidizers, Or Incinerators: Size _____ (Btu/hour) <u>Annual</u> Throughput _____ (scf) (Excluding Fuel) Combustion Efficiency _____ (%) Average Molar Concentration: CH ₄ _____ (mole %) CO ₂ _____ (mole %) Carbon Molar Ratio (CMR) _____	Carbon Adsorbers: Size _____ (ft ³) <u>Annual</u> Throughput: _____ (scf) Methane Capture Efficiency _____ (%) Average Molar Concentration: CH ₄ _____ (mole %) CO ₂ _____ (mole %)

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Table 12
U.S. EPA Natural Gas STAR Program – Natural Gas Dehydrators
(Fill Out Once Per Entity)

Natural Gas Dehydrators	Yes	No	Market Penetration (MP)* (%)	Reasons For Not Implementing The Program or Limited MP
Use Condensate Separator Gas as Fuel	<input type="checkbox"/>	<input type="checkbox"/>		
Replace Gas-Assisted Glycol Recirculation Pumps with Instrument Air	<input type="checkbox"/>	<input type="checkbox"/>		
Replace Gas-Assisted Glycol Recirculation Pumps with Electric Pumps	<input type="checkbox"/>	<input type="checkbox"/>		
Optimize Glycol Recirculation Rate	<input type="checkbox"/>	<input type="checkbox"/>		
Install Flash Tank Separators	<input type="checkbox"/>	<input type="checkbox"/>		
Install Vapor Recovery Units (VRU)	<input type="checkbox"/>	<input type="checkbox"/>		
Replacing Glycol Dehydrators with Desiccant Dehydrators	<input type="checkbox"/>	<input type="checkbox"/>		

*MP refers to the number of installations implemented, from program commencement to the present, divided by the total number of available opportunities for installations, expressed in percentage.

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Table 13
U.S. EPA Natural Gas STAR Program – Compressors
(Fill Out Once Per Entity)

Compressors	Yes	No	Market Penetration (MP)* (%)	Reasons For Not Implementing The Program or Limited MP
Convert Engine Starting to Nitrogen	<input type="checkbox"/>	<input type="checkbox"/>		
Reduce Frequency of Natural Gas Powered Engine Starts	<input type="checkbox"/>	<input type="checkbox"/>		
Convert Engine Starting to Instrument Air	<input type="checkbox"/>	<input type="checkbox"/>		
Reduce False Starts by Maintaining/Replacing Ignition System	<input type="checkbox"/>	<input type="checkbox"/>		
Employ Programmable Logistic Controllers (PLC) to Reduce Venting	<input type="checkbox"/>	<input type="checkbox"/>		
Replace/Maintain Compressor Cylinder Unloaders to Reduce Leaks	<input type="checkbox"/>	<input type="checkbox"/>		
Utilize an Economic Replacement Threshold to Determine Rod Packing Replacement	<input type="checkbox"/>	<input type="checkbox"/>		
Keep Compressors Pressurized When Off-Line	<input type="checkbox"/>	<input type="checkbox"/>		
Connect Blowdown Vent to Fuel Gas System	<input type="checkbox"/>	<input type="checkbox"/>		
Install Static Seals on Reciprocating Compressors	<input type="checkbox"/>	<input type="checkbox"/>		
Recover Natural Gas from Emergency Shutdown Systems When Possible	<input type="checkbox"/>	<input type="checkbox"/>		
Convert Engine Starting to Electric	<input type="checkbox"/>	<input type="checkbox"/>		
Install Automated Air-Fuel Ratio Controllers	<input type="checkbox"/>	<input type="checkbox"/>		
Replacing Wet Seals with Dry Seals in Centrifugal Compressors	<input type="checkbox"/>	<input type="checkbox"/>		

*MP refers to the number of installations implemented, from program commencement to the present, divided by the total number of available opportunities for installations, expressed in percentage.

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Table 14
U.S. EPA Natural Gas STAR Program – Pipelines
(Fill Out Once Per Entity)

Pipelines	Yes	No	Market Penetration (MP)* (%)	Reasons For Not Implementing The Program or Limited MP
<u>Reroute High Pressure Gas Blowdown to Low Pressure System</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Composite Wrap for Non-Leaking Pipeline Defects</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Use Flexible Plastic Insert Liners on Cast Iron and Steel Pipes</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Pump-Down Pipeline Prior to Maintenance or Repair</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Install Ejectors to Reduce Pipeline Pressure Prior to Venting</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Using Hot Taps for In Service Pipeline Connections</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Use of Improved Protective Coating for Exposed Pipelines</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Use Inert Gases and Pigs to Purge Pipelines Prior to Venting</u>	<input type="checkbox"/>	<input type="checkbox"/>		

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Table 15
U.S. EPA Natural Gas STAR Program – Pneumatic Devices
(Fill Out Once Per Entity)

Pneumatic Devices	Yes	No	Market Penetration (MP)* (%)	Reasons For Not Implementing The Program or Limited MP
<u>Replace Pneumatic Controllers with Mechanical Controllers</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Reduce Frequency of Turbine Meter Servicing</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Retrofit/Replace High-Bleed Pneumatics with Low-Bleed Pneumatics</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Convert Natural Gas Pneumatic Controls to Instrument Air</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Replace Continuous Flare Pilot with Electrical Sparking Pilot</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Replace Bi-Directional Orifice Meters with Ultrasonic Meters</u>	<input type="checkbox"/>	<input type="checkbox"/>		

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Table 16
U.S. EPA Natural Gas STAR Program – Valves
(Fill Out Once Per Entity)

Valves	Yes	No	Market Penetration (MP)* (%)	Reasons For Not Implementing The Program or Limited MP
<u>Inspect and Repair Compressor Station Blowdown Valves</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Install Secondary Relief Valves on Burst Plates</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Employ Ultrasonic Leak Detectors</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Close Main and Unit Valves to Reduce Blowdown Volumes</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Replace Pipeline Relief Valves with Rupture Pin Shutoff Devices to Reduce Pipeline Venting</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Install YALE® Closures on Emergency Shutdown (ESD) Vent Stacks for System Testing</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Inspect and Repair Nearby Valves During Pipeline Repair</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Test and Repair Pressure Safety Valves</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Position Isolation Valves Closer to Compressors to Minimize Gas Blowdown Volumes</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Move Fire Gates Closer to Compressor Stations to Reduce Venting</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Test Pressure Relief Valves with Nitrogen</u>	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Install Excess Flow Valves for Automatic Shutoff During Catastrophic Event</u>	<input type="checkbox"/>	<input type="checkbox"/>		

*MP refers to the number of installations implemented, from program commencement to the present, divided by the total number of available opportunities for installations, expressed in percentage.

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Table 17
U.S. EPA Natural Gas STAR Program – Others
(Fill Out Once Per Entity)

Others	Yes	No	Market Penetration (MP)* (%)	Reasons For Not Implementing The Program or Limited MP
Pipe Vents to Flare System	<input type="checkbox"/>	<input type="checkbox"/>		
Implement a Directed Inspection and Maintenance Program	<input type="checkbox"/>	<input type="checkbox"/>		
Directed Inspection and Maintenance with Optical Imaging	<input type="checkbox"/>	<input type="checkbox"/>		
Eliminate or Downgrade Unnecessary Equipment and/or Systems	<input type="checkbox"/>	<input type="checkbox"/>		

*MP refers to the number of installations implemented, from program commencement to the present, divided by the total number of available opportunities for installations, expressed in percentage.