Safety Element Supplement

February 1, 2000

Santa Barbara County Comprehensive Plan

COUNTY OF SANTA BARBARA

COMPREHENSIVE PLAN

SAFETY ELEMENT SUPPLEMENT

February 1, 2000

Board of Supervisors Resolution 00-56

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INTRODUCTION

Both California planning law and the California Environmental Quality Act emphasize the importance of protecting public safety through proactive land-use planning. Since 1971, Government Code Section 65302(g) has required local governments to prepare a Safety Element as part of their General Plans. This element, according to statute, addresses protection of the community from any unreasonable risks associated with the effects of seismically induced hazards, other geologic hazards (e.g., landslides and subsidence), flooding, and fires (both urban and wildland). California's General Plan Guidelines describe the Safety Element as the primary vehicle for identifying hazards that cities and counties must consider when making land-use decisions. The Guidelines specify that the number and types of hazards depend in part on local circumstances, noting: "*While the safety element focuses on identifying fire and geologic hazards, it may also address other locally relevant safety issues such as vehicle accidents, hazardous materials spills, power failure, and storm drainage."*

The California Environmental Quality Act (CEQA) sets forth a legal framework for identifying significant effects on the environment. Among other criteria, a project may have a significant effect on the environment if it will cause substantial adverse effects on human beings, either directly or indirectly (Public Resources Code Section 21083(c) and CEQA Guidelines Section 15126.2(a) and (b)). Accordingly, Santa Barbara County's *Environmental Thresholds and Guidelines Manual* includes thresholds to define the significance of public exposure to acute risks posed by certain types of facilities or activities that involve hazardous materials. These policies require mitigation of any proposed development with significant, adverse effects or denial of the project.

Part A of this supplement to Santa Barbara County's Safety Element focuses on the role of land-use planning in reducing the risk of public exposure to acutely hazardous materials. It draws upon the County's own experiences and recommended practices of other informed sources to guide consistent and well-informed land-use decisions with regard to public safety. Chapter I addresses facilities that handle acutely hazardous materials and are fixed in location to a single site; such facilities represent a single-point source of risk (e.g., a gas processing facility, or storage of gaseous chlorine at a water treatment plant). Chapter II addresses gas pipelines, which are considered to be fixed in location to a corridor and, thus, represent a linear source of risk, which extends along the corridor.

GOALS

The objectives and policies contained in these chapters address the following two goals:

(1) To provide sufficient guidance to affect well-informed, consistent and equitable land-use decisions; and

(2) To prevent and minimize unnecessary risk to the public, recognizing it is impossible to obtain a zero-risk society.

DEFINITIONS

The following definitions are included herein to clarify the policies of Part A of the Safety Element Supplement and do not automatically extend to other elements of the County's Comprehensive Plan or any chapter of the County Codes.

ACUTE HAZARD: A hazard that can have either an immediate or delayed effect (with short-term or prolonged consequences) due to a single exposure to an accident, such as exposure to a gas explosion, fireball, or a release of an acutely toxic material.

ACUTELY HAZARDOUS MATERIALS: In general, materials that pose an acute hazard. Acutely hazardous materials addressed in this supplement are defined within each chapter.

ASSOCIATED GAS: Gas that occurs with oil, either as free gas or in solution. Gas occurring alone in a reservoir is unassociated gas.

EXTERNAL FORCE: Third-party intrusions into the pipeline corridor, earth movements (including scouring, and earthquakes).

GAS PRODUCING WELL: Any well for the exploration (prospect), extraction, or injection of gas except for wells used by a public utility to inject or withdraw from an underground storage reservoir.

HAZARD ZONE: The area around the source of a hazard that exposes the public to a significant risk, pursuant to the public safety thresholds found in the County's *Environmental Thresholds and Guidelines Manual.*

HAZARDOUS FACILITIES: Facilities fixed in a single location that contain acutely hazardous materials with the potential to pose a significant, acute risk to public safety beyond the facility's boundaries. Hazardous facilities may include gas production, as well as other facilities that handle specified quantities of regulated substances (pursuant to Title 19, California Code of Regulations, Division 2, Chapter 4.5).

HEAVIER GAS LIQUIDS: The heavier fractions of natural gas liquids which are extracted as a marketable byproduct during oil and gas processing, and consist of pentanes, hexanes, and heavier components, including natural gasoline.

HIGHLY SENSITIVE LAND USES: Land uses that meet one or more of the following criteria:

(a) Land uses whose onsite population cannot be readily evacuated or otherwise adequately protected from serious harm through methods such as sheltering in-place. They include schools (through grade 12), hospitals, clinics, nursing homes, multiple-family housing exclusively for the elderly or handicapped, stadiums, and arenas, but do not extend to Family

Day Care if residential subdivisions *per se* are considered to be compatible with the hazardous facility in question.

(b) Land uses that serve critical "lifeline" functions such as water supplies if exposed to a significant risk that will curtail its lifeline function for a critical period of time.

(c) Other types of other land uses, such as high-density residential development, may also be determined to be incompatible in vicinity to an existing or proposed hazardous facility.

INHERENTLY SAFER DESIGN: Strategies discussed in the Center of Chemical Process Safety's publication, *Inherently Safer Chemical Processes* (1996). Includes feasible alternative equipment, processes, materials, lay-outs, and procedures meant to eliminate, minimize, or reduce the risk of a major chemical accident or release by modifying a process rather than adding external layers of protection (see primary prevention below).

LIQUIFIED PETROLEUM GASES (LPGS): The lighter fractions of natural gas liquids which are extracted as a marketable byproduct during gas production or processing, liquified under pressure, and consist primarily of propane and butane.

MAXIMUM ALLOWABLE OPERATING PRESSURE: The highest pressure at which a pipeline can be operated, considering design and regulatory factors.

NATURAL GAS: Hydrocarbons which, at atmospheric conditions of temperature and pressure, largely are in a gaseous phase (although gas liquids and liquid impurities may be present as a another phase in the gas stream) and are used as a source of energy.

NATURAL GAS GATHERING PIPELINES: Gas pipelines upstream of final processing or, when no processing is required, upstream of the Lease Automatic Custody Transfer meter.

NATURAL GAS LIQUIDS (NGLS): Hydrocarbons which are separated from natural gas at the surface in field facilities or in gas processing plants, and include propane, butane, and heavier fractions.

NATURAL GAS TRANSMISSION PIPELINES: Pipelines that transmit gas offsite from final processing or, when no processing is required, downstream of the Lease Automatic Custody Transfer or production site, to a distribution network operated by a public utility or, if the gas is not delivered through a public utility's network, then to an end use, injection well, or flare.

POPULATED AREA: An area characterized by land uses other than agriculture, open-space (including undeveloped, infrequently visited parkland), or hazardous facilities of similar nature (including onshore oil field operations and consolidated sites for oil/gas facilities), considering both present and reasonably anticipated future development. Populated areas also incorporate frequently traveled transit routes, including highways, roads, bike paths, pedestrian paths unless transitory populations are sporadic or often absent.

PRIMARY PREVENTION: Measures that reduce or eliminate the likelihood of an accident in a manner that is inherently safe (without dependence upon safety systems), including redesign of production systems, reductions in chemical inventories, or substitution of hazardous materials with non-hazardous or significantly less hazardous materials.

PROCESSED NATURAL GAS: Natural gas that has been treated to remove impurities such as water, carbon dioxide, sulfur, and natural gas liquids (e.g., propane, butane, natural gasoline). Processed natural gas is considered to be ready for retail consumption; it largely comprises methane.

PUBLIC SAFETY: Protection of the general public from the acute, immediate effects caused by a single exposure to an accident, generally resulting in severe biological harm, including fatality. Public safety, as used in this section, does not extend to issues of occupational safety or to chronic effects from prolonged exposure to a public health hazard.

PUBLIC UTILITY: A high pressure pipeline (>125 psig) owned by a public utility, regulated by the California Public Utility Commission, and operated for the purpose of transporting gas to temporary storage or to distribution pipelines for delivery directly to retail consumers. Connections between processing facilities and primary transmission pipelines do not qualify as a public utility for purposes of this chapter unless these connections are operated at pressures greater than 125 psig. Fuel gas pipelines between processing facilities, between production facilities, or between processing and production facilities also do not quality as a public utility for the purposes of this chapter.

RAW NATURAL GAS: Natural gas extracted from a reservoir but not yet treated to remove impurities such as water, carbon dioxide, sulfur, and natural gas liquids.

SECONDARY PREVENTION: Safety systems and programs such as leak detectors, double-walled vessels, emergency flares, and sprinklers that prevent accidents from occurring during a deviation in the normal operations of a facility.

SIGNIFICANT RISK: A compound measure of the probability and number of fatalities or serious injuries (generally referred to as societal risk) that is due to a deviation from normal operating conditions and that exceeds the County's threshold for significance in the *Environmental Thresholds and Guidelines Manual*.

SOCIETAL RISK: Risk to a group of people, expressed in terms of the distributed frequency of events that cause multiple casualties or, when appropriate, the frequency of casualties at a specific location.

UTILITY: Any person, firm, or corporation engaged as a public utility in transporting natural gas, hydrocarbon gas or any mixture of such gases for domestic, commercial, industrial, or other purposes.

CHAPTER I: HAZARDOUS FACILITIES

In this chapter, the term "hazardous facilities" refers to those industrial facilities, public utilities, public works, and commercial land uses that perform specified operations or handle specified quantities of acutely hazardous materials. Such facilities potentially pose a significant, involuntary risk to public safety by virtue of the flammable, explosive, or toxic properties of hazardous materials used in their operations. Examples of hazardous facilities in Santa Barbara County include oil and gas development, water treatment (if using large quantities of anhydrous chlorine), and refrigerating facilities which require large quantities of anhydrous ammonia. They are considered to be single-point sources of risk, being fixed in location at a single site. Pursuant to California Health and Safety Code, the County's Fire Department maintains an inventory of stationary facilities that handle regulated hazardous substances except oil and gas production facilities.

While incidents that involve hazardous materials do not frequently result in public casualties or disruption, society nonetheless recognizes the risks involved with hazardous materials and seeks prudent actions to protect public safety. Local government plays a fundamental role in protection public safety. This role includes its function to apply sound principles of land-use planning when siting and permitting hazardous facilities or development in proximity to existing hazardous facilities.

In today's society, several methods are available to reduce the risk of hazardous facilities. Inherently safer design represents the most effective method of neutralizing potentially significant or catastrophic impacts to public safety from hazardous facilities when feasible. For example, substituting less hazardous or non-hazardous materials to perform the same function as the acutely hazardous material would in a facility's processes reflects inherently safe design. Substitution has been proven effective in a few applications. The County's Air Pollution Control District successfully applied this method to technology for reducing NOx emissions from certain industrial facilities, substituting aqueous ammonia or urea for anhydrous ammonia as a catalyst in the NOx-reducing process. Many water districts and community pools have substituted hypochlorite (bleach) or aqueous chloramines for chlorine in direct response to state and local fire code regulations.

Another method for neutralizing significantly adverse impacts to public safety focuses on siting hazardous facilities in relatively remote locations and subsequently controlling the type of land uses that are placed in proximity to the hazardous facility. Proper siting of a hazardous facility and protecting it from future encroachment of development falls to local government where land-use planning occurs, unless preempted by state or federal law.[1]

Additional methods focus on proven safety systems such as leak detection, double-walled vessels, emergency flares and water deluge that prevent accidents from occurring during a deviation from the normal operations of the facility. Also adjustments in operating procedures can help reduce the

[1] Nonetheless, state and federal agencies are still likely to consider local general plans and zoning codes when making such siting decisions.

probability of accidents and reduce human error which is a significant causal factor in many accidents.

In 1996, California adopted Senate Bill 1889 to establish the California Accidental Release Prevention Program (CalARP).[2] This program implements the federal Risk Management Program[3] in concert with California's pre-existing Risk Management and Prevention Program. CalARP applies to stationary sources (not including offsite pipelines or production of oil and gas) and requires their registration if they use regulated substances that are specified in the implementing regulations.[4] It also establishes specific responsibilities for operators and owners of these stationary sources with oversight by local administering agencies.[5] For stationary sources with the potential to adversely effect offsite population, such responsibilities include an assessment of hazards, assessment and implementation of methods to prevent accidents (including operating procedures, employee training, maintenance, compliance audits, and incident investigation), and emergency response planning.

CalARP focuses on prevention and reduction of hazards through secondary preventative measures such as safety systems, employee training, and emergency response planning. However, it occurs subsequent to and largely separate from land-use decisions that can be critical for reducing significant risk to the public by considering siting and preliminary design issues. The objectives and policies listed below primarily concern land-use decisions such as siting issues (compatibility of proposed developments with surrounding land uses), compliance with the California Environmental Quality Act, initial design of the facility, and compensation in the event of evacuation. It also extends to oil and gas operations that, although not governed by CalARP, are of significant local concern.

APPLICABILITY

The objectives and policies contained in the Part A of the Safety Element Supplement pertain to proposed development that requires approval of a discretionary land use permit. The objectives and policies specifically apply to the following types of hazardous facilities and to other development proposed in proximity to the following types of hazardous facilities:

A. Gas producing wells (including oil wells with associated gas) and supporting facilities unless located one mile or more from a populated area as defined in this supplement and have hydrogen sulfide concentrations less than 5%.

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[2] Health and Safety Code, Sections 25531 to 25543.3.

[3] Title 40, Code of Federal Regulations, Part 68, which contains 1996 regulations promulgated by the 1990 Clean Air Act Amendments, Section 112(r).

[4] Title 19, California Code of Regulations, Division 2, Chapter 4.5.

[5] The Fire Department is the Certified Unified Program Agency for the entire County (including incorporated areas but not federal land), making it the responsible agency for enforcing CalARP along with five other programs for hazardous waste management, Business Plans, above-ground and underground storage tanks, and tiered permitting for onsite recycling of hazardous materials.

B. Gas processing facilities, including gas stripping associated with oil processing subject to discretionary land-use permits pursuant to Chapter 35 of the Santa Barbara County Code.

C. Facilities dedicated to production, processing, storage, or transportation of natural gas liquids subject to discretionary land-use permits pursuant to Chapter 35 of the Santa Barbara County Code, unless such storage is limited to a single container with a maximum capacity of 10,000 gallons or less and does not require refilling more than once weekly.

D. Oil storage tanks subject to discretionary land-use permits pursuant to Chapter 35 of the Santa Barbara County Code, except for (1) floating-roof tanks, and (2) tanks that store 5,000 barrels or less and are located more than one-half mile from a populated area as defined in this Supplement.

E. Oil refineries.

F. Facilities that store chlorine in containers of one-ton or greater capacity or an equivalent amount in bottles or cylinders connected through a common header.

G. Facilities that store anhydrous ammonia in containers of one-ton or greater capacity or an equivalent amount in bottles or cylinders connected through a common header.

H. Facilities for refueling motor vehicles with compressed natural gas stored onsite.

I. Facilities of a type not addressed in A-H above that use specified quantities of regulated substances (pursuant to Title 19 of the California Code of Regulations, Division 2, Chapter 4.5) and meet all of the following criteria:

1) The regulated substance(s)
   a) is stored as a compressed gas or liquified compressed gas, or
   b) is expected to vaporize or evaporate quickly upon accidental release or reaction with another substance, or
   c) is stored as a liquid at a temperature that exceeds its boiling point, or
   d) is classified as a Class A or B explosive (per Title 49, Code of Federal Regulations, 171-179), or
   e) is classified as a high-level radioactive material.

2) The regulated substance(s) has the potential to cause a significant risk to populated areas as defined in this Supplement and as determined according to the County's environmental thresholds. (For example, the regulated substance(s) exists as a gas or vapor upon accidental release or upon reaction with another substance upon release, and will either release into the open atmosphere or become dangerously explosive in a confined environment.)

3) The regulated substance(s) is associated with a specific activity that is generally considered to be incompatible with surrounding land uses. Facilities predominately dedicated to retail distribution of consumer products (such as gasoline stations, or hardware, paint, or dry-cleaning stores) are not subject to the policies of this chapter.

OBJECTIVES & POLICIES

Objective 1

INFORM LAND-USE PLANNING AND PERMITTING DECISIONS ABOUT SIGNIFICANT RISKS TO PUBLIC SAFETY DUE TO INVOLUNTARY EXPOSURE TO ACUTELY HAZARDOUS MATERIALS

POLICY HAZARDOUS FACILITY SAFETY 1-A, *RISK ESTIMATES*

The County shall employ accurate estimates of risk associated with hazardous facilities to inform discretionary land-use decisions where substantial, preliminary evidence indicates involuntary public exposure to significant risk may result from the land-use decision.

IMPLEMENTING ACTIONS:

(A) RESPONSIBILITY OF CEQA LEAD OR RESPONSIBLE AGENCY. The County agency designated as the lead or responsible CEQA agency for proposed land-use projects shall implement this policy during the environmental review process. If screening during the initial study of a proposed project reveals that the project may cause involuntary exposure of the public to a significant risk, then the agency shall conduct a quantitative risk analysis. The CEQA lead or responsible agency shall share responsibility for overseeing the preparation of the risk analysis with the Fire Department. Among other things, this joint responsibility is essential to ensure that the CEQA risk analysis will align with the subsequent, pre-operational risk analysis required through the California Accidental Release Program (CalARP). In cases where risk analysis has already been performed by a governmental agency, the CEQA-lead agency shall ensure that the analysis is up-to-date and accurately reflects the specific risk associated with the proposed project.

(B) MAINTENANCE OF THRESHOLDS OF SIGNIFICANCE AND GUIDELINES. To assist the environmental review process, the County shall maintain environmental thresholds for the purpose of determining the significance of risk to public safety. These thresholds should consider both risk of fatality and serious injury to the public, and should specify any exceptions to the application of this policy. Planning and Development should also maintain guidelines to ensure the consistency and accuracy of risk analyses performed in satisfaction of this policy, and identify appropriate screening methods and tools to be used in initial studies. All estimates of risk shall be as accurate as possible, reflecting any reductions in risk due to mitigation while still being sufficiently conservative to minimize underestimating potential risk.

(C) RESPONSIBILITY TO FUND RISK ANALYSES AND UPDATES. The applicant of a proposed hazardous facility shall be responsible for funding risk estimates and updates triggered by changes in the hazardous facility that may affect its level of risk offsite. Ordinarily, the first update shall occur upon approval of the project in order to reflect the reduction of risk accomplished through approved mitigation of risk. The next update shall occur prior to start-up if evidence suggests that changes in design or operations during construction may increase or reduce risk offsite. Subsequent updates shall occur when changes in operations or design of the hazardous facility if evidence suggests that such changes may increase or reduce risk offsite. Additional updates shall be required as deemed necessary following the occurrence of accidents if the circumstances of the accident (or occurrence of repeated accidents) suggest additional risk.

The responsibility of funding risk analyses for projects that are proposed in proximity to existing hazardous facilities shall fall to the applicant of that new development. A risk analysis shall not be required if the hazardous facility has been permanently abandoned, unless hazardous materials continue to be stored or used onsite or contamination of soil or water requires such an analysis.

Objective 2

DEFINE UNACCEPTABLE RISK IN A MANNER THAT GUIDES CONSISTENT AND SOUND LAND-USE DECISIONS INVOLVING HAZARDOUS FACILITIES

POLICY HAZARDOUS FACILITY SAFETY 2-A, *UNACCEPTABLE RISK INVOLVING NEW DEVELOPMENT*

Proposed new development that meets either of the following two criteria shall represent an unacceptably high level of risk and constitute a *prima facie* standard for denial of the proposed development.

(1) All proposed development that registers mitigated risk in the red zone of the County's risk thresholds unless the proposed development is determined to be urban dependent as defined in this supplement, it avoids exposure of highly sensitive land uses to significant risk, and no other feasible location is available.

(2) All new development that registers mitigated risk in the amber zone of the County's risk thresholds if exposure of a highly sensitive land use would occur as result of project approval.

IMPLEMENTING ACTION: As stipulated in the County's Risk Thresholds, this policy shall apply to new hazardous facilities and development proposed in proximity to an existing hazardous facility, but does not apply to occupational risk (e.g., employees of new or existing hazardous facilities).

POLICY HAZARDOUS FACILITY SAFETY 2-B, *UNACCEPTABLE RISK INVOLVING MODIFICATIONS TO EXISTING DEVELOPMENT*

Proposed modifications to existing development that require a discretionary land-use permit and meet any of the following three criteria shall represent an unacceptably high level of risk and constitute a *prima facie* standard for denial.

(1) Modifications that increase risk and the resulting mitigated risk registers in the red zone of the County's risk thresholds, unless the proposed modification is required to comply with law, the modification does not increase significant risk to highly sensitive land uses, and no other feasible alternatives are achievable.

(2) Modifications that increase risk and the resulting mitigated risk registers in the red zone of the County's risk thresholds, unless the proposed modification is made to an urban dependent land use and highly sensitive land uses are not exposed to significant risk as a result of the modification.

(3) Modifications that increase risk and the resulting, mitigated risk registers in the amber zone of the County's risk thresholds if exposure of a highly sensitive land use would occur as result of project approval.

IMPLEMENTING ACTION: As stipulated in the County's Risk Thresholds, this policy shall apply to new hazardous facilities and development proposed in proximity to an existing hazardous facility, but does not apply to occupational risk (e.g., employees of new or existing hazardous facilities).

Objective 3

PREVENT DEVELOPMENT THAT EXPOSES THE PUBLIC TO UNACCEPTABLE LEVELS OF RISK AND OTHERWISE REQUIRE APPROPRIATE ACTION TO MINIMIZE PUBLIC EXPOSURE TO SIGNIFICANT RISK TO THE MAXIMUM EXTENT FEASIBLE

POLICY HAZARDOUS FACILITY SAFETY 3-A, *SITING*

New hazardous facilities shall be sited to prevent unacceptable risk to offsite population as defined in this chapter. New hazardous facilities should also be sited to avoid significant offsite risk to populated areas, as defined in this chapter. Siting considerations undertaken to optimize public safety shall also examine routes used for transporting acutely hazardous materials to or from a new hazardous facility.

IMPLEMENTING ACTION: This policy shall be implemented during the environmental review and permitting of a new hazardous facility. Similar siting alternatives shall be considered during the permitting of a substantial expansion to an existing hazardous facility if such expansion is found to present an unacceptable risk as defined in Policy 2-B of this chapter.

POLICY HAZARDOUS FACILITY SAFETY 3-B, *ENCROACHMENT*

The County shall not allow a development near existing hazardous facilities if the development would expose populated areas, as defined in this supplement, to unacceptable risk, as defined in Policies 2-A and 2-B of this chapter.

POLICY HAZARDOUS FACILITY SAFETY 3-C, *MITIGATION*

New hazardous facilities shall employ primary and secondary preventative measures to eliminate or reduce significant risk to offsite population.

IMPLEMENTING ACTION: Permit processing and compliance for new hazardous facilities shall examine the effectiveness of inherently safer designs, technology, and procedures to reduce significant levels of offsite risk and require those that show substantial reduction in significant risk where feasible. For example, the County shall require consideration of substituting less hazardous or non-hazardous materials where feasible. If significant societal risk to offsite population is unavoidable despite feasible primary prevention, then design shall include appropriate secondary control measures to provide a sufficient contingency for minimizing the occurrence or consequences of an accident.

Among other mitigation, permits for new hazardous facilities shall require implementation of an approved program for inspection and maintenance. This program may be accomplished through the CalARP program (Title 19, California Code of Regulations, Division 2, Chapter 4.5) and/or other mechanisms such as a Safety Inspection, Maintenance, and Quality Assurance Program (SIMQAP) and programs administered by the County's Petroleum Officer. Additionally, new major oil and gas projects shall require approved SIMQAPs in concert with CalARP requirements. Existing SIMQAPs shall remain operative. SIMQAPs or similar programs shall meet approval of County permitting agencies before the facility operator commences operations.

CHAPTER II: GAS PIPELINES

Gas pipelines that operate outside the confines of industrial facilities, public works, or consolidated oil and gas planning areas in Santa Barbara County are limited to the transportation of natural gas in either a raw or processed form. Both forms of natural gas qualify as hazardous materials by virtue of their flammable and explosive properties. Moreover, raw natural gas produced in and offshore Santa Barbara County often contains sufficient concentrations of hydrogen sulfide to be acutely toxic as well. Such gas is commonly referred to as sour gas.

In 1999, the Southern California Gas Company operated 137 miles of high-pressure transmission pipelines and 146.5 miles of high pressure supply pipelines (i.e., between 126 and 1,000 psig) in Santa Barbara County. These pipelines transport large volumes of natural gas to a network of low-pressured pipelines that distribute natural gas to customers. Approximately 40-45 additional miles of active, onshore natural gas pipelines supported development of onshore and offshore oil and gas reserves in 1999, gathering raw gas from producing areas and sending it to onshore processing facilities.[6] A smaller number of relatively short pipelines deliver gas from processing facilities to gas utility's transmission network. New gathering and transmission pipelines would be required if oil and gas reserves offshore the County's northwestern coast are developed.

Nationwide, operators of gas transmission pipelines reported 382 releases from 1986 through mid-1999, resulting in 39 fatalities, 189 injuries and over $238 million dollars of property damage.[7] External forces continue to represent the largest cause of failures for natural gas transmission pipelines, accounting for 151 reportable incidents from 1994 through 1998. External forces include third-party intrusions into the pipeline corridor, earth movements, and earthquakes, accounting for 49%, 9%, and 3% of all pipeline failures respectively.[8] Damage from external forces may produce an immediate release or a mere scratch on a coated-steel pipeline that leads to subsequent accelerated corrosion and failure at a later time.[9]

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[6] The number and length of natural gas gathering pipelines varies over time as new fields are brought into production and old fields or processing facilities are decommisioned. In the 1980s, increased offshore production added several miles of onshore gathering pipelines, giving Santa Barbara County nearly twice the national average pipeline mileage per square mile. Later, abandonment of the Battles Gas Plant in the 1990s significantly reduced the number of active onshore gathering and fuel gas pipelines by several miles.

[7] Office of Pipeline Safety, U.S. Department of Transportation. *Natural Gas Pipeline Operators, Incident Summary by Year.* See http://ops.dot.gov/ng97_a.htm. These statistics do not include releases from rural gathering pipelines not regulated by the Office of Pipeline Safety.

[8] Bercha International Inc. *Santa Barbara Policy Paper on Gas Pipeline Safety.* (Santa Barbara: Planning & Development Department, Energy Division, 1996.) Page 2.11. External interference is also a leading cause of pipeline failure in European gas pipelines; see European Gas Pipeline Incident Data Group. *Gas Pipeline Incidents.* (The Netherlands: 1988.)

[9] Muhlbauer, W. Kent. *Pipeline Risk Management Manual.* (Houston: Gulf Publishing Co., 1996.) Page 35.

Regulatory oversight of gas pipeline safety bridges all three levels of government. Pursuant to the Natural Gas Pipeline Safety Act of 1968,[10] the U.S. Department of Transportation establishes and enforces minimum safety standards for both intrastate and interstate gas pipelines through its Office of Pipeline Safety (OPS).[11] These minimum standards focus on several aspects of design, construction, operation, and maintenance, while the states and political subdivisions may enact law to prevent damage, restrict routing, define buffers, and address other land-use considerations. Among other things, OPS supports the states and their political subdivisions in restricting development immediately over or adjacent to high pressure and sour gas pipelines to reduce failure by external forces. Within California, the state's Public Utilities Commission (PUC) enforces and may supplement the federal regulations, but only for pipelines operated by public utilities.[12] For non-public utilities, OPS implements and enforces applicable federal regulations (Title 49, Code of Federal Regulations, Part 192) for gas pipelines in California that are subject to the Natural Gas Pipeline Safety Act. OPS's regulatory scope does not extend to gathering lines outside the limits of any incorporated or unincorporated city, town, or village, or outside the limits of any designated residential or commercial areas such as a subdivision, business or shopping center, or community development.[13]

Local government can enhance gas pipeline safety through the exercise of its authority to regulate land use, unless preempted by state or federal law.[14] Such authority, representing an extension of state police powers, extends responsibility to local government to protect the public health, safety, and welfare of its citizens. Through its land-use authority, local government can specify the types of development appropriate on properties adjacent to hazardous pipelines and the amount of buffer from hazardous pipelines that is necessary. Minimum setbacks are particularly useful in reducing the occurrence of pipeline damage by third-party intrusion.

Local government may also map and keep records on pipeline locations and characteristics that define risks to public safety and aid emergency response. It may also require conditions in construction permits to reduce risk of pipeline failure so long as state or federal law does not preempt any such requirements.

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[10] 49 U.S.C. 1671 *et.seq.*

[11] Title 49, Code of Federal Regulations, Section 192.1.

[12] General Order No. 112-E. also sets additional minimum requirements that it considers to be adequate for safety under conditions normally encountered in the gas industry and specifies that requirements for abnormal or unusual conditions are not specifically proscribed (Section 103.1). Compliance with the General Order is not intended to relieve a utility from any statutory requirements (Section 103.3). Additional requirements are largely focused on reporting safety-related conditions.

[13] Gathering lines generally include those pipelines upstream of gas processing or, in the absence of gas processing, upstream of commingling with other gas streams or transfer of custody.

[14] Transportation Research Board, National Research Council. *Pipelines and Public Safety.* (Washington, D.C.: Government Printing Office, 1988.) Page 40-41.

APPLICABILITY

The objectives and policies herein pertain to the following types of gas pipelines that are located wholly or partially in the unincorporated area of Santa Barbara County:

A. All natural gas gathering pipelines except:
(1) rural pipelines that serve onshore gas fields upstream of first compression to ≥ 50 psig;
(2) pipelines within the boundaries of gas producing or processing facilities; and
(3) pipelines not subject to discretionary land-use permits pursuant to Chapter 35 of the Santa Barbara County Code.

B. All natural gas transmission pipelines not operated by a public utility that are subject to discretionary land-use permits pursuant to Chapter 35 of the Santa Barbara County Code.

C. All high-pressure, natural-gas pipelines (>125 psig) operated by a public utility when expressly identified in a specific policy. The low-pressure, distribution pipelines (≤ 125 psig) operated at low pressure by public utilities to deliver natural gas from transmission pipelines to residences and commercial users are exempt from this chapter.

D. All new development or modifications to existing development that require a discretionary permit and, except for equipment directly associated with the operations of the gas pipeline, is proposed in proximity to those gas pipelines identified in A - C above if it results in involuntary public exposure to significant risk.

OBJECTIVES AND POLICIES

Objective 1

DEVELOP AND MAINTAIN FUNCTIONALLY RELEVANT AND ADMINISTRATIVELY MANAGEABLE INFORMATION ON GAS GATHERING AND TRANSMISSION PIPELINES

POLICY GAS PIPELINE SAFETY 1-A, *INVENTORY*

The County shall maintain a current inventory of gas pipelines, including public utility transmission pipelines, and shall require operators of gas pipelines to provide it with information deemed essential for such inventory.

IMPLEMENTING ACTION: Planning & Development shall maintain this inventory of pipelines, and shall condition permits for pipelines to submit other necessary data as often as required to inform land-use decisions. Information essential to risk management and land-use planning can include such characteristics as pipeline locational maps, diameter, and length, pipeline pressures (average operating, maximum operating, and maximum allowable), description of previous releases, boundaries of pipeline easements, and operating and maintenance practices. Planning & Development shall also evaluate the effectiveness of this inventory in its permitting processes and make necessary revisions, based on the merit of the data contained in the inventory.

POLICY GAS PIPELINE SAFETY 1-B, *RISK ESTIMATES*

To the extent practical, the County shall maintain accurate estimates of societal risk associated with gas pipelines to inform land-use decision-making of potential risk where substantial evidence indicates public exposure to significant risk may result.

IMPLEMENTING ACTIONS:

(A) RESPONSIBILITY OF CEQA LEAD OR RESPONSIBLE AGENCY. The County agency designated as the lead or responsible CEQA agency for proposed land-use projects shall implement this policy during the environmental review process. If initial screening reveals that a proposed development may result in a significant off-site risk to the public, then the agency shall conduct a quantitative risk analysis the extent of risk, pursuant to the County's *Environmental Thresholds and Guidelines Manual*. In cases where risk analysis has already been performed, the agency shall ensure that the analysis is updated and accurately reflects the specific risk associated with the proposed project. Risk analysis conducted for gas pipeline projects shall be updated upon project approval to accurately reflect the risk adjusted by approved mitigation.

(B) MAINTENANCE OF THRESHOLDS OF SIGNIFICANCE AND GUIDELINES. To assist the environmental review process, the County shall maintain environmental thresholds for determining the significance of risk to public safety regarding gas pipelines addressed in this chapter. These thresholds should consider both risk of fatality and serious injury to the public, and should specify any exceptions to the application of this policy. Planning and Development should also maintain guidelines to ensure the consistency and accuracy of risk analyses performed in satisfaction of this policy. All estimates of risk shall be as accurate as possible, reflecting any reductions in risk due to mitigation, while still being sufficiently conservative to minimize underestimating potential risk.

(C) RESPONSIBILITY TO FUND RISK ANALYSES AND UPDATES. The applicant of a proposed gas pipeline shall be responsible for funding risk estimates and updates triggered by changes in the hazardous facility that may affect it level of risk offsite. Ordinarily, the first update shall occur upon approval of the project in order to reflect the reduction of risk accomplished through approved mitigation of risk. The next update shall occur prior to start-up if evidence suggests that changes during construction in the design or operations of the pipeline may increase reduce risk offsite. Subsequent updates shall occur when changes in operations or design of the hazardous facility may affect an increase or reduction in risk offsite.

The responsibility of funding risk analyses for projects that are proposed in proximity to existing gas pipelines shall fall to the applicant of the new development. A risk analysis shall not be required if the gas pipeline is permanently abandoned.

Objective 2

DEFINE UNACCEPTABLE RISK IN A MANNER THAT GUIDES CONSISTENT AND SOUND LAND-USE DECISIONS INVOLVING GAS PIPELINES

POLICY GAS PIPELINE SAFETY 2-A, UNACCEPTABLE RISK INVOLVING NEW DEVELOPMENT

Proposed new development that meets either of the following two criteria shall constitute an unacceptably high level of risk and constitute a *prima facie* standard for denial of the proposed development.

1. All proposed development that registers mitigated risk in the red zone of the County's risk thresholds unless the proposed development is determined to be urban dependent as defined in this supplement, it avoids exposure of highly sensitive land uses to significant risk, and no other feasible location is available.
2. All new development that registers mitigated risk in the amber zone of the County's risk thresholds if exposure of a highly sensitive land use would occur as result of project approval.

IMPLEMENTING ACTION: As stipulated in the County's Risk Thresholds, this policy shall apply to new gas pipelines and development proposed in proximity to an existing gas pipeline, but does not apply to occupational risk.

POLICY GAS PIPELINE SAFETY 2-B, *UNACCEPTABLE RISK INVOLVING MODIFICATIONS TO EXISTING DEVELOPMENT*

Proposed modifications to existing development that require a discretionary land-use permit and meet any of the following three criteria shall represent an unacceptably high level of risk and constitute a *prima facie* standard for denial.

(1) Modifications that increase risk and the resulting mitigated risk registers in the red zone of the County's risk thresholds, unless the proposed modification is required to comply with law, the modification does not increase significant risk to highly sensitive land uses, and no other feasible alternatives are achievable.
(2) Modifications that increase risk and the resulting mitigated risk registers in the red zone of the County's risk thresholds, unless the proposed modification is made to an urban dependent land use and highly sensitive land uses are not exposed to significant risk as a result of the modification.
(3) Modifications that increase risk and the resulting, mitigated risk registers in the amber zone of the County's risk thresholds if exposure of a highly sensitive land use would occur as result of project approval.

IMPLEMENTING ACTION: As stipulated in the County's Risk Thresholds, this policy shall apply to new gas pipelines and development proposed in proximity to an existing gas pipeline, but does not apply to occupational risk.

Objective 3

ROUTE GAS PIPELINES AWAY FROM PRESENT AND PROJECTED POPULATED AREAS TO THE MAXIMUM EXTENT FEASIBLE AND PROTECT THESE ROUTES AGAINST ENCROACHMENT

POLICY GAS PIPELINE SAFETY 3-A, *ROUTING*

New pipelines, or existing pipeline relocations, shall be routed to avoid significant risk to populated areas where feasible. New pipelines, or existing pipeline relocations, shall also be routed to prevent significant risk to highly sensitive land uses as defined in this chapter, unless the risk can be rendered insignificant via other measures.

IMPLEMENTING ACTION: Permit processing for new pipelines or relocation of existing pipelines shall require optimal pipeline routes, considering public safety and other environmental factors, to avoid populated areas where feasible and to prevent exposure of highly sensitive land uses to significant levels of risk. The determination of populated areas shall consider both present and reasonably anticipated future development according to applicable land-use plans, subdivision maps,

zoning, and urban spheres of influence. Significant risk shall be based on the extent of a vapor cloud's lower flammability limit or dangerous dosages of hydrogen sulfide (identified through air dispersion models and probit equations and based on Emergency Response Planning Guidelines 2 and 3, adjusted to reflect the anticipated size of the vapor cloud).

POLICY GAS PIPELINE SAFETY 3-B, *ENCROACHMENT*

The County shall control development near gas pipelines by not allowing highly sensitive land uses if the existing pipeline would expose the new use to significant risk. For other types of proposed development near existing pipelines, the County may require mitigation if they are located within a presumptive hazard zone of the pipeline. A person who seeks to develop within a presumptive hazardous zone may rebut the presumed boundaries of this zone through site-specific analysis that complies with County thresholds.

IMPLEMENTING ACTION: Controls shall be exercised on development highly sensitive land uses within the hazardous zone of the pipeline, as determined by the extent of a vapor cloud's lower flammability limit or dangerous dosage levels of hydrogen sulfide (identified through air dispersion models and probit equations based on Emergency Response Planning Guidelines 2 and 3 and adjusted to reflect the anticipated size of the vapor cloud). For other types of development proposed near existing pipelines, mitigation may include optimal siting within parcel(s) in a manner that minimizes the impact, reasonable design measures to effect adequate sheltering in-place, reasonable design measures to control ignition sources, controls to ensure that grading and construction does not reduce the burial depth of an existing pipeline below minimum requirements, and notification to all future owners and renters of the approximate location and potential hazards of gas pipelines. Presumptive hazardous zones may be based on either societal or individual risk, depending upon availability of such measurements. Rebuttal of these zones should be processed prior to issuance of permit.

Objective 4

MITIGATE RISK THROUGH TECHNIQUES IN DESIGN, CONSTRUCTION, OPERATION MAINTENANCE, AND UPGRADE OF PIPELINE THAT ARE COMMENSURATE WITH THE LEVEL AND ANTICIPATED DURATION OF THE RISK

POLICY GAS PIPELINE SAFETY 4-A, *SAFE DESIGN*

In a manner consistent with applicable law, the County shall condition discretionary land-use approvals of new gas pipelines to require safe design, including technology to prevent failure and reduce the consequences of failure. Examples include proven controls for preventing internal and external corrosion and fractures; proven leak detection; safe venting systems; appropriate capabilities for shutting the pipeline down and isolating the pipeline leak; and effective, public warning systems.

IMPLEMENTING ACTION: Requirements shall be commensurate with the level and anticipated duration of the risk.

POLICY GAS PIPELINE SAFETY 4-B, *SAFE OPERATIONS*

The County shall condition discretionary land-use approvals of new or substantially upgraded gas pipelines to require a Safety Inspection, Maintenance, Quality Assurance Program or similar mechanism to ensure adequate inspection (including smart pigs), maintenance, and other operating procedures. Any such mechanism shall meet the approval of County permitting agencies prior to commencement of pipeline operations and provide for systematic updates also subject to County approval.

IMPLEMENTING ACTION: Requirements shall be commensurate with the level and anticipated duration of the risk.

POLICY GAS PIPELINE SAFETY 4-C, *REDUCED HAZARD ZONES*

For pipelines associated with new production of natural gas, the County shall require feasible operating methods for reducing the hazard along the pipeline corridor that are commensurate with the level of risk.

IMPLEMENTING ACTION: Potential considerations minimally include one or more of the following methods: sweetening of gas offshore; removal of condensate at the production site to achieve a single-phased flow in the gas pipeline; reduction of maximum allowable operating pressure, thicker-walled pipelines, and systematic surveillance of the right-of-way. Measures shall be commensurate with the level of significant risk posed by the pipeline, and may be adjusted as that level of significance changes over time.

Objective 5

MINIMIZE PIPELINE FAILURES CAUSED BY EXTERNAL FORCE

POLICY GAS PIPELINE SAFETY 5-A, *CONSULTATION WITH PIPELINE OPERATORS*

The County shall consult with applicable pipeline operators, including public utilities, during the preparation of land-use plans and during the early stages of reviewing discretionary permit applications on all properties that contain, or are adjacent to, gas pipelines, including public utility high pressure pipelines.

IMPLEMENTING ACTION: The Subdivision/Development Review Committee shall consult with pipeline operators shortly after receiving an application for subdivision or development. The Planning & Development Department shall consult during preparation of community plans and other applicable land-use planning.

POLICY GAS PIPELINE SAFETY 5-B, *SETBACKS*

The County shall require a minimum setback of 15-to-25 feet from the centerline of gas pipelines, including public utility high pressure pipelines, for all buildings and structures to prevent damage to the pipeline by external mechanical forces and to permit operators timely and unhindered access for repair, maintenance, survey, and emergency response. Exceptions to this policy shall include: (a) corridor-type locations such as roads and highways, and corridor-type uses such as other pipelines, bicycle and pedestrian paths, utilities, and appurtenances of corridors located in public rights-of-way; (b) land subdivided before January 1, 2000, where a landowner or pipeline operator can demonstrate to the County that the minimum setback poses an undue hardship, and a setback of lesser distance (agreeable to the pipeline operator, land owner, and the County) can meet the intent

of this policy; (c) pipeline endpoints and interconnecting pipelines, (d) replacement of a public utility pipeline with a functionally equivalent pipeline, and (e) where state or federal law preempts application of this policy.

IMPLEMENTING ACTION: The Planning & Development Department shall consider the 25 feet as the basic setback during preparation of community plans and other applicable land-use planning. The Subdivision/Development Review Committee shall ensure that proposed subdivisions or development take the prescribed 25-foot setback into consideration. If the County finds the 25-foot setback poses a hardship to proposed development, considering other environmental and zoning constraints, then it shall determine a lesser setback no less than 15 feet (except as provided in prescribed exceptions of the policy) that accomplishes the intent of this policy while providing some remedy to the hardship posed by the 25-foot setback.

POLICY GAS PIPELINE SAFETY 5-C, *BURIAL DEPTH*

Unless infeasible, new subsurface pipelines, or relocation of existing subsurface pipeline, shall be buried at an appropriate depth, taking into consideration affects of erosion, scouring, and other forms of natural or human-caused earth movement. A minimum burial depth shall be maintained for the entire operating life of the pipelines.

IMPLEMENTING ACTION: Any calculation of initial burial depths should take into account depth reduction via erosion and other forms of earth movement (including grading and construction) unless other means of maintaining a safe minimum burial depth can be incorporated throughout the operating life of a pipeline. Pipeline depths should be assessed every five years, or at a more frequent interval when geologic characteristics, flooding, and other circumstances indicate a prudent need for special monitoring. This policy does not apply to pipelines decommissioned for a period of one year or longer; however, this limitation shall not supersede other policies or regulations that address requirements for maintaining burial depths of decommissioned pipelines. This policy shall apply to new and existing pipelines where burial depths are specified. It also applies to existing, buried pipelines where depths are not prescribed, but maintenance of a minimum depth is warranted.

POLICY GAS PIPELINE SAFETY 5-D, *MARKING PIPELINE PRESENCE*

New pipelines, or relocation of existing pipelines, shall include measures to clearly warn outside parties about the presence of a gas pipeline, including proper marking of the right-of-way with signage and use of brightly colored warning tape approximately one foot above buried pipelines where feasible.