

# Statutory Constraints

## Provisions Enacted Prior to 1969 Promoting Full Development and Maximized Recovery

- PRC §§6828, 6829(b), 6829(c): Prevention of Waste – offsetting drainage and diligence in producing the resource in a safe manner
- PRC §6830: Maximize recovery – prevent waste and promote maximum economic recovery and conservation of reservoir energy
- PRC §6830.1: Legislative findings – produce the optimum quantities of oil and gas and leave a minimum of unrecovered oil and gas

# Statutory Constraints

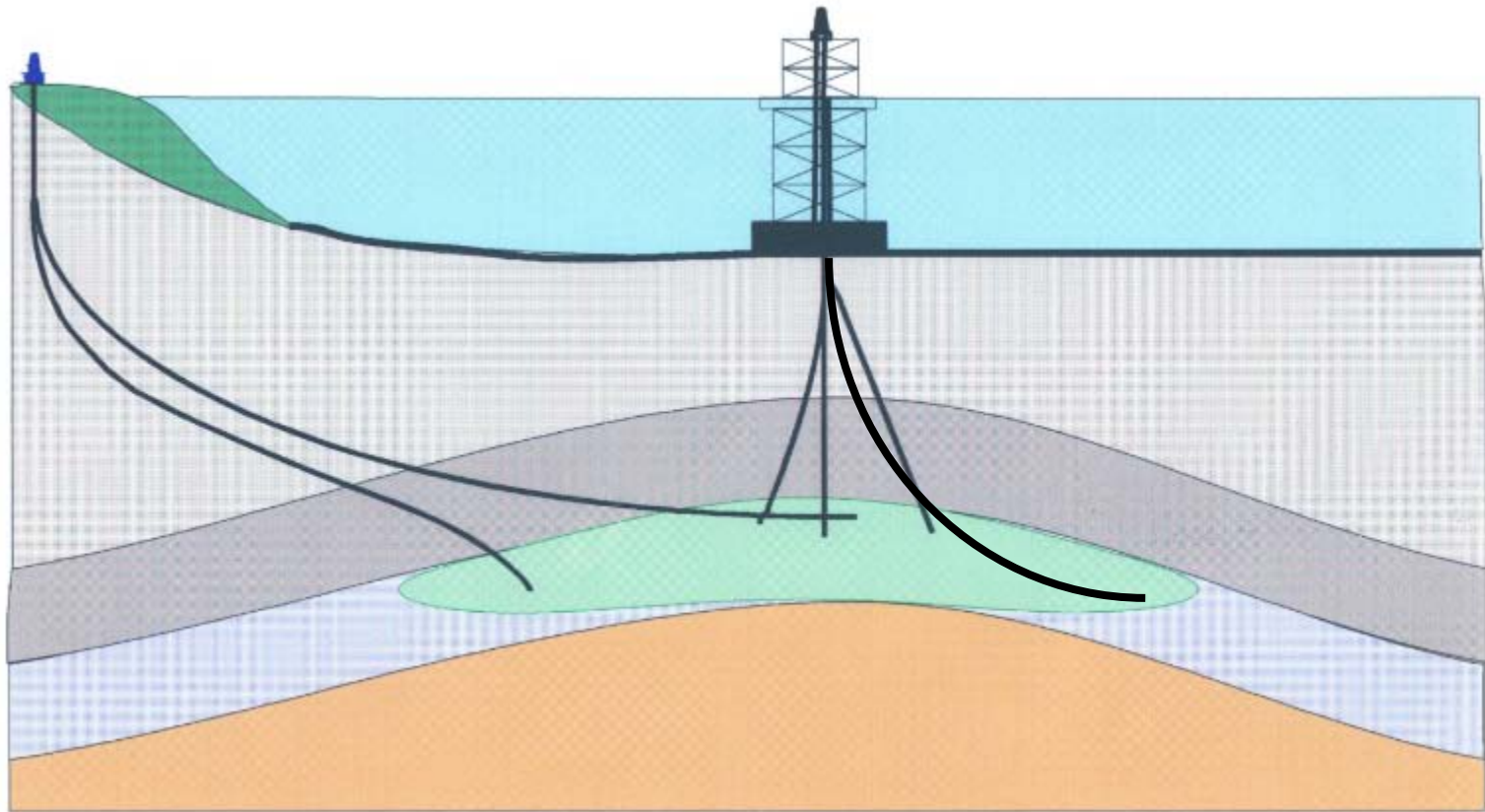
## Provisions After 1969 Imposing Environmental and Land Use Constraints

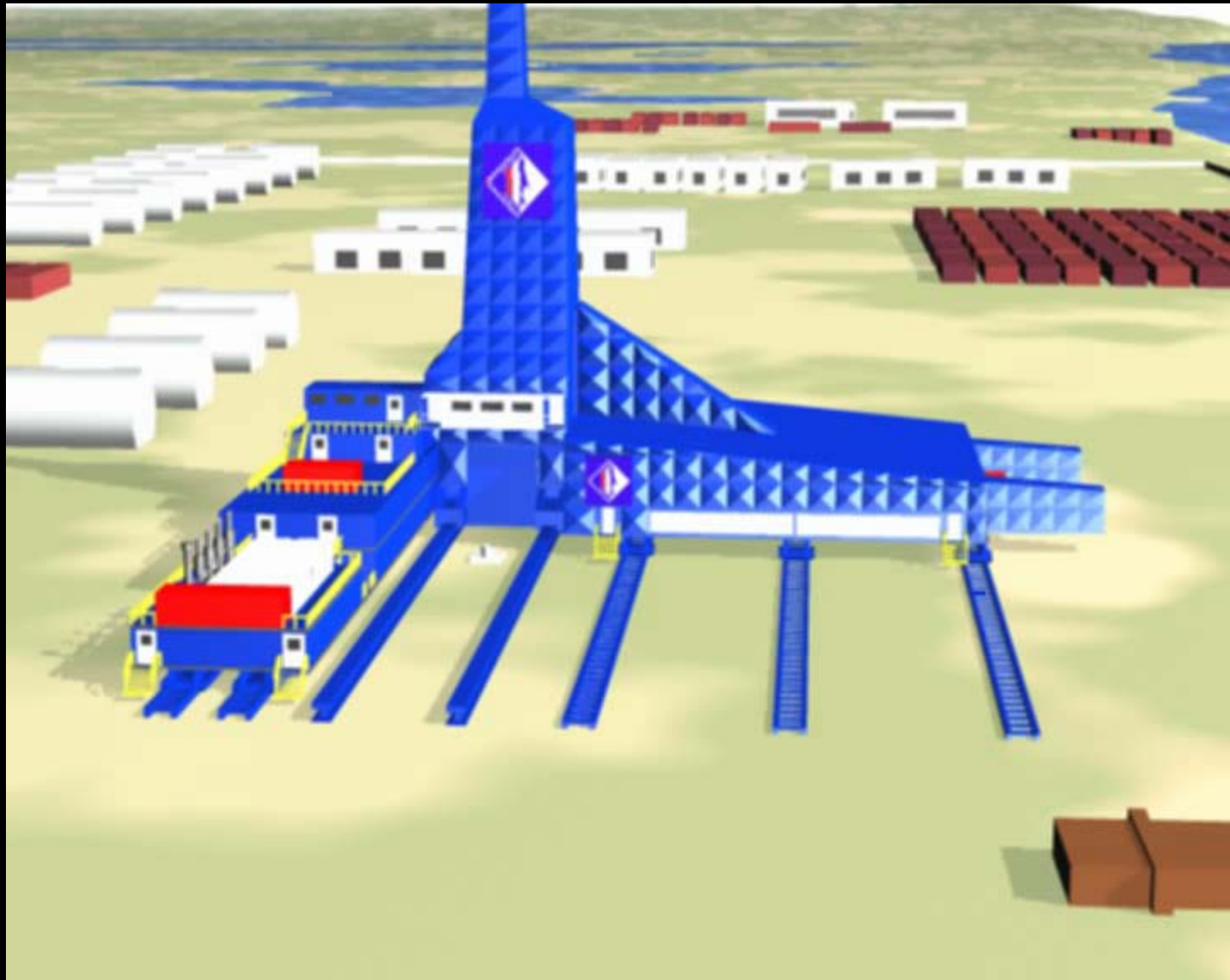
- California Environmental Quality Act (CEQA) – PRC §§21000 *et seq.*
- California Coastal Act – PRC §§30000 *et seq.*
- California Coastal Sanctuary Act – PRC §§6240 *et seq.*
  - **PRC §6241:** Production of offshore oil & gas in certain areas of state waters poses an unacceptably high risk of damage and disruption of the state's marine environment.
  - **PRC §6242:** California Coastal Sanctuary is established covering all State offshore lands not under lease in 1994 or under leases that are later terminated.
  - **PRC §6243:** New oil & gas leasing is prohibited in the Sanctuary unless strict conditions are met and the Legislature approves exception.
  - **PRC §6244:** New leases are permitted if oil or gas deposits are being drained by wells upon adjacent federal lands and lease is in the best interests of the State
  - **PRC §6872.5:** Adjustment of boundaries of existing leases are permitted to encompass all of a field to permit more efficient resource recovery providing no new platforms are required.

# Current State of Technology for Extended Reach Drilling

Steve Curran, CSLC  
Petroleum Drilling Engineer

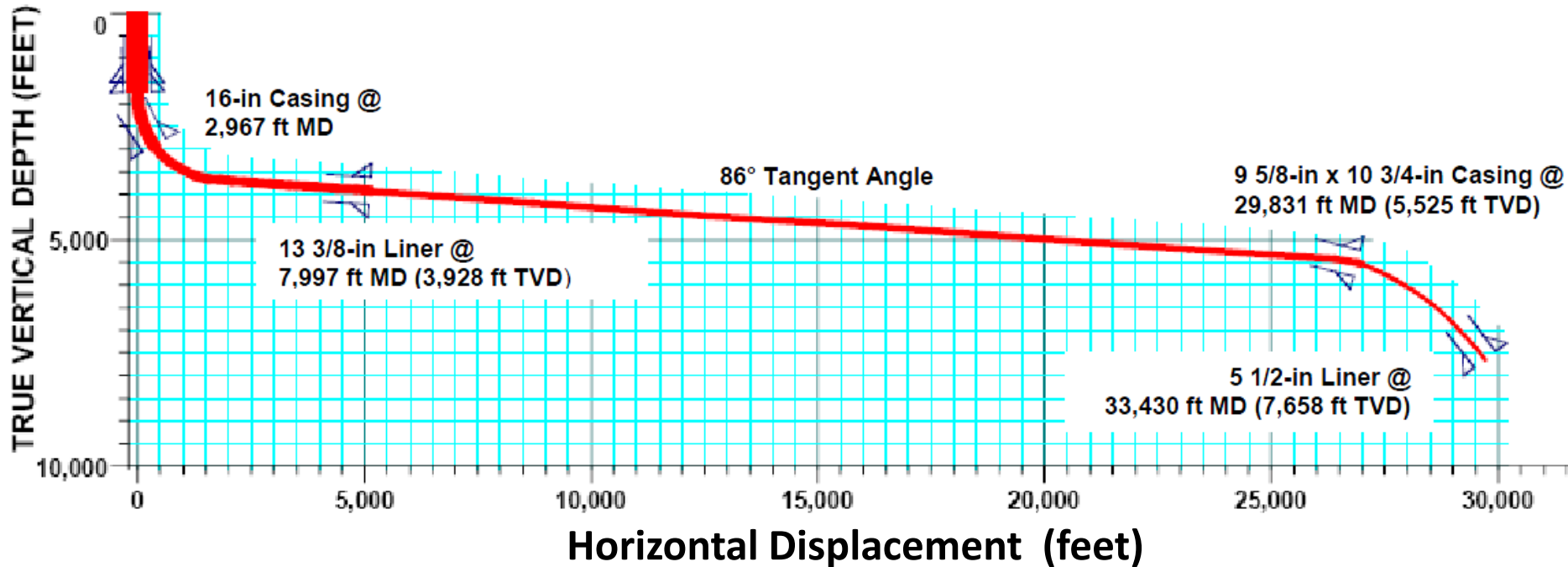
# Extended Reach Drilling (ERD)







Since 1999, the company has drilled 15 ERD wells at Sacate, using Platform Heritage at the adjacent Pescado Field and is the longest ERD well in North America.



# Sakhalin -- World Record Extended Reach Well



ExxonMobil Sakhalin-1 on Russia's east coast was drilled from shore at a distance of nearly 7 miles.

# Offshore and Onshore Operational Considerations

Pete Johnson

Chief Operations, CSLC



# OFFSHORE OPERATIONS

- Limited Space
  - Drilling rig & equipment
  - Processing facilities
- Increased costs
  - Marine transportation
  - Platform maintenance
- Increased Operational Risk
  - Ocean oil spill
  - Worker safety
  - Equipment reliability
- Platform Capacity
  - Larger, heavier drilling rig & equipment



# ONSHORE BASED OPERATIONS

- Adequate space & structural flexibility
- Reduced transportation costs
- Urban sites
  - Visual cover
  - Sound attenuation
  - Operating hour restrictions
  - Sour gas (higher public risk)



# EXTENDED REACH DRILLING

- Platform capacity
  - Larger, heavier drilling rig & equipment
    - Mast, draw works, mud pumps, mud pits
    - Increased weight, increased space requirements
- Increased well cost
  - More expensive to drill & equip
  - More expensive to produce
    - More energy to lift fluids
    - Downhole maintenance more difficult

# SAFETY RISKS

RISK	ONSHORE	OFFSHORE
Public Safety	<p><i>fire/explosion</i></p> <p><i>toxic gases</i></p>	<i>Little or no risk</i>
Worker Safety	<p><i>fire/explosion</i></p> <p><i>toxic gases</i></p> <p><i>industrial environment risks</i></p>	<p><i>Transfers to platform</i></p> <p><i>Limited crew (response)</i></p> <p><i>Limited space</i></p> <p><i>Storm surge / tsunami</i></p>

# Environmental Factors Relating to Offshore Oil Development in California

Eric Gillies, CSLC

Staff Environmental Scientist

# Oil and Gas Offshore Infrastructure

## Santa Barbara Channel

- marine resources/habitats
- marine mammals
- coastal biological resources
- offshore biological resources
- commercial/recreational fishing
- offshore water quality
- recreation
- visual
- lighting
- oil spill risk
- air quality/GHG emissions

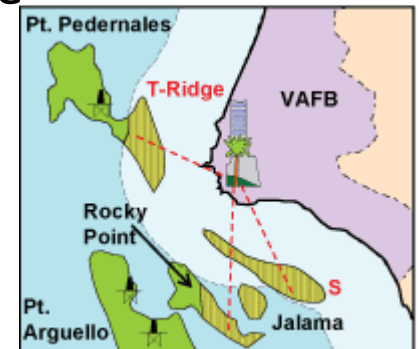
# Generalized Impact Summary

- **OFFSHORE IMPACTS** – Risk of Oil Spill, Marine Resources, Marine Mammals, Coastal Biological Resources, Commercial & Recreational Fishing, Recreation.
- **ONSHORE IMPACTS** – Onshore Biological Resources & Water Quality, Land Use, Cultural Resources, Recreation, Noise.
- **VARIES BY PROJECT** – Risk and Public Safety, Visual/Aesthetics.
- Air Quality Impacts and GHG Emissions can be substantial regardless of location.

# Construction Impacts: Offshore vs. Onshore

## Onshore Construction Impacts (PXP example)

- visual
- **terrestrial biology** (threatened and endangered species)
- **habitat disturbance (e.g., wetlands, coastal scrub)**
- water quality
- **land use**
- recreation
- **cultural resources**
- spill risks into local waterways, but less than offshore
- **noise**
- **transportation**
- **risk to public safety**
- air quality/GHG emissions





# Construction Impacts: Offshore vs. Onshore

## Offshore Construction Impacts (Montalvo Wells example)

- visual (new structure in the ocean difficult to mitigate)
- marine biology/water quality
- marine mammals
- marine habitat disturbance (e.g., kelp)
- commercial/recreational fishing
- recreation
- oil spill risk in marine/ocean environment
- air quality/GHG emissions (increased drilling and lifting)
- **lighting (new platform)**
- **seafloor disturbance (new platform and pipelines)**
- **underwater noise (due to construction)**



# Regional Factors

## Remote vs. Existing Oil and Gas Infrastructure Regions

### North and Central Coast (Offshore Platform & Pipelines)

- visual (new structure in the ocean difficult to mitigate)
- marine biology/water quality
- marine mammals
- marine habitat disturbance (e.g., kelp)
- commercial/recreational fishing
- recreation
- lighting
- seafloor disturbance (new platform and pipelines)
- oil spill risk in marine/ocean environment
- air quality/GHG emissions

# Regional Factors

## Remote vs. Existing Oil and Gas Infrastructure Regions

### North and Central Coast (Offshore Platform Supporting Processing Facilities)

- Visual (new onshore facilities)
- Terrestrial biology (threatened and endangered species)
- habitat disturbance (e.g., wetlands, coastal habitats)
- water quality
- land use
- recreation
- cultural resources
- spill risks into local waterways, but less than offshore
- noise
- transportation
- risk to public safety (gas processing)(less in rural areas; more near communities)
- air quality/GHG emissions

# Regional Factors

## Remote vs. Existing Oil and Gas Infrastructure Regions

### North and Central Coast (Onshore Drilling Facility)

- visual (new onshore facilities)
- terrestrial/coastal biology (threatened and endangered species)
- habitat disturbance (e.g., wetlands, coastal habitats)
- water quality
- land use
- recreation
- cultural resources
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# Operational Impacts: Offshore vs. Onshore

	<b>Torch/Platform Irene Pipeline</b>	<b>PRC 421 Pipeline</b>
Year	1997	1994
Barrels of oil spilled	163	170
Spill type	Offshore pipeline leak (Platform Irene to shore)	Onshore pipeline leak
Location	Offshore Vandenberg (Santa Barbara County)	Near Coastal Bluff in Goleta (Santa Barbara County)
Spill extent	17 miles of coastline	< 1 acre on golf course green
Impacted resources	<ul style="list-style-type: none"><li>• marine biology (seabirds, sandy and gravel beach habitats, rocky intertidal shoreline habitats)</li><li>• marine water quality (crude oil in ocean)</li><li>• recreation (beaches)</li></ul>	<ul style="list-style-type: none"><li>• recreation (golf course)</li></ul>

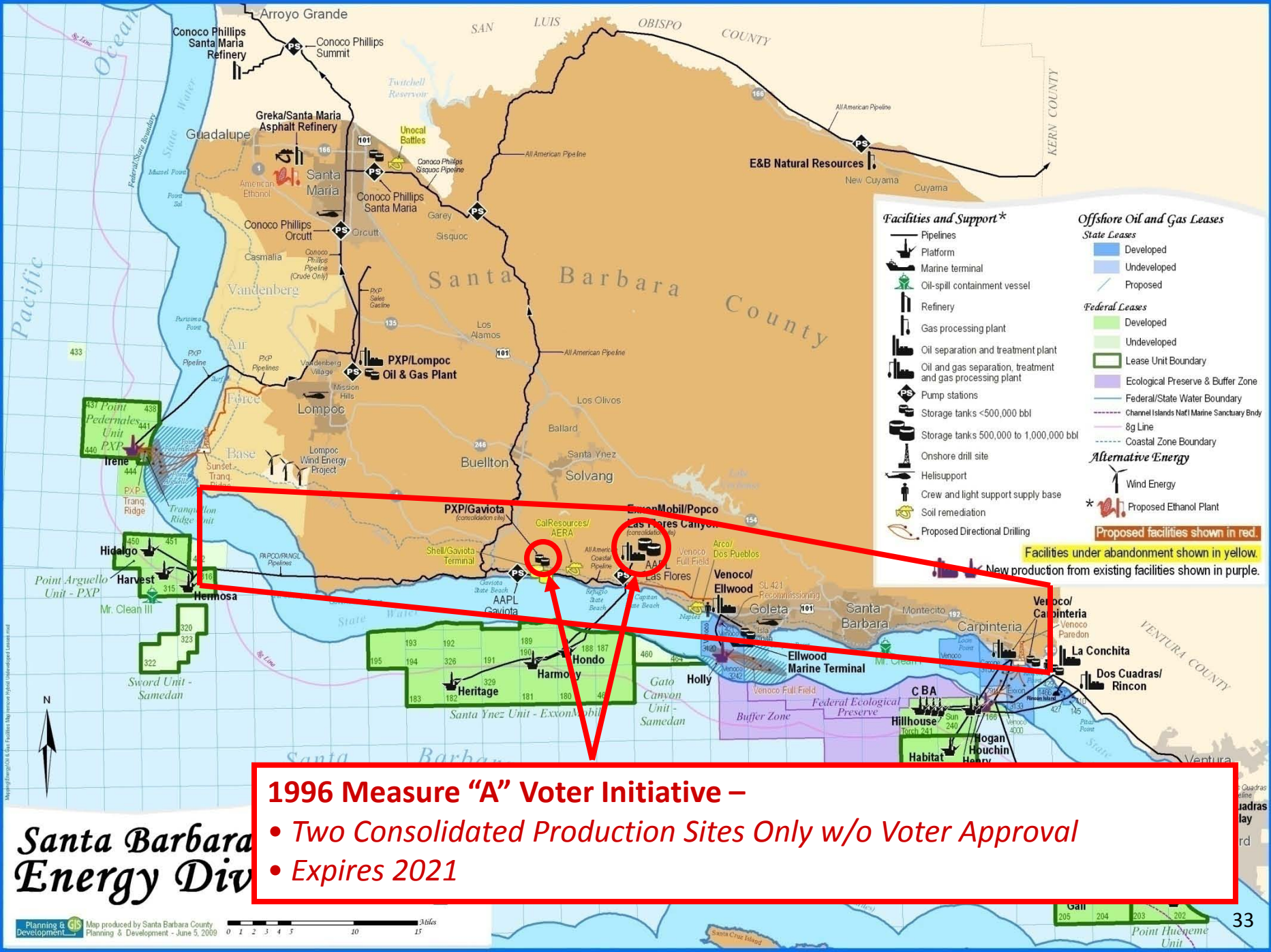
# Operational Impacts: Offshore vs. Onshore

## General Conclusions:

- Offshore oil development has more environmental disadvantages than drilling from onshore with regard to oil spills.
- Spills from an onshore facility and associated onshore pipelines can be more easily contained compared the fluid environment of the ocean currents offshore where containment is much more difficult.
- Many impacts are specific to location of the oil development (offshore vs. onshore)
- Some impacts are dependent on location but also the specifics of the project.
- Air quality impacts and GHG emissions can be substantial regardless of location.

# Access – Onshore Constraints

Doug Anthony, Deputy Director  
Planning & Development Dept., Energy Division  
Santa Barbara County



**Facilities and Support\***

- Pipelines
- Platform
- Marine terminal
- Oil-spill containment vessel
- Refinery
- Gas processing plant
- Oil separation and treatment plant
- Oil and gas separation, treatment and gas processing plant
- Pump stations
- Storage tanks <500,000 bbl
- Storage tanks 500,000 to 1,000,000 bbl
- Onshore drill site
- Helisupport
- Crew and light support supply base
- Soil remediation
- Proposed Directional Drilling

**Offshore Oil and Gas Leases**

**State Leases**

- Developed
- Undeveloped
- Proposed

**Federal Leases**

- Developed
- Undeveloped
- Lease Unit Boundary
- Ecological Preserve & Buffer Zone
- Federal/State Water Boundary
- Channel Islands Nat'l Marine Sanctuary Bndy
- 8g Line
- Coastal Zone Boundary

**Alternative Energy**

- Wind Energy

\* Proposed Ethanol Plant

Proposed facilities shown in red.

Facilities under abandonment shown in yellow.

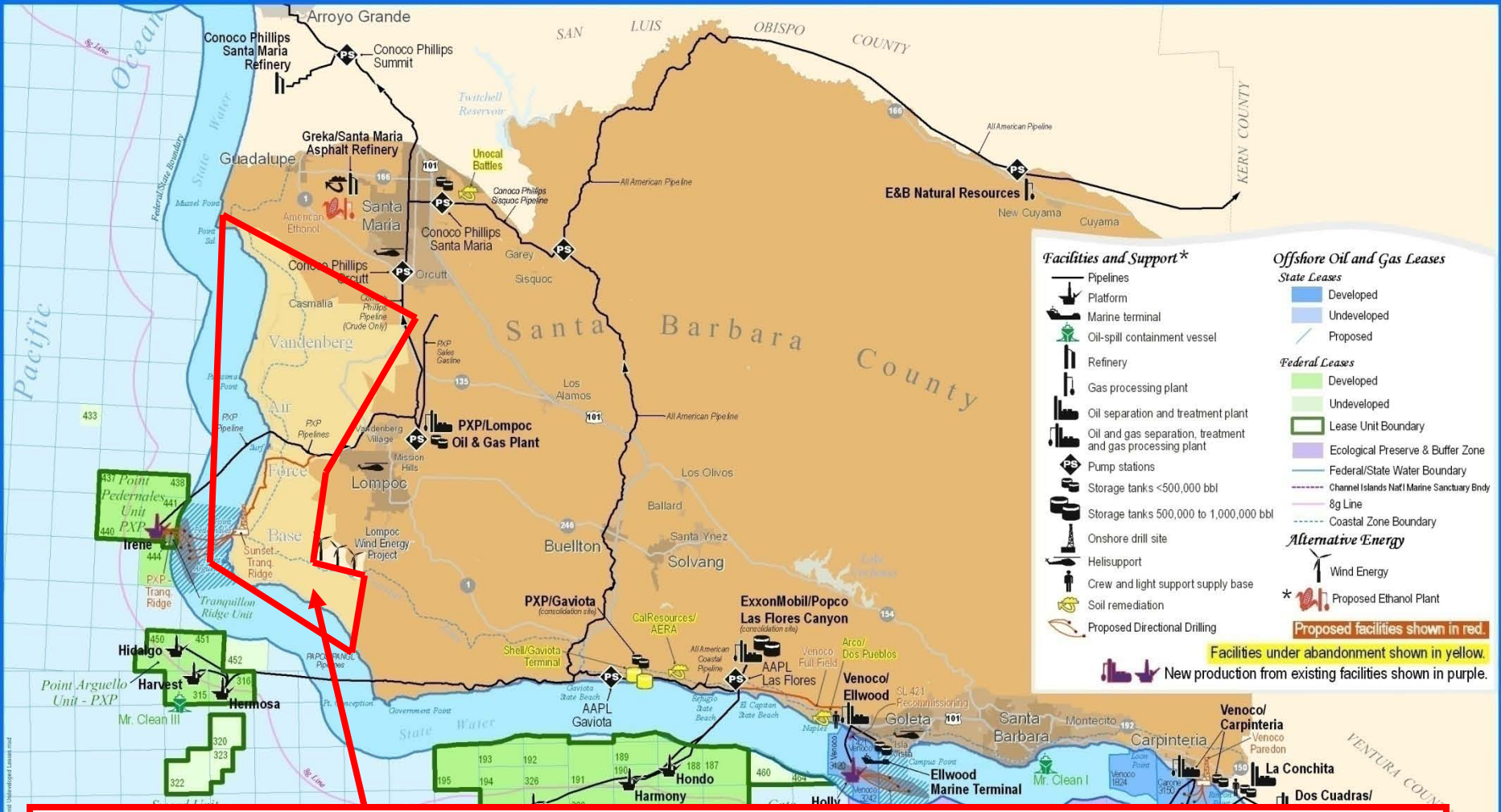
New production from existing facilities shown in purple.

**1996 Measure "A" Voter Initiative –**

- Two Consolidated Production Sites Only w/o Voter Approval
- Expires 2021

**Santa Barbara Energy Div**

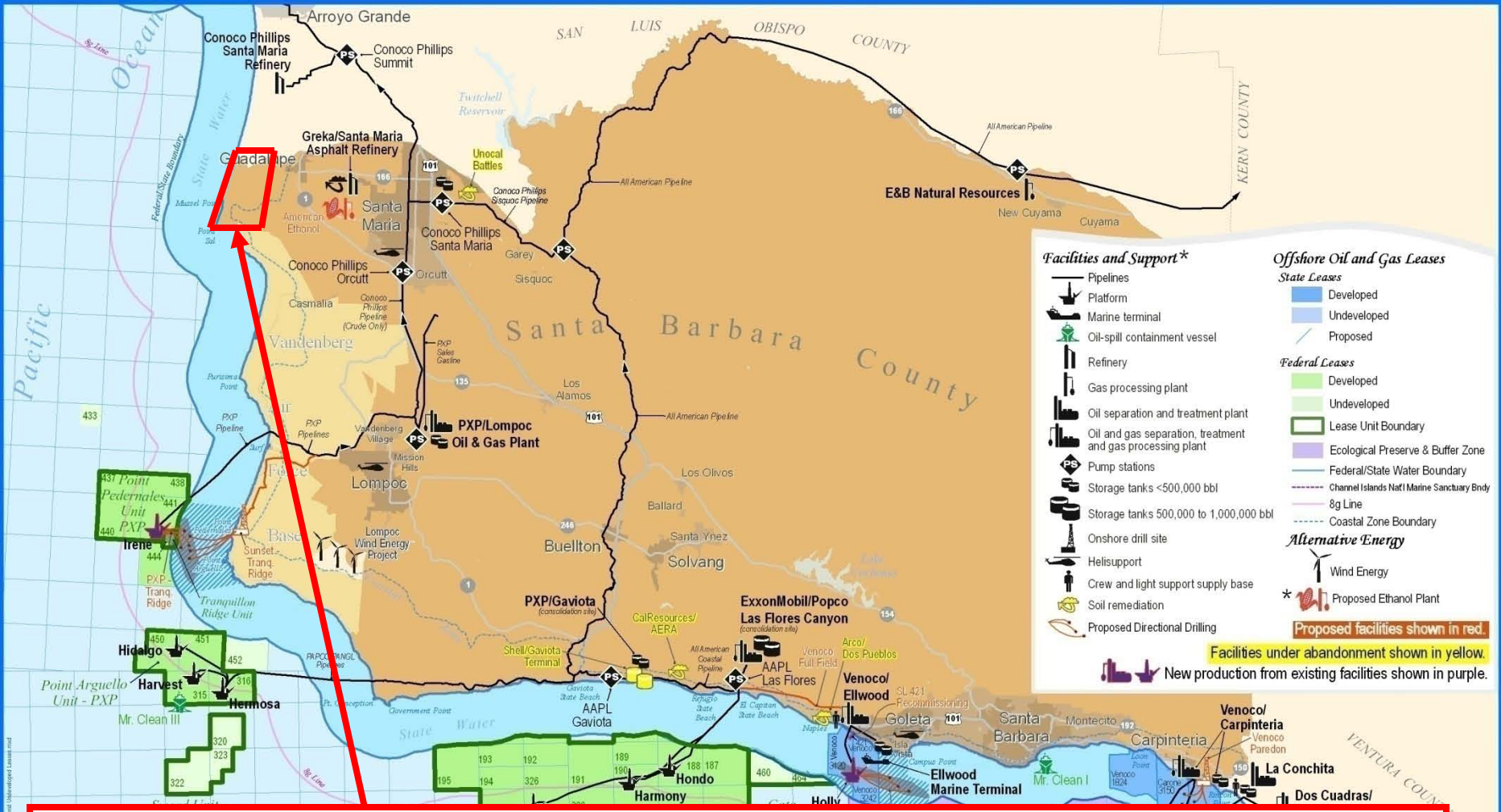




**Vandenberg Air Force Base –**

- As of 8-8-08, VAFB unwilling to commence NEPA process
- VAFB willing to conduct an Enhance Use Lease process
- If a suitable site(s) is identified, AF would initiate competitive bidding process

# Energy Division Map



**Point Sal Area –**

- No OCS leases that could drain State resources
- No existing oil/gas leases in area

# Santa Barbara County Energy Division Map



# Primary Siting/Design Considerations

- Human Safety - populated vs. remote
- Biology – Construction & Operations
- Archaeology & Cultural Resources
- Visual & Noise
- Conflict with Other Uses
- Permittable Zones
  - Conditionally in rural agriculture zone, or
  - Coastal-Related Industry