

# **CALIFORNIA OFFSHORE OIL AND GAS DECOMMISSIONING OUTLOOK AND CHALLENGES**

**by**

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BOEM Retired**

# **ACKNOWLEDGEMENTS**

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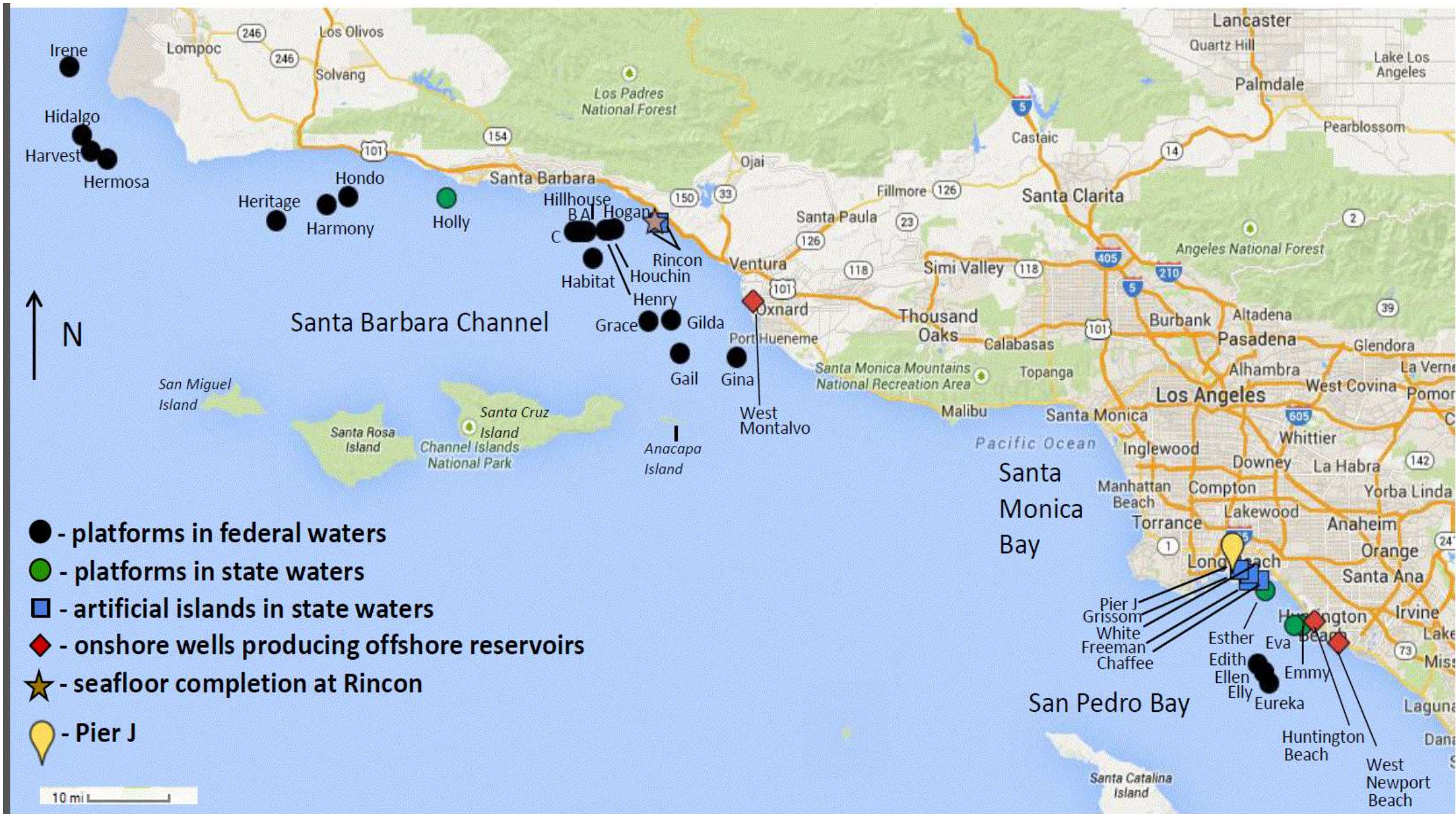
**The Challenges Facing the Industry in Offshore Facility  
Decommissioning on the California Coast**

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# TOPICS COVERED

1. CA offshore oil and gas facilities
2. Decommissioning outlook
3. Challenges facing industry
4. Decommissioning costs







# FEDERAL OCS PLATFORMS

- 23 OCS platforms (all fixed steel jacket structures)
- Age Range                      28 – 50 years
- Water depth                    95 – 1,198 feet
- Removal Weight              1,380 – 86,513 tons
- Operating Status
  - 14 producing
  - 9 shut-in
  - 5 in early stages of decommissioning

**FEDERAL OCS PLATFORMS LOCATED  
OFFSHORE CALIFORNIA**

<b>Platform</b>	<b>Year Installed and Age (years)</b>		<b>Operating Status Sept. 2018</b>	<b>Water Depth (feet)</b>	<b>Total Weight (s. tons)</b>	<b>Wells</b>	<b>OCS Operator</b>
<b>San Pedro Bay – Los Angeles and Orange County</b>							
Eureka	1984	33	Producing	700	33,377	50	BOC
Elly <sup>2</sup>	1980	37	Active	255	9,400	0	BOC
Ellen	1980	37	Producing	265	11,665	63	BOC
Edith	1983	34	Producing	161	8,556	18	DCOR
<b>Eastern Santa Barbara Channel – Ventura and Santa Barbara County</b>							
Hogan	1967	50	Producing	154	5,098	39	POO
Houchin	1968	49	Producing	163	5,615	35	POO
A	1968	49	Producing	188	4,896	52	DCOR
B	1968	49	Producing	190	4,959	57	DCOR
C	1977	33	Producing	192	5,718	38	DCOR
Henry	1979	38	Producing	173	4,006	23	DCOR
Hillhouse	1969	48	Producing	190	5,834	47	DCOR
Gina	1980	37	Producing	95	1,380	12	DCOR
Gilda	1981	36	Producing	205	11,293	63	DCOR
Habitat <sup>3</sup>	1981	36	Shut-in	290	9,611	20	DCOR
Gail	1987	30	Shut-in	739	37,057	27	BWEG
Grace	1979	38	Shut-in	318	13,074	28	BWEG
<b>Western Santa Barbara Channel – Santa Barbara County</b>							
Hondo <sup>3</sup>	1976	41	Shut-in	842	29,478	28	EMC
Harmony <sup>3</sup>	1989	28	Shut-in	1,198	86,513	34	EMC
Heritage <sup>3</sup>	1989	28	Shut-in	1,075	69,192	48	EMC
<b>Santa Maria Basin – Santa Barbara County</b>							
Harvest <sup>3</sup>	1985	32	Shut-in	675	35,150	19	FMCOG
Hermosa <sup>3</sup>	1985	32	Shut-in	603	30,868	13	FMCOG
Hidalgo <sup>3</sup>	1986	31	Shut-in	430	23,384	14	FMCOG
Irene	1985	32	Producing	242	8,762	26	FMCOG

# STATE WATER FACILITIES

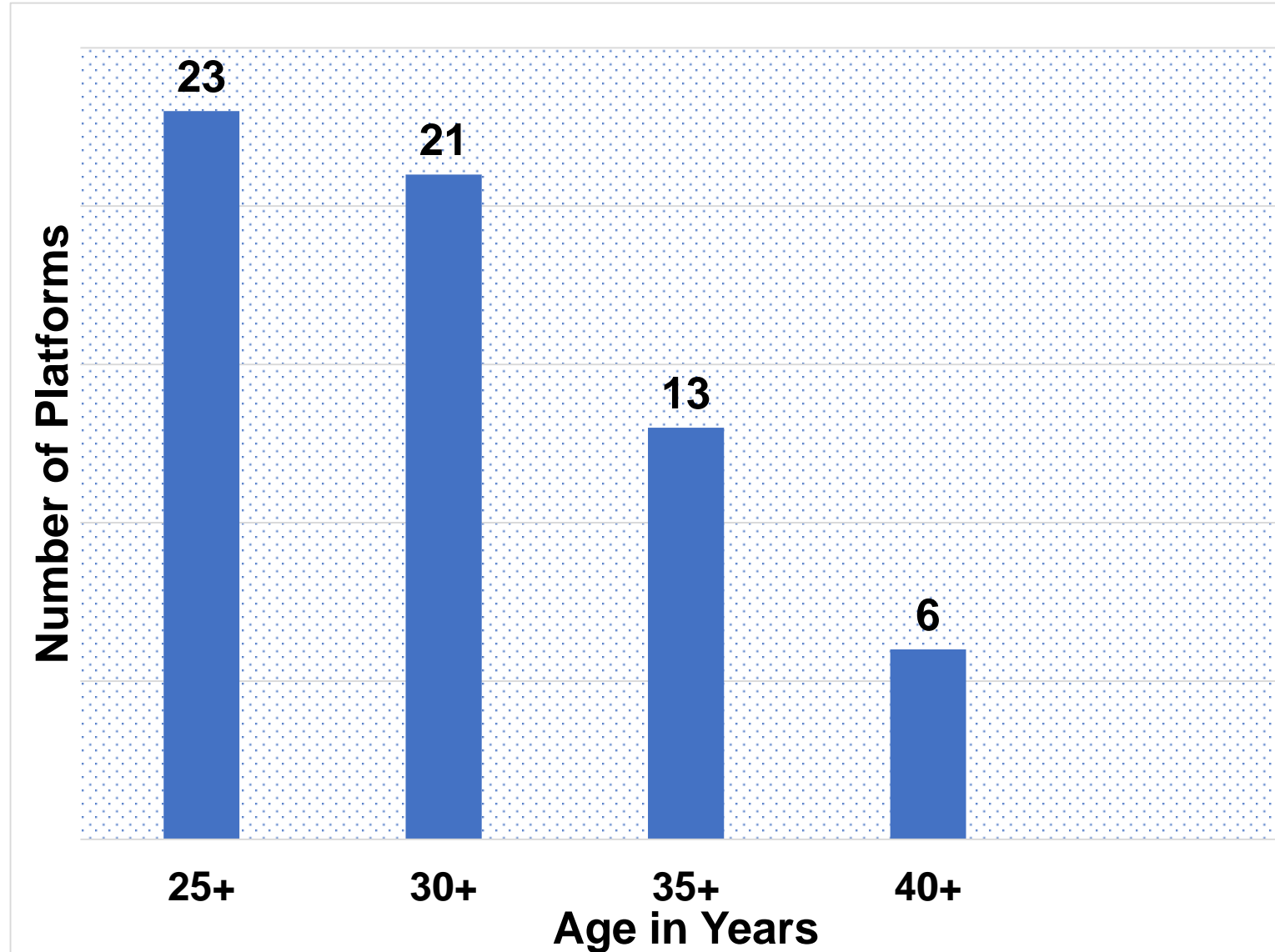
- 4 platforms (all fixed steel jacket structures)
- 5 artificial islands
- Age range           32 - 59 years
- Water depth       22' - 57' except Plat. Holly (211' wd)
- Operating status
  - 7 producing
  - 2 being decommissioned (Platform Holly and Rincon Island)

**OIL AND GAS PRODUCTION FACILITIES LOCATED  
IN CALIFORNIA STATE WATERS**

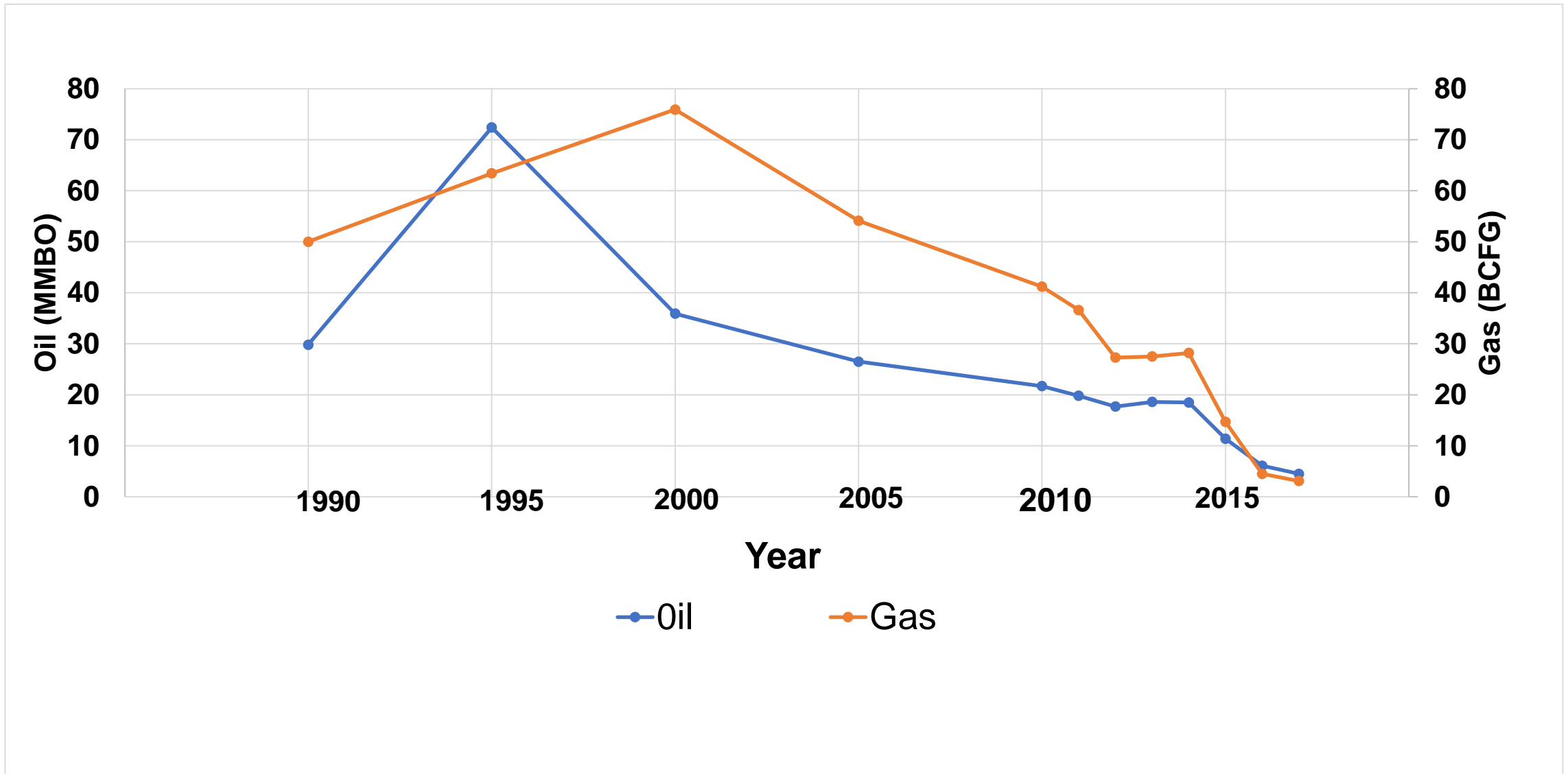
Platforms	Year Installed and Age (years)		Water Depth (feet)	Location	Current Status	Well Slots	Operator
	Year Installed	Age (years)					
Emmy	1963	54	47	Huntington Beach, Orange County	Producing	64	SoCal Holdings, LLC
Eva	1964	53	57	Huntington Beach, Orange County	Producing	44	DCOR, LLC
Esther	1985	32	22	Seal Beach, Los Angeles County	Producing	64	DCOR, LLC
Holly	1966	51	211	Goleta, Santa Barbara County	Shut-in	30	CSLC/BWEG; prior operator was Venoco, LLC
Artificial Islands							
Chaffee	1966	51	40	Long Beach, Los Angeles County	Producing	387	THUMS Long Beach Company
Freeman	1966	51	40	Long Beach, Los Angeles County	Producing	357	THUMS Long Beach Company
White	1966	51	40	Long Beach, Los Angeles County	Producing	338	THUMS Long Beach Company
Grissom	1966	51	40	Long Beach, Los Angeles County	Producing	394	THUMS Long Beach Company
Rincon <sup>1</sup>	1958	59	44	Ventura County	Shut-in	69	CSLC; prior operator was Rincon Island Limited Partner.



# THE AGE RANGE OF CALIFORNIA OCS PLATFORMS



# CALIFORNIA OCS OIL AND GAS PRODUCTION 1990 - 2017



# DECOMMISSIONING PROJECTS

Platform	Water Depth (feet)	Estimated Removal Weight (short tons)	Wells	Operator <sup>1</sup>
<b>Federal OCS Platforms</b>				
Gail	739	37,057	27	BWEG
Grace	318	13,074	28	BWEG
Harvest	675	35,150	19	FMCOG
Hermosa	603	30,868	13	FMCOG
Hidalgo	430	23,384	14	FMCOG
<b>State Water Facilities</b>				
Holly	211	5,515	30	CSLC/BWEG
Rincon Island	59	NA	45	CSLC

<sup>1</sup> Operators: Beacon West Energy Group, LLC (BWEG); ExxonMobil Corp. (EMC); Freeport McMoran Oil, Gas, LLC (FMCOG); California State Lands Commission (CSLC)

# CALIFORNIA DECOMMISSIONING CHALLENGES

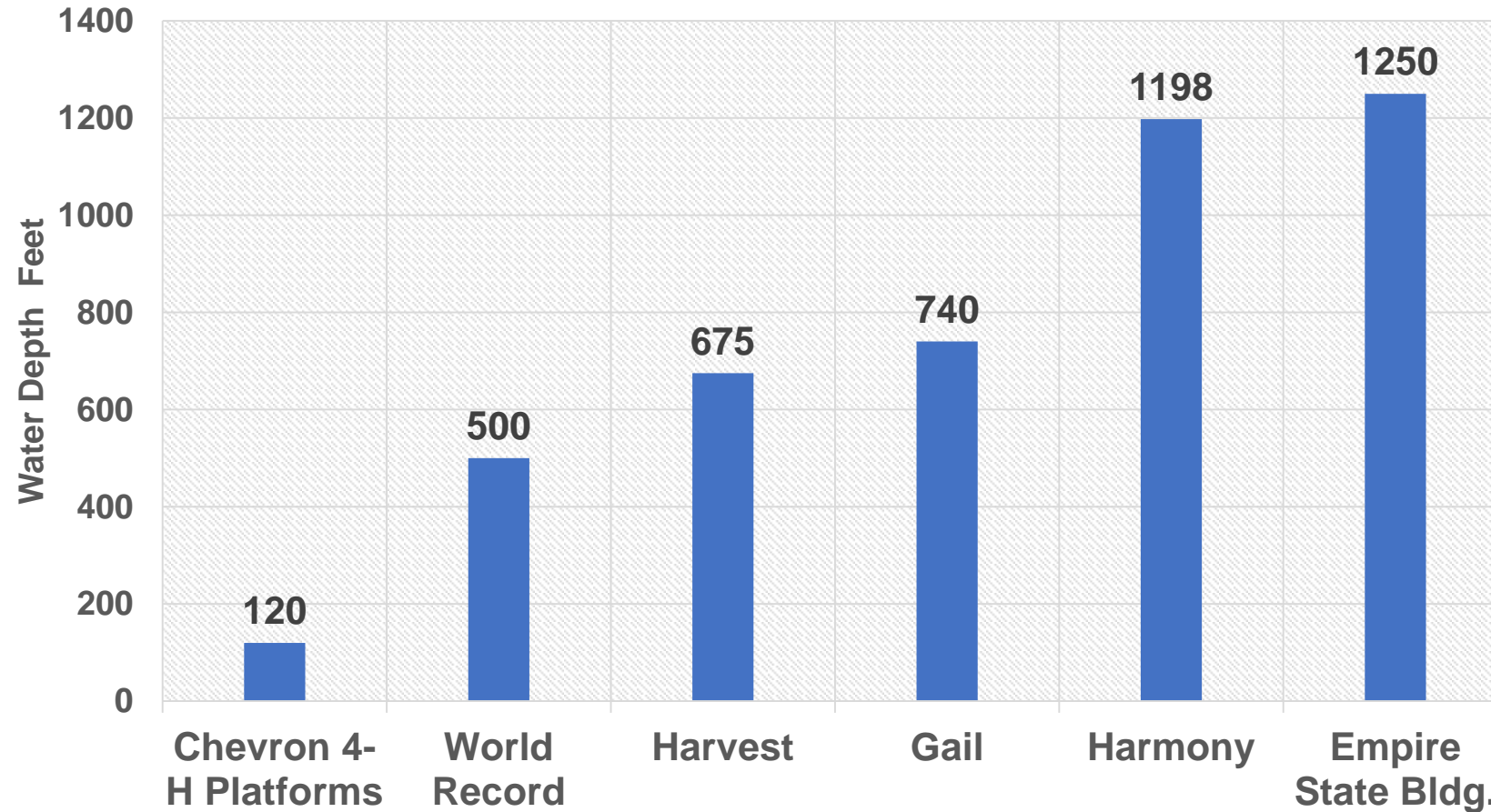
1. Large structures and limited deep water experience
2. Very high HLV/DB mobilization costs.
3. Limited onshore processing & disposal options.
4. An untested and problematic rigs-to-reef process.
5. Complex regulatory framework.
6. Marine mammal protection requirements.
7. Air emission control requirements.
8. Site clearance requirements for shell mounds.

# LIMITED WORLDWIDE DEEP WATER REMOVAL EXPERIENCE

- Only 15 steel jackets (+ 14,000 tons) removed worldwide through 2016
- Largest jackets in 350 – 500' wd
- Nearly all in GOM and UK where reefed or footings left in-situ 70 -150 'above seabed
- 8 of 23 OCS platforms are +400" wd.
- CA platforms will among largest ever decommissioned (wd./tonnage).



# JACKET SIZE COMPARISON



# Platform Harmony Jacket

Man walking



# HIGH HLV/DB MOBILIZATION COST

Vessel Type	Max. Lift Capability (short tons)	Region of Departure	Time Days	Vessel Day Rate	Total Roundtrip Cost
Small DB	600	GOM	80	\$165,000	\$11,880,000
Large DB	3,000	GOM	80	\$250,000	\$18,000,000
HLV.	3,000	S.E. Asia	100	\$250,000	\$22,500,000
HLV.	4,000	North Sea	180	\$350,000	\$56,700,000
HLV	5,000	North Sea	180	\$450,000	\$72,900,000
HLV	7,000	S.E. Asia	100	\$550,000	\$49,500,000

# LIMITED ONSHORE DISPOSAL OPTIONS

- SA Recycling (SAR) Facilities in Long Beach
- Primarily processes industrial scrap (autos, rail cars)
- Chevron 4-H platforms taken to SAR (10,000 tons)
- Limited capacity and crane capability
- Removal of Gail (37,100 tons) (4 x Chev. 4-H)
- Removal of 3-4 large platforms could generate  
90,000 -180,000 tons (10-20 x Chevron 4-H)
- Major upgrades necessary for large scale projects.

# REEFING CHALLENGES

1. CA Marine Resources Legacy Act (AB 2503) of 2010
2. Untested and complex process
3. High cost to set-up & manage CDFW reefing program
4. CDFW, CDNR, CSLC, OPC, CCC multi-jurisdiction
5. Regulatory uncertainty – NEBA
6. State share of cost savings - 65% to 2023 then 80%
7. Liability continues for industry in perpetuity



# OCS PLATFORM DECOMMISSIONING COST ESTIMATES

- 2016 TSB cost report for BSEE/BOEM
  - \$1.5 billion (23 platforms)
- Best case estimate
- OTC paper conclusion:
  - factoring in challenges (risks) could increase costs by a factor of 5 or more from \$1.5 to \$7.8 billion.

# **SUMMARY & MAJOR TAKE HOME MESSAGE**

Decommissioning is going to be a very challenging and expensive process in CA due to:

1. Lack of infrastructure
2. Limited onshore disposal options
3. Complex regulatory framework
4. Strict environmental requirements, and
5. A problematic R2R program