

20 September 2014

To Whom It May Concern:

Decades ago, California extended oil and gas extraction leases offshore southern California which allowed private companies to install drilling platforms throughout the Southern California Bight in both state and federal waters. California now has 27 offshore platforms in various depths and at various stages of productivity. The original lease agreements required the complete removal of platforms at the end of their productive lives, at the time a sensible stipulation that helped assuage the concerns of stakeholders who were displeased with their installation. Subsequently, an engaged citizenry has mobilized against additional drilling, and California decision-makers consistently blocked local and federal efforts from pursuing drilling off the coast.

The platforms, having been in the environment for decades, now support abundant and diverse communities of marine organisms; sessile animals and algae have settled on their complex substructures, and fishes are both attracted to and settle as larvae on the submerged architecture. It appeared that the platforms themselves were providing additional hard substrate to a system otherwise limited in habitat for larvae to settle, and the ensuing community provided ecosystem and economic services that would be lost if the entire platform was decommissioned.

This was the crux of the challenge California faced in considering decommissioning options, and it divided the stakeholder community, even within constituencies: some conservationists were angered that large oil companies would not be held to the original agreement of full removal, while others were offended by the loss of the rich communities that made their homes on the submerged structures. Likewise, recreational fishermen and divers sought out the platforms for the abundance of fishes, adding to local economies, while commercial fishermen railed against the loss of trawling real estate. Additional considerations, including legal, logistical (what to do with a fully decommissioned platform?) and impacts to air resources and water quality needed to be weighed as well.

In navigating the alternatives, policy makers in California found themselves considering which science was accurate – stakeholders were arguing the merits of their preferred option with their interpretation of the science, or cherry picking the science that supported their position. For example, some said the platforms were not adding to fish populations, rather they were attracting fish from nearby reefs. Issues of larval dispersal and oceanographic regimes were argued on the assembly floor by non-experts, creating an impasse. What was needed to break through this impasse was a robust, authoritative compilation of the best available science and analyses, and a rigorous dissection of trade-offs with different decommissioning alternatives. The spectrum of stakeholder positions needed to agree upon this document as authoritative and unbiased, and with that in hand, policy makers could undertake an informed discussion of values-based options.

In California, fortunately, a structure is in place to provide such a document. The California Ocean Science Trust ([www.calost.org](http://www.calost.org)) (OST) is a non-profit, public benefit corporation that exists by statute (CORS 2001) to deliver un-biased and credible scientific support to state decision-makers. OST staff



have expertise in marine science as well as processes to deliver that science to decision-makers. OST undertook to source funding from multiple stakeholders holding diverse positions on the outcome, and set up a process of review that ensured the robustness of the product. Through an RFP, OST identified Dr. Brock Bernstein and his team to undertake the compilation. Dr. Bernstein's team included highly experienced and well-respected experts across a wide range of disciplines (e.g., economics, fish ecology, air emissions, offshore engineering, decision analysis, state and federal policy). The team made a mathematical decision analysis model the conceptual centerpiece of their proposal and successfully argued that this sort of integrative tool was the best means to synthesize data and findings across the many different types of potential costs and benefits. In addition, they proposed the decision model as an effective means of investigating the implications of uncertainty and differences in stakeholder perspectives and values.

*What were the study's most valuable technical contributions?*

The study produced the first reliable, quantitative estimates of the potential cost savings from the partial removal/artificial reefing option, the fish production associated with communities around existing platforms, and the likely air emissions associated with the complete removal option. In addition, the study's decision model provided a means for integrating quantitative and qualitative (e.g., impacts on marine mammals) aspects of the problem into an overall multi-attribute analysis.

*What were its most valuable decision analysis contributions?*

The study narrowed a large number of potential decommissioning options into a smaller and much more tractable number. The decision model (PLATFORM) allowed for the explicit treatment of uncertainty (e.g., for costs), created a multi-attribute analysis of stakeholders' varying objectives, and an enabled sensitivity analyses to identify technical assumptions and stakeholder preferences were most important to the choice among options. PLATFORM is an interactive and adaptable tool to help stakeholders and decision makers explore options and how they react to changes in inputs.

*What was the impact of the study on thinking and decision making at Cal OST and stakeholders, California State agencies, California legislators?*

The study quantified key costs and benefits that had not previously been reliably quantified, including the scale of cost savings (approximately \$400 million), the high amount of fish production on many existing platforms, and the sizeable amount of air emissions associated with the complete removal option for the larger platforms. In addition, the study confirmed that adequate legal and financial mechanisms are available to address decision makers' concerns about the potential liability associated with an expanded state-managed artificial reef program. Together these findings served to adjust the perceived balance of costs and benefits. The multi-attribute analysis also showed that the perspective that platform operators should be required to completely remove all platforms (strict compliance) would have to be weighted at extreme values relative to other objectives in order to produce an outcome that favored the complete removal option.

*What was the benefit of the study to OST and other stakeholder organizations?*

The study provided a comprehensive assessment of all key financial, legal, and environmental costs and benefits, through a combination of literature review, targeted data gathering, and new data analysis. The decision model, PLATFORM, dramatically improved the study team's productivity, enabling them to include more data in their analyses and to conduct more rigorous and sophisticated modeling and analysis, thus improving the study's results. PLATFORM is available for use at any time by interested parties and could readily be updated with new data as time goes by.

*What was the outcome of the OST report and tool to the state of California?*

Dr. Bernstein's team created a novel approach to understanding trade-offs of two distilled options: full and partial decommissioning. Those trade-offs included ecological services, environmental impacts, and economic considerations. Wrapped in a process that provided expert review, these products provided state lawmakers a clear path forward: to consider partial decommissioning of each platform. After being debated for decades, the proposal to turn offshore oil platforms into "underwater reefs" for the benefit of marine life is now a California law. Thus, when a platform ceases to be productive, the oil company who owns it may request the state to assess the environmental benefits of leaving a portion of it in place. If the state determines scientifically that there is an overall benefit, then a portion of the savings, in the hundreds of millions for all platforms, would be collected by the state in support of marine conservation issues. The bill prevailed with only three dissenting votes, and stakeholders across the spectrum – oil companies, recreational fishermen, and conservationists – supported it. A few detractors were displeased, particularly as oil companies would save money should the partial decommissioning option be granted.

By clearly identifying the issues, synthesizing the best multi-disciplinary science, daylighting the uncertainty and providing for unbiased review, the tool created by Bernstein et al. was successful in distilling the rhetoric to meaningful discussion of trade offs and values. Further, the tool was made available to the public, its assumptions and approach were transparent. Constituents had the opportunity to import various scenarios and learn the best approach. With this tool, sound legislation was passed that will serve California and our marine resources well.

I encourage the committee to look closely at the approach Dr. Bernstein and his team took in developing this decision support tool; a team of technical experts would be tempted to develop a 'black box' that served up outcomes. Rather, their approach was a smart, science-informed synthetic algorithm with transparent and vetted assumptions that served all constituencies equally. It brought the science together in a way that provided decision makers an opportunity to advance their discussion on what was best for California's marine resources.

I am available to answer any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Skyli McAfee".

Skyli McAfee, Executive Director

[Skyli.mcafee@calost.org](mailto:Skyli.mcafee@calost.org)

707.529.7984