UH ENERGY RESEARCH REPORT

Repurposing Offshore Infrastructure for Clean Energy – Regulatory Considerations

Authored by ROICE-PIF Workgroups:

- **RC-1 Regulatory Requirements and Pathways**
- **RC-2 Financial Assurance and Decommissioning**

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About the Authors

This paper is published as part of the Repurposing Offshore Infrastructure for Clean Energy (ROICE) program led by UH Energy, a multi-disciplinary research entity at the University of Houston. The ROICE program is an industry-government-public-academia program and is advised by individual experts from the over 40 organizations that form the ROICE Project Collaborative (RPC). Several members of the RPC volunteered to serve on one or more of six workgroups that were charged with conducting the research and contributing their expertise to put together a series of papers that will form the ROICE project implementation framework (PIF). This paper was written by the ROICE regulatory perspectives workgroups – RC-1: Regulatory Requirements and Pathways, and RC-2: Financial Assurance and Decommissioning. The members of the two workgroups are:

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The authors have written this paper in good faith to provide guidance on the regulatory considerations for repurposing offshore oil and gas infrastructure for clean energy use. However, the authors are not liable for any errors or omissions in the guidance or from the consequences of following it.

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Abbreviations

API	American Petroleum Institute
ARO	Asset Retirement Obligation
ASME	American Society of Mechanical Engineers
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
CO_2	Carbon Dioxide
COP	Commercial Operations Plan
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act
ESA	Endangered Species Act
GAO	Government Accountability Office
GAP	General Activities Plan
GoM	Gulf of Mexico
IRS	Internal Revenue Service
NEPA	National Environmental Policy Act
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OSHA	Occupational Safety and Health Administration
PIF	Project Implementation Framework
PWSA	Ports and Waterways Safety Act
RPC	ROICE Project Collaborative
ROICE	Repurposing of Offshore Infrastructure for Clean Energy
RUE	Right-of-Use and Easement
SAP	Site Assessment Plan
SEC	U.S. Securities and Exchange Commission
TE	Techno-Economic
UH	University of Houston
U.S.	United States
UTBEG	University of Texas Bureau of Economic Geology

Executive Summary

Repurposing Offshore Infrastructure for Clean Energy (ROICE) is an industry-government-public-academia program formed in February 2022 in the United States (US). Among other deliverables, it is developing a project implementation framework for repurposing up to 1,500 offshore oil and gas platforms in the Gulf of Mexico (GoM) for non-fossil-fuel extraction or "clean" energy uses. Examples include offshore-wind-energy generation, offshore-wind-powered hydrogen generation and/or storage, and carbon dioxide (CO_2) sequestration facilities. The main advantage of repurposing is to defer some portions of – and incentivize funding for all of – the decommissioning requirement of oil and gas infrastructure. It could also help to reduce the cost of new offshore clean energy schemes.

The ROICE program is led by UH Energy, a multi-disciplinary research entity at the University of Houston. It receives funding from research grants from state and federal agencies and is advised by experts from over 40 industry, academic, research, and community organizations which form the ROICE Project Collaborative (RPC).

The ROICE program has two main components, a techno-economics (ROICE-TE) analysis and a project implementation framework (ROICE-PIF). ROICE-TE is building detailed design and economic models for clean energy repurposing projects and charting a path to their profitability. ROICE-PIF is developing detailed guidance for all stakeholders of such projects. This includes regulatory compliance requirements, liability transfer pathways, financial assurance mechanisms, commercial and operational frameworks, technical certification of structures, and pre- and post-ROICE decommissioning requirements.

The program is being undertaken in phases. An initial ROICE-TE feasibility study was completed in April 2023 and demonstrated the potential profitability of repurposing for clean energy use. The first phase of ROICE-PIF – formation of the workgroups – was completed in August 2023. Deliverables from the second phase, expected to be completed by April 2024, includes publication of this PIF regulatory considerations paper, a companion PIF paper on technical considerations, along with TE design refinements and cash flow models for offshore-wind-to-hydrogen demonstration projects. Phase 3, due for completion in 2025, includes launching a commercial framework, expanding the regulatory and technical considerations, and selecting and designing a demonstration project. The aim is to have the demonstration project operating by 2032.

There is a clear regulatory framework for new-build offshore wind energy projects in the GoM but the Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environment Enforcement (BSEE) are continuing to develop and publish new regulations during 2024 to address the transition of existing oil and gas infrastructure for green energy use, such as wind energy export, hydrogen generation, and CO_2 storage.

The most likely regulatory pathway for a ROICE project is for the existing oil and gas operator or owner to submit an alternate use permit application under Code of Federal Regulations (CFR) Title 30 Part 285 and assign it to the new ROICE operator, of which the current operator or owner will be a stakeholder. The ROICE operator could also apply directly for an alternate use permit after demonstrating its legal, financial, and technical qualifications to do so. A less likely option is for the existing oil and gas lease to be transferred to a ROICE operator, which may be necessary for CO_2 sequestration projects. In all cases, the current operator or owner or their predecessors will need to decommission portions of the existing oil and gas structure not required for the ROICE project.

For the ROICE operator's post-ROICE decommissioning obligations, BSEE and BOEM will most likely allow financial surety instruments to be used, and the amount and costs of these will likely be much less than those for oil and gas operations. Furthermore, it is very unlikely that BSEE would require a significant oil spill response plan fund for a ROICE project.

It appears that the Environmental Protection Agency's (EPA) UIC class VI permits will not be required for CO_2 injection and storage projects in the federal waters of the GoM because there are no underground sources of drinking water in use that need to be protected. This will streamline the regulatory approval process for ROICE projects involving CO_2 storage. In addition, unlike onshore CO_2 injection and storage projects in Texas and Louisiana, there will be no legal issues related to ownership of subsurface pore space in the event of unanticipated migration of injected CO_2.

The Internal Revenue Service (IRS) has acknowledged that 45Q and 45V tax credits for CO_2 sequestration and clean hydrogen generation respectively are transferable between stakeholders. Although IRS maintains it will not divide and distribute the credits, the ROICE operator can divide and distribute them to its stakeholders. ROICE operators will likely use commercial agreements to address the respective rights and obligations of stakeholders, including division and distribution of green energy profits and tax credits, as well as the allocation of costs for modifying the existing infrastructure for use as a ROICE project and for post-ROICE decommissioning.

Insurance coverage and contractual indemnity exposures for ROICE projects will be far less than for conventional oil and gas operations. This is because partial decommissioning, including plugging and abandoning of all wells, will have already been undertaken, there will be reduced catastrophic hydrocarbon pollution exposure, lower fire and explosion risks, less business interruption risk, and reduced manning requirements.

Finally, the delay of 10 to more than 20 years in decommissioning may also incentivize former operators and owners to participate in ROICE projects, especially with BSEE and BOEM maintaining pressure to fulfil decommissioning obligations and timelines.

Key Recommendations

The RPC recommends that stakeholders in a ROICE project focus on the following:

• **Communication.** When developing a project, there could be many parties, authorities, regulations, policies, and opinions to navigate. Although confidentiality issues may come up, a transparent approach is ideal. Involve all stakeholders early in the project – regulators, current operator, investors, impacted communities, bonding and surety agencies, certifying agencies, original equipment manufacturers, engineering and construction companies, and others. Due to the novel nature of a ROICE project, it is possible that situations and challenges may arise that were not already identified and discussed between the parties. Should this occur, the ROICE project team should attempt to inform all parties in a manner that is consistent with the relative urgency of the situation.

• **Regulatory compliance.** The current regulations outlining alternative use and financial assurance, in addition to proposed regulations for offshore energy transition activities, are under review by BOEM and BSEE and have the potential for change. ROICE project stakeholders need to stay up to date of and anticipate potential regulatory and industry changes. Consider using the alternate use permit application (30 CFR Part 285) to obtain the needed permissions to launch the ROICE project. The RPC plans to monitor these changes and provide guidance to ROICE project stakeholders on compliance with any new guidelines and requirements.

• **Financial assurance.** The transition from oil and gas operations to a clean energy repurposing project needs to involve a straightforward and comprehensive transition from regulatory and liability perspectives. The process should be vetted and constantly reviewed to address financial, operational, and regulatory requirements. From a practical standpoint the transition will need to address the following:

  o Cost-effective and regulatory compliant partial pre-ROICE decommissioning of wells and hydrocarbon processing equipment, and other non-essential equipment. It is likely that such partial decommissioning of the structure will extend its working life.

  o Repurposing of the structure for green hydrogen production, wind power generation or CO_2 injection and storage over a period of 20 to 25 years.

  o Operation, maintenance, and final decommissioning obligations for the repurposed structure and ROICE equipment.

  o Anticipating and addressing any significant variations in project participants and assignments, updated regulatory requirements, and the division and distribution of continued and/or varied tax credits.

The above items are considered the pillars of success for a ROICE project. As with the other ideals referenced in this document, they are subject to change.

Future ROICE-PIF papers will discuss potential new operational exposures that may arise that were not envisioned (for example unintended release of CO_2 into ocean, saline water disposal into the sea, oxygen release, and impact of seafloor cables) and ways to avoid and/or mitigate such occurrences.

Introduction

There are around 1,500 oil and gas structures on the United States (US) Outer Continental Shelf (OCS) in the Gulf of Mexico (GOM) that have reached, or will soon reach, the end of their oil and gas production phase. Each of them will need to be decommissioned in the next few decades as required by both national and international law and as part of the offshore leasing process.

Decommissioning is a potentially expensive process: it includes plugging and abandoning of wells, removing or abandoning in-place pipelines, removing oil and gas equipment, and disassembling supporting structures and bringing them back to shore, followed by site restoration. According to the US Government Accountability Office, decommissioning all assets in the GOM is estimated to cost $40–70 billion.[1]

Decommissioning responsibility is based on the principle of "joint and several liability", where all current and previous asset owners are subject to the "asset retirement obligation" (ARO). The Bureau of Ocean Energy Management (BOEM) estimates that only around 10% of decommissioning costs are covered by surety bonds, with the rest dependent on the balance sheet of present or past operators.[2] This often results in individual asset decommissioning plans being prolonged while predecessor liability is reviewed. Over $2 billion of decommissioning is currently "stalled" by some estimates and may not be covered by financial assurances.[3]

Due to the recent surge in bankruptcy proceedings filed by large operating companies on the OCS, parties and the bankruptcy courts have looked to surety bonds to support decommissioning obligations of insolvent operators. As a result, the surety bond market has been subjected to intense financial pressures. As of the first quarter of 2024, the number, and financial capabilities, of surety bonding companies to serve the offshore oil and gas sector has significantly retracted, adversely impacting both operators some and decommissioning contractors.

How a ROICE Project Can Help

Decommissioning can be encouraged by supporting and adopting Repurposing Offshore Infrastructure for Clean Energy (ROICE) projects, which create a post-oil-and-gas revenue stream from clean energy. A ROICE project could, for example, involve building fixed or floating wind turbines around an existing oil and gas platform, with the resulting electricity sent ashore or used to make "green" hydrogen, which is made from wind energy and sea water only. The existing platform could house equipment for either power export or hydrogen generation.

The jacket (support structure) and the topsides (the decks above the jacket) are probably going to be the most cost-effective components of existing platforms to reuse in ROICE projects. The rest of the equipment will have to be decommissioned in the usual way, with wells plugged and abandoned and all hydrocarbon-processing equipment and non-essential units removed.

The ROICE approach has various advantages. By creating a revenue-generating life extension, it will be easier to raise funds for the pre-ROICE decommissioning phase from current and past operators. Getting surety bonds to cover the remaining decommissioning phase will also be simpler given there will be an ongoing income stream. ROICE project investors will receive a share of clean energy revenue for 10–20 years or more, while the current operator will benefit from a 10–20 years delay to the final decommissioning phase and get a financial contribution towards the cost of this.

ROICE Project Challenges

To establish the viability of the ROICE approach, government, industry, public and academia need to conduct technical feasibility studies, evaluate project economics, establish regulatory pathways, review liability and commercial aspects and engage stakeholders.

The University of Houston UH Energy program has therefore been leading a study into the feasibility of ROICE projects since June 2021. An industry-government-public-academia advisory group, the ROICE Project Collaborative (RPC), has been created from over 40 organizations to provide specialist expertise, resources, and knowledge from similar global projects. Key US regulatory bodies including the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE) are being kept informed of the results of the program and have strongly encouraged its goals and scope.

Initial techno-economic feasibility studies were completed in April 2023, demonstrating the potential profitability of ROICE projects. The program is now planning wind-to-hydrogen demonstration project in the GoM, which could be extended in future phases to include solar and wave energy, hydrogen storage, and carbon dioxide (CO_2) sequestration.

The ROICE program has two components, a techno-economics (ROICE-TE) analysis and a project implementation framework (ROICE-PIF). ROICE-TE builds detailed design and economic models for clean energy repurposing projects and charts a path to their profitability. ROICE-PIF develops detailed guidance for all stakeholders of such projects. This includes regulatory compliance requirements, liability transfer pathways, financial assurance mechanisms, technical certification of structures, and pre- and post-ROICE decommissioning requirements.

[1] GAO-24-106229 Offshore Oil and Gas: Interior Needs to Improve Decommissioning Enforcement and Mitigate Related Risks (Jan. 25, 2024).

[2] BOEM Press Release "BOEM Proposes stronger financial assurance requirements for offshore oil and gas industry to protect taxpayers from being forced to pay decommissioning costs" (June 27, 2023).

[3] GAO-16-40 Offshore Oil and Gas Resources: Actions Needed to Better Protect Against Billions of Dollars in Federal Exposure to Decommissioning Liabilities (Dec. 18, 2015).

What a ROICE Operator Needs to Know

A would-be operator of a ROICE project is likely to be made up of one or more of the following stakeholders:

· Existing operator and/or companies that were previous owners or operators of the oil and gas structure

· Clean energy developers, including offshore wind operators, hydrogen producers, and CO_2 sequestration firms

· Investors, lenders, and financial surety issuers

· Regulatory bodies, such as BOEM, BSEE, the U.S. Environmental Protection Agency (EPA), and the United States Coast Guard

· Equipment manufacturers, such as turbine and electrolyzer companies

· Engineering, procurement, decommissioning, and construction companies

· Community and skill pool organizations

The ROICE operator will need to be aware of and comply with regulatory requirements in place and planned, including:

· Offshore oil and gas lease AROs that govern decommissioning of oil and gas production assets

· Procedures for delaying decommissioning of offshore structures and allowing them to transition to other use, such as alternate use right-of-use and easement (RUE) permit or other routes approved by BOEM and/or BSEE

· Understanding financial assurance mechanisms for current oil and gas phase and setting up new mechanisms for the clean energy phase

· Establishing commercial agreements to transfer liability to the ROICE operator and setting up firewalls between previous and future operations

· Checking that pre-ROICE decommissioning is being planned and will be done, understanding that post-ROICE decommissioning will transfer to the ROICE operator

· Checking structures repurposed for ROICE comply with technical requirements and get BSEE approval for life extension certification and compliance with structural regulations.

More guidelines and requirements will be discovered as the ROICE demonstration project is planned, implemented, and operated.

ROICE-PIF

UH Energy launched ROICE-PIF in April 2023. More than 40 experts from industry standards organizations, operators, engineering companies, and academic and regulatory consultants have collaborated since then to develop the PIF. They completed the first phase in August 2023, with the formation of the six workgroups of 5 to 10 members each (see Table 1).

Table 1. ROICE-PIF Workgroups

Regulatory Considerations (RC) Workgroups	RC-1: Regulatory Oversight for ROICE Projects RC-2: Financial Assurance for ROICE Projects
Commercial Considerations (CC) Workgroup	CC-1: Financing and Business Models for ROICE Projects
Technical Considerations (TC) Workgroups	TC-1: Decommissioning and Reuse in the ROICE Context TC-2: Recertifying Assets for ROICE Projects TC-3: Transportation and Storage Considerations for ROICE Projects

The RC-1, RC-2, TC-1, and TC-2 workgroups met in phase 2 to develop the framework elements for their respective remits. They were each asked the question, "What do ROICE project stakeholders need to know about regulatory oversight, financial assurance, decommissioning and reuse, and recertifying assets when considering repurposing fixed offshore structures for wind power generation, hydrogen generation, or CO_2 sequestration?"

Phase 2 is limited to fixed assets (as opposed to floating structures) under the following scenarios:

• Current owner ceasing oil and gas operations and switching to a ROICE project

• Current owner leasing assets to a ROICE operator

• Current owner selling assets to a ROICE operator

Other special cases such as bankrupt asset scenarios, hybrid scenarios (where clean energy operations are added to a platform while oil and gas operations continue), and floating assets are to be handled in phase 3. Phase 3 will also convene the commercial considerations workgroup (CC-1) and the transportation and storage workgroup (TC-3), which will issue papers like this one.

The second phase was completed in April 2024, with the publication of two papers: this paper (ROICE-PIF 002) by RC-1 and RC-2 on regulatory considerations and a companion paper (ROICE-PIF 001) on technical considerations by TC-1 and TC-2. A combined summary of these papers was published by members of four workgroups at the Offshore Technology Conference in May 2024.[4]

[4] OTC-35474-MS: Repurposing Offshore Infrastructure for Clean Energy (ROICE) Vs. Decommissioning – Regulatory Considerations (2024), https://doi.org/10.4043/35474-MS.

Scope of Work by Workgroups RC-1 and RC-2

During initial meetings the RC-1 and RC-2 workgroups developed a list of topics that could be considered under the general heading of regulatory oversight and financial assurance for ROICE projects.

Topics included roles of regulatory bodies, potential options and pathways for lease assignment or transfer to a ROICE operator, competitive bidding for alternate use permits, solvency requirements, surety bonds and liabilities, and checklists for ROICE phases. The topics were addressed by referring to the current and proposed regulatory environment and through discussions with the workgroup members.

The workgroups' general assumption was that a ROICE project will only reuse the jacket of an existing fixed oil and gas platform. Depending on project-specific considerations, topsides structures and non-oil-and-gas utilities – such as decks, accommodation, cranes, and emergency and evacuation systems – could also be considered for reuse. Existing transmission pipelines and associated risers may also be needed, again on a project-specific basis, but these will be the focus of a future ROICE-PIF paper. All the rest of the oil and gas infrastructure will need to be decommissioned as per normal GoM offshore industry practices.

Between August 2023 and January 2024, the workgroups investigated the predefined topics using their collective knowledge and experience. Additionally, they sought the advice of others to reach collectively agreed opinions, conclusions, and recommended further actions. This included defining justifiable recommendations for further studies. This paper is the result of their combined efforts.

Decommissioning Challenges for US Gulf of Mexico Regulators

The decommissioning of oil and gas infrastructure can be complex and expensive, but it is required by national and international law, and is a necessary step in the offshore oil and gas leasing process. In the US GoM, this is governed primarily by the US Outer Continental Shelf Lands Act (OCSLA) of 1953.

Appendix I sets out the current regulatory provisions for ceasing a platform's oil and gas operations and Appendix II covers decommissioning.

Decommissioning includes plugging and abandoning of all wells, removal, or preservation in place of all pipelines, removal of all oil and gas equipment, and the disassembling of supporting structures to bring them back to shore. The costs for such decommissioning for individual assets can range from the tens to several hundreds of million dollars.

Responsibility for carrying out the decommissioning and bearing the costs is based on the "joint and several liability" principle, where all existing and previous operators and owners are responsible for fulfilling their decommissioning obligations. As reported by BOEM[5] and GAO,[6] it is estimated that 10% of the cost of decommissioning structures is covered by surety bonds, with the rest dependent on the balance sheet of existing or previous operators. This often results in individual asset decommissioning plans being prolonged while liability is assigned and accepted.

The challenge for the US federal government and its primary regulators BOEM and BSEE, part of the Department of the Interior, is they will have to find the required funds if oil and gas operators fail to meet their decommissioning obligations. The financial burden of decommissioning and the financial risk this pr agencies. It has resulted in the release of several federal documents to address the issue.[7,8,9,10,11] The recent retraction of the surety bond market, impacted by the large Fieldwood Energy and Cox Operating bankruptcy proceedings, has aggravated the financial impact of decommissioning liabilities.

In June 2023, BOEM highlighted the lack of financial assurance and the need for regulatory reform:

> "The Government Accountability Office reported that as of 2015, the Department of the Interior held less than $3 billion in bonds to cover approximately $38.2 billion in decommissioning costs, with approximately $2.3 billion in costs at highest risk of needing to be covered by American taxpayers. Recent corporate bankruptcies in the offshore oil and gas industry have underscored the need for regulatory reform. If BOEM holds insufficient financial assurance at the time of bankruptcy, the government may end up having to perform the decommissioning, with the cost being borne by the American taxpayer. Delays in decommissioning can lead to environmental damage and other risks."[12]

And in January 2024, the GAO reaffirmed the risks to the American taxpayer:

> "Interior's Bureau of Ocean Energy Management (BOEM) does not effectively assure that operators have the financial and technical capacity to meet decommissioning obligations in advance of potential delays, bankruptcies, or other defaults. Specifically, BOEM held about $3.5 billion in supplemental bonds to cover between $40 billion and $70 billion in total estimated decommissioning costs as of June 2023. As a result, the federal government remains exposed to billions of dollars in financial risks from decommissioning liabilities if operators do not meet their obligations."[13]

However, the US Energy Policy Act of 2005 has already provided another potential solution by allowing offshore platforms to be re-permitted for renewable energy and other marine-related uses once they cease producing oil and gas. These regulations are now found in the Code of Federal Regulations (CFR), Title 30, Part 285 –

[5] BOEM Release (2023). | [6] GAO-24-106229 (2024). | [7] GAO-16-40 (2015). | [8] GAO-17-642 Offshore Oil and Gas Resources: Information on Infrastructure Decommissioning and Federal Financial Risk (May 17, 2017). | [9] GAO-21-293 Offshore Oil and Gas: Updated Regulations Needed to Improve Pipeline Oversight and Decommissioning (Mar. 19, 2021). | [10] Proposed Rule BOEM-2023-0027 Risk Management and Financial Assurance for OCS Lease and Grant Obligations 88 FR 42136 (June 29, 2023). | [11] GAO-24-106229 (2024). | [12] BOEM Release (2023). | [13] GAO-24-106229 (2024).

Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf, and Part 586 – Alternate Uses of Existing Facilities on the Outer Continental Shelf. With this in mind, the ROICE program was initiated on the basis that such projects can incentivize and encourage the completion of decommissioning requirements by creating a revenue stream from clean energy for 10 to 20 years or more.

Nevertheless, a ROICE project will still be subject to a full range of regulatory and financial assurance requirements for offshore and onshore energy projects, as discussed in the following sections of this paper.

Regulations Applying to a ROICE Project

Development of offshore energy projects in the US Outer Continental Shelf (OCS) involves the intricate interplay of various federal acts and multiple federal agencies and departments.

One of the intriguing aspects of regulatory framework in the US is how several key federal acts confer authority to multiple federal agencies. For instance, OCSLA provides the framework for leasing and regulating activities on the OCS, but it does not assign this responsibility to a single agency. It involves various federal entities, each with its specific role and expertise (see Figure 1).

Understanding how the acts empower multiple federal agencies is crucial to comprehending the US regulatory framework for ROICE projects.

It often becomes necessary for the primary agency, BOEM, to coordinate the review and approval processes involving several other federal agencies. This coordination is not only a matter of ensuring compliance with applicable laws but also a practical necessity to involve relevant subject matter experts in the technical review and regulatory approval process. In some cases, state governments play a role in this process, adding an additional layer of complexity to the coordination efforts by the primary agency.

Figure 1. Hierarchy of references for an offshore wind energy substation facility in the US OCS (source: S. Sarada)

Understanding the complexity of the US regulatory framework is crucial for establishing a well-structured legal framework and design basis for ROICE projects in the GoM.

Table 1 summarizes the legal underpinnings and multi-agency interactions relevant for offshore wind developments in the US OCS. These would apply to a ROICE project which involves repurposing a former oil and gas site as a wind power generation facility, with the existing platform surrounded by fixed or floating wind turbines and housing equipment for power export or hydrogen generation.

Table 1. Major US Acts and multi-agency interactions relevant to a ROICE wind energy project in the US OCS (source: S. Sarada)

		Major US Acts relevant to offshore wind in the US Outer Continental Shelf (OCS)				
Governing U.S. Department	**Federal Agency**	**Energy Policy Act of 2005 (EPAct)**	**National Environmental Policy Act (NEPA)**	**OCS Lands Act (OCSLA)**	**OSH Act of 1970**	**Ports and Waterways Safety Act (PWSA)** **Air Quality and Clean Air Pact**
The U.S. Department of Labor	Occupational Safety and Health Organization (OSHA)			OSHA accepts and investigates complaints from offshore workers related to safety and health concerns on OCS facilities. Workers have the right to report unsafe conditions or practices to OSHA.	OSH Act applies to all workplaces, including those in the offshore wind industry, there are no specific provisions within the OSH Act that exclusively address offshore wind energy projects. Pursuant to section 4(b)(1) of the OSH Act, OSHA cannot enforce its requirements to working conditions if the working conditions are already regulated by another federal agency.	OSHA's regulations and standards work in conjunction with the Clean Air Act to ensure that workers are not exposed to hazardous levels of air pollutants in the workplace.
The U.S. Department of Homeland Security	United States Coast Guard (USCG)			Offshore wind projects often require coordination with the USCG to ensure navigational safety, particularly regarding the placement of turbines, transmission cables, and safety zones.		PWSA and OCSLA authorizes USCG to regulate vessel traffic, vessel traffic services, and safety on US navigable waters and ports. The USCG uses this authority to establish and enforce vessel traffic safety regulations, navigation rules, safety zones, and other measures to prevent collisions, protect the marine environment, and ensure the safety of vessels and mariners.

The original authority for governing renewable energy was given by Congress in the Energy Policy Act of 2005 which was codified in the OCS Lands Act. DOI then delegated the authority to BOEM. Relevant extracts from 30 CFR 585 are provided below:

PART 585—RENEWABLE ENERGY ON THE OUTER CONTINENTAL SHELF

Authority: 43 U.S.C. 1337.

Subpart A—General Provisions

§ 585.100 Authority.

The authority for this part derives from section 8 of the Outer Continental Shelf Lands Act (OCS Lands Act) (43 U.S.C. 1337). The Secretary of the Interior delegated to the Bureau of Ocean Energy Management (BOEM) the authority to manage the development of energy on the Outer Continental Shelf (OCS) from sources other than oil and gas, including renewable energy, through the issuance of leases, easements, and rights-of-way for activities that produce or support the production, transportation, or transmission of energy.

§ 585.101 What is the purpose of this part?

The purpose of this part is to:

(a) Establish procedures for issuance and administration of leases, right-of-way (ROW) grants, and right-of-use and easement (RUE) grants for renewable energy production on the OCS; and

(b) Inform you and third parties of your obligations when you undertake activities authorized in this part.

(c) Ensure that renewable energy activities on the OCS are conducted in a safe and environmentally sound manner, in conformance with the requirements of subsection 8(p) of the OCS Lands Act, other applicable laws and regulations, and the terms of your lease, ROW grant, or RUE grant.

(d) This part will not convey access rights for oil, gas, or other minerals.

The ROICE Operator will also need to comply with relevant regulatory requirements from BSEE prior to obtaining the Alternate Use permit from BOEM. The first of these is the BSEE structural analysis requirement at 30 CFR 250.900:

§ 250.900 What general requirements apply to all platforms?

(a) You must design, fabricate, install, use, maintain, inspect, and assess all platforms and related structures on the Outer Continental Shelf (OCS) so as to ensure their structural integrity for the safe conduct of drilling, workover, and production operations. In doing this, you must consider the specific environmental conditions at the platform location.

(b) You must also submit an application under § 250.905 of this subpart and obtain the approval of the Regional Supervisor before performing any of the activities described in the following table:

(4) Convert an existing platform at the current location for a new purpose

(i) The Regional Supervisor will determine on a case-by-case basis the requirements for an application for conversion of an existing platform at the current location.

(ii) At a minimum, your application must include: the converted platform's intended use; and a demonstration of the adequacy of the design and structural condition of the converted platform.

(iii) If a floating platform, you must also adhere to USCG regulations for the fabrication, installation, and inspection of floating OCS facilities.

Of particular significance to the permit application is the requirement to accurately specify loads and placement of loads for the repurposed platform. This includes what loads will be removed from the platform including the well conductors and any drilling rig loads that were used in the original design. A fatigue analysis will be required with the new loading. BSEE will also require an underwater inspection of the platform if there is not a recent inspection.

A comprehensive discussion of the structural compliance requirements is provided in a companion white paper published by the TC-1 / TC-2 workgroups of the ROICE-PIF team.[14]

It is currently not clear how ROICE projects involving hydrogen generation and CO_2 storage will be administered by federal regulators such as BSEE and BOEM since regulations and permitting process are still being considered. The storage could include use of depleted hydrocarbon reservoirs, saline reservoirs or salt caverns as established by the University of Texas Bureau of Economic Geology (UTBEG) and BOEM[15].

The Inflation Reduction Act of 2022 called on the Department of the Interior to develop regulations that support and encourage offshore injection, storage, and monitoring of CO_2 and the generation of green hydrogen in offshore federal waters. Other stakeholders and policy makers likely to be involved in this process include the Department of Energy's Office of Fossil Energy and Carbon Management, Office of Technology Transitions, and National Renewable Energy Laboratory; the Department of Treasury's Internal Revenue Service (IRS); and the Environmental Protection Agency (EPA).

EPA currently regulates wells used for geological sequestration of CO_2, known as "Class VI" wells. One of the primary requirements to be met is to ensure that CO_2 injection into these wells does not harm drinking water aquifers on the US mainland and in state territorial waters. This is a complex procedure which can take up to four to five years to obtain regulatory approval. Because the US

[14]ROICE-PIF 001 JUNE 2024: Repurposing Offshore Infrastructure for Clean Energy – Technical Considerations, UH Energy White Paper

[15]BEG Report R10283 Geological CO_2 Sequestration Atlas of Miocene Strata, Offshore Texas State Waters

does not draw from potable water aquifers in federal waters of the GoM, it is likely that the drinking water protection regulations would not apply to CO_2 injection and monitoring activities there.

EPA also regulates the National Pollution Discharge Elimination System and other regulations arising from the Clean Water Act, to ensure operators do not discharge inappropriate material into the GoM.

In December 2023, EPA signed a final rule giving the State of Louisiana Department of Natural Resources primary enforcement authority (or "primacy") over class VI underground injection wells within state waters. The Texas Railroad Commission has also submitted a request for primacy authority to enforce class VI underground injection wells within its state waters, but EPA has yet to issue approval.

IRS issues 45Q and 45V tax credits for permanent geological storage of CO_2 and clean hydrogen production respectively. It is likely IRS will issue these tax credits to appropriate ROICE operators. While they will be freely transferrable, IRS will not divide them between individual ROICE project stakeholders. That aspect would need to be handled through commercial and legal agreements among the stakeholders in the ROICE project entity.

Permit for Alternate Use of an Existing Oil and Gas Lease

Existing oil and gas structures in the GoM are generally situated on square seabed plots measuring 4.82 km x 4.82 km (3 miles x 3 miles). These are leased from the federal government through a competitive bidding process managed by BOEM under 30 CFR Part 585. In most instances, the leases have been conveyed multiple times from the original operator to intermediate operators and ultimately to the current operator. Furthermore, the current operator may or may not be the owner of the physical assets.

Adapting an existing oil and gas facility and its associated lease for a ROICE project will involve a permitting process with BSEE and BOEM for an alternate use RUE permit under 30 CFR Parts 285 and 586 respectively.

The existing oil and gas lease expires when oil and gas production ceases or when the operator stops paying the lease rental fees. The most likely regulatory pathway for a ROICE project is for the existing oil and gas operator or owner to submit an alternate use permit application (30 CFR Part 285) and assign it to the new ROICE operator, of which the current operator or owner will be a stakeholder. The ROICE operator could also apply directly for an alternate use permit after demonstrating its legal, financial, and technical qualifications to do so. The current operator must decommission parts of the existing oil and gas structure that are not required for a ROICE project, such as hydrocarbon processing equipment, producing or sealed wells (unless reconditioned for CO_2 injection), and non-essential pipelines, wells, and accommodation.

If the current operator is not financially able to discharge its decommissioning obligations under the existing lease, the ROICE operator should, with the assistance of BSEE and BOEM, seek to involve operators and/or owners who are jointly and severally liable for the pre- and post-ROICE decommissioning.

For a ROICE operator to apply directly for an alternate use permit, it would need to show it is qualified to be a lessee or grantee by providing evidence it is a "person eligible" to hold a lease or grant and demonstrate its technical and financial capability to conduct the activities to be authorized by the lease or grant.

Appendix III details the legal, financial, and technical qualifications required for this.

Decision-Making Process

BOEM will consider all alternate use permit requests on a case-by-case basis. It will consult federal and state agencies and consider whether the proposed activity:

- Harms or adversely effects coastal and marine ecosystems
- Inhibits or restrains orderly development of the OCS mineral or energy resources
- Harms or damages any natural resources in areas leased and not leased, any life or property or objects of historical or archeological significance
- Is consistent with subsection 8(p) of the OCSLA
- Can be effectively regulated.

Based on this information, the regulator will decide whether or not to authorize the proposed activity.

BOEM will also determine if competitive interest exists in a proposed facility for alternate use activities by issuing a 30- to 45-day request for competitive interest in the Federal Register. If the regulator determines that competitive interest exists, it may decide to proceed with a competitive offering process. Each competing applicant must then submit a description of the types of activities proposed for the existing facility, as well as evidence they are qualified to hold a lease or grant on the OCS by a date the regulator specifies.

BOEM will evaluate proposals using the following criteria: the proposed activities are compatible with existing activities at the facility, and the regulator has the expertise and resources available to regulate the activities effectively. BOEM will also evaluate all

proposals under the requirements of the National Environmental Policy Act (NEPA), the Coast Zone Management Act (CZMA), and other applicable laws.

The regulator then selects one or more acceptable proposals, notifies the competing applicants and submits each acceptable proposal to the current operator of the facility. If the operator agrees to accept a proposal, BOEM will issue an alternate use permit. If the operator does not like any of the proposals, no permit will be issued. Clearly all would-be ROICE operators should check with the current operator before applying to BOEM.

If BOEM finds there is no competitive interest, it publishes a notice to this effect in the Federal Register. The regulator may then decide to issue a non-competitive grant, and the ROICE operator has to submit a general activities plan (GAP).

In both competitive and non-competitive processes, BOEM consults widely and conducts full compliance checks before deciding to issue a grant and/or GAP approval, disapproval, or approval with modifications and in developing grant terms and conditions.

Assigning or Transferring an Existing Oil and Gas Lease

In cases where subsurface injection is part of the ROICE project scope, a lease transfer may be part of the permitting process. However, it is unlikely BOEM would simply transfer an existing oil and gas lease to a ROICE operator, particularly if the latter plans to use the site for injection and storage of CO_2. For example, current oil and gas leases do not permit injection of CO_2 into hydrocarbon reservoirs other than for enhanced oil recovery. If the ROICE operator does not need to access the subsurface, it should use the alternate use permit process.

The would-be ROICE operator would need to notify BSEE that it wishes to become an operator. BSEE then determines if the current operator has any outstanding corrective actions that need resolving early on. Even if the current operator wants to repurpose to a CO_2 storage project (or any other ROICE project scope), they will likely have to form a new entity that goes through the same permitting process as a new ROICE operator. The ROICE operator then submits qualification paperwork to BOEM, which qualifies the ROICE operator to hold interest in leases and approves a list of officials authorized to sign on its behalf. Companies already qualified to hold interest in leases should check that their authorized signatories are listed on their qualification card (see 30 CFR 556.400 to 556.402).

A new ROICE operator will have to address regulatory requirements concerning the lease and right-of-way assignments subject to variation and accommodation by the regulators.

The current regulations state:

> "Officials recognized by BOEM/BSEE as authorized to sign for the companies must sign assignments. If the new company wishes to become an owner before it is approved as an operator, it must: 1) agree to the original operator by submitting Designation of Operator forms for each lease and right-of-way, and **2) submit Oil Spill Financial Responsibility paperwork to the BOEM Gulf of Mexico Region Office to designate an existing applicant (see #15 for contact information).** BOEM sends lease assignments to the Department of Justice for antitrust review. (See 30 CFR 556.700 to 556.716 for lease assignments and 30 CFR 250.1018 for right-of-way assignments). You may transfer your record title interests in one lease to multiple parties using the same instrument, but a separate fee applies to each individual transfer of interest."

However, as the ROICE project will not involve hydrocarbon production, it is unlikely BOEM will demand substantial Oil Spill Financial Responsibility (OSFR) obligations from the ROICE operator and/or its participants (highlighted in bold above). BOEM and BSEE have a defined set of standards listed in the regulations for traditional platforms, primarily based on American Petroleum Institute (API) recommended practices, and t is expected that those standards would be the immediate requirement. However, the ROICE operator may opt to apply more appropriate industry standards, such as the American Society of Mechanical Engineers (ASME) or other standards applicable to offshore structural integrity and operations that do not involve hydrocarbon production and processing. An alternate compliance process may be required for these cases.

BOEM has published new renewable energy lease terms for the GoM, some of which may be appropriate for a ROICE project.

> "Assignment - This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee's application to transfer or assign all or part of this lease. Any assignment will be effective on the date the Lessor approves the Lessee's application. Any assignment made in contravention of this section is void."

> "Financial Assurance - The Lessee must provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum "B." If, at any time during the term of this lease, the Lessor requires additional financial assurance under the authority of applicable regulations in 30 CFR Part 585, then the Lessee must furnish the additional financial assurance required by the Lessor in a form acceptable to the Lessor within 90 days after receipt of the Lessor's notice of such adjustment."

Most of BOEM's renewable energy lease regulations are applicable to new offshore wind and solar applications, so it is possible BOEM or BSEE may develop separate financial assurance requirements for ROICE projects since they involve repurposing existing structures and may also involve hydrogen production or CO_2 storage.

For renewable offshore energy projects, 30 CFR 515 says BOEM will approve assignment of a commercial lease if the assignee provides either a $100,000 minimum lease-specific bond or another approved financial assurance instrument guaranteeing performance up to $100,000 as specified by 30 CFR 585.526 – 529.

Under 30 CFR 585.517, BOEM can require extra and decommissioning financial assurance based on the commercial operation plan (COP) and a site assessment plan (SAP). So far the COP and SAP regulations provided by BOEM apply to offshore wind and other renewable projects. These may have some application to ROICE projects.

> "Relinquishment of Lease - the lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the lessor a written relinquishment application, in accordance with applicable regulations in 30 CFR Part 585. no relinquishment of this lease or any portion thereof will relieve the lessee, or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area and project easement(s) pursuant to section 13 of this lease and applicable regulations."

> "Removal of Property and Restoration of the Leased Area and Project Easement(s) on Termination of Lease - Unless otherwise authorized by the Lessor, pursuant to the applicable regulations in 30 CFR Part 585,the Lessee must remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area and project easement(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with any approved SAP, COP, or approved decommissioning application, and applicable regulations in 30 CFR Parts 285, 585, and 586."

Commercial and Risk Allocation Agreements for a ROICE Project

Once an alternate use permit or lease transfer is granted, the ROICE operator needs to set up a commercial agreement with its stakeholders to share liabilities for ultimate decommissioning of the repurposed facility, share profits from commercial clean energy production or CO_2 sequestration, and share 45Q or 45V tax credits.

The terms of the commercial agreement should also address the following:

- assignment or transfer of the lease from the current operator or owner to the ROICE operator, subject to detailed contractual and regulatory requirements
- designation of the ROICE operator including its delegation of authority
- designation of stakeholders in the ROICE project, including detailed responsibilities, obligations, and liabilities of stakeholders
- financial obligations of all stakeholders
- scope and limitation of liabilities of stakeholders, including defense and indemnity obligations
- liability, property, and environmental impairment and response insurance structure for the ROICE project.

The composition of the ROICE entity is significant for the receipt, division, and distribution of tax credits. IRS's January 15, 2021 rules addressed assignability and divisibility of 45Q tax credits, as follows:

> "The final regulations do not provide specific rules regarding how to allocate any section 45Q credits generated by carbon capture equipment that captures qualified carbon oxide among multiple taxpayers that own different components within a carbon capture system or an undivided interest in the same carbon capture equipment. Allowing the credit to be shared in this manner will generate a significant administrative burden for the IRS. Accordingly, for each single process train of carbon capture equipment, only one taxpayer will be permitted to claim the section 45Q credit, and it will be the taxpayer who either physically ensures the capture and disposal, injection, or utilization of qualified carbon oxide or contracts with others who capture and dispose of, inject, or utilize qualified carbon oxide. However, multiple owners of carbon capture equipment may form a partnership to allocate section 45Q credits among themselves pursuant to Revenue Procedure 2020-12."

If IRS's current stance on divisibility of 45Q and/or 45V tax credits remains consistent for the foreseeable future, the project agreement will also have to address this.

The contractual assignment or lease transfer needs to spell out the obligations of the current operator or owner to decommission those portions of the offshore structure that are not essential for the ROICE project. There should be appropriate risk allocation for contractual defense, indemnity and surety obligations, and assignments if the current operator or owner defaults on these obligations.

Further, the commercial agreement should allocate the financial obligations to decommission the ROICE project at the end of its life cycle. For CO_2 storage projects, this may be determined by the federal government's assumption of liability for the storage after a certain period of years. It is assumed that the upcoming BOEM and BSEE regulations will determine the life cycle and the assumption of liability by the federal government. Various states have assumed liability for onshore CO_2 storage in their jurisdictions after 20 to 25 years.

Financial Assurance for a ROICE Project

As decommissioning responsibilities for existing and previous operators and owners never go away, their liability for removing a jacket and topsides at the end of a ROICE project is extended by a further 10 to over 20 years. BOEM will require assurance that this liability is covered, perhaps in the form of surety bonds or escrow accounts, and inflation needs to be considered.

A ROICE operator will therefore have to provide financial assurance to the regulators. This could include the current operator's financial assurance or surety bond, or a combination of existing and new financial assurance provided by stakeholders in the new operating entity.

Surety bonding companies should charge lower rates for a ROICE project as the structure will contain less equipment and should involve a less-costly ultimate decommissioning project. BOEM and BSEE may demand that any financial assurance or surety is payable directly to them rather than being named as third-party beneficiaries.

Financial assurance for a ROICE project requires the details and financial status of the current operators or owners to be fully transparent. It should adequately address issues such as the current regulatory authority, liability, operating insurance, bonding, and other challenges. These issues are discussed further in the following section.

Liability Scenarios

For assets with an existing solvent operator or owner, negotiations with them would be required and there would be a commercial discussion. The ROICE operator needs to have an effective firewall between pre-ROICE liability and post-ROICE liability. The current operator remains responsible for previous liabilities and the ROICE operator is responsible for any new liabilities created by the ROICE project. Predecessor liability will remain in place for all pre-ROICE liabilities.

The ROICE operator should determine how private bonds between it and the current operator or owner will be supported and how they are differentiated. The ROICE operator should ensure that the bonds are valid and be clear on who is providing assurance to whom and what is covered. For ROICE projects, it might be ideal if BOEM is already a co-insured, but several workable alternatives exist. Either way, the regulator will likely require a bond or some other form of financial assurance to cover decommissioning at the end of the ROICE project.

A possible scenario when assigning or transferring a lease to a ROICE project is that the ROICE operator cannot give the same level of financial assurance. One option is to consider new ways of covering liabilities, including partners, bonds, and insurance. The ROICE operator would have to be a financially viable company or provide the required financial assurance from the regulator's perspective. All must also be approved by the appropriate federal agencies.

There may also be scenarios where the current operator or owner has declared bankruptcy. A ROICE project can bring together all the parties, providing a way forward, potentially converting a challenging situation into an energy transition and investment opportunity. In all cases, surety bonds or confirmation of the financial capability to support decommissioning will be required.

Challenges

Financial assurance discussions between current operators, owners, and ROICE operators together with expectations that the original decommissioning responsibilities remain in place are a challenging new frontier for regulators. As potential new financial assurance rules for ROICE projects are drafted and put in effect, they will need to be reviewed and complied with.

Another challenge is deciding how to address financial assurance and whether to name BOEM as a beneficiary of bonds. The regulator has previously never required to be named as a beneficiary, but indications are that it would be comfortable with this option. It would be an agreement between BOEM, the ROICE operator and the existing or former operator or owner.

There is also the question of whether existing private bonds or

escrow accounts set up for pre-ROICE decommissioning will interfere with the transition to a ROICE project. In the past, BOEM required separate (double) bonds, however, the regulator will work with the surety companies and other stakeholders on alternate approaches. If BOEM is a beneficiary, then only one bond will be likely to work. The regional director and headquarters will decide.

A further issue could be deciding if BOEM is liable because of gaps in its assurance that a ROICE project might not want to fill. If the regulator has insufficient bonding, general bonds can be requested to help cover liability for a ROICE project and post-ROICE decommissioning. BOEM may not approve the lease assignment or transfer if coverage is not worked out with past operators or owners.

Finally, it should be noted that the potential repurposing of pipelines, including the potential risk to a ROICE project from pipeline assets left in place, needs to be considered. BSEE regulates pipelines, the liability for which is different from wells. BSEE must ask BOEM for an environmental review, which may complicate the liability discussion. Use of the previous pipeline environmental impact assessment to cover reuse would be of significant benefit to the ROICE project and should be explored.

Conclusions and Recommendations

A significant number of existing oil and gas structures in the federal waters of the GoM are appropriate for ROICE wind power, hydrogen generation or CO_2 storage projects.

There is a clear regulatory framework for new offshore wind projects in the GoM, and BOEM and BSEE are continuing to develop and publish new regulations during 2024 to address the transition of existing oil and gas structures for green energy use. This will involve publication of draft regulations in the Federal Register for public comment. BSEE and BOEM will also continue to seek input from education and industry groups, including the RPC.

The most likely existing regulatory pathway for a ROICE project is for the existing oil and gas operator or owner to submit an alternate use permit application (30 CFR Part 285) and assign it to the new ROICE operator, of which the current operator or owner will be a stakeholder The ROICE operator could also apply directly for an alternate use permit after demonstrating its legal, financial, and technical qualifications to do so. A less likely option is for the existing oil gas lease to be transferred to a ROICE operator, which may be necessary for CO_2 sequestration projects.

Appendix IV provides a regulatory checklist for a proposed ROICE project. ROICE projects are likely to involve the removal of hydrocarbon processing equipment and wells on existing offshore structures and will utilize the structures themselves for another 10 to 20 years for the ROICE clean energy phase. Current operators of existing oil and gas structures which transition to ROICE projects can therefore defer the cost of decommissioning and abandonment obligations for the structures by up to two decades or more. The obligations of solvent predecessors will also be delayed for a similar period.

BOEM and BSEE will continue to enforce financial assurance requirements against current operators to ensure that existing offshore infrastructure will be responsibly and effectively decommissioned. The regulators will also pursue financially solvent predecessors to ensure that these structures will be properly retired.

BSEE and BOEM will most likely allow financial surety instruments to be used to secure a ROICE operators' decommissioning obligations, however, the amount and costs of these surety instruments will likely be much less than those for oil and gas operations. Furthermore, it is very unlikely that BSEE would require a significant oil spill response plan fund for a ROICE project.

EPA will continue to administer class VI CO_2 injection wells located onshore and in state territorial waters of the US to ensure they will not adversely impact underground sources of drinking water. It is likely that class VI permits will not be required for CO_2 injection

and storage projects in the federal waters of the GoM because there are no underground sources of potable water in use. This will streamline regulatory approval of ROICE projects involving CO_2 storage.

The Inflation Reduction Act provided substantial tax credits for CO_2 sequestration and green hydrogen generation, which should apply to ROICE projects in the GoM. IRS has acknowledged that 45Q and 45V tax credits for CO_2 and hydrogen respectively are transferable between stakeholders. Although IRS maintains it will not divide and distribute the credits, the ROICE operator can divide and distribute them to its stakeholders.

ROICE operators will likely use commercial agreements to address the respective rights and obligations of stakeholders. This will include division and distribution of green energy profits and tax credits, and allocation of costs for modifying the existing infrastructure for use as a ROICE project and for post-ROICE decommissioning.

Insurance coverage and contractual indemnity exposures for ROICE projects will be far less than for conventional oil and gas operations. This is because partial decommissioning will have already been undertaken, there will be reduced catastrophic hydrocarbon pollution exposure, lower fire and explosion risks, less business interruption risk, and reduced manning requirements.

One of the most significant incentives for current operators or owners to participate in a ROICE project is that its structures decommissioning obligations will be deferred for 10 to more than 20 years. This could represent a sizeable financial consideration for the current operator to participate in a ROICE project, as well as contribute to the sustainability goals of the parent oil and gas company. The deferment of some of the decommissioning may also incentivize former operators and owners to participate in ROICE projects, especially since BSEE and BOEM could be pursuing them for decommissioning costs.

Key Recommendations

The RPC recommends that stakeholders in a ROICE project focus on the following:

- **Communication.** When developing a project, there could be many parties, authorities, regulations, policies, and opinions to navigate. Although confidentiality issues may come up, a transparent approach is ideal. Involve all stakeholders early in the project – regulators, current operator, investors, impacted communities, bonding and surety agencies, certifying agencies, original equipment manufacturers, engineering and construction companies, and others. Due to the novel nature of a ROICE project, it is possible that situations and challenges may arise that were not already identified and discussed between the parties. Should this occur, the ROICE project team should attempt to inform all parties in a manner that is consistent with the relative urgency of the situation.

- **Regulatory compliance.** The current regulations outlining alternative use and financial assurance, in addition to proposed regulations for offshore energy transition activities, are under review by BOEM and BSEE and have the potential for change. ROICE project stakeholders need to stay up to date of and anticipate potential regulatory and industry changes. Consider using the alternate use permit application (30 CFR Part 285) to obtain the needed permissions to launch the ROICE project. The RPC plans to monitor these changes and provide guidance to ROICE project stakeholders on compliance with any new guidelines and requirements.

- **Financial assurance.** The transition from oil and gas operations to a clean energy repurposing project needs to involve a straightforward and comprehensive transition from regulatory and liability perspectives. The process should be vetted and constantly reviewed to address financial, operational, and regulatory requirements. From a practical standpoint the transition will need to appropriately address the following:

    - Cost-effective and regulatory compliant partial pre-ROICE decommissioning of wells and hydrocarbon processing equipment, and other non-essential equipment. It is likely that such partial decommissioning of the structure will extend its work life.

    - Repurposing of the structure for green hydrogen production, wind power generation or CO_2 injection and storage over a period of 20 to 25 years.

    - Operation, maintenance, and final decommissioning obligations for the repurposed structure and ROICE equipment.

    - Anticipating and addressing any significant variations in project participants and assignments, updated regulatory requirements, and the division and distribution of continued and/or varied tax credits.

The above items are considered the pillars of success for a ROICE project. As with the other ideals referenced in this document, they are subject to change.

Future ROICE-PIF papers will discuss potential new operational exposures that may arise that were not envisioned (for example unintended release of CO_2 into ocean, saline water disposal into the sea, oxygen release, and impact of seafloor cables) and ways to avoid and/or mitigate such occurrences.

Appendix I: Regulatory Checklist for Ceasing Operation of an Oil and Gas Platform

A would-be Repurposing of Offshore Infrastructure for Clean Energy (ROICE) operator should be aware of the steps that need to be taken by the existing oil and gas operator to cease oil and gas operations properly. This will ensure a clean start for the ROICE phase and avoid any residual issues and complications from the oil and gas phase.

Regulatory Compliance

Review and ensure compliance with all relevant United States (U.S.) regulations and requirements, such as:

- Outer Continental Shelf Lands Act (OCSLA): Provides the legal framework for offshore energy development, including regulations related to decommissioning and environmental protection. Outer Continental Shelf leases typically require the current operator(s) to remove seafloor obstructions, such as offshore platforms and pipelines, within one year of lease termination, or prior to termination of the lease if either the current operator or the Department of the Interior deems the structure unsafe, obsolete, or no longer useful for operations.

- Code of Federal Regulations (CFR) Title 30: Contains the federal regulations governing offshore oil and gas operations, including requirements for well plugging, offshore facilities decommissioning, and environmental protection (for example 30 CFR Part 250).

- Bureau of Safety and Environmental Enforcement (BSEE) regulations: the regulator is responsible for overseeing offshore oil and gas operations and has specific requirements for well abandonment, platform removal, and environmental protection.

Permitting and Notifications

- Obtain any necessary permits or authorizations required for the cessation of oil and gas operations, including approvals from regulatory authorities such as BSEE.

- Notify relevant stakeholders, including regulatory agencies and other parties with interests in the offshore operations, of the planned cessation activities.

Well Plugging and Abandonment

Develop a plan for the permanent plugging and abandonment of all wells associated with the offshore platform, following the requirements outlined in:

- 30 CFR Part 250, Subpart Q: Contains specific regulations for well plugging and abandonment on the OCS, including requirements for well integrity testing, plugging procedures, and reporting.

- BSEE Notice to Lessees (NTL) No. 2018-G03: Provides guidance on well plugging and abandonment operations, including requirements for wellbore stability and cementing practices.

Facility Decommissioning

Develop a decommissioning plan for the removal and disposal of all oil and gas facilities (in this case, excluding the platform itself and pipelines that can be repurposed), following the requirements outlined in:

- 30 CFR Part 250, Subpart Q: Contains regulations for decommissioning offshore facilities, including requirements for facility removal, site clearance, and environmental protection.

- BSEE NTL No. 2019-G05: Provides guidance on facility decommissioning, including requirements for site clearance verification and environmental impact assessments.

Environmental Considerations

Assess and address any potential environmental impacts associated with the cessation of oil and gas operations, including but not limited to the requirements outlined in:

- National Environmental Policy Act (NEPA): Requires federal agencies to consider the environmental impacts of their actions and involve the public in decision-making processes.
- Endangered Species Act (ESA): Requires federal agencies to ensure that their actions do not jeopardize the existence of endangered or threatened species or their habitats.

Safety and Risk Management

Safety and risk management during the cessation of oil and gas operations are governed by regulations such as the Occupational Safety and Health Administration (OSHA) standards and BSEE Safety and Environmental Management Systems regulations.

Documentation and Reporting

Maintain detailed documentation of all activities related to the cessation of oil and gas operations, following the requirements outlined in:

- 30 CFR Part 250, Subpart Q: Contains reporting requirements for well plugging and abandonment, facility decommissioning, and environmental impact assessments.
- BSEE regulations and guidance: the regulator provides specific requirements for reporting and documentation related to offshore operations, including well records, decommissioning plans, and environmental assessments.

Financial Planning

Develop a financial plan for the cessation of oil and gas operations, including budgeting for decommissioning activities, potential liabilities, and post-closure monitoring, following the requirements outlined in BSEE regulations. BSEE may require current operators to provide financial assurances, such as bonds or other instruments, to cover the costs of decommissioning and environmental restoration.

Closure and Handover

Once oil and gas operations have ceased and decommissioning activities are complete, ensure that the offshore platform is properly handed over in accordance with regulatory requirements and industry standards, following the requirements outlined in 30 CFR Part 250, Subpart Q. This contains requirements for the final closure of offshore facilities, including site clearance verification and regulatory notifications.

Appendix II: Regulatory Requirements for Decommissioning an Oil and Gas Platform

Decommissioning is the process of ending offshore oil and gas operations at an offshore platform and returning the ocean and seafloor to its pre-lease condition. A large fraction of the decommissioning activities needs to be carried out prior to the transition to the Repurposing of Offshore Infrastructure for Clean Energy (ROICE) phase. Hence it is important that a ROICE operator should be fully aware of the obligations of the current operator and ensure that these are carried out before transition of the structural asset to the ROICE operator.

The United States (U.S.) Outer Continental Shelf Lands Act (OCSLA) and implementing regulations establish decommissioning obligations to which a current operator must commit when they sign an offshore lease under the OCSLA, including the requirement to apply for and obtain a permit for subsequent removal of platforms. Outer Continental Shelf (OCS) leases typically require the current operator to remove seafloor obstructions, such as offshore platforms, within one year of lease termination, or prior to termination of the lease if either the current operator or the Department of the Interior deems the structure unsafe, obsolete, or no longer useful for operations ("idle iron").

OCS Lease Form – BOEM 2005 (February 2017) Sec. 22. Decommissioning states:

> "a) When wells, platforms, pipelines or other facilities are no longer useful for operations, the Lessee shall permanently plug such wells, remove such platforms and other facilities, decommission such pipelines, and clear the seafloor of all associated obstructions created by the lease operations.
>
> b) The Secretary may determine that a well, platform, pipeline or other facility is no longer useful and require its immediate decommissioning.
>
> c) All platforms and other facilities shall be removed within 1 year after the lease terminates unless the Lessor grants approval to conduct other activities.
>
> d) All decommissioning operations shall be conducted in accordance with applicable laws and regulations and in a manner that is safe, does not unreasonably interfere with other uses of the OCS, and does not cause undue or serious harm or damage to the human, marine, or coastal environment."

The OCSLA regulatory and lease requirements for decommissioning offshore platforms are designed to minimize the environmental and safety risks inherent in leaving unused structures in the ocean, and to reduce the potential for conflicts with other users of the Federal OCS (commercial fishing and aquaculture, military activities, transportation industry, and other oil and gas or renewable energy operations).

Decommissioning an offshore platform generally entails: plugging all wells supported by the platform and severing the well casings 4.57 m (15 feet) below the seabed; cleaning and removing all production and pipeline risers supported by the platform; removing the platform from its foundation by severing all bottom-founded components at least 4.57 m (15 feet) below the mudline; disposing the platform in a scrap yard or fabrication yard, or placing the platform jacket at an artificial reef site; and performing site clearance verification at the platform location or subsea production center(s) to ensure that no debris or potential obstructions to other users of the OCS remain.

The Bureau of Safety and Environmental Enforcement (BSEE) is responsible for overseeing the decommissioning of any well, facilities, pipelines and other equipment installed offshore in federal waters supporting energy development. BSEE identifies decommissioning as the process of ending oil, gas, or sulfur operations and returning the lease or pipeline right-of-way to a condition specified by regulatory requirements. The BSEE works to ensure that obsolete structures and components are cleared from the site to prevent use conflicts. To avoid release of hydrocarbons to the environment, wells are plugged and cut below the seabed and pipelines removed or internally cleaned and prepared for abandonment in place.

BSEE supports and encourages the reuse of obsolete offshore structures as artificial reefs in US waters if the structure does not impede future mineral development and other OCS use. Reuse must comply with the artificial reef permitting requirements of the Corps of Engineers and the criteria in the National Artificial Reef Plan. The state agency responsible for managing marine fisheries resources must accept liability for the structure before BSEE will release the federal lessee from lease obligations.

BSEE requires that current operators obtain approval of the platform removal methodology before removing the platform through an application process. To satisfy National Environmental Policy Act (NEPA) obligations, the Bureau of Ocean Energy Management (BOEM)

prepares a site-specific environmental assessment or environmental impact statement for each removal application on behalf of BSEE. BSEE ensures any environmental assessment is adequate and imposes any necessary protective mitigation measures as conditions of permit approval.

Effective December 11, 2018, BSEE published a new Idle Iron Decommissioning Guidance for Wells and Platforms (NTL No. 2018-G03) superseding and streamlining their previously issued guidance under Idle Iron (NTL No. 2010-G05) issued on September 15, 2010. Idle infrastructure poses a potential threat to the OCS environment and potential financial liabilities if destroyed or damaged in a future event, such as a hurricane.

The cost and time to permanently plug wells and remove storm-damaged infrastructure is significantly higher than decommissioning assets that have not been damaged as of the time of decommissioning. Pursuant to Code of Federal Regulations (CFR) Title 30 Part 250.1711 BSEE has the authority to order current operators to permanently plug a well if it poses a hazard to safety or the environment or is not useful for lease operations and is not capable of oil, gas, or sulfur production in paying quantities. In January 2018 (Gulf of Mexico) there were 235 idle wells and 239 idle platforms on active leases.

Appendix III: Legal, Financial, and Technical Qualifications Required for a ROICE Operator to Apply Directly for an Alternate Use Permit

Legal Eligibility

The Bureau of Ocean Energy Management (BOEM) defines a "person" is defined as a natural person, an association (including partnerships and joint ventures), federal agency, state, political subdivision of the state, Native American Tribal government, or a private, public, or municipal corporation. BOEM defines an "eligible" person as a citizen or a national of the United States (U.S.); an alien lawfully admitted for permanent residence in the US; a private, public, or municipal corporation organized under the laws of any state of the U.S., its territories, or the District of Columbia; an association of any of the parties described previously; an executive agency of the U.S.; a state of the US, or a political subdivision of a state.

A person may not qualify as an eligible person if they are excluded or disqualified from participating in transactions covered by the federal non procurement debarment and suspension system; they have failed to meet or exercise due diligence under any Outer Continental Shelf (OCS) lease or grant; or they have remained in violation of the terms and conditions of any lease or grant issued under the Outer Continental Shelf Lands Act (OCSLA) for a period extending longer than 30 days after being directed to comply and no action was taken to correct the noncompliance within that time period.

Once a Repurposing of Offshore Infrastructure for Clean Energy (ROICE) operator is qualified as an eligible person, they will be assigned a unique company number that should be used in all correspondence when referencing their qualifications to be an OCS renewable energy or alternate use lessee or grantee. If they remain an eligible person per the guidelines, they should submit their unique company number along with requisite documentation demonstrating their technical and financial capability for subsequent renewable energy leases, grants, and alternate use grants they wish to acquire.

Financial Capability

Documentation is needed establishing that the ROICE operator can access sufficient capital to carry out all anticipated activities.

Detailed information should be provided on how the acquisition of the lease and initial activities on the lease will be financed. This should further include an estimate of the costs associated with obtaining the federal and state authorizations that will be required to obtain and perform the site characterization activities and a plan describing how these measures will be financed. There should also be a brief description of how all subsequent phases of project development will be financed and a description of the ROICE operator's experience in raising finance for similar projects or projects of a similar scale.

The ROICE operator also needs to provide the full name, location, and description of its business entity; a company profile; a description of the corporate structure (a chart or other illustrations are acceptable); bank references; years in operation; current audited financial statement from an independent certified public accountant, preferably using accounting standards accepted by the Securities and Exchange Commission (SEC); and information regarding any bankruptcy or other adverse financial proceedings within the last 5 years if applicable. If not, a statement to this effect is needed.

Technical Capability

To demonstrate technical capability, the ROICE operator needs to provide documentary evidence of international or domestic experience with renewable energy, other energy-related projects or other relevant experience.

Key personnel directly involved with management of the proposed project should be identified. This should include names, titles, and a description of their relevant experience. Resumes, credentials, and/or relevant training are acceptable. Any proposed contractors and consultants with renewable energy or other project experience should be identified similarly. Business relationship documents with these contractors or consultants such as non-binding letters of agreement should be included.

For prior or current projects, a general description, including project name, type, location, size, years in operation, and operation status should be included, along with the roles of key personnel, contractors and consultants who would be directly involved in the proposed project.

Any legal or regulatory actions taken against the ROICE operator in the last five years and the resolution of such actions should be included. If the ROICE operator is a publicly traded company, BOEM considers the SEC EDGAR system as an acceptable source of information.

Timing and Initial Review

The ROICE operator must submit information showing its legal, technical, and financial qualifications when an alternate use permit is requested. If the ROICE operators wish to participate in a competitive bidding process and have not previously submitted information demonstrating its legal, technical, and financial qualifications, it must submit these qualifications to BOEM by a date specified.

The application will be initially reviewed to determine whether the ROICE operator has provided acceptable documentation evidencing its legal, technical, and financial qualifications to hold an alternate use permit. Unless otherwise stated, the ROICE operator must submit one paper copy and one electronic copy of the qualification application. There is no filing fee for qualification applications.

If the regulator determines the ROICE operator has not met one or more of the requirements to qualify to be an alternate use grantee, the regulator will notify the ROICE operator of the problem or deficiency and may request additional or updated documentation.

If the ROICE operator submits all the information requested and the regulator determines it has not met the requirements, the regulator will notify the ROICE operator of its decision and the grant will not be issued. This decision can be appealed.

Appendix IV: Regulatory Checklist for a Potential ROICE Operator

This is a high-level checklist that can be useful when considering a Repurposing of Offshore Infrastructure for Clean Energy (ROICE) project. Systematically addressing these elements can enhance the likelihood of a successful project. If the response to any of the questions in topics 2 to 8 is "no", solutions may still be possible but are likely to require additional time and cost.

1. High-level asset description

Question	Notes	Answer
What is the function of the asset?		
What is the operating history and current operational status?		
How is it constructed and been upgraded?		
When are the well permitting dates?		
What are the past asset uses and major upgrades or changes?		
Who are the existing and past asset operators or owners?		
What major equipment is at the location (past and present)?		
What is the asset's condition?	Include information requested via the Freedom of Information Act, information provided by the current operator or owner and visual inspection from the water.	

2. Project definition

Question	Notes	Yes, no, or additional information needed
Does a preliminary financial plan support the feasibility of the ROICE project?	Include cost estimates for modifications, installation, insurance, and ongoing maintenance.	
Does exploration of funding options support the feasibility of the repurposing project?	Including partners, investors, financing, grants, and incentives for cleaner energy projects.	
Does a preliminary evaluation of liability control or exposure support the feasibility of the ROICE project?		
Does a preliminary project schedule support the feasibility of the ROICE project?		
Is the selected technology compatible with existing site conditions, energy potential, and the existing infrastructure?	Consider that technologies such as wind turbine installation, wave energy converters, and solar panel deployment require consideration of different factors.	
What is the asset's condition?	Include information requested via the Freedom of Information Act, information provided by the current operator or owner and visual inspection from the water.	

3. Technical feasibility

Question	Notes	Yes, no, or additional information needed
Do the results of a technical, economic, and environmental feasibility study support the viability of the ROICE project?		
Do the potential risks and challenges of repurposing lie within the risk tolerance of the project proponents?		
Do the results of a preliminary offtake and connection or interconnection assessment support the viability of the ROICE project?		

4. Site suitability

Question	Notes	Yes, no, or additional information needed
Is it located at a feasible distance from potential offtake points (whether pipeline, power, or other)?		
Is it located at a feasible distance from a port that could support the project's construction?		
Is it located at a feasible distance from a port that could support the project's operations and maintenance?		
Is it located at a minimum distance from any other offshore assets to allow safe operation of the repurposed asset and other assets?	Note location, type, and status of wells, pipelines, platforms, offshore wind leases, other charted and uncharted activities.	

5. Asset assessment

Question	Notes	Yes, no, or additional information needed
Is the structural integrity of the asset suitable for the intended repurposing?	Initial evaluations might be based on compliance documents and photographs.	
Are the environmental conditions at the site compatible with the chosen cleaner energy technology and intended repurposing?	Consider all phases: retrofitting, construction, operations, and decommissioning	
Are the seabed conditions at the site compatible with the chosen cleaner energy technology and intended repurposing?		
Are the water depths at the site compatible with the chosen cleaner energy technology and intended repurposing?		

6. Regulatory and permitting

Question	Notes	Yes, no, or additional information needed
Was the asset operated in compliance with laws, regulations, and its permits?	Research incidents of non-compliance, legal issues, any available inspection reports.	
Are the regulatory requirements and necessary permits well understood for the existing asset?	Specifically, commitments regarding decommissioning or closure	
Are the regulatory requirements and necessary permits well understood for decommissioning and modification of the asset?		
Are the regulatory requirements and permits well understood for the repurposed use of the asset?		
Are all the above regulatory requirements and necessary permits feasible to obtain and comply with?		

7. Detailed structural analysis

Question	Notes	Yes, no, or additional information needed
Do detailed structural analysis and engineering assessments support the feasibility of the modifications required for the existing offshore infrastructure to support the new cleaner energy technology? *	Ensure that the structure can withstand the additional loads and environmental conditions associated with the chosen technology. * See the Technical Considerations companion paper to this paper (ROICE-PIF 001).	

8. Preliminary safety, environmental, and stakeholder assessment

Question	Notes	Yes, no, or additional information needed
Does a preliminary environmental impact review support the feasibility of modifications for and operation of the asset and the new cleaner energy technology?	The review should cover the comprehensive set of topics established by Bureau of Ocean Energy Management (BOEM) precedent.	
Does a comprehensive list of permits and jurisdictional agencies support the feasibility of the proposed ROICE project within the identified timeframe?	• Decommissioning and disposal plan • Monitoring and maintenance plan	
Does a preliminary list of required management system procedures, protocols, and plans to comply with reasonably anticipated permits support the feasibility of the proposed ROICE project?		
Do learnings from early engagement with relevant stakeholders, including local communities, fishing industries, and environmental groups support the feasibility of the proposed ROICE project?	Communicate project goals, benefits, and potential impacts transparently.	
Does an assessment of potential safety hazards associated with the repurposing process and cleaner energy operations support the project's feasibility?		
Does an assessment of potential environmental liabilities of the associated with the repurposing process and cleaner energy operations support the project's feasibility?		

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