

CONSENTING PROCESSES FOR OCEAN ENERGY ON OES MEMBER COUNTRIES

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A report prepared by WavEC for the OES under *ANNEX I - Review, Exchange and Dissemination of Information on Ocean Energy Systems*



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1. BACKGROUND

Administrative and regulatory issues concerning permitting of ocean energy projects in the sea are likely to be the highest non-technical barrier to overcome on the development towards large scale ocean energy implementation. The consenting process is regarded as a critical barrier for industry and to future progress of the sector. This can be attributed to the complexity of the consenting process as well as the absence of well-defined procedures to obtain consent. The time involved in obtaining consents is of great concern to most developers as it has definite resource and economic implications for project planning. Some consents are only required for certain types of projects, under specific circumstances or to particular sites or part of a project. The result of this is that for developers there is no consistency in application processes across different locations resulting in difficulties for business planning and project management.

Ocean energy projects are relatively new to many regulatory bodies and are often considered under legislation developed for other sectors (e.g. oil & gas or aquaculture) which may not be ideally suited to a new technology such as ocean energy. Consequently separate consents are often necessary for the marine, terrestrial and electrical elements of a project. There is a general opinion that development activities are stimulated in countries that implement a clear and consistent consenting process for ocean energy. As a way to expedite the consenting process, some countries have attempted to “streamline” their procedures so as to improve their operation. Elsewhere streamlining has culminated in the adoption of a “one stop-shop” approach to administration of the consenting process, for example, Scotland.

Maritime Spatial Planning and Strategic Environmental Assessment have been identified as tools which can support and inform future consenting of ocean energy projects. Some countries are in the process of developing MSP systems and others have already zoned sea areas for marine renewable energy development. The operation of consenting systems will always be influenced to a large extent by national governance structures, given ultimate authority rests primarily with them. Likewise dedicated policies, strategies and incentives for renewable energy introduced by respective governments can have a significant impact on progressing industry development.

At the 25th ExCo meeting (October 2013), the subject of “Permitting and Licensing” was mentioned as one important topic that the ExCo should address. It was suggested that gathering information from different countries on this issue was within the scope of work contained in *Annex I: Review, Exchange and Dissemination of Information on Ocean Energy Systems*.

2. EXECUTIVE SUMMARY

The present report summarises several aspects of the consenting process for ocean energy in the OES member countries, based on a collection of information provided by the Delegates.

The term 'consenting process' is used in this report to describe all of the consents or permissions necessary to deploy a device or array of devices in the sea. The following technologies are considered: wave, tidal current, salinity gradient and OTEC. Tidal barrage is not considered due to its distinct stage of development. This report addresses the following topics, in separate chapters:

- Marine spatial planning policies and site selection for ocean energy development
- Regulatory issues and authorities involved in the consenting process
- Environmental impact assessment (EIA) requirements
- Consultation as part of the licensing process
- Challenges to the consenting process and streamlined licensing processes

MARINE SPATIAL PLANNING POLICIES

Each OES member country reports on their existing marine spatial planning (MSP) policy; how it is being effectively implemented and to what extent MSP is used as a decision making tool for ocean energy development. It further includes information about site selection carried out in each country, namely, how sites have been identified and implemented.

CONSENTING PROCESS

The main sequential steps required to get permission for project deployment are reported for each OES member country, as well as the identification of the authorities involved in the consenting process and their specific role.

References to legislation and regulations related with the consenting process for ocean energy are included with indication of fit-for-purpose consenting regulation/legislation adapted to better suit ocean energy. Plans for changing legal and administrative frameworks to facilitate development and more integrated marine governance are also mentioned.

Some countries give their view on the clarity of the process for applicants (what permits are required, in what order and what information must be supplied at what time).

ENVIRONMENTAL IMPACT ASSESSMENT

This chapter addresses several issues related with the Environmental Impact Assessment (EIA) process: whether it is always required or instead a case-by-case analysis is applied. If a case-by-case approach is

followed, the main criteria used for decision making process is mentioned, as well as the entity responsible for this decision.

There is also some information about the stage of the process at which the EIA is submitted, and in some countries how EIA baseline and post-deployment monitoring steps of the projects deployed have been carried out.

CONSULTATION

Consultation, usually a legal requirement, is briefly described by each OES member country: how is it conducted, in what stage of the process is done and who are the mandatory consultees. Some examples are provided, including informal consultation activities implemented during the licensing process.

CHALLENGES TO THE CONSENTING PROCESS

OES member countries identify the main factors that can delay the consenting process. Reference to existence or lack of specific guidance and advice available to help developers during the process is reported. To help address the challenges of developing ocean energy projects some countries have been taken steps towards delivering a simpler, more streamlined licensing system to handle ocean energy applications. In some countries a single point of contact (a "one-stop-shop") for developers to obtain consents/licenses for ocean energy projects has been established in order to make the process of gaining consents more streamlined. Usually deployment in designated test centers are already pre-consented, so developers do not have to submit a full application comprising all the typical consents providing certain initial conditions are met. OES member countries comment if this is the situation in their existing test centers.

CONCLUSION AND RECOMMENDATIONS

The report concludes with a set of recommendations aiming to eliminate non-technical barriers and to ensure that the challenges encountered in the consenting process of ocean energy are overcome. These recommendations are presented for four identified critical themes:

- Integrated planning
- Administrative procedures
- Environmental Impact Assessment
- Consultation

The development of guidance documents and/or public platforms or databases is a recurrent recommendation over the identified critical themes.

3. MARINE SPATIAL PLANNING (MSP) POLICY

Various countries have started to use marine spatial planning for ocean energy development however pre-selected areas have been mainly defined for offshore wind. Site selection for ocean energy is carried out on a case by case basis.

CANADA

Currently, at the federal level, there is no existing marine spatial planning policy for ocean energy. Spatial planning for ocean energy takes place in the province of Nova Scotia.

Pre-selected areas for tidal current energy development have been selected in the province of Nova Scotia, in the Bay of Fundy.

Site selection was determined, in-part, by a Strategic Environmental Assessment (SEA) on tidal energy development in the Bay of Fundy (FORCE). Resource assessments were also considered as part of the site selection. Another area in Nova Scotia that recently underwent an SEA is Cape Breton Island, inclusive of the Bras d'Or Lakes.

CHINA

In 2012, the State Council approved the National Marine Functional Zoning (2011–2020), and 11 planning of provinces, municipalities and autonomous regions. China has started the Marine Functional Zoning work in 1989.

Marine functional zoning is zoned into 8 categories: farming fishery area, port, shipping area, industrial and urban area, mineral and energy, touristic areas, marine protected areas, special use area and reservations.

MSP is used as a decision making tool: every project relating to the sea must conform to the Marine Functional Zoning.

Pre-selected areas for ocean energy development have been defined, under the category "mineral and energy". Site selection planning should be consistent with the National Renewable Energy Development Planning, Marine Functional Zoning, Island Protection Planning and Marine Environmental Protection Planning.

DENMARK

The Danish Parliament and the various Governments of Denmark have in their Energy Agreements focus on Off-shore and Near-shore spatial planning in the long-term goal for Danish energy policy.

The latest Energy Agreement (Energy Bill) for the period 2012–2020 has specific focus on offshore wind turbine sea-spaces (Kriegers Flak and Horns Rev) as well as 6 dedicated offshore coastal areas.

MSP is used as a decision tool for Offshore wind. Specific ocean energy space is not reserved.

Spatial planning is coordinated with other interests, at the sea territory. In Denmark the following core public authorities administer the maritime spatial planning: 1: the Danish Coastal Authority (an agency under The Danish Ministry of the Environment); 2: The Danish Maritime Authority (a government agency under the Ministry of Business and Growth); 3: The Danish Energy Agency, (an agency under the Ministry of Climate, Energy and Building); 4 : The Danish Environmental agency, (an agency under The Danish Ministry of the Environment); 5: the Ministry of Defence.; (6: Local municipalities)

Pre-selected areas for ocean energy have not been defined. However. Historic test sites are recognized as potential areas by authorities.

GERMANY

The Federal Ministry of Transport, Building and Urban Development (BMVBS) has determined the targets and principles of spatial planning for the German Exclusive Economic Zone (EEZ) in the North and Baltic Sea with regards to economic and scientific use, safety and efficiency of maritime traffic as well as protection of the marine environment. The spatial plan for the EEZ in North Sea and Baltic Sea, including its justification, environmental declaration summary, monitoring measures and environmental reports are available for public in the libraries of the Federal Maritime and Hydrographic Agency. The marine spatial planning covers all three dimensions of the marine space (surface, water column and seabed), and identifies specific zones for maritime activities. Maritime spatial planning is used as a decision making tool in all activities developed in the North Sea and Baltic Sea.

There are no defined areas for ocean energy in Germany and the Marine Spatial Planning regime does not specifically consider ocean energy developments. However, areas for offshore energy power production have been specified and implemented by the Federal Government's strategy for wind energy use at sea (2002), which is part of its overall sustainability strategy. This plan aims to create framework conditions for offshore wind energy potential to be exploited. In addition, the Federal Government's Energy and Climate Programme (IEKP) of December 2007 formulates the goal of increasing the proportion of renewable energies in electricity production.

Note: There are no well-defined procedures to obtain consent for ocean energy, therefore these projects are considered under the legislation developed for the offshore wind sector.

IRELAND

The Marine Coordination Group, chaired by the Minister for Agriculture, Food and the Marine, is progressing the development of Marine Spatial Planning in Ireland, work that will continue in the short and medium term.

In the meantime, an EU Directive on a Framework for Maritime Spatial Planning has been adopted and published. The Directive requires Member States to put maritime spatial plans in place by March 2021 at the latest.

As part of the Department of Communications, Energy & Natural Resources (DCENR) Offshore Renewable Energy Development Plan (OREDPP) a Strategic Environmental Assessment for Marine Renewables was conducted. The purpose of this was to evaluate the likely significant environmental effects of implementing plans to develop offshore renewable at low, medium and high scenarios so that areas could be prioritised for development.

Separately the Marine Renewables Industry Association (MRIA), the trade association for marine renewables on the island of Ireland, has previously published a White Paper on Initial Development Zones (MRIA, 2010). This proposed that four Initial Development Zones (IDZs) for Ocean Energy be prioritised by Government and that efforts to achieve the 2020 target be focused in these zones.

Site selection is a matter for project developers in the first instance, subject to the relevant consent processes. Work has now commenced, through the OREDPP, on mapping opportunity and constraints to inform future development.

Marine Spatial Planning is not currently used as a decision making tool, however the 2014 EU Directive on a Framework for Maritime Spatial Planning requires Member States to put maritime spatial plans in place by March 2021 at the latest, Ireland has until 2016 to transpose this directive into Irish law. The Department of the Environment, Community and Local Government will play a leading role in the development of a maritime spatial planning framework for Ireland.

KOREA

There is no specific legislation for MSP alone, but legal base for offshore energy power production is governed and implemented by different national and domestic authorities. Ministry of Ocean and Fisheries (MOF) has Public Waters Management Act & Reclamation Act (Act No. 11690, 2013), which provides framework act and general law governing management of public waters when installing structure or using it:

- Public Waters Management Act
- Public Waters Reclamation Act

One may install a structure in accordance with either of the Acts, but depending on their governing laws, applicable management requirements may differ.

Pre-selected area for ocean energy has not been defined yet, although there are legal considerations to be made in the process of site selecting primarily by the Public Water Management & Reclamation Act and Coast Management Act. Construction of demonstrative offshore wind turbine of Jeju Island was carried out based on the assessment above.

MEXICO

Although there is not a clear MSP policy, there are legal instruments that applies to the matters related to the sea:

- The Mexican Constitution (Constitución Política de los Estados Unidos Mexicanos) - It points out that individuals and private Mexican companies would be able to use or exploit these resources only through concessions given by the National Executive.
- General Law of National Assets (Ley General de Bienes Nacionales) - This law regulates all the aspects of the assets that constitute the Nation's patrimony. It designates marine assets as assets of common use and points out that the special exploitation of them requires a concession, an authorization or permission given in accordance with the conditions and requirements of every corresponding law.
- Federal Law of the Sea (Ley Federal del Mar) - This law is of federal jurisdiction and regulates the marine zones that are part of the national territory.
- Marine Sector Programme 2013-2018 (Programa Sectorial de Marina 2013-2018)- It specifies the objectives, priorities and policies consistent with the National Plan of Development (Plan Nacional de Desarrollo) referring to sea issues.
- Law of National Waters (Ley de Aguas Nacionales) - It regulates the use, utilization or exploitation of national waters, as well as the distribution, use and preservation of its quantity and quality in order to achieve integral sustainable development of them.
- Law on the Use of Renewable Energy and Energy Transition Financing (LAERFTE) - (Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética LAERFTE). This law regulates the renewable energies and clean technologies harnessing to generate electricity with private purposes. Likewise, it establishes the national strategy for energy transition funding.
- General Law of Ecological Balance and Environmental Protection (Ley General de Equilibrio Ecológico y Protección al Ambiente) - This law refers to the preservation and restoration of the ecological balance as well as the environmental protection in the national territory and in the zones where the Nation exerts its sovereignty.

Pre-selected areas for ocean energy have not been defined. However some areas have been identified with ocean energy potential in the national territory. The Secretariat of Energy (SENER) provides this information through the National Inventory of Renewable Energies (INER): <http://iner.energia.gob.mx/publica/version2.0>

MONACO

Marine spatial planning policy exists in Monaco in the sense that some marine areas are protected or restricted. It is implemented by the technical departments as the department of maritime affairs and the department of the environment, the marine police and one NGO, the Association Monegasque pour la Protection de la Nature

Pre-selected areas for ocean energy have not been defined. Site selection is carried out by the Government according to the need or proposals

NIGERIA

There is a marine planning policy planning managed by several agencies depending on the type or types of activities. Examples:

- Department of Petroleum Resources (DPR) - Management and monitoring of oil and gas activities.
- The Nigerian Maritime Administration and Safety Agency (NiMASA) - responsible for: Maritime safety administration, maritime labor regulation, marine pollution prevention and control, search and rescue, sabotage enforcement, shipping development and ship registration training and certification of seafarers, and maritime capacity development.
- Nigerian Ports Authority - Management of ports and harbors.

The Federal Ministry of Environment is responsible for the preparation of a comprehensive national policy for the protection of the environment and conservation of natural resources, including procedure for environmental impact assessment of all developing projects; promote cooperation in environmental science and conservation technology with similar bodies in other countries and with international bodies connected with the protection of the environment and the conservation of natural resources; monitor and enforce environmental protection measures

The Nigerian Institute for Oceanography and Marine Research (NIOMR) conduct research into the resources and physical characteristics of the Nigerian territorial waters and the high seas beyond.

There are no pre-selected areas for ocean energy. It is expected that areas for development of OTEC will be identified following the completion of feasibility studies for OTEC.

NORWAY

Offshore renewable energy is governed by the Offshore Energy Act. According to this act, the construction of offshore wind power and other renewable energy production units/facilities at sea, can only take place after the Norwegian Government has opened specific geographical zones for license applications.

The Norwegian Water Resources and Energy Directorate (the NVE) has carried out a strategic environmental assessment (SEA) for 15 zones, and presented a recommendation to the Ministry of Oil and Energy (the OED) in January 2013. The Ministry will decide which zones are to be opened for license applications. These decisions are under process.

The selection of the 15 zones was carried out through a screening where technical opportunities were analyzed along with impacts on petroleum interests, shipping, fisheries and a range of environmental interests.

PORTUGAL

The implementation of MSP was launched in December 2008. After being in public consultation for about 3 months (from November 2010 to February 2011), the plan was

finally published in November 2012 and released on the official website of the Directorate-General of Marine Policies¹.

The plan provides spatial information on the current and potential situation regarding marine activities, uses and functions within coastal and marine areas along the continental Portuguese territorial waters, integrating also management guidelines. More recently, Law n.º 17 issued on April 2014, established the regulation of MSP implementation.

The Marine Spatial Planning is used as a decision making tool: there's a tendency to site projects in the already designated area for ocean energy developments: the Ocean Plug – Portuguese Pilot zone.

The selection of the Ocean Plug site has been based in a previous study carried out for all coastal area where a resource assessment analysis has been made and crossed with other marine uses (e.g. fisheries, leisure, navigation routes, etc).

SOUTH AFRICA

There is no marine spatial plan, but an Integrated Coastal Management Act determines the land use along the coast line.

No formal process for site selection is carried out. At present the Centre for Renewable and Sustainable Energy Studies is carrying out resource and site assessment studies in the form of PHD and masters dissertations.

SPAIN

There is no a specific MSP policy.

Pre-selected areas for ocean energy development have not been defined. Site selection is carried out on a case by case basis.

In the Basque country, in the case of BIMEP, a MSP approach was used for selecting the site.

SWEDEN

New Swedish legislation on MSP is in force from 1 September 2014.

The Government will adopt the marine spatial plans that (according to a Government proposal) will be prepared by the Swedish Agency for Marine and Water Management.

According to the new legislation, the Government may adopt separate binding regulations linked to the plans prohibiting or limiting activities in destined geographical areas.

There are no pre-selected areas for ocean energy. Instead there are national interest areas for off-shore wind. Within areas of national interest it is not allowed to undertake activities than can seriously harm the designated values or undertake activities that significantly complicate the intended use of the area.

UNITED KINGDOM

MSP policy exists in UK and details are presented at:

<https://www.gov.uk/government/collections/marine-planning-in-england>

An interactive tool – the Marine Information System – explains how marine plans apply to different marine sectors and geographic areas. It highlights policies that apply to a chosen area to inform plan users, and mapping information makes searching for your area of interest easier. Available at: <http://mis.marinemangement.org.uk/>

11 marine plan areas will have a marine plan with a long-term (20 years) view of activities and will be reviewed every 3 years. There will be 10 marine plans as the North West will

¹ http://www.dgpm.gov.pt/Pages/POEM_PlanoDeOrdenamentoDoEspacoMarinho.aspx

have a single plan following requests to have a single process and one plan for these areas. All marine plan areas are scheduled to have a plan by 2021.

Marine Spatial Planning is used as a decision making tool currently only in the East of England Inshore and Offshore areas.

The Crown Estate carries out periodic tendering processes for wave/tidal areas. These areas are scoped and Strategic Environmental Assessments carried out.

USA

[MSP was included as a component of the National Ocean Policy Implementation Plan which was released in 2013.](#)

The implementation plan supports MSP at a regional level. The United States and its territories were divided into nine Regional Planning Bodies (RPBs). Each RPB is composed of Federal, state, local and tribal (indigenous) representatives. All RPBs are at different stages in the planning process. Some regions have developed data portals to share information on sea space usage, while other regions have elected to not perform any type of MSP to date. The RPB for a specific region has no regulatory authority and it is still the responsibility of the federal and state agencies to regulate the use of ocean space according to established national legislation and policies as they consider any actions recommend by the RPBs.

Several states in the United States (e.g. Rhode Island, Massachusetts, and Oregon) have developed and implemented marine plans of their own, all were initiated before the National Ocean Policy Implementation Plan was released. Interest in developing ocean renewable energy is one driver for the formation of these state plans.

On a national level, marine spatial planning is meant to be used to inform decisions made by the individual state or federal agencies, and is likely to occur in a non-prescriptive fashion since the RPBs do not have autonomous regulatory authority. On a state level, marine plans have also been used to help guide project siting decisions.

Pre-selected areas for ocean energy development have not been defined on a national level. State Task Forces led by the Department of Interior, Bureau of Ocean Energy Management (BOEM) have identified and set aside initial areas for the development of Offshore Wind.

A number of states have also identified selected areas for ocean energy development, including Massachusetts, Rhode Island, and Oregon. Sites of most proposals for wave and tidal development are put forward by project developers. Areas identified through spatial planning and pre-selected processes have typically involved collaborative processes including multiple stakeholder groups.

4. CONSENTING PROCESS FOR OCEAN ENERGY

The number of permits, number of authorities involved in the process and dedicated legislation and regulations differ considerably in the OES member countries. In all the countries more than one authority is directly or indirectly involved and several permits are required. Ocean energy development's interact with other sectors such as navigation, fishing, aquaculture, defense, natural protected areas, etc. which is the reason why the projects will often apply for more than one permit to more than one authority. Appendix 2 gives more detailed information on the consenting process for each country. The table below presents the authorities involved, main legislation and regulatory aspects and a summary on permits found in the Appendix.

CANADA

AUTHORITIES INVOLVED	<p>Federal authorities: Fisheries and Oceans Canada, Transport Canada, Environment Canada, Canadian Environmental Assessment Agency, Employment and Social Development Canada, Public Works and Government Services, Aboriginal Affairs and Northern Development Canada.</p> <p>Province of Nova Scotia: Department of Energy, Department of Natural Resources, Department of Fisheries and Aquaculture, Department of Environment, Department of Labour and Advanced Education, Office of Aboriginal Affairs.</p> <p>Members of Nova Scotia's Federal/Provincial One Window Committee on Tidal Energy:</p> <ul style="list-style-type: none"> • Federal: Atlantic Canada Opportunities Agency, Transport Canada, Natural Resources Canada, Fisheries and Oceans Canada, Canadian Environmental Assessment Agency, Environment Canada, Aboriginal Affairs and Northern Development Canada • Provincial: Energy, Natural Resources, Aboriginal Affairs, Fisheries and Aquaculture, Labour and Advanced Education, Environment, Economic and Rural Development and Tourism
LEGISLATION AND REGULATIONS	<p>There is no legislation or regulations designed solely for the licencing of renewable energy activity in the offshore.</p> <p>Nova Scotia's Electricity Act and Renewable Electricity Regulations outline two paths for the development of tidal energy projects: at a community level and large-scale R&D level. The Regulations outline a comprehensive application process that projects must undergo in order to receive one of two feed-in tariff rates.</p> <p>In 2011, Canada's Federal Government established the Marine Renewable Energy Enabling Measures program to develop and present to Cabinet, by March 2016, a federal policy framework for administering marine renewable energy activities.</p> <p>The federal department of Natural Resources Canada is conducting extensive research and analysis on relevant federal legislation and regulations and on other countries' marine renewable energy regulatory regimes under this program.</p> <p>Nova Scotia is actively working on the development of a Marine Renewable Energy Act, which is anticipated to be tabled in spring 2015.</p>
CONSENTING PROCESS	<p>At the federal level, authorizations required prior to the approval of marine renewable energy projects include:</p>

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- Land use
 - Project activities
 - Transmission
 - Occupational health and safety
 - Operational safety
 - Environmental protection
 - Navigation

At the provincial level: in Nova Scotia projects are not able to proceed in an area that has not undergone a Strategic Environmental Assessment.

At FORCE testing site: Projects must be approved by the Minister of Energy and are selected through a competitive Request for Proposal process.

CHINA

AUTHORITIES INVOLVED	<ul style="list-style-type: none"> • Financial funding authorities: National Development and Reform Commission, Ministry of Finance, Ministry of Science and Technology and State Oceanic Administration (depending on the financial funding sources of projects) • Ministry of land and resources and related local department. • Local electricity sector – approval of the grid-connection; • Environmental Protection Departments - responsible for the EIA; • Energy Management Departments - responsible for reviewing the energy assessment report.
LEGISLATION AND REGULATIONS	<p>Regulations issued by the State Oceanic Administration for the consenting process of ocean energy projects:</p> <ul style="list-style-type: none"> • Marine Renewable Energy Special Funds Management Interim Measures • Marine Renewable Energy Special Fund Project Implementation Management Rules <p>Regulations and legislation adapted for ocean energy:</p> <ul style="list-style-type: none"> • National Medium and Long-term Science and Technology Development Plan (2006-2020)" • "Renewable Energy Law Amendment" • "Renewable Energy Tentative Management Measures for Electricity Generating Prices and Expenses Allocation" • "Interim Measures for Renewable Energy Electricity Price Additional Income Allocation"
CONSENTING PROCESS	<p>The consenting processes differs depending if it is a project funded by the government or with private funding. Required approvals:</p> <ul style="list-style-type: none"> • Initial approval from the Development and Reform Department for approval • EIA approved by the Land Resources Departments and Environmental Protection Departments. • Approval of the feasibility study report and project application report by the Development and Reform Department. • Planning permission procedures approved by the Urban Planning Department

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- Formal land use approved by the Land Resources Department
 - Certificate of right to use sea areas from the State Oceanic Administration or local government of maritime administrative departments.
 - For power production and grid connection a specific permitting procedure is required which involves the utility distribution grid operator.
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DENMARK

AUTHORITIES INVOLVED

- Danish Coastal Authority (an agency under The Danish Ministry of the Environment) - Responsible for the use of the coast (together with local Municipalities), and the seabed (eg power cables) in Danish territorial waters, including coastal protection and erosion abatement.
- Danish Maritime Authority (a government agency under the Ministry of Business and Growth) - Responsible for maritime safety and the use of the sea territory.
- Danish Energy Agency, (an agency under the Ministry of Climate, Energy and Building) - The conditions for offshore farms are laid down in the Promotion of Renewable Energy Act. It provides in its chapter 3 that the right to exploit energy from water and wind within the territorial waters and the exclusive economic zone (up to 200 nautical miles) around Denmark belongs to the Danish State.
- Danish Environmental Agency, (an agency under The Danish Ministry of the Environment) - Responsible for the Environmental Impact assessment together with the Danish Energy Agency
- Ministry of Defense - Monitoring of maritime traffic and maritime environment, Rescue services and handling of pollution at sea.

LEGISLATION AND REGULATION

- "Promotion of Renewable Energy Act"
- "Energy Agreement (Energy Bill) for the period 2012–2020"

CONSENTING PROCESS

Three licenses are required:

- License to carry out preliminary investigations – consent in 1-2 months: Investigations covers MetOcean, Seabed Bathymetry, EIA, Maritime safety, decommissioning plans and public hearing and can take from few months to several years depending on the complexity of the area. (e.g. EU Nature 2000 area, EIA, fishing and breeding grounds, Maritime vessel intensity, seabed/geophysical conditions, coastal conditions, landscape and seaview conditions and values etc.)
- Licence to establish the offshore site (only given if preliminary investigations show that the project is compatible with the relevant interests at sea)
- Licence to exploit Ocean power for a given number of years, and an approval for electricity production. (given if conditions in licence to establish project are kept)

The consenting process last from few months for a single device at unproblematic sites to several years.

GERMANY

AUTHORITIES INVOLVED	<p>The Federal Maritime and Hydrographic Agency (BSH) is the federal agency overseeing licensing for renewable energy projects in the EEZ based on the Maritime Spatial Plan for the North Sea and the Baltic Sea.</p> <p>Within the 12 nautical mile limit, i.e. in the area of the territorial sea, responsibility for the approval of renewable energy rests with the German coastal states, because an approval granted by the BSH for installations in the EEZ is not legally binding for approval procedures involving installations on land and in the territorial sea.</p> <p>The BSH and the competent regional Waterways and Shipping Directorate also examine whether the project would constitute a hazard to navigation. For a wind farm project to obtain approval, the regional Waterways and Shipping Directorate must have consented to it under the aspect of navigational safety.</p> <p>The Federal Energy Regulator (BundesNetzagentur) is in charge of approving applications for an offshore grid on economic grounds.</p>
LEGISLATION AND REGULATION	<p>Since there are no well-defined procedures to obtain consent for ocean energy projects these are considered under the legislation developed for offshore wind sector. The legislation used to regulate offshore renewable energy deployments in the North and Baltic Sea is the Maritime Spatial Plan.</p>
CONSENTING PROCESS	<p>The approval procedure has the following steps:</p> <ol style="list-style-type: none"> 1. Competent authorities like the regional Waterways and Shipping Directorates and the Federal Agency for Nature Conservation are informed about the project application and asked to comment. 2. A larger number of Stakeholders are involved in the process; the public has the possibility to inspect the planning documents. A project presentation is offered to the project planner during an application conference. An important aspect of the approval procedure is an early involvement of the German coastal states, which have to approve the laying of land feeder cables through the territorial sea for the transport of electricity to onshore substations 3. If required by the BSH, the applicant prepares an Environmental Impact Assessment and a risk analysis to be reviewed by the BSH and if requirements are met the project is approved.

IRELAND

AUTHORITIES INVOLVED	<p>The main steps and competent authorities currently involved in consenting for offshore energy projects are:</p> <ul style="list-style-type: none"> • Foreshore licence / lease: The Department of the Environment, Community and Local Government (DECLG) is responsible for consenting of activities / developments on the foreshore (HMW to 12 mile territorial sea limit). While the nature, scale and impact of these projects can vary significantly, all require foreshore consent (i) to investigate/survey the site; (ii) to construct the development (and cabling); and (iii) to occupy the property. • Permission to generate and Grid connection: The Commission for Energy Regulation (CER) are responsible for licensing construction of new generating stations and their subsequent operation. Generators with an installed capacity of 1 MW or less do not need to apply to the CER for an authorisation to construct or a licence to generate. They stand authorised and licensed by SI 383 of 2008 and SI 384 of
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2008. All other generators must submit an application to CER. However, those generating less than 10 MW are licensed by way of order: Generators above the 10 MW thresholds are issued their own individual licences.

Grid connection is subject to a separate administrative process involving either the transmission or the distribution system operators, EirGrid or ESB respectively.

- Onshore development: Where a project includes onshore components, consent for development will be required from relevant local planning authorities and/or An Bord Pleanála (The Irish Planning Authority).

However a new Maritime Area and Foreshore (Amendment) Bill is expected to be enacted in 2015 and will reform the Irish foreshore consenting process including, the authorities involved.

LEGISLATION AND REGULATION

There is no specific legislation to deal solely with ocean energy. Ocean energy developments are subject to the same legislation as any other marine development.

The Irish Government has recently published the Offshore Renewable Energy Development Plan which enables cross government support and collaboration for the sector and will inform ongoing review of relevant legislation.

The current Foreshore Act has been in place since 1933 and has been subject to limited updating in that time. A new Maritime Area and Foreshore (Amendment) Bill is expected to be enacted in 2015 and will reform the Irish foreshore consenting process. Details of forthcoming Bill have yet to be finalised, but the new Bill will aim to align the foreshore consent system with the planning system, to streamline the EIA process for projects and to provide a coherent mechanism to facilitate and manage development in maritime area.

Two other policy initiatives are also of relevance. The Government of Ireland published 'Harnessing Our Ocean Wealth' in 2012. This is an Integrated Marine Plan for Ireland which has the over-arching goal of delivering a thriving maritime economy, healthy ecosystems and more engagement with the sea. As part of the implementation of this policy two specific Task Forces have been created. The Enablers Task Force focuses on specific actions identified around the enabling actions need to deliver the objectives of the policy. This Group has been working on Maritime Spatial Planning at a strategic level. The Developers Task Force focuses on developing growth and jobs in targeted emerging sectors that require a high degree of integration. This included Marine Renewable Energy and a number of State agencies as well as industry developers have contributed to the work of the Task Force.

With respect to the Offshore Renewable Energy Development Plan (OREDPP) a Steering Group has been created to take forward actions identified in the plan. These actions are being delivered by three working groups with particular focus on the environment, job creation and infrastructure development.

CONSENTING PROCESS

Leases are required for exclusive right of use of the foreshore where developments or structures are of a permanent nature. Licences are generally required for temporary activities or developments that do not involve exclusive rights to the foreshore. The maximum term allowed for a lease or licence under the current legislation is 99 years, although generally the term granted for a lease is around 35 years.

Currently, both the development consent and property management aspects of a foreshore lease or licence are addressed simultaneously by the Minister for the Environment, Community and Local Government, when determining whether it is in the public interest to grant a foreshore lease or licence. In accordance with the Foreshore Act, a lease or licence can only be issued if it is in the public interest.

Investigation licences permit a developer to undertake testing of energy devices and/or surveying at specific locations to determine their suitability for energy generation and are subject to specific conditions that address, but are not confined to, (i) the scale of the project, and (ii) the duration of occupation of the foreshore. It is important to note that

the grant of an investigation licence does not confer any right or entitlement on the licensee for any future use or occupation of the licensed area.

There are no timelines prescribed under the Foreshore Act for decisions on foreshore licence and lease applications. At all stages, the Minister reserves the right to reject any application for a foreshore licence or lease, to modify the area sought under the licence / lease application or to allow others to simultaneously investigate the suitability of the area the subject of the licence / lease application.

Ocean energy developments qualify as electricity generating stations and as such are subject to the requirements of the Electricity Regulation Act, 1999. A developer requires a licence to generate and a licence to construct or reconstruct a generating station. Both applications can be made separately or together. An application for a licence to generate must be accompanied, where applicable, with an EIS, Planning Permission/Exemption, a connection offer from the relevant operator and a Power Purchase Agreement. Planning Permission may also be required from the adjoining Local Authority (County Council) regarding onshore elements of the project. If the development is likely to impact upon a Natura 2000 an Appropriate Assessment may be required.

KOREA

COMPETENT AUTHORITIES

Federal authorities: Managing authorities include the Minister of Ocean and Fisheries, director of regional maritime affairs & port office, city mayor, county governor and urban district head.

There may be additional authorities involved depending on the size and purpose of marine space usage, such as the Minister of Agriculture & Forestry and director of regional construction office.

LEGISLATION AND REGULATION

Legislation and regulations related with the consenting process for ocean energy issued are:

1. Regulation for ocean usage
 - Public Waters Management Act
 - Public Waters Reclamation Act
2. Regulation for energy development
 - Act On The Promotion Of The Development, Use And Diffusion Of New And Renewable Energy
 - Electric Source Development Promotion Act
 - Electric Utility Act
 - Framework Act On Low Carbon, Green Growth
 - Integrated Energy Supply Act
 - Submarine Mineral Resources Development Act
3. Regulation for protecting Marine ecosystem
 - Fishery Resources Management Act
 - Environmental Impact Assessment Act
 - Conservation And Management Of Marine Ecosystems Act
 - Marine Environment Management Act

CONSENTING PROCESS

The consenting process can be classified into 2 levels. The first consenting level is for public waters management and reclamation which lasts for approximately 20-30 years after its development. The other consenting level is necessary for offshore construction only, which is a shorter process that lasts 2-3 years. Details can be found in Appendix 2.

MEXICO

COMPETENT AUTHORITIES	<p>According to the actual legal framework of the marine and energy sectors, the authorities that have the faculty to be involved in the licensing process are:</p> <ul style="list-style-type: none"> • Secretariat of Environment and Natural Resources (SEMARNAT) - is in charge of promoting the sustainable use and exploitation of the federal marine-terrestrial zone and the sea-lands. It is the governmental authority that has the faculty to give or deny the concessions for the economic utilization of these resources. • Secretariat of Energy (SENER) - is in charge of the national energy policy. Regarding renewable energy, SENER is responsible for defining a national program for ensuring a sustainable energy development, preparing a national renewable energy inventory, defining transmission expansion plans to connect power generation from renewable energy to the national grid, promote projects, among other responsibilities. • National Commission of the Efficient Use of Energy (CONUEE) - is in the technical authority that promotes the energy efficiency and the sustainable use of energy. • Energy Regulatory Commission (CRE) –is the electricity and hydrocarbons regulator. This governmental entity has the faculty to give or deny permissions to generate electricity. It regulates the market and it is in charge of issue the rules, standards, methodology, contract models and energy interchange processes. • Federal Commission of Energy (CFE) - is the governmental entity that is authorized to generate, conduct, transform, distribute and supply electricity for public service along the national territory. It is in charge of the national electrical system planning, as well as the power generation, conduction, transformation, distribution and selling. • National Commission of Water (CONAGUA) - establishes de payment of fees for exploiting the federal waters. Every concessioner has the obligation to pay an established amount in order to ensure its permission to take advantage of the resources. • Secretariat of Communications and Transport (SCT) - is in charge of supplying safe, efficient and competitive systems of communications and transport. It has the faculty to authorize or issue permissions and licenses to particulars in all that concerns the communications and transport sectors.
LEGISLATION AND REGULATION	<p>Due to the fact that ocean energy is a renewable energy that has not been developed in Mexico, there is not a specific law to regulate it. In case some private companies, research centers or universities want to start a project to develop one of the ocean energy technologies, they will have to look over the following legal framework:</p> <ul style="list-style-type: none"> • Article 27th of the Mexican Constitution. (Constitución Política de los Estados Unidos Mexicanos). • General Law of National Assets (Ley General de Bienes Nacionales). • Federal Law of the Sea (Ley Federal del Mar). • Law of Ports (Ley de Puertos) • Law on the Use of Renewable Energy and Energy Transition Financing (Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética, LAERFTE). • Law of the Electrical Industry (Ley de la Industria Eléctrica). • Law of the Public Service of Electrical Power (Ley del Servicio Público de Energía Eléctrica LSPEE). • Law of National Waters (Ley de Aguas Nacionales). • General Law of Ecological Balance and Environmental Protection, LGEEPA (Ley General de Equilibrio Ecológico y Protección al Medio Ambiente). • Ecological Planning Program (Programa de Ordenamiento Ecológico) that corresponds to the site which the project will be developed. • Local regulations according to the selected site.

Although these legal instruments mention the opportunity or desire of harnessing ocean energy, as well as the actors that should intervene in the process, they do not serve as a guide to be followed by developers.

Although Mexico has just experimented a relevant change in its energy sector due to the new legislation approved and promulgated on August 11th, 2014; it does not include any regulation oriented to ocean energy and there are no plans, until now, to elaborate such regulation.

CONSENTING PROCESS	Due to the fact that marine energy technologies have not been developed in Mexico, there is not a specific process that includes licenses, consents or permits to get permission for project deployment.
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MONACO

COMPETENT AUTHORITIES	<p>The authorities involved in the consenting process are:</p> <ul style="list-style-type: none"> • Department of the Environment: checks if the project is compatible with the local environment • Department of Urban Amenities : Manages the concessions (Electricity, Water, ...) • Department of maritime Affairs : Manages the marine spatial planning
LEGISLATION AND REGULATION	There is no legislation and regulations for ocean energy.
CONSENTING PROCESS	A proposal has to be sent to the Ministry of Public Works, the Environment and urban Planning, then if the project could be of interest for the Principality of Monaco, a technical committee will be set up to analyze and implement the project. The duration will depend on the project.

NIGERIA

COMPETENT AUTHORITIES	The competent authority for consenting projects is the ocean is expected to be the Presidency in collaboration with agencies with relevant mandate in the sea, as well as NIOMR/FOT-K consortium as the contracting party in Nigeria to the OES.
LEGISLATION AND REGULATION	There is no legislation yet for ocean energy.
CONSENTING PROCESS	There is no dedicated consenting process for ocean energy projects.

NORWAY

COMPETENT AUTHORITIES	As decisions regarding opening zones for license applications are still under process, there is no authority responsible to manage the consenting process today. Consenting processes for onshore energy production governed by the Energy Act is managed by the NVE.
LEGISLATION AND REGULATION	The Ocean Energy Act of 2010.
CONSENTING PROCESS	Applications for ocean energy production are not being processed in Norway at the moment because the Ministry will decide which zones are to be opened for license applications. These decisions are under process.

PORTUGAL

AUTHORITIES INVOLVED	<p>The authorities involved in the consenting process are:</p> <ul style="list-style-type: none"> • Agência Portuguesa do Ambiente (APA)- Portuguese Environmental Agency • Comissão de Coordenação do Desenvolvimento Regional (CCDR) - Coordination Committee on Regional Development • Direcção Geral de Engenharia e Geologia (DGEG) - Energy and Geology Directorate-General • Electricidade De Portugal (EDP) - Portuguese Electricity Utility
LEGISLATION AND REGULATION	<p>Whilst there is no over-arching dedicated consenting system for ocean energy, all the required consents have been adapted to better suit wave energy developments:</p> <p>Decree Law 225/2007 - amends previous legislation on electricity production to accommodate electricity production from renewable sources and establishes regulation on the Environmental Impact Assessment process for such kind of projects.</p> <p>Changes are expected in the legislation as regards Marine Spatial Planning regulation through the implementation of the EU Directive 2014/89/UE in the country.</p>
CONSENTING PROCESS	<p>4 licenses required:</p> <ul style="list-style-type: none"> • License for water resources utilization (Título de utilização dos recursos hídricos) managed by the Portuguese Environmental Agency (APA) - this license can be authorised through a licence or a concession: <ul style="list-style-type: none"> - For devices deployed for less than one year and for installed capacity below or equal to 25 MW : a licence is required - For more lengthy time periods - a concession is mandatory • Environmental licence - managed by the regional authority “Comissão de Coordenação do Desenvolvimento Regional” (CCDR; Coordination Committee on Regional Development). • Licence for the power production or grid connection • Building license for infrastructure on land (e.g. substation, cable routes) administered by the municipal council of the area where the project is to be installed.

SPAIN

COMPETENT AUTHORITIES

- The Ministry of Agriculture, Food and Environment, through the Directorate General of Coasts - is in charge of the authorizations and concessions regarding the occupation of maritime-terrestrial areas. This ministry will also act as the decision-making body for all of the environmental aspects.
- The Ministry of Development, through the Directorate General of Merchant Navy - authorizes the precise activities when they affect maritime safety, navigation and human life at sea.
- In case of occupation of public ports, the competent port authority shall grant authorization or concession.
- Regional governments can participate in the process depending on their competences. In particular, regional governments (there are 17 in Spain) are the decision-making bodies when the site is in internal sea areas (i.e. sea areas lying between two capes).

LEGISLATION AND REGULATION

In Spain no dedicated consenting process exists for ocean energy technologies. The consenting process is based on three main legal instruments that are briefly outlined here.

- Royal Decree 1028/2007 establishes the administrative procedure for processing applications for electricity generating facilities in territorial waters. Although it focuses on offshore wind, it also includes electricity generation from other marine renewable technologies (Article 32). This Decree foresees a simplified procedure governed by Royal Decree 1955/2000 (from 1st December 2000) regulating energy transport, distribution, commercialisation, supply and the authorisation procedure for electrical power plants. RD 1955/2000 also provides that construction, extension, modification and exploitation of all electric installations listed (in article 111) require the following administrative procedures and sanctions to be followed:
- Request for Administrative Authorisation (AA): refers to the project's draft installation plan as a technical document.
- Project Execution Approval (AEP): refers to the commissioning of the specific project and allows the applicant to start construction.
- Exploitation Authorisation (EA): allows the installations, once the project is installed, to be powered up and proceed to commercial exploitation.
- Law 21/2013, December 9th, on Environmental Impact Assessment. According to this Law, all projects devoted to the production of energy on the marine environment are subject to be evaluated through a simplified environmental impact assessment process.
- Law 2/2013, of 29 May, for protection and sustainable use of coastal and amending the previous Coastal Law of 1988. It provides the legal framework for occupation of the territorial sea, as well as governing issues affecting the fishing sector and safety conditions for maritime navigation. Management and surveillance competences relating to the Public Maritime Domain on land (MTPD), which includes the territorial sea, rest with the General Council on Coast and Ocean Sustainability which forms part of the Ministry of Rural, Marine and Natural Environment. Coastal Demarcation Departments are their representatives in each coastal province and Autonomous Community. Therefore, the development of electric power projects in the territorial sea must comply with the legal requirements governing the administrative process for granting titles to territorial occupation (prior to and during project development) and associated arrangements e.g. deadlines, transfers and expiry.

Legislation and regulation that have been adapted to better suit ocean energy:

- The new law for Environmental Impact Assessment substantially reduces the time for obtaining the Environmental Impact Authorisation.
- Royal Decree 1028/2007, which establishes the administrative procedure for processing applications for authorization of electricity generation facilities in the territorial sea, is simplified for ocean energy since a competitive procedure between promoters (which applied for offshore wind) is not considered for ocean energy.

**CONSENTING
PROCESS**

The total time needed to obtain approval is approximately two years but this timeframe varies between projects. For instance, consenting of bimep started in July 2008 and ended in 2012 with the concession of marine-terrestrial public domain and the authorisation for project execution. In contrast, the consenting of the Mutriku wave power plant took less than two years as it is located onshore and consequently was subject to the consenting process applicable to an 'ordinary' renewable energy plant. The reason for such time variability to obtain the final consent is attributed to whether an EIA is required or not.

The new EIA law in Spain since 2013, aims to reduce the time scale needed for obtaining the Environmental Authorisation, establishing a time period of no more than 4 months, or 6 months if there are justified reasons, thus reducing significantly the time needed for this consenting process which was about 3 to 24 months according to the previous law from 2008.

SOUTH AFRICA

**COMPETENT
AUTHORITIES**

Two authorities are involved in the consenting process:

- NERSA (National Energy Regulator of South Africa) - energy generation permit
- ESKOM (South Africa's National Utility) - IPP access to the national grid

**LEGISLATION AND
REGULATION**

There is no fit-for-purpose consenting regulation, ocean energy projects will fall under coastal regulations and energy generation permits.

At present no legislation and regulation has been adapted to encompass or better suit ocean energy.

**CONSENTING
PROCESS**

For any power generation plant greater than 100 kW, a power generator license needs to be obtained from NERSA (National Energy Regulator of South Africa) if the plant is to be connected to the national grid. Together with such a license from NERSA, an application for generator connection to the Eskom network needs to be submitted to Eskom's IPP division. Both these applications are granted at the discretion of each entity.

The appendix lists the additional permits which would be required from either private or municipal entities.

No ocean energy projects have been implemented in South Africa and thus a timeline is unclear.

SWEDEN

**AUTHORITIES
INVOLVED**

Permits according to the environmental code are granted by the Environmental Courts with input from the County Administrative Boards. Ocean energy projects may also need consent regarding the continental shelf act. These applications are handled by County Administrative Board.

LEGISLATION AND REGULATION	<p>The consenting process for ocean energy is regulated by the environmental legislation in the environmental code (miljöbalken). The environmental code is a framework legislation which contains certain special rules applicable to water-related activities. These provisions are however applicable not only to ocean energy but to dams, building of bridges, traditional hydropower etc. There are no special rules applicable only to ocean energy.</p> <p>No legislation and regulation have been adapted to better suit ocean energy so far.</p> <p>Swedish water-law is currently being reviewed and it has been suggested that more water-related activities are made subject only to notification and not a full permit-process. However nothing has yet been decided.</p>
CONSENTING PROCESS	<p>In short: The local County Administrative Board should be contacted and informed in the beginning of the process. A consultation will then be held between the County Administrative Board, the municipality environmental service committee and the person applying for permit. At the consultation there will be discussions about the planned activity, environmental impact and the future process. After that a consultation will be held with others particularly affected by the plans. If the plans are likely to have a significant environmental impact it is mandatory to have a bigger consultation with other authorities etc. The next step for the applicant is to make an environmental impact assessment and send together with the application to the Environmental Court (this should be made within one year after the consultation or a new consultation might be needed). The Environmental Court will then decide if permit are given (supplementary information might be required before). A granted permit is in turn associated with conditions that must be met by the applicant. It is also possible that the Environmental Court determines different compensation measures like a fish fee.</p> <p>Whether it is clear or not to applicants what permits are required, in what order and what information must be supplied at what time, depends on the applicant's experience of earlier consenting process.</p>

UNITED KINGDOM

AUTHORITIES INVOLVED	<p>Authorities involved in the consenting process:</p> <ul style="list-style-type: none"> • Marine Management Organisation (MMO) • National Resources Wales (NRW) <p>In English and Welsh offshore waters, marine licences, section 36/A consents and safety zones are determined by the Marine Management Organisation (MMO).</p> <p>In Welsh inshore waters, marine licences are determined by National Resources Wales (NRW) and section 36/A consents and safety zones by the MMO. Decommissioning of offshore renewable energy installations is regulated by Department of Energy and Climate Change (DECC).</p>
LEGISLATION AND REGULATION	<p>Legislation and regulations related solely with the consenting process for ocean energy:</p> <ul style="list-style-type: none"> • The Electricity (Offshore Generating Stations)(Applications for Consent) Regulations 2006; • The Electricity (Offshore Generating Stations)(Safety Zones)(Application Procedures and Control of Access) Regulations 2007; • The Electricity Act 1989 (Requirement for Consent for Offshore Wind and Water Driven Generating Stations)(England and Wales) Order 2001. <p>Legislation and regulation that has been adapted to better suit ocean energy:</p>

	<ul style="list-style-type: none"> • Electricity Act 1989 for section 36 consents and safety zones
CONSENTING PROCESS	<p>Main sequential steps (licences, consents, permits) required to get permission for project deployment is presented in the following link:</p> <p>https://www.gov.uk/planning-development/marine-licences</p> <p>The MMO have a Key Performance Indicator (KPI) target of 13 weeks to make a determination on a marine licence application from when it is received with us. There is no such KPI for section 36 consents or safety zones.</p> <p>Information about what permits are required, in what order and what information must be supplied at what time is available at a dedicated web link.</p>

USA

COMPETENT AUTHORITIES	<ul style="list-style-type: none"> • The Federal Energy Regulatory Commission (FERC) has jurisdiction over marine and hydrokinetic facilities, including the primary transmission line, in navigable waters that are connected to the national electric grid. • The Bureau of Ocean Energy Management (BOEM) has the authority to issue leases and easements for hydrokinetic projects located partially or entirely on the OCS. • Under section 10 of the Rivers and Harbors act, the U.S. Army Corps of Engineers (COE) issues permits for any structure placed in navigable waters. They must also issue permits for any dredging that is associated with the installation of hydrokinetic facilities (e.g. transmission cables and device anchors). • The U.S. Coast Guard (USCG) – issues permits to mark all obstructions in navigable waters with navigation aids and to ensure that projects do not interfere with established shipping lanes. <p>Multiple other federal agencies are consulted during the permitting process to ensure that projects comply with a number of federal environmental protection statutes. These agencies include, but are not limited to: the National Oceanic and Atmospheric Administration (specifically the National Marine Fisheries Service within NOAA), the U.S. Fish and Wildlife Service, Environmental Protection Agency, National Parks Service, Bureau of Indian Affairs, Advisory Council on Historic Preservation.</p>
LEGISLATION AND REGULATION	<p>The Ocean Thermal Energy Conversion Act (OTECA) of 1980 granted the National Oceanic and Atmospheric Administration the licensing authority for all ocean thermal energy conversion facilities in the U.S. territorial seas.</p> <p>The Energy Independence and Security Act of 2007² directed the Department of Energy to work with the Department of the Interior and Department of Commerce to develop a program to support research and demonstration and commercial application to expand the use of marine renewable energy sources. It also allowed for the establishment of the National Marine Renewable Energy Centers. There is no regulatory authority conveyed by this Act.</p> <p>FERC carries out its regulatory authority under the Federal Power Act³. In 2008 FERC developed a Guidance for Pilot Project Licensing⁴ to provide an opportunity for developers to field test emerging hydrokinetic technology, determine appropriate sites and gather</p>

² Energy Independence and Security Act: <http://www.gpo.gov/fdsys/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf>

³ Federal Statutes with which FERC must comply: <http://www.ferc.gov/legal/fed-sta.asp>

⁴ FERC Guidance for Pilot Project Licensing: <http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/energy-pilot.asp>

information on the environmental effects of the device. The intent of the pilot project license was to speed up the licensing process for demonstration projects.

BOEM has also developed a set of regulations governing its Outer Continental Shelf Renewable Energy Program to ensure that BOEM meets its statutory requirements for overseeing offshore renewable energy projects.

The Energy Policy Act of 2005 provided guidance for federal regulation of new renewable energy technologies in general and amended the Outer Continental Shelf Lands Act to give the Secretary of the Interior authority to regulate the production, transportation or transmission of renewable energy on the OCS. This authority was delegated to BOEM. To clarify the respective regulatory roles on the OCS, a Memorandum of Understanding was adopted by the Department of Interior and FERC in 2009.

Executive Order 13514 “Federal Leadership in Environmental, Energy and Economic Performance” called for the increased use of renewable energy by federal agencies and aligning Federal policies to increase the effectiveness of local planning for locally generated renewable energy, which includes tidal, wave, current and thermal ocean energy⁵.

Pans for changing legal and administrative frameworks to facilitate development and more integrated marine governance: The Marine and Hydrokinetic Renewable Energy Act of 2013⁶ proposed to amend the Energy Independence and Security Act of 2007 to redefine marine and hydrokinetic renewable energy. It also added support for improving various aspects of marine and hydrokinetic (MHK) technologies, establishing in-water testing infrastructure and supporting in-water technology development with international partners. This act has been introduced to the U.S. Senate but has not yet received legislative or executive approval.

**CONSENTING
PROCESS**

In 2010, the U.S. Department of Energy supported the development of a handbook containing information on the siting and licensing processes for marine hydrokinetic renewable energy projects.⁷

All of the following information is summarized from and can be found in that resource.

The sequential steps are dependent upon the location of the project and whether the project will be connected to the grid. The information below outlines the necessary licenses and permits for 5 different scenarios. Many of the steps in the permitting process can overlap or occur simultaneously and there are currently no legal timelines in place for any of the steps. A schematic is also provided for each scenario.

The length of the permitting process is dependent upon the type and location of project, especially if the project is located in a sensitive area. Estimated, best-case scenario timelines for permitting of both grid-connected and non-grid connected pilot projects in state waters are 12 months; however, in practice it has taken several years to license the few pilot projects that have proceeded through the entire process (filing for a preliminary permit until receipt of the FERC license) in the U.S. Commercial scale projects in state waters may take 4 years or more to permit. Non-competitive leases on the OCS could take 3-5 years and competitive leases on the OCS could take 6-8 years for permitting. Very few projects have undergone the entire permitting process.

⁵ Executive Order 13514: http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf

⁶ Marine and Hydrokinetic Renewable Energy Act: <https://beta.congress.gov/bill/113th-congress/senate-bill/1419>

⁷ Handbook on Siting Methodologies for Hydrokinetics:

http://www.oceanrenewableenergy.com/sites/default/files/file_uploads/Regulatory%20Handbook%202010.pdf

5. ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

All license applications require supporting information on the potential environmental effects of the development. An EIA is typically required for ocean energy projects but in some countries the EIA is assessed on a case-by-case analysis.

CANADA

The Canadian version of an EIA, is typically required for projects. A federal Environmental Assessment is required for tidal current projects 50 MW or greater. Tidal current projects less than 50 MW do not require a federal Environmental Assessment. If the tidal current project is located on federal lands (i.e. the federal seabed), then a federal Environmental Analysis is required. Tidal current projects less than 50 MW and located on provincial lands (i.e. the provincial seabed), are only subject to a provincial Environmental Assessment. In Nova Scotia, a provincial Environmental Assessment is required for tidal current projects greater than 2 MW. Projects can be subject to Environmental Assessments below these thresholds at either the federal or provincial level, subject to Ministerial discretion.

The Canadian Environmental Assessment Agency is the federal authority responsible for a federal Environmental Assessment.

Environmental Assessments usually require ongoing environmental effects monitoring throughout the lifecycle of a project.

CHINA

An Environmental Impact Assessment must be submitted to SOA and related Environmental Protection Departments. The responsible for the decision on the requirement for an EIA is the Environmental Protection Departments.

A “Marine Engineering Environmental Impact Assessment Technical Guideline” is available for developers, as well as related environmental protection standards.

EIA baseline and post-deployment monitoring of the projects is not done.

DENMARK

The requirement for an EIA is on a case-by-case analysis: Technical solutions, maritime and environmental safety precautions, organizations planning process and consent to environmental risks; and involvement of and consent by relevant other interests at sea.

The Danish Energy Agency and Danish Environmental Agency are both the entities responsible for the decision on whether an EIA is required.

Monitoring of e.g. Offshore wind turbine parks are made by the owners. Decommissioning plans must be presented at application and performed at the end of e.g. periodic ocean technologies test programmes.

GERMANY

In the Exclusive Economic Zone (EEZ), the potential impacts of the planned facilities on the marine environment have to be assessed. In the course of the approval procedure, the BSH reviews whether the marine environmental features to be protected are at risk by the project deployment and informs the project’s proponent if they are required to perform an EIA. The responsible for the decision on whether an EIA is required is the Federal Maritime and Hydrographic Agency (BSH).

As for offshore wind energy, the process is much clearer since offshore wind farm projects comprising more than 20 turbines require an environmental impact assessment based on the UVPG (Environmental Impact Assessment Act). UVPG requires that applicants investigate the marine environment in the project area and

predict the impact of the projected wind farm. The BSH has issued regulations for offshore wind farms specifying the required scope of the investigations to be carried out by the applicants with respect to each of the features to be protected (so-called „Standards for the Environmental Impact Assessment“). The applicant prepares an Environmental Impact Assessment and a risk analysis to be reviewed by the BSH and if requirements are met the project is approved. There are also specific standards for the baseline and monitoring of offshore wind projects. In accordance with these standards, baseline and post-deployment surveys have to investigate impacts on features of conservation interest, i.e. fish, benthos, birds, and marine mammals in order to determine their spatial distribution and temporal variability during three main stages:

- in the pre-construction phase (baseline survey),
- to monitor the effects of construction, operation and decommissioning
- and to establish a basis for evaluating the monitoring results.

Note: There are no specific EIA steps for ocean energy projects, therefore these projects are considered under the legislation developed for the offshore wind sector. Specific EIA standards for offshore wind can provide important inputs for ocean energy deployments, as they will likely be used as a basis/ guideline for the future development of standards' for ocean energy

IRELAND

In the case of a proposed development on the foreshore, DECLG formally decides as part of the foreshore consent process whether or not a project would or would not be likely to have significant effects on the environment. DECLG undertakes a screening exercise in respect of each application to determine if an EIA is required.

Where a planning authority is involved in making a planning decision on a development, the requirement for an EIA will be decided by the associated planning authority.

In the case of a proposed development on the foreshore, DECLG is responsible for deciding whether an EIA is required or not.

Where a proposed development also requires planning consent for development onshore, the relevant planning authority (a local authority or An Bord Pleanála) as part of the planning process will decide if an EIA is required.

In the case of a proposed development on the foreshore, if an EIA is required the foreshore lease / licence application to DECLG will have to be accompanied by an Environmental Impact Statement (EIS) [term used in the Irish legislation] in accordance with section 13A(1)(c) of the Foreshore Act, 1933.

KOREA

Environmental Impact Assessment (EIA) is required before and after construction according to the Environmental Impact Assessment Act (Article 85 sea area utilization impact assessments), Framework Act on Environmental Policy (Article 25 prior examination of environmental nature), and Marine Environment management Act depending on the scale and location of development.

According to Environment Impact Assessment Act, the target projects for EIA are electric power plant with capacity of 10,000kW, solar/wind power plant of 100,000kW, submarine mining site of 300,000m², public water reclamation over 300,000 m² (over 30,000m² in protected area) etc. and projects of smaller scale are target of Prior Examination of Environmental Nature.

When EIA is executed for a project, the assessment shall be based on the objective of environmental conservation of the project after establishing it, taking into account the

environmental impacts due to the execution of such project, and the scientific knowledge, economic conditions during the time of such assessment.

EIA may be performed either by the developer or registered agent for assessment and shall report within 30 days after each assessment. The entity responsible for decision making on requirement of EIA is the Ministry of Environment.

And as for the post-construction monitoring system, an agent for assessment shall report the record of performance to the agency for the assessment of environmental impacts of the preceding year to the Minister of Environment. This may continue for minimum 5 years after construction depending on the results, every year due Jan 31st. The assessment categories are:

1. Natural Environment (weather, geological features, wildlife, marine environment etc.),
2. Living Environment (air, water quality, noise & vibration, electromagnetic fields, visual impact, hygiene etc.),
3. Social Economy Environment (population, accommodation, business, public facility, education, traffic, cultural assets etc.)

The results of the EIA are disclosed to the public via EIA database system (www.eiass.go.kr).

MEXICO

There are three cases in Mexico in which the government, through the Secretariat of Environment and Natural Resources, requires of an Environmental Impact Assessment, depending on the control it has on the environmental impacts and the size of the site where the project is planned to be developed, in order to authorize the resources exploitation. These cases are called: a) Preventive Report; b) EIA, Particular mode; c) EIA, Regional mode.

The Preventive Report occurs when the activities or works are part of an Urban Development Plan or an Ecological Planning Program previously approved by SEMARNAT; The EIA particular mode or regional mode are developed when particulars want to carry out some of the activities described in the Article 28th of the *General Law of Ecological Balance and Environmental Protection*.

The entity responsible for the decision on whether an EIA is required is the Secretariat of Environment and Natural Resources (SEMARNAT), according to the *General Law of Ecological Balance and Environmental Protection LGEEPA*.

It can be inferred from the Mexican Environmental Policy that every Company, Research Center or High Education Institute, who wants to deploy a device in the ocean with the purpose of generating electricity, would have to submit an EIA before deploying it in order to get permission to continue.

MONACO

An Environmental Impact Assessment (EIA) process is required if the project could affect maritime traffic, restricted area, marine protected area and the environment in general. The decision of conducting an EIA is taken by the Government through the Ministry of Public Works, the Environment and Urban Planning.

NIGERIA

An EIA process is required in accordance with the Nigerian guidelines and legislation.

The Federal Ministry of Environment is the responsible entity for this decision.

EIA baseline and post-deployment monitoring steps of the projects have to be done in accordance with the EIA guidelines.

NORWAY

The decisions regarding license applications for ocean energy projects are under process. According to this situation, this topic is not relevant at the moment.

PORTUGAL

An EIA is not required if the project including marine and terrestrial parts, are to be located outside the national ecological reserve, Natura 2000 sites and/or the national grid of protected areas. However, this decision still has to be confirmed by the licensing authority. If any part of the installation is located in an ecological reserve, Natura 2000 site or a protected area an Environmental Effects Assessment (ElncA) has to be performed. The ElncA is a less demanding administrative instrument than the so called Environmental Impact Assessment. The entity responsible for the decision on whether an EIA/ ElncA is required is the CCDR if it is a license, APA if it is a concession.

The baseline survey is usually made through desk based studies although some developers of the few projects that have been installed in Portugal have carried out some baseline studies as required in the declaration of the EIA.

Monitoring is usually part of the EIA declaration issued as part of the environmental license. In Portugal the onerous post-deployment monitoring have been required for some marine renewable energy projects. Evidences should be given in periodic reports that monitoring is being carried out, and its results are usually analysed by the Portuguese Institute for Nature Conservation (ICNF).

SOUTH AFRICA

The EIA is determined by the 2010 National Environmental Management Act (NEMA) and it depends on the electricity output, area covered by the infrastructure and type of construction.

SPAIN

Law 21/2013, December 9th, on Environmental Impact Assessment - According to this Law, all projects devoted to the production of energy on the marine environment are subject to be evaluated through a [simplified environmental impact assessment process](#).

The entity responsible for the decision on whether an EIA is required is The Ministry of Agriculture, Food and Environment.

There are not too many experiences related with EIA baseline and post-monitoring steps. The most interesting case can be bimep where an environmental monitoring plan is being carried out. For example, this included monitoring activities during the installation of the electrical cables.

SWEDEN

Currently an EIA is always required, however the level of detail and scope of necessary investigations naturally varies depending on the character of the project. This legislation is currently under review and it is possible it will be altered.

Permits usually contain conditions regarding monitoring the environmental effects of the project.

UNITED KINGDOM

EIA is assessed on a case-by-case basis. Assessment is based on the size, nature and location of each proposal as directed by Annex II of the Marine Works (Environmental Impact Assessment) Regulations 2007 or Schedule II of the Electricity Works (Environmental Impact Assessment)(England and Wales) Regulations 2000.

The Marine Management Organisation (MMO) is responsible for providing a decision on whether an EIA is required or the applicant can voluntarily opt in to the process.

The Environmental Statement (ES) will be submitted at the application stage for a marine licence. However, draft ES chapters may be reviewed by the MMO and its technical advisors at the pre-application stage.

USA

[A National Environmental Policy Act \(NEPA\) analysis is always required prior to any action taken by a federal agency.](#)

NEPA was enacted to ensure that federal agencies evaluate potential environmental impacts of any proposed action and reasonable alternatives. These environmental impacts include effects on natural resources and the human environment. During an initial scoping process, the agency responsible for the project determines the analytical process to be performed and identifies potential environmental issues to be addressed. As a result of the scoping process the project either receives a Categorical Exclusion (CX) from a detailed environmental review, or an Environmental Assessment (EA) or Environmental Impact Statement (EIS) must be prepared. A CX is issued if the federal agency determines, based on prior experience with similar projects, that the proposed action will not have a significant adverse impact on the environment. The choice to perform an EA or the more rigorous EIS depends on the number and complexity of issues identified during the scoping process. Each state also has a parallel process for evaluating potential environmental effects of MHK projects, although portions of each state process builds off the NEPA process.

A NEPA analysis is required any time a federal agency issues a decision which may produce significant effects on the environment. For MHK projects in state waters a minimum of one NEPA analysis, led by either COE or FERC is required. For non-competitive projects on the OCS at least one NEPA analysis is required. For competitive projects a minimum of two NEPA analyses are required, led by BOEM and FERC respectively. When multiple NEPA analyses are required, each will build upon information collected in a prior analysis regardless of lead agency. The lead agency for environmental analyses performed at the state level varies by state.

The results of the NEPA analysis and multiple consultations (e.g. Endangered Species Act consultation, Marine Mammal consultation, Fish and Wildlife Coordination Act consultation) that occur before leases and licenses are issued are often used to generate monitoring or mitigation requirements that must be implemented as a condition of the license. The FERC pilot project guidance places large emphasis on post-deployment environmental monitoring while the standard commercial licensing process places a larger emphasis on environmental studies conducted before the license application is filed.

6. CONSULTATION

Consultation can take a variety of forms. It can be a formal public consultation process and/or an informal consultation with all stakeholders, including local interest groups and the public ensuring that appropriate consideration is given to all stakeholder concerns and that opinions are integrated into the project decision making process. In general, consultation is a legal requirement in all countries and further informal consultation activities can be implemented during the licensing process.

CANADA

Consultations can occur as part of the Strategic Environmental Assessment process.

Nova Scotia also undergoes engagement with stakeholders, ratepayers, and taxpayers primarily at the Strategic Environmental Assessment stage, but also throughout the lifecycle of the project.

Statutory consultation required:

At the federal level, the Government of Canada has a legal duty to consult Aboriginal people when there are potential or established Aboriginal or treaty rights that may be adversely impacted by a contemplated Crown conduct, such as a marine renewable project approval.

Like the Government of Canada, the Government of Nova Scotia has a duty to consult with the First Nations of Nova Scotia, the Mi'kmaq.

Informal consultation activities:

It is essential that proponents are also directly involved in communication and engagement regarding their projects.

There are two cooperative mechanisms for Canada and Nova Scotia Mi'kmaq consultation—the Canada-Nova Scotia Memorandum of Understanding (MOU) on Consultation Cooperation and the tri-partite Mi'kmaq/Nova Scotia/Canada Consultation Terms of Reference (TOR).

The Nova Scotia Department of Energy leads an Energy Consultation Table with the participation of federal authorities and the Mi'kmaq where provincial energy issues are discussed.

CHINA

The formal mechanism of public participation consists in expert meetings to select the preferential developers.

There are two mandatory consultees:

- State Oceanic Administration - is responsible for the approval of ocean engineering
- National Marine Consulting Center - technical review of environmental impact assessment documents

Informal consultation activities implemented during the licensing process can be on a sample survey form, panel discussion, feasibility study meeting, hearing etc. and it shall include the representatives of citizens influenced by ocean engineering, legal persons or organizations.

DENMARK

Consultation is done at the stage of the preliminary investigations.

Local Municipality has to be consulted and Public hearing meeting published and held.

For the less visible ocean technologies, and sites outside the public reach (surfing, diving, bathing, leisure sailing, landscape and seascapes/values) the process can be simple and short. For visible technology the process can be longer.

Informal consultation activities can be implemented during the licensing process by direct contact with the authorities.

GERMANY

A larger number of stakeholders are involved in the process and the public also has the possibility to inspect the planning documents. The consultation processes starts upon the submission of the projects application to the competent authorities.

Mandatory consultees include all competent authorities (including the regional Waterways and Shipping Directorates, mining authority, Federal Environmental Agency, Federal Agency for Nature Conservation), associations (e.g. nature protection, commercial and small craft shipping, fisheries, wind energy associations) and the public, which also has the opportunity to inspect the planning documents. Subsequent to the second round of participation, an application conference is held during which the applicant has the opportunity to give a presentation on the project. Conflicting interests and uses are discussed, and the scope of investigations required to study possible effects on the marine environment is determined.

Note: There are no well-defined consultation procedures for ocean energy, therefore these projects are considered under the legislation developed for the offshore wind sector.

IRELAND

The provisions of the Public Participation Directive were applied to consent applications under the Foreshore Acts which require the preparation of an Environmental Impact Statement by the European Communities (Foreshore) Regulations 2009 (S.I. No. 404 of 2009) and the European Union (Environmental Impact Assessment) (Foreshore) Regulations 2012 (S.I. No. 433 of 2012). These regulations amend the Foreshore Act and apply to the consideration of foreshore consent applications subject to EIA. These regulations provide an enhanced level of public participation and information sharing on environmental matters. Further information is available from the DECLG website at the following link: <http://www.environ.ie/en/Foreshore/PublicParticipationProcess-Foreshore/>

The full list of consultees and contact details is available at:

<http://www.environ.ie/en/Foreshore/ApplyingforaForeshoreConsent/>

KOREA

Usually, consultation is required from a number of stakeholders in advance. These include the Ministry of Environment, the management agency of public waters (including the Minister of MOF, regional maritime affairs & port office, city mayor, county governor and urban district head), and the head of other related administrative agency depending on each consenting stage. These are as prescribed by Presidential Decree.

The most critical consultation that the developer should consider is the agreement of residents. As for the public sector, in the process of obtaining the Use Permit of Public Waters, as prescribed by Presidential Decree, developer should circulate the information to local residents for more than 20 days, and hold an explanatory meeting or a public hearing, if more than 30 people require it. The signed agreement from the

inhabitants in the area must be included in the documents for the use permit of public waters, thus the entire process may be deterred at this stage if the developer fails to reach an agreement.

MEXICO

In general, consultation is a legal requirement. The *Federal Law of Public Consultation* (Ley Federal de Consulta Popular) establishes, regulates and protects the Mexican citizens right to give their opinion about a matter of national importance.

Regarding an ocean energy project, according to the *General Law of Ecological Balance and Environmental Protection*, the Secretariat of Environment and Natural Resources will make public the project in the Ecological Gazette (Gaceta Ecológica) when the EIA is submitted.

The Mexican government, in compliance with the *Convention No. 169* about Indigenous and Tribal People, has the obligation to consult Indigenous people.

The National Commission for the Development of Indigenous People (Comisión Nacional para el Desarrollo de Pueblos Indígenas) is the authority responsible of the consultation process in accordance with the *Implementation of Indigenous People and Communities Consultation Protocol*. Indigenous opinions against any project, it would represent a delaying factor or a relevant interruption for the course of the project.

There are informal consultation activities implemented during the license process of other renewable energies projects.

MONACO

Consultation is usually a legal requirement if there are any needs of Public Funds and that should be done before implementing the project. The mandatory consultee is the Ministry of Public Works, the Environment and Urban Planning.

NIGERIA

Consultation is done upon submission of the EIA report and before start of implementation of project.

The statutory consultation is the Federal Ministry of Environment.

Mandatory consultees are stakeholders, communities and other responsible agencies.

Informal consultations can also take place with relevant agencies, stakeholders, communities.

NORWAY

The decisions regarding license applications for ocean energy projects are under process. According to this situation, this topics is not relevant at the moment.

PORTUGAL

Consultation is usually required as part of the legal licensing process and is usually made after the Environmental Impact Statement is delivered to the authorities for approval.

Advices are asked by the licensing authority to a number of statutory consultees namely Institute of Nature Conservation, port authorities and a number of public authorities responsible for marine resources management.

There are informal consultation activities implemented during the licensing process: usually developers prepare a number of informal public events to disseminate the project and collect the public feed-back on their activities at sea.

SOUTH AFRICA

Public consultation is required as part of the EIA process, thus formal stake holder meetings are held and documented. The stakeholder concerns are thus address through public forums.

SPAIN

Consultation is usually required as part of the legal licensing process and is usually made after the Environmental Impact Statement is delivered to the authorities for approval.

Advices are asked by the licensing authority to a number of statutory consultees namely Institute of Nature Conservation, port authorities and a number of public authorities responsible for marine resources management.

There are informal consultation activities implemented during the licensing process: usually developers prepare a number of informal public events to disseminate the project and collect the public feed-back on their activities at sea.

SWEDEN

A Consultation is done early in the process. It is the applicant that is responsible for the implementation of the consultation and that it follows all rules. In the first consultation with the authorities there will be discussions about the planned activity, environmental impact and the future process. In the next consultation others particularly affected by the plans will receive a written invitation. General organizations and public are invited through an ad in the newspaper. Discussions will be about the location, scale, design and environmental impact of the activity as well as content of the environmental impact assessment. In case of a bigger consultation, the identified parties will receive a written invitation.

Statutory consultation is required with the County Administrative Board, municipality environment steering committee and others particularly affected by the plans. If the plans are likely to have a significant environmental impact it is mandatory to have a bigger consultation.

UNITED KINGDOM

Consultation process is initiated after the initial checking of the application. This is done primarily through the online portal Marine Case Management System (MCMS) but also by email to other consultees as appropriate.

There are no statutory consultees stipulated in either the Marine and Coastal Access Act 2009, the Marine Works (Environmental Impact Assessment) Regulations 2007 or Electricity Works (Environmental Impact Assessment)(England and Wales) Regulations 2000. Consultation is taken on a case-by-case basis.

There are no informal consultation activities implemented during the licensing process.

USA

Consultation with various stakeholders and regulators is performed at multiple stages of the process. Stakeholder consultation starts at the very beginning of the project development, and public comment periods are incorporated into each of the regulatory stages.

In order to receive a FERC license or BOEM lease a series of mandatory consultations are performed, usually in conjunction with the NEPA analysis.

7. CHALLENGES TO THE CONSENTING PROCESS

7.1 BARRIERS

The main factors identified by the OES members that can delay the consenting process are the following:

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- Uncertainties regarding environmental aspects of the projects
 - For novel tidal devices, lack of scientific evidence to show that there will be no negative effect on marine flora and fauna.
 - Public acceptance and extended time of public consultations
 - Governmental permits
 - Judicial/legal rules opposed to practical solutions
 - Lack of a one-stop shop facility
 - Uncertainties and lack of information of the different public agents who have to take decisions
 - Lack of guidance to developers
 - Agreement of residents
 - Maritime safety
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7.2 GUIDANCE AND ADVICE

Guidance and advice for the consenting process is a key part of the ocean energy planning system. To help address the challenges of developing ocean energy, many countries have dedicated websites or technical support to make clear the process to be followed by developers and/or other applicants, and the roles and responsibilities of the teams and organisations involved in the consenting processes. However in a few countries the information is still dispersed in several sources.

CANADA	The One Window Committee, along with the Province of Nova Scotia's Marine Renewable Energy Strategy provide guidance to developers on potential permits/approvals, and review processes.
CHINA	It is clear to applicants what permits are required, in what order and what information must be supplied at what time and there is guidance available to help developers during the process.
DENMARK	There is guidance available to help developers during the process through the energy authority and e.g. DanWEC.
GERMANY	There are guidelines for the promotion of offshore wind energy use in accordance with the Federal Government's sustainability strategy. These guidelines can provide helpful inputs for the developers of ocean energy projects.
IRELAND	There are guidance notes for pre-application consultation and investigative licences available on the DECLG website:

	<p>(http://www.environ.ie/en/Foreshore/ApplyingforanOffshoreRenewableEnergyProject/) Guidance for Authorisation to Construct and Licence to Generate are available on the Commission for Energy regulation website (www.cer.ie/document-detail/Licences-and-Authorisations/878/5245,5246,5247,5249,5250,5251,5252) These are due to be updated in 2015.</p>
MONACO	There is no guidance available to help during the process, but the technical services could assist the applicant organization.
PORTUGAL	Some information on parts of the licensing process exists in the internet as part of the authorities' websites. However there is no compiled information on all process and the developer is usually the manager of the project licensing procedures.
SOUTH AFRICA	Information about the consenting process is provided by NEMA, the National Environmental Management Agency.
SPAIN	It is clear to applicants what permits are required, in what order and what information must be supplied at what time, but no specific guideline (single document) is available for developers.
SWEDEN	<p>Information of the process is available on the homepages of the County Administrative Boards.</p> <p>The Swedish Energy Agency has also developed a website together with other government authorities which explains the consenting process for wind power plants, including offshore plants, http://www.vindlov.se/sv/ (only in Swedish). This site also includes web map service integrated with e-service for consenting applications.</p>
UK	<p>Main sequential steps (licences, consents, permits) required to get permission for project deployment is presented in the following link:</p> <p>https://www.gov.uk/planning-development/marine-licences</p> <p>The MMO have a Key Performance Indicator (KPI) target of 13 weeks to make a determination on a marine licence application from when it is received with us. There is no such KPI for section 36 consents or safety zones.</p> <p>Information about what permits are required, in what order and what information must be supplied at what time is available at a dedicated web link.</p>
USA	<p>Various reference materials are available to developers to provide additional details on the licensing process. These include:</p> <ol style="list-style-type: none"> 1) FERC's Handbook for Hydroelectric Project Licensing⁸ 2) DOI/FERC Guidance on the Regulation of Hydrokinetic Energy Projects on the OCS⁹ 3) Guidelines for the Mineral Management Service Renewable Energy Framework¹⁰ 4) Hydrokinetic Pilot Project Criteria and Draft Application Checklist provided by FERC¹¹ 5) Siting Methodologies for Hydrokinetics- Navigating the Regulatory Framework¹² 6) Marine Cadastre for siting maps/conflicting uses¹³

⁸ FERC's Handbook for Hydroelectric Project Licensting: http://ferc.gov/industries/hydropower/gen-info/handbooks/licensing_handbook.pdf

⁹ DOI/FERC Guidance on the Regulation of Hydrokinetic Energy Projects on the OCS: <http://www.boem.gov/BOEM-FERC-staff-guidelines/>

¹⁰ Guidelines for the Mineral Management Service Renewable Energy Framework: http://www.boem.gov/REnGuidebook_03/

¹¹ Hydrokinetic Pilot Project Criteria and Draft Application Checklist: http://ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics/pdf/pilot_project.pdf

¹² Siting Methodologies for Hydrokinetics: http://www.oceanrenewableenergy.com/sites/default/files/file_uploads/Regulatory%20Handbook%202010.pdf

¹³ Marine Cadastre: <http://marinecadastre.gov/>

7.3 MANAGEMENT OF THE WHOLE PROCESS

To help address the challenges of developing ocean energy projects some countries have been taken steps towards delivering a simpler, more streamlined licensing system to handle ocean energy applications. In some countries a single point of contact (a "one-stop-shop") for developers to obtain consents/licenses for ocean energy projects has been established in order to make the process of gaining consents more streamlined.

CANADA	Within the province of Nova Scotia, the Department of Energy is responsible for managing the consenting process through a "one window committee" process, consisting of federal and provincial government departments/agencies with an interest in the marine environment and ocean energy.
CHINA	There is no specific authority responsible to manage the ocean energy consenting process as a whole ("one stop shop" facility or entity). The approval departments depends on the funding sources for the project.
DENMARK	The Danish Energy Agency is the "one stop shop" facility for the ocean energy consenting process.
GERMANY	There is no specific authority responsible to manage the ocean energy consenting process, therefore ocean energy projects should be considered by the same authorities that manage offshore wind projects, the Federal Maritime and Hydrographic Agency (BSH).
IRELAND	There is no specific authority responsible to manage the ocean energy consenting process as a whole ("one stop shop" facility or entity), however a new Maritime Area and Foreshore (Amendment) Bill is expected to be enacted in 2015 will align the foreshore consent system with the planning system in order to streamline the EIA and AA processes for projects.
KOREA	There is no specific authority responsible to manage the ocean energy consenting process as a whole ("one stop shop" facility or entity).
MONACO	There is a specific authority responsible to manage the ocean energy consenting process as a whole which is the Ministry of Public Works, The Environment and Urban Planning.
NORWAY	As decisions regarding opening zones for license applications are still under process, there is no authority responsible to manage the consenting process today. Consenting processes for onshore energy production governed by the Energy Act is managed by the NVE.
PORTUGAL	There is no specific authority responsible to manage the ocean energy consenting process as a whole ("one stop shop" facility or entity).
SOUTH AFRICA	There is no specific authority responsible to manage the ocean energy consenting process as a whole ("one stop shop" facility or entity).
SPAIN	The Ministry of Industry, Tourism and Commerce through the Directorate General for Energy Policy and Mines is the decision-making body and it is responsible for granting the administrative authorization. However, in practice there are more bodies involved in the process and developers need to deal with them.
SWEDEN	There is no single authority that manages the whole ocean energy consenting process, there are several authorities involved and they also manage other consenting processes.
UK	In English and Welsh offshore waters, marine licences, section 36/A consents and safety zones are determined by the MMO. In Welsh inshore waters, marine licences are determined by National Resources Wales (NRW) and section 36/A consents and safety zones by the MMO.

USA	<p>There is no single agency that is responsible for the entire ocean energy consenting process. There are two agencies with overarching authority over licensing and leasing activities in the U.S.:</p> <ul style="list-style-type: none"> • The Federal Energy Regulatory Commission (FERC) has jurisdiction over marine and hydrokinetic projects in navigable waters that are connected to the grid. • The Bureau of Ocean Energy Management (BOEM) has the authority to issue leases and easements for marine and hydrokinetic projects located partially or entirely on the Outer Continental Shelf (OCS, further than 3 nautical miles from shore). <p>The lead agency is dependent upon the location of the project (e.g. state waters vs. the Outer Continental Shelf) and whether the project will be connected to the grid. Non-Grid connected pilot projects located in state waters fall under the jurisdiction of the U.S. Army Corps of Engineers (COE) and state authorities. For grid-connected projects in state waters, the Federal Energy Regulatory Commission (FERC) is the lead agency and COE is also involved.</p> <p>Multiple state agencies are also involved in the consenting process. For all projects located on the Outer Continental Shelf, (generally 3 nautical miles from shore to the exclusive economic zone boundary) the Department of Interior, Bureau of Ocean Energy Management (BOEM) must issue a lease that allows the developer access to the site and FERC must issue a license for the project to move forward.</p>
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7.4 TEST CENTERS

Usually deployment in designated test centers are already pre-consented, so developers do not have to submit a full application comprising all the typical consents providing certain initial conditions are met. This is the situation in a few test centers but it is not the current practice yet.

CANADA	<p>The Fundy Ocean Research Centre for Energy (FORCE) has an approved Environmental Assessment for its full site, inclusive of its four deployment berths. As such, developers at the site do not have to undergo individual EAs. Developers are still required to provide applications to other relevant regulatory agencies.</p>
DENMARK	<p>It is not the case at DanWEC because it is still not established as the Offshore test site of the west coast of Jutland.</p> <p>It is the case for the in fiord scaled test site.</p>
IRELAND	<p>The Galway Bay Test Site is currently operated as a pre-consented test site where developers may test their quarter scale devices. The lease for the Galway Bay Test Site will be reviewed in 2016.</p> <p>In the case of the Atlantic Marine Energy Test Site, it is anticipated that a lease will be granted to the Sustainable Energy Authority of Ireland (SEAI) and individual WEC developers will be required to apply for a licence from consenting authorities (currently DECLG) to use an area within the test site. It is intended that the SEAI will produce guidance for developers in this regard going forward.</p>
PORTUGAL	<p>Specific regulation for the Portuguese Pilot Zone – Ocean plug - has been produced and provisionally approved by DGEG.</p>
SPAIN	<p>This is the specific case of BIMEP</p>

SWEDEN	It is not the case in Sweden.
UK	This is the approach encouraged for applicants to adopt in order to streamline the consenting process for the deployment of demonstration devices.
USA	<p>This is currently not the situation in the United States.</p> <p>Permitting agencies are in the process of developing a permitting regime for a test center (Pacific Marine Energy Center South Energy Test Site).</p> <p>It is not clear if the permitting regime developed for this test center will be applied to future test centers.</p> <p>There is currently no ability under U.S. law to allow for complete “pre-permitting” of test sites; each device to be tested will have to undergo some regulatory processes, although data collected at the site could be shared to help accelerate the process.</p>

8. CONCLUSIONS

Consenting is still regarded as a non-technological barrier to the progress of marine renewable energy industry, due to the complexity of consenting processes and the lack of dedicated legal frameworks. Appraisal of issues affecting consenting processes can promote discussion on changes to legislation, streamlining of requirements, improvements in administrative procedures, and a more consistent interpretation and application of legislation taking into account the national context.

The objective of this report was to present and analyse consenting regimes for ocean energy in the different countries members of the OES group. The approach followed along this work counted with an analysis of the current Marine Spatial Planning (MSP) strategy for ocean energy, EIA requirements, and consultation process in the different member countries. As an overall conclusion, several aspects of the consenting process still need to be improved before having an ideal situation for the implementation of ocean energy. A summary of the main conclusions gather for each theme considered in the analysis is made below.

MARINE SPATIAL PLANNING POLICY

MSP considering ocean energy already exists in China, Portugal, and the UK. MSP in Denmark and Germany includes only offshore wind and in Sweden interest areas for this technology have been selected. The MSP strategy in other countries includes at least one of the ocean energy technologies. In Nova Scotia, Canada a pre-selected area for tidal current energy development has been defined in the Bay of Fundy and, in Nigeria, areas for the development of OTEC are to be established following the completion of feasibility studies for OTEC. In the USA, MSP, which includes ocean energy, has been introduced in some states.

Although in some countries a defined MSP strategy is still missing, most part of the countries under analysis have already implemented or are in the process of implementing a MSP strategy taking into account renewable energy developments. Ocean energy is not always considered in such strategies but, e.g. in the European Union, these plans are supposed to be periodically reviewed and thus it is possible for ocean energy to be either included or extended to more regions in the future.

CONSENTING PROCESS FOR OCEAN ENERGY

Several member countries have identified a number of authorities involved in the consenting process. It is also clear from this analysis that many member countries don't have any specific authority allocated to lead the process. However, there are some exceptions. In Sweden, for example, the permission is granted by the Environmental Court, which has an input from the Country Administrative Board. In the UK the involved authorities are clearly identified and limited to two entities. In most cases

the consenting process is very complex, including a number of steps and involving several entities. However, fit for purpose consenting can be found for ocean energy in e.g. the UK.

In most member states there are no specific legislations and regulations set for ocean energy. However, in China a specific regulation was issued by the State Oceanic Administration for the consenting process of ocean energy and in Norway the legislations and regulations fall under the Ocean Energy Act of 2010. In Portugal there is no over-arching dedicated consenting procedure, however, all the required consents have been adapted to better suit wave energy development. In Denmark the legislation falls under the renewable energy act and in Sweden the consenting process of ocean energy is regulated by the environmental legislation in the environmental code. The legislations and regulations in the UK and USA are either focussing on ocean energy or have been adapted to fit in the case of ocean energy.

ENVIRONMENTAL IMPACT ASSESSMENT

Although the Environmental Impact Assessment (EIA) European Directive has been reviewed recently, it does not specifically address ocean energy projects probably due to the early stage of development of this technology. The EIA Directive outlines which project categories shall be made subject to an EIA, which procedure shall be followed and the content of the assessment. Project categories are split between Annex I for which EIA is compulsory and Annex II for which EIA is dependent on whether significant environmental effects may occur and national authorities decide whether an EIA is needed. Most member countries under analysis require an EIA for ocean energy developments. However, in countries such as Denmark, Ireland, Germany, Mexico and the UK the decision on whether an EIA is required or not is decided on a case by case basis.

CONSULTATION

The development of a consultation process is a legal requirement identified in the consenting process of most part of the different member countries under analysis. It is also clear that most part of the member countries start with a formal consultation, which is normally followed by an informal consultation process, where the consultation process is adjusted to the type of stakeholders involved in the region.

CHALLENGES TO THE CONSENTING PROCESS

It is clear that all the member countries are facing challenges and barriers to the implementation of ocean energy developments related to the consenting process. Challenges encountered by the member states causing delays in the process are uncertainties regarding environmental aspects and impacts of the projects, public acceptance and extended time of public consultations, governmental permits, judicial/legal rules opposed to practical solutions, lack of a one stop shop facility, uncertainties

and lack of information of the different public decision makers, lack of guidance to developers and lastly maritime safety. Therefore, in order to help developers dealing with these challenges most of the countries have already implemented mechanisms for guidance and advice, either through websites, special committees, research centres or guidebooks. Efforts have been made by several member countries to streamline ocean energy consenting although in different ways. Some member countries have created a one stop shop facility to manage all process while others, have adapted their regulation to better suit projects' licensing. In countries which follow a parallel processing (of the consenting requirements), better coordination between different authorities is needed to avoid e.g. asking the developer for the same information. The licensing process in designated test sites might be different since it may already involve pre-consenting of the projects.

9. RECOMMENDATIONS

Non-technological barriers to the progress of the ocean energy sector have been identified in a number of studies and publications. To eliminate barriers and ensure that the challenges encountered in the consenting process of ocean energy are overcome, several recommendations have been proposed in such studies. These have been reviewed and a summary is presented below for four critical themes which are common among different analyses. It is important to highlight that the availability of country specific information through the development of guidance documents and/or public platforms or databases is a recurrent recommendation over the identified critical themes.

1) INTEGRATED PLANNING

The implementation of strategic plans like MSP and SEA allows a better management of the different marine areas. MSP and SEA may be considered complementary techniques and thus results should be aligned among each other. Furthermore, and because MSP mostly focuses on current users of the marine space, the plans should be reviewed periodically in order to include forthcoming uses.

2) ADMINISTRATIVE PROCEDURES

Ocean energy projects are relatively new both to the public and the regulatory system. As a consequence, long lead-in times for obtaining the necessary permits may arise. Streamlining procedures and providing guidance to device developers are the main recommendations to overcome such issue. The establishment of fixed time frames and deadlines for each licensing step can also be an important measure to deal with licensing process delays.

The implementation of a 'one-stop-shop' approach for marine energy consenting is seen by many stakeholders as a measure to minimise administrative problems. However, its full implementation is difficult to achieve in practice and tends to address only the marine environmental elements of projects. Implementing a 'one-stop-shop' in certain jurisdictions would be complex given the levels of regulatory amendment required to align different pieces of legislation and the work of different authorities. In such case, well-coordinated procedures should be implemented. Nevertheless, some jurisdictions have already developed such approaches and can inform the development or amendment of procedures in other countries (e.g. the approaches used by the Danish Energy Agency and Marine Scotland).

3) ENVIRONMENTAL IMPACT ASSESSMENT

The application of the EIA process is not consistent among countries and there is a lack of knowledge on real environmental impacts of ocean energy. Furthermore, there is not enough guidance provided by authorities on EIA requirements and monitoring. It is therefore important to have more information

about environmental aspects and regulation, in order to increase awareness and stimulate knowledge transfer in this field. This can be done by creating a public database on monitoring results and conclusions. Another step forward would be to implement a risk-based approach during the decision-making process, like the *Survey Deploy and Monitor* approach followed in Scotland, and to implement an environmental adaptive management procedure during project's deployment.

4) CONSULTATION

Early stakeholder engagement and informal consultation with local stakeholders are the most important recommendations to overcome potential problems arising from public acceptance of the project. Furthermore, it is also important to carefully plan consultation events considering the target audience and select suitable stakeholder representatives to help build trust. A very important aspect is to provide as much as possible evidence-based information, both scientific and socio-economic and to take into account the needs of different stakeholders. The development of a public database with information on the users of the sea in areas of potential interest for ocean energy developments in each country may be a useful tool for developers.

APPENDICE 1 – CONTACT DETAILS

The information presented in this report was provided by:

Country	First Contact	Other contacts
Canada	Jonathan Brady (Natural Resources Canada)	Melissa Oldreive (Nova Scotia Department of Energy)
China	Wang Fang (National Ocean Technology Center) Xu Wei; Ma Changlei (National Ocean Technology Center)	Wang Haifeng (Center for the State Oceanic Administration Marine Renewable Energy Development and Utilization)
Denmark	Hans Jørgen Brodersen (DanWEC)	
Ireland	Declan Meally (The Sustainable Energy Authority of Ireland)	
Germany	Source: http://www.bsh.de/en/	
Korea	Keyyong Hong (KRISO)	
Mexico	Gerardo Hiriart (ENAL)	Alma Santa Rita and Tamara Estrada (ENAL)
Monaco	Bernard Fautrier (Monaco Government)	Sébastien Lubert (Prince Albert II Monaco Foundation)
Nigeria	Gbola Akande (Nigerian Institute For Oceanography And Marine Research)	
Norway	Sissel Jakobsen (Norwegian Directorate for Water Resources and Energy)	
Portugal	Teresa Simas (WavEC)	
South Africa	Imke Meyer (Centre for Renewable and Sustainable Energy Studies, Stellenbosch University)	
Spain	Jose Luis Villate (Tecnalia)	Juan Bald (Azti-Tecnalia)
Sweden	Joacim Johannesson (Swedish Agency for Marine and Water Management)	Maria Olsson and Ingela Lindqvist (Swedish Energy Agency)
UK	Craig Loughlin and Richard Green (Marine Management Organisation)	
USA	Hoyt Battey (U.S. Department of Energy)	

APPENDICE 2 – ADDITIONAL DETAILS OF THE CONSENTING PROCESS FOR SOME OES MEMBER COUNTRIES

CANADA

At the federal level: without a specific legal framework for marine renewable energy activities in place, there is no specified sequential process for project authorizations.

The following federal approvals are required prior to the approval of marine renewable energy projects: land use authorization, activity licences, transmission authorizations, occupational health and safety approvals, operational safety approvals, environmental authorizations and navigational authorizations.

At the provincial level: in Nova Scotia projects are not able to proceed in an area that has not undergone a Strategic Environmental Assessment. Then, a project may proceed to consenting—specifically for an Environmental Assessment (if applicable, either federal or provincial or a joint EA) as well as gaining access to the Crown land (an approval issued by the Nova Scotia Department of Natural Resources). If a project requires a feed-in tariff, it must receive approval from the Nova Scotia Department of Energy through either the Community Feed-in Tariff or Developmental Tidal Array Feed-in Tariff Program.

FORCE: Projects wishing to deploy at the Fundy Ocean Research Centre for Energy site must be approved by the Minister of Energy and are selected through a competitive Request for Proposal process. Further, it is recommended that any developer wishing to deploy a device in Nova Scotia waters present their project to the One Window Committee.

Scheme to summarise the process for Nova Scotia:

<http://energy.novascotia.ca/sites/default/files/Tidal-Policy-Framework-Nova-Scotia.pdf>

The One Window Committee, along with the Province of Nova Scotia's Marine Renewable Energy Strategy serve to provide guidance to developers on potential permits/approvals, and review processes.

CHINA

In accordance with the 'Circular of the General Office of the State Council on Strengthening and Regulating the Administration of Newly-Started Projects', the government investment project adopting examination and approval system, the developer shall firstly submit the project proposal to the Development and Reform Department; after receiving the approval documents, then to apply for the examination and approval procedures of site selection & planning, pre-examination of land and EIA to Land Resources Departments and Environmental Protection Departments; Complete the relevant formalities, the developer shall submit the feasibility study report to the Development and Reform Department within attached approval documents above mentioned (site selection and planning, pre-examination of land and EIA); Based on the approved documents of feasibility study report, developer apply for planning permission procedures to the Urban Planning Department, formal land use to the Land Resources Department and the certificate of right to use sea areas to the State Oceanic Administration or local government of maritime administrative departments.

The implementation of ratification system of enterprise investment project, the developer first respectively apply for the examination and approval procedures of site selection & planning, pre-examination of land and EIA to Land Resources Departments and Environmental Protection Departments; Complete the relevant formalities, the developer shall submit a project application report, with attached site selection & planning, pre-examination of land and approval of EIA documents to the Development and Reform Department. Depending on the approval project documents, developer may apply for planning permission procedures to the Urban Planning Department, formal land use to the Land Resources Department and the certificate of right to use sea areas to the State Oceanic Administration or local government of maritime administrative departments.

A recording system of the enterprise investment project, developer must firstly record to the Development and Reform Department, then apply for the examination and approval procedures of site selection & planning, pre-examination of land and environmental impact assessment to Land Resources Departments and Environmental Protection Departments.

The differences among examination and approval system, ratification system and recording system are mainly reflected in the applicable scope. The examination and approval system applies only to the government investment project; the ratification system for enterprises do not use government funds to invest in the construction of major projects and restricted projects; recording system suitable for small and medium-sized enterprise investment projects.

In accordance with the ‘Decision of the State Council on Reforming the Investment System’ and ‘the Circular of the National Development and Reform Commission on relevant provisions of examination and approval of local government investment project (Provisional)’ involves the following processes:

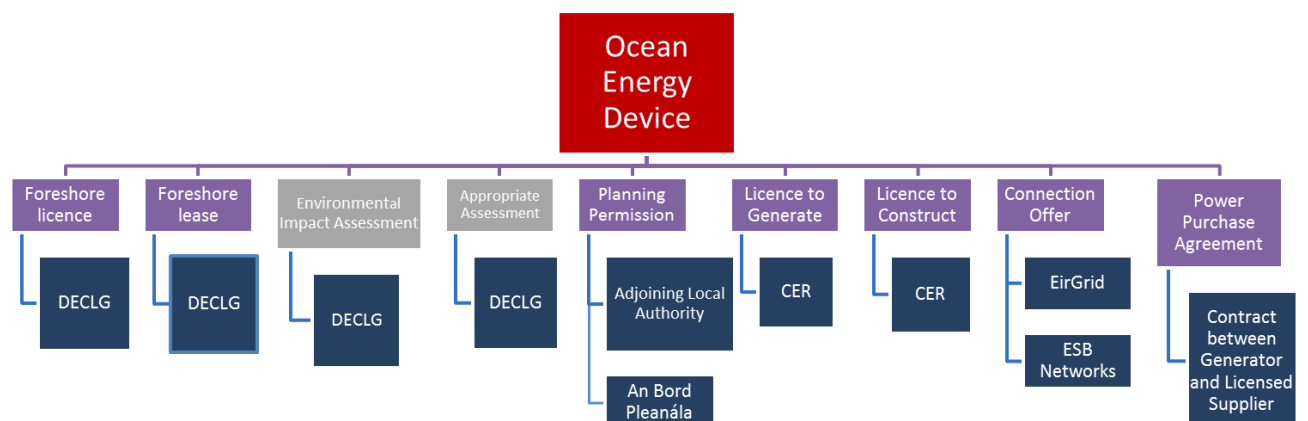
In handling the project proposal approval procedures, the Development and Reform Department received reply from the Planning Department to approve the project proposal (20 working days);

In reply to the feasibility study report, the developer get EIA and review (10 ~ 30 working days), pre-review on construction land (20 working days) and planning submissions (location) (20 working days). Planning Departments issued a detailed planning review (30 working days), the Development and Reform Department (Construction Department) according to the need, in accordance with the relevant documents on Environmental Protection, Land, Planning, Health, Cultural Relics Departments of the license or approval, as well as the traffic impact assessment review comments, to approve the feasibility study report (20 working days) (for land requisition plan notice, in 5 working days).

For project land and use on sea, developer apply for land planning permit (7 days), the land license (20 days), the allocation of land license (20 days); apply for the certificate of right to use sea areas (45 working days)to the State Oceanic Administration or local government of maritime administrative departments.

For a project’s power production and grid connection requirements a specific permitting procedure applies. This involves the China utility distribution grid operator State Grid.

IRELAND



Notes: The process reflected in the schematic above refers to a device to be operated outside a test centre environment either as a demonstration project or on a commercial project. EIA and AA are shown in grey as the requirement for either or both of these assessments is dependent on the outcome of a screening process either

under foreshore legislation, planning legislation and/or electricity legislation. Their inclusion here is therefore indicative rather than an absolute requirement. [This is explained further in the text below]

A pre-application consultation with the Foreshore Section of DECLG is mandatory for all developers. Please see <http://www.environ.ie/en/Foreshore/> for further information. Pre-application consultations are undertaken without prejudice to the outcome of any application for consent under the Foreshore Act.

Consultations with other agencies such as Commission for Energy Regulation, DCENR and relevant Local Authorities are also recommended.

Generators with an installed capacity of 1 MW or less do not need to apply to the CER for an authorisation to construct or a licence to generate. They stand authorised and licensed by SI 383 of 2008 and SI 384 of 2008. All other generators must submit an application to CER. However, those generating less than 10 MW are licensed by way of order: Generators above the 10 MW threshold are issued their own individual licences.

KOREA

The procedures below mainly follow the steps of demonstrative offshore wind turbine project held in Jeju Island.

1. Consenting process for use permit for public water (3-year-process)

- Initial step that the developer must take is to prepare the draft for consultation on utilization of sea areas according to Marine Environment Management Act, article 84, 85. Depending on the location of the project, developer shall submit the draft of summaries of the business plan, environment of area, impact forecast/analysis, possible impact to stakeholders and compensation, alternative solution etc. to the regional authorities and residents for their consultation and approval. Then the developer should have MOF review the original draft, in addition to the signed approval of local residents, comment and consultation from related authorities. The result shall be reported within 45 days.
- After the authorizing institution gives approval of the business plan, the developer shall proceed to Marine Environmental Impact Assessment. (This process applies to development of public waters/territorial waters over 100,000m², and EEZ over 200,000m²). Process may be shortened if the project is considered small-scale to slightly affect marine environments by decision of MOF (standard of the scope is provided in Table 15, Presidential Decree No. 21622).
- The developer then must obtain permission for occupancy or use of public waters from the management agency of public waters, as prescribed by the presidential decree (Act No. 11690, 2013). When the necessary documents and permits, which include the use permit for public water, are submitted, the management agency approves the project within 14 days, if it is determined to satisfy article 17 of Act no. 111690.

2. Consenting process for permit for Energy development (1-year-process)

- During the pre-construction stage, business license shall be obtained from the Ministry of Trade, Industry and Energy (MOTIE) with consultation from Korea Power Exchange (KPX) and Korea Electric Corporation (KEPCO). In case where one desires to run electric utility, developer shall obtain license to generate by the type of the electric utility from the Minister of Commerce, Industry and Energy (Electric Utility Act). The electric source developer shall establish an execution plan for electric source development business, and shall obtain authorization from the MOTIE when they are generating more than 3,000kW. If lower than 3,000kW, permission can be earned from the governor of the region.
- Then, the developer should obtain permission for the actual construction of the offshore structure from both MOTIE and local government. According to Power Market operation regulations of KPX, developer must submit notification of plant change plan for newly installed generators at least 6 months prior to Grid connection offer. After the Grid connection, developer may demonstrate test and report for starting new business (Specific process may differ depending on registered capacity). Environmental Impact Assessment as well as safety assessment takes place at this stage.

Each consenting process was written according to prescribed time table, but in actual implementation, time can be shortened depending on the consulting process or postponed due to additional supplementation.

More information on the Coastal policy and procedures for utilization of Public Waters are also available via Ministry of Oceans and Fisheries webpage:

<http://www.coast.kr/portal/html/eng/policy/policy05.asp>

MEXICO

Due to the fact that marine energy technologies have not been developed in Mexico, there is not a specific process that includes licenses, consents or permits to get permission for project deployment.

If some private company, research center or university wanted to do this, they should contact, according to the legal framework, the Secretariat of Environment and Natural Resources and ask for the correct process they should follow, get permission for them to deploy a device in national waters and ensure that the project will not disagree with the Ecological Planning Program of the site. In order to use a vessel or any other kind of ship to carry out the project, they should ask for permission to the Secretariat of Communications and Transport to use a pier, a berth or other necessary.

Likewise, they will have to approach the local government of the site of interest and ask for the permissions required to continue the project.

Considering the actual permits that these federal institutions issue for marine activities, is possible to infer which ones could be the most accurate to carry out ocean energy projects. These permits are listed below:

Federal Institution	Permit	Legal Timeline	State of Being in Force
Secretariat of Environment and Natural Resources	Permit Application for Temporary Use	45 calendar days	1 year
Secretariat of Environment and Natural Resources	Permit Application for Construction Works	150 calendar days	1 year
Secretariat of Environment and Natural Resources	Concession Application	200 calendar days	50 years
Secretariat of Communications and Transport	Authorization for Execution of Maritime Works	45 calendar days	Indeterminate
Secretariat of Communications and Transport	Concession to Build and Operate Marine Terminals for Private Use	90-180 calendar days	50 years
Secretariat of Communications and Transport	Authorization for Construction and Use of Piers, Berths, or others for Particular Use	90-180 calendar days	Indeterminate

Note that the list of permits mentioned above is just an assumption according to the legal framework applicable and what is inferred from the actual official permits for the maritime federal zone. It is not a guide to follow.

Considering the permits listed above, those of temporary authorization would last 225 calendar days; those for construction works would last 150 calendar days, and in case a concession is necessary, the permits would last 380 calendar days as a maximum period of time of the sum of the particular timelines of every permit of both federal institutions, SEMARNAT & SCT, in case all of them were required.

PORTUGAL

Although some of the licensing steps are sequential, an administrative parallel processing is implemented, which means the developer can apply to several licenses at the same time.

The main consent required is the “Título de utilização dos recursos hídricos” (licence for the water resources use), managed by the Portuguese Environmental Agency (APA). This license can be authorised through a licence or a concession. In the case of ocean energy the option for one or the other is dependent on the period of time the device(s) will be installed: for devices deployed for less than one year a licence is required and for more lengthy time periods, a concession is mandatory. It also depends on the installed capacity of the development: below or equal to 25 MW a licence will be issued, higher than this value a concession will be required. The actual procedures vary according to whether a licence or concession is necessary, although to initiate the process the applicant must submit the same dedicated pre-application form with the project characteristics and an annex specifying the project location and the site characteristics. The latter includes characteristics relating to navigation, fisheries, leisure areas, water depth and wave climate, water circulation pattern, weather data (wind and storm data), emergency plans and land infrastructure associated with the project. In cases where a concession is required for the project, a competitive public examination must be carried out, starting with a public announcement by the competent authority.

Environmental licensing is managed by the regional authority “Comissão de Coordenação do Desenvolvimento Regional” (CCDR; Coordination Committee on Regional Development). During the EIA process two main phases usually require the participation of the licensing authority: 1) the screening and scoping phase where the competent authority is defined as well as the scope of the EIA study and 2) after the applicant submits the EIA report which culminates in the issue of an Environmental Impact Statement (EIS) by the Minister of Agriculture, Sea Affairs, Environment and Land Use Management, based on advice from the competent authority for EIA. The EIS can be favourable, conditionally favourable or unfavourable to the project installation depending on the evaluation of environmental impacts.

In addition to the licence for the water resources use of the project, a licence for the power production installation is required. The consenting process begins with a pre-application that is submitted by the applicant to the “Direcção Geral de Engenharia e Geologia” (DGEG, Energy and Geology Directorate-General). This licence does not include grid connection but is needed if the project is to supply power to the national grid. In such a case, a request is made by the developer to the Portuguese Electricity Utility (EDP, Electricidade De Portugal) together with a map of the project location including the geographical position of the connection point. After this, EDP-Distribution informs the developer of the technical solution, budget and other relevant supplementary information to proceed with the installation of the connection infrastructure. If construction of infrastructure on land is required for project implementation (e.g. substation, cable routes) a licence to construct these is also required and is administered by the municipal council of the area where the project is to be installed.

The consenting process for wave energy projects in Portugal generally takes no more than 18 months, however this is a conservative estimate (if the time periods of all intermediate licensing steps are completed) and does not include the preparation of the EIA report, which can necessitate field work for baseline characterisation..

SOUTH AFRICA

Table 1: Permits Register of Formal Permits Requirement (Frick, 2014)

Statute:	Consent:
<i>NEMA: Integrated Coastal Management Act</i>	20 Year lease with condition to exclusive water use rights from the Department of Environmental Affairs
<i>NEMA: Integrated Coastal Management Act</i>	Lease for temporary occupation of land with in coastal zone
<i>National Environmental Management Act, 107 of 1998 (NEMA)</i>	Environmental Authorization for the electricity generation plant, associated activities and associated infrastructure (gridline).
<i>NERSA Electricity Regulation Act</i>	Electricity Generation Licence
<i>NERSA Electricity Regulation Act</i>	Power Purchase Agreement
<i>Mineral and Petroleum Resources Development Act, 28 of 2002 ("MPRDA") – Section 53</i>	Consent in terms of section 53 to use land contrary to the objects of the MPRDA
<i>National Environmental Management Biodiversity Act (NEMBA), Provincial Nature Conservation Ordinances, and regulations promulgated under them</i>	Biodiversity Consents: the removal of certain sensitive fauna/flora, permission is required from the Department of Environmental Affairs ("DEA") or the Department of Agriculture, Forestry and Fisheries ("DAFF"). Permit to be applied for during the Environmental Impact Assessment
<i>Sea Birds and Seals Protection Act</i>	Permit for the disturbance of Sea Birds and Seals. To be undertaken during the Environmental Impact Assessment
<i>National Heritage Resources Act, 25 of 1999 ("NHRA") – Section 38</i>	Required notification of the relevant heritage authority. Notification to occur as part of the Environmental Impact Assessment
<i>National Heritage Resources Act, 25 of 1999 ("NHRA")</i>	Heritage Approval and any destruction permits or related permits for an impact on a heritage site or object. If any artefact is discovered notification of the relevant authority is required. Assessed during EIA by the relevant authority.
<i>Civil Aviation Act, 13 of 2009 ("CAA")</i>	Aviation Consents, particularly if there is the intention to have helicopter landing pads on the device platform. To be applied for once device location and designs finalised.
<i>National Building Standards Act, 103 of 1977</i>	Building plan approval required prior to the commencement of any construction on the Project Site.

Table 2: Permits Register of Additional Consents Required (Frick, 2014)

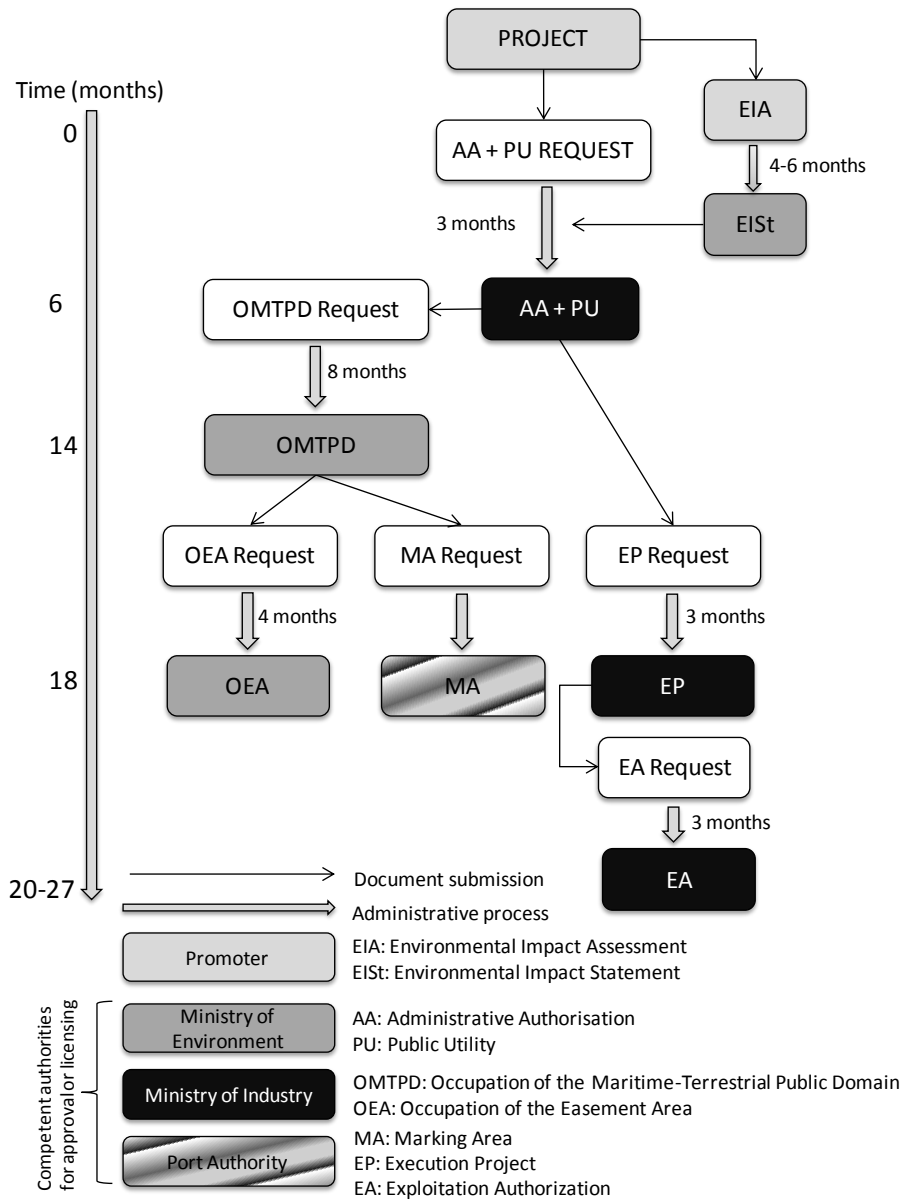
Statute:	Consent:
Additional Permits/ Consents	
<i>Electronic Telecommunications Act 36 of 2005 – Section 29</i> <i>Applicable to: (Transnet, SANDF, Eskom, Telkom, Neotel, Sentech, and Mobile operators such as Vodacom, MTN, Cell C)</i>	Consent from the relevant telecommunications operators to ensure the development does not disturb their transmission activities. Application to occur during the EIA phase.
<i>Permission to install cabling/construct infrastructure across servitudes.</i> <i>Applicable to: (Eskom, Telkom, Transnet, Municipal Servitudes, Neotel and Sentech)</i>	Permission required to cross existing infrastructure (Telecommunications cables, power cables/ lines) with infrastructure (cabling, roads). Application to occur during the EIA phase.
<i>Municipal By-laws</i>	Miscellaneous Local Authority Consents
<i>Mineral and Petroleum Resources Development Act No. 28 of 2002</i>	Mining Permit for excavation and use of materials onsite
<i>Hazardous Substances Act, Act 15 of 1973 (HSA)</i>	Necessary requirements of the HSA need to be adhered to and addressed in the Environmental Management Plan.
<i>Occupational Health and Safety Act, Act 85 of 1993 (OHSA)</i>	Adherence to Occupational Health and Safety Requirements
<i>National Environmental Management: Protected Areas Act, Act 57 of 2003</i>	Proximity to Protected Areas needs to be considered and interaction with the Department of Environmental Affairs is required.

SPAIN

A simplified scheme of the Spanish consenting process for ocean energy is presented in the next figure (taken from the following publication): *Teresa Simas, Soraya Hamawi, Davide Magagna, Anne-Marie O'Hagan, Jean-Baptiste Saulnier, Dorleta Marina, Juan Bald and Jan Sundberg. Submitted. Review of renewable ocean energy consenting procedures across Europe. International Journal of Marine Energy.*

The total time needed to obtain approval is approximately two years but this timeframe varies between projects. For instance, consenting of bimep started in July 2008 and ended in 2012 with the concession of marine-terrestrial public domain and the authorisation for project execution. In contrast, the consenting of the Mutriku wave power plant took less than two years as it is located onshore and consequently was subject to the consenting process applicable to an 'ordinary' renewable energy plant.

The reason for such time variability to obtain the final consent is attributed to whether an EIA is required or not. Until 2008, in Spain the requirement for an EIA of wave and current technologies was decided on a case-by-case analysis. Since 2013, the new EIA law makes mandatory a simplified EIA process to all the projects for energy production in the marine environment. Also, the new EIA law in Spain aims to reduce the time scale needed for obtaining the Environmental Authorisation, establishing a time period of no more than 4 months, or 6 months if there are justified reasons, thus reducing significantly the time needed for this consenting process which was about 3 to 24 months according to the previous law from 2008.



SWEDEN

Fixed time frame consenting has been debated in Sweden from time to time, mostly brought up by the industries (not specifically ocean energy) as a way of increasing the predictability and shortening permit processes.

The National Council for Innovation and Quality in the Public Sector (Innovationsrådet) has been established by the Swedish Government to improve the efficiency and quality of public activities at national, regional and local level. In the report from 2012 Increased efficiency in the environmental permit-process (Ökad effektivitet i miljötillståndsprocessen) the council recommended that fixed time frame consenting should not be established.

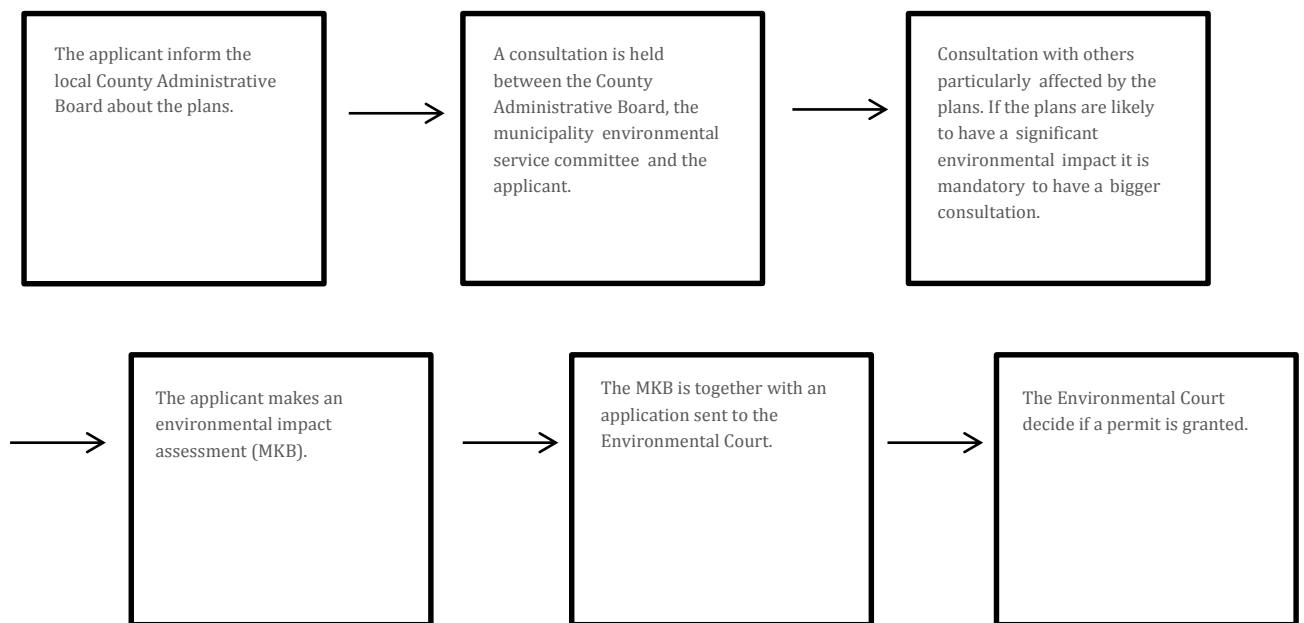
The first reason for the council's dissuasion was that time frame's in does not actually make the system more suited to its purpose. The council argued that the system theory is built upon the presumption that the system is crucial to how individuals work, and as a result of this the system is also crucial to the result of their work. According to this line of reasoning increasing efficiency must be implemented by changes in the system. A time frame may consequently be ineffective.

There is however a risk that time frames are not only without effect but can actually cause negative effects. The council refers to an example from the Swedish Social Insurance Agency (Försäkringskassan) where 75 % of all applications were to be handled within 120 days. The target was reached but at the cost of a minority of applications which came to take much more time. When a manager realised a case would not be completed within 120 days it was no longer a priority.

Another example is from the county administrative boards. Officials experience that well-argued and clearly motivated decisions are less likely to be appealed. A time frame may therefore in practice cause longer processes.

Overall the council states that there is always a risk in setting quantifiable targets which may have a negative impact on other values such as correct legal assessments. Other values that may be at least as important but much more difficult to measure and evaluate

Scheme of the consultation process:



UNITED KINGDOM

The following link presents details regarding marine licensing:
<https://www.gov.uk/planning-development/marine-licences>

The MMO have a Key Performance Indicator (KPI) target of 13 weeks to make a determination on a marine licence application from when it is received with us. There is no such KPI for section 36 consents or safety zones.

USA

In 2010, the U.S. Department of Energy supported the development of a handbook containing information on the siting and licensing processes for marine hydrokinetic renewable energy projects.¹⁴ All of the following information is summarized from and can be found in that resource.

¹⁴ Handbook on Siting Methodologies for Hydrokinetics:
http://www.oceanrenewableenergy.com/sites/default/files/file_uploads/Regulatory%20Handbook%202010.pdf

The sequential steps are dependent upon the location of the project and whether the project will be connected to the grid. The information below outlines the necessary licenses and permits for 5 different scenarios. Many of the steps in the permitting process can overlap or occur simultaneously and there are currently no legal timelines in place for any of the steps. A schematic is also provided for each scenario. Please note that the times provided in the schematics are informal estimations for the amount of time each process could take under a best-case scenario. In practice, all MHK permitting in the U.S. has exceeded these timeframes. Also note that FERC allows prospective developers to apply for a preliminary permit. The preliminary permit only guarantees a first-to-file status while a potential applicant carries out, initial site assessment, project feasibility studies and while preparing a license application. A preliminary permit is not required to obtain a FERC pilot or commercial license and is not included in the requirements below.

Scenario 1: Non-Grid Connected Pilot Project in State Waters

- COE consultation results in Clean Water Act §404 permit and Rivers and Harbors Act §10 Permit
- National Environmental Policy Act (NEPA) consultation results in an Environmental Assessment or an Environmental Impact Statement (see section F for more information on NEPA)
- National Historical Preservation Act (NHPA)§106 consultation results in a Historic Properties Management Plan
- Endangered Species Act §7 consultation results in the issuance of a biological opinion
- Essential Fish Habitat consultation results in conservation recommendations
- Marine Mammal Protection Act consultation results in an Incidental Harassment Authorization or a Letter of Authorization
- Fish and Wildlife Conservation Act consultation results in license conditions
- US Coast Guard consultation results in Private Aid to Navigation Permits
- State agency review for Coastal Zone Management Consistency results in a consistency certification
- State agency review for Clean Water Act § 401 results in a water quality certification

Scenario 2: Pilot Scale Grid Connected Project in State Waters

- FERC Pilot License
 - During the Pre-filing period the developer submits a Notice of Intent and a Draft License application. This is followed by a public comment period, tribal consultations, and a public meeting. The developer revises the license application in response to the feedback provided in the public comments and tribal consultations.
 - The Filing period is when the developer submits the final FERC License application.
 - During the Post-Filing period the NEPA analysis and all other consultations occur. Comments resulting from the required consultations are considered by FERC when deciding whether to grant the license.

The necessary consultations/permits are listed below. The end product of each consultation is the same as it was for the Non- grid connected project in state waters.

- COE consultation for a Clean Water Act §404 permit and Rivers and Harbors Act §10 Permit
- National Environmental Policy Act (NEPA) consultation
- National Historical Preservation Act (NHPA)§106 consultation
- Endangered Species Act §7 consultation
- Essential Fish Habitat consultation
- Marine Mammal Protection Act consultation
- Fish and Wildlife Conservation Act consultation
- U.S. Coast Guard Consultation for Private Aid to Navigation Permits
- State agency review for Coastal Zone Management consistency
- State Agency review for Clean Water Act § 401 certification

Scenario 3: Commercial Scale Project in State Waters

- FERC License (Default, Integrated Licensing Process)
 - During the Pre-filing period the developer conducts initial site assessment and feasibility studies, submits a Notice of Intent and a Draft License application. This is followed by a public comment period, tribal consultations, and a public meeting. The developer should also

conduct pre-application consultations with federal, state and local agencies and stakeholders and incorporate suggestions into the final license application.

- The Filing period is when the developer submits the final FERC License application.
- During the Post-Filing period the NEPA analysis and all other consultations occur. FERC will issue a draft Environmental Assessment (EA) or Environmental Impact Statement (EIS). Comments resulting from the required consultations and comments on the EA/EIS are considered by FERC, which then creates a final EA/EIS and makes a decision whether to grant the license. National Environmental Policy Act (NEPA) Consultation Results in an Environmental Assessment or an Environmental Impact Statement

The necessary consultations/permits are listed below. The end product of each consultation is the same as it was for the Non-grid connected project in state waters.

- National Historical Preservation Act (NHPA)§106 consultation
- Endangered Species Act §7 consultation
- Essential Fish Habitat consultation
- Marine Mammal Protection Act consultation
- Fish and Wildlife Conservation Act consultation
- U.S. Coast Guard consultation for Private Aid to Navigation Permits
- COE consultation for Clean Water Act §404 permit¹⁵ and Rivers and Harbors Act §10 Permit
- State agency review for Coastal Zone Management consistency
- State Agency review for Clean Water Act § 401 certification

Scenarios 4 & 5: Marine and Hydrokinetic Projects on the Outer Continental Shelf

Any project located entirely or partially on the Outer Continental Shelf (OCS) requires a hydrokinetic lease¹⁶ from BOEM. The commercial lease authorizes access and operational rights to produce, sell and deliver renewable energy on the OCS. It also conveys the rights to one or more easements for the installation of transmission cables and other facilities for the project. A FERC license is also required for all projects located on the OCS, however FERC will not issue a license until BOEM has issued a lease for the project.

Issuance of BOEM leases must occur through a competitive process. To determine if competitive interest for a lease site exists, BOEM will publish a Request for Information. This process can be initiated by BOEM or in response to an unsolicited lease request. If no competitive interest exists, BOEM will issue a Determination of No Competitive Interest and a noncompetitive lease process will occur. If more than one developer is interested in a site, BOEM will proceed with a competitive lease process. The primary steps of both processes are outlined below.

Scenario 4: Noncompetitive Lease Process

- Applicant must submit a Site Assessment Plan (SAP) to BOEM within 2 months of the determination of no competitive interest.
- BOEM reviews the SAP, performs the necessary environmental reviews and decides whether to approve the SAP and issue the lease. The environmental reviews include:
 - National Historical Preservation Act (NHPA)§106 consultation
 - Endangered Species Act §7 consultation
 - Essential Fish Habitat consultation
 - Marine Mammal Protection Act consultation
 - Fish and Wildlife Conservation Act consultation
 - State agency review for Coastal Zone Management consistency
 - State Agency review for Clean Water Act § 401 certification
- After lease issuance and SAP approval, the applicant must submit an application for a FERC license. The commercial scale FERC license process for the OCS contains all of the same components and requirements as a commercial scale FERC license in state waters (see above).

¹⁵ Note that the Clean Water Act §404 permit is usually issued after the FERC license has been issued, but it can be part of the licensing process.

¹⁶ BOEM may issue either a commercial or research lease. Please consult the following fact sheet for more information: <http://www.boem.gov/BOEM-RE-Programs-Fact-Sheet/>

Scenario 5: Competitive Lease Process

- BOEM publishes a Call for Information and Nominations, after which all prospective lessees have 45 days to submit an application.
- After reviewing the applications, BOEM will perform a preliminary NEPA review of the area of interest. BOEM will then publish a Proposed Sale Notice which includes information about the lease area, lease provisions, auction details, bid evaluation criteria, award and appeal procedures and lease execution procedures. The Proposed Sale Notice also includes a 60 day public comment period.
- Prospective lessees submit their bid packages in the specified format.
- BOEM issues a lease to the successful bidder and a 6 month preliminary term begins, during which the successful bidder must submit its SAP.
- BOEM performs a NEPA analysis and other environmental consultations for the lease sale and SAP. These reviews include:
 - National Historical Preservation Act (NHPA)§106 Consultation
 - Endangered Species Act §7 consultation
 - Essential Fish Habitat consultation
 - Marine Mammal Protection Act consultation
 - Fish and Wildlife Conservation Act consultation
- After lease issuance and SAP approval, the applicant must submit an application for a FERC license. The commercial scale FERC license process for the OCS contains all of the same components and requirements as a commercial scale FERC license in state waters (see above).

The length of the permitting process is dependent upon the type and location of project, especially if the project is located in a sensitive area. Estimated, best-case scenario timelines for permitting of both grid-connected and non-grid connected pilot projects in state waters are 12 months; however, in practice it has taken several years to license the few pilot projects that have proceeded through the entire process (filing for a preliminary permit until receipt of the FERC license) in the U.S. Commercial scale projects in state waters may take 4 years or more to permit. Non-competitive leases on the OCS could take 3-5 years and competitive leases on the OCS could take 6-8 years for permitting. Very few projects have undergone the entire permitting process. The projects that have obtained complete permits took much longer than the best-case scenario estimates. Ocean Power Technologies is the only company thus far to have received a FERC commercial license for a project in state waters (Scenario 3). The process took 6 years from filing for a preliminary permit to when the full commercial license was granted. The time between submission of the final FERC license application and award of the license was 2.5 years. Four companies have received FERC pilot licenses (Scenario 2). These projects took between 6-8 years from the initial filing for a preliminary permit to receipt of the pilot license and 1-5 years between submission of the final FERC license application and license issuance.