Transforming the global energy landscape
Renewables are rapidly transforming the global energy landscape. Offshore wind has become an important element of this transformation, and increasingly so on a global basis.

As competition increases for developers as their search widens for clean energy resources offshore, RPS is right in the thick of it - with our deep commitment to global energy security through the development of high yield and low impact infrastructure.

We offer a range of technical consultancy and operational support to this growing market including: Environment and Permitting; Site Investigation; Metocean (including wind resource measurement); and Unexploded Ordnance. Our breadth of services allows our teams to sit alongside our clients throughout the asset lifecycle, providing international standard advice.

We have deep expertise in things that matter and we are easy to work with. Our clients trust us and we are respected for our creative thinking. Together we build strong relationships by repeatedly delivering on our promise.

MAKING COMPLEX EASY
**SUPPORT ACROSS THE ASSET LIFECYCLE**

As the offshore wind industry develops and matures around the world and developers seek to capitalise on the clean energy potential within local markets, RPS specialists are supporting renewable energy investment, innovation and commercialisation.

**Define**

**What we do**

**Making complex easy**

**Managing the permitting and consents process**

Navigating the complexities of multiple regulatory frameworks and stakeholder engagement needs specialist knowledge and experience — getting this right can prevent your project becoming tangled in unnecessary and expensive delays and escalating development and operating costs. RPS have advised on offshore energy projects successfully for over 40 years — our local expertise is backed by an international network to help clients navigate the nuances of increasingly complex regulatory landscapes.

**Applying new technology and innovation to collect reliable wind resource data - Floating LiDAR**

We provide high quality and durable LiDAR buoys for the site-specific long-term measurement of wind resource. Our buoy design is supported by decades of offshore measurement experience in the harshest environments, together with the application of industry leading technology.

Our Metocean buoys are environmentally friendly - they’ve been carefully designed with moorings that minimise seabed disturbance and marine life entanglement risk, which simplifies the permitting process.

**Robust interpretation of ground conditions to de-risk development areas.**

Uncertainty regarding offshore ground conditions, can introduce unwanted ambiguity to a development project - particularly during a competitive bidding process.

RPS are acknowledged experts in the assessment and interpretation of ground conditions - reducing uncertainty, facilitating optimisation and informed decision making within a competitive process.

**Applying international standard advice to provide investment confidence**

When you’re looking to apply international standards at a local level, it helps to engage with teams who have a wealth of international experience to back you up.

Our teams have experience advising in a range of regulatory environments around the world and bring this experience to bear on projects, to provide confidence in the standard of advice provided.

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**Hornsea Projects One, Two And Three**

Since 2012, RPS has been the lead EIA consultant, providing offshore and onshore services, on all three Hornsea offshore wind farm projects.

We are proud to have provided uninterrupted EIA consultancy support to all three projects. Each Hornsea project has set new records in terms of consented capacity and Hornsea Project Three, if built out to full capacity, will be the largest proposed offshore wind farm to date - anywhere in the world.

Hornsea Project One, a 1.2 GW project was consented in December 2014 and is now generating power and Hornsea Project Two, a 1.8 GW project was consented in August 2016. Based on the successful delivery of these projects, we were awarded Hornsea Three in 2016 to provide project management, Lead EIA and technical services onshore and offshore throughout the pre-application phase, up to Application and during Examination phase. In early April 2019, the Examination Phase for Hornsea Three was completed.

**Onshore and offshore services**

- Lead EIA Consultants
- EIA Coordination and Project Management
- Provision of majority of onshore technical specialists (in-house)
- Provision of majority of offshore technical specialists (in-house)
- Stakeholder engagement / consultation
- Pre-application and Examination phase support
- Expert witness advice during hearings

“RPS have played a central role in preparing the Hornsea Three application and providing technical advice through the testing examination phase. Their multi discipline team has been instrumental in preparing a robust evidence led assessment and have played a central role in responding to stakeholder and Examiners questions and concerns. They are a dedicated team and became trusted advisors on complex matters.”

*Stuart Livesey, Ørsted’s Hornsea Project Three Development Manager*
OUR EXPERIENCE

RPS has deep expertise in the delivery of onshore and offshore energy projects. Our team of project managers, EIA experts and technical specialists bring a comprehensive understanding of a range of potential marine and terrestrial, human, biological and physical environmental impacts to design and deliver the right solution to meet the challenges of these projects.

Design and manage offshore surveys to ensure fit for purpose results

Offshore surveys can be costly from a financial and a program perspective. It’s critical that surveys are appropriately designed to achieve a given objective. Our teams of in-house technical specialists have deep expertise and experience designing surveys. Hard-earned experience built up through our involvement from the very early days of the offshore wind industry in Europe. We have specialists who design offshore geophysical and geotechnical surveys, metocean surveys and the full range of environmental surveys (onshore and offshore). We routinely sit alongside our clients helping to procure and manage surveys as well as managing quality control and analysing outputs.

Floating LiDAR

A bankable assessment of the available resource is the most critical element of any resource or energy project. For offshore wind farms, the resource that needs quantifying is the wind, with the strength and consistency over the long term requiring definition.

We took traditional LiDAR technology and integrated it into a buoy with power, data storage and satellite communication capabilities.

Applying our deep expertise of offshore measurement, our design and development process focussed on creating a reliable design to maximise data accuracy and return, while making the process of information gathering easier and more cost-effective for our clients.

Fixed to a buoy, our LiDAR measures the doppler shift-effect - changes to laser light wave formations - as a way of determining wind speeds at sea.

It’s environmentally friendly - our mooring design minimises damage to the seabed and marine life entanglement risk. The buoy is powered by solar and wind energy – helping meet the stringent environmental consenting conditions often associated with renewable wind farm projects.

Our buoy design has achieved Level 2 certification. This is an important milestone in the development of our technology as it qualifies the RPS LiDAR 4.5 buoy type to collect bankable wind resource data for clients wishing to develop offshore wind farms.

During the 6-month validation deployment off Blyth in the UK, our buoy NEVER missed a 10-minute data transmission, and the validation accuracy is excellent, achieving the best practice KPI.

Additional construction and further development of our Floating LiDAR buoys is underway and will continue to meet the rapidly expanding renewable offshore wind sector.

Deployments

Long Island, New York, United States
City of Norfolk, Virginia, United States
Perth, Western Australia, Australia
Busan, Ulsan region, South Korea
Guyana, South America

Floating LiDAR is a bankable assessment of the available resource.

Design and manage offshore surveys to ensure fit for purpose results

<table>
<thead>
<tr>
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<td>Provide a dedicated team of EIA and permitting project managers</td>
<td>The EIA process for offshore wind can be complex and demanding. Our team of dedicated and experienced offshore wind EIA project managers are supported by a breadth of in-house technical specialists. This team comprises our problem solvers – working closely with our clients to find solutions to complex issues.</td>
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<tr>
<td>Metocean forecasting for operations planning</td>
<td>We provide unique metocean forecasting that integrates site specific, real time measurements with advanced model predictions to provide a high-quality forecasts. These improve significantly on traditional forecast products, providing our clients with better information on which to make important decisions.</td>
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Floating LiDAR Deployments
INTEGRATED PROGRAM DELIVERY

- Wind resource measurement and metocean sciences
- Planning, environment and consents
- Site investigation and survey
- Marine Assurance and QHSSE
- Unexploded ordnance (UXO)
- Data management and visualisation
In 2014 RPS were awarded a framework agreement for the Netherlands Government to supply consultancy services to support the Dutch plan to significantly expand their offshore wind farm sites. RPS provide site and desk based support services, for tendering, survey and post survey operations across the current Netherlands offshore wind farm program for a potential capacity totalling 6GW. We were engaged to design and deliver specialist consultancy services for geophysical and geotechnical surveys to provide comprehensive reconnaissance survey datasets to develop engineering ground models, engineering parameters and to support an optimised procurement process for the future development of offshore areas within Dutch territorial waters.

An independent audit of the resultant data packages found that the survey approach delivered comprehensive state of the art data sets. The approach was a significant departure from the more traditional development process for the Netherlands Government and resulted in a more robust bid process, significantly reduced bid prices from developers and in some case zero subsidy bids saving the Netherlands Government significant sums of money.

Minke whale, orjip study

RPS and project partners Marine Conservation Research (MCR) have been working on a project for the Offshore Renewables Joint Industry Project (ORJIP) - to test the effectiveness of an Acoustic Deterrent Device (ADD) as a mitigation tool to reduce potential injury to low frequency cetaceans, such as the Minke whale, during offshore construction piling operations. The project, managed by the Carbon Trust, was part of a UK-wide, collaborative program of environmental research aimed at reducing consenting risks for offshore energy projects.

A team of researchers spent five weeks in Faxafjörður Bay, southwest Iceland, during August and September 2016, tracking the Minke whale. The aim of the study was to understand their behavioural response to an ADD during a controlled exposure experiment (CEE). Data analysis showed that the whales reacted strongly to the ADD, swimming quickly and directly away from the playback site in all 15 CEEs. We were able to confidently recommend that ADDs be used as an effective mitigation tool to reduce the potential for injury because of noise generated during pile driving. We were also able to conclude there was little potential for inducing temporary or auditory injury through exposure to the ADD. The study methodology and results will be used in future to inform government guidance on the mitigation strategies during the development of marine projects.
Environmental assessment studies offshore New York

The National Environmental Policy Act (NEPA) requires BOEM to prepare environmental assessments (EA) or impact statements to ensure review of natural, physical, and socioeconomic impacts associated with alternative energy activities. RPS contributed to the EA for commercial lease issuance and site assessment activities in the Wind Energy Area offshore of New York.

The US wind energy industry is young, and development involves some unique challenges. It’s vital to understand potential effects of offshore wind developments while the industry is still relatively new. Included as part of this EA were the site assessment surveys and related potential impacts needed to assess the wind energy resources within the WEA offshore New York and determine which areas are suitable for commercial-scale wind energy.

RPS conducted a thorough literature review to characterise the baseline conditions of marine resources. We completed sections of the EA relating to water quality, marine biological resources, coastal habitats, and commercial and recreational fisheries.

Sediment transport analysis and transmission system for Block Island Wind Farm, Rhode Island

The Deepwater Wind ‘Block Island’ offshore Wind Farm, is a 30 megawatt (MW) farm located approximately 3 miles southeast of Block Island, Rhode Island in approximately 26m of water. It consists of five, 6 MW wind turbine generators (WTGs), a submarine cable inter-connecting the WTGs (Inter-Array Cable), and a 34.5 kV transmission cable from the northernmost WTG to an interconnection point on Block Island (Export Cable).

Rhode Island’s Coastal Resources Management Council (CRMC) and Department of Environmental Management (RIDEM) require that certain thresholds of sediment concentration and sediment deposition depths not be exceeded, as a result of dredging activities in coastal waters.

As part of the Environmental Impact Assessment, RPS performed a hydrodynamics and sediment transport modelling study to evaluate the sediment trajectory and fate from jet plough cable burial operations and near shore cofferdam re-fill activities (constructed for Horizontal Directional Drilling at the cable landfall).
Founded in 1970, RPS is a leading global professional services firm of 5,600 consultants and service providers. Operating in 125 countries across six continents, RPS define, design and manage projects that create shared value for a complex, urbanising and resource-scarce world.

We deliver a broad range of services across the asset lifecycle in: property, energy, transport, water, defence & government services and resources.

We provide services in project & programme management, design & development, water services, environment, advisory & management consulting, exploration & development, planning & approvals, health, safety & risk, oceans & coastal, laboratories, training and communication & creative services.

The stand out for our clients is that we use our deep expertise to solve problems that matter, making them easy to understand and we’re easy to work with – Making complex easy.
Sustainable energy solutions