



POWERING GOOD

Power & Renewables



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WHO WE ARE

We're AtkinsRéalis, a world-class engineering services and nuclear organization. We connect people, data and technology to transform the world's infrastructure and energy systems.

Together, with our industry partners and clients, and our global team of consultants, designers, engineers and project managers, we can change the world and **engineer a better future for our planet and its people.**

In this brochure you'll find a snapshot of our expertise, services and experience in Power & Renewables. For further information visit: atkinsrealis.com/power-and-renewables



WHAT WE DO & WHY WE DO IT

To help meet the world's ambitious - and necessary - net zero targets, together with our partners, we're innovating and creating solutions across the entire spectrum of sustainable energy generation and power transmission. A mix of approaches is required, and we have the breadth of expertise and the global perspective to help governments and organizations make informed, affordable, future-proof choices.





POWERING A NET ZERO FUTURE

Our work isn't just about minimizing our impact on the planet and the climate: it's about leaving our world in a better state than we found it and improving the status quo for all. That's why we design and build sustainable and reliable energy generation and power transmission systems.



WE SEE POWER FROM EVERY ANGLE

We've designed, delivered, and operated wind, solar, nuclear, and hydro projects. We're involved in decarbonization projects such as clean hydrogen production via electrolysis or pyrolysis, as well as through carbon capture for industries where clean hydrogen is not applicable. Transmission and distribution (T&D) and energy storage are other areas where we have world leading expertise.

Because we do all this, and so much more than power and renewables as an organization, our clients gain from the collective experience we have accumulated across decades of working on major projects.

What sets us apart? Our unique blend of local knowledge, cost-effectiveness, and end-to-end technological capabilities. No other company can provide an entire energy system solution the way we can. We continually surprise our clients with solutions that surpass their expectations, and this is down to our ability to look beyond the project scope and understand the big energy picture.



POWER GRIDS

Demand for sustainable energy is growing at a rapid pace. As the energy mix is changing, the grid needs to evolve in tandem to meet future demand. Our reliable, forward-thinking grid technologies and power engineering experts are helping our clients to overcome the challenges of ageing infrastructure, to plan for grid integration, and to build assets that meet the needs of the changing energy landscape.

We bring power to wherever it's needed. With over 50 years of international experience, we are an innovative leader in power system planning and design, including generation, transmission and distribution, High Voltage Direct Current (HVDC) and Flexible AC Transmission Systems (FACTS), and renewable integration.

[Find out more](#)

Our expertise encompasses the following areas:

- Grid technologies
- Power system planning
- Substations
- HVDC and FACTS
- Transmission lines
- High voltage cables
- Cybersecurity and digitization
- Smart grids and automation
- Due diligence for privatization and acquisitions





HYDROPOWER & DAMS

Hydropower has a key role in the transition to clean energy. Our solutions consider the impacts on the people and the communities we live in to maximise the credentials of our clients' clean power projects.

We integrate the latest technologies to bring our clients cutting edge sustainable solutions that deliver benefits optimized to their operating and business models. Our hydropower services are broad and versatile. We hold our solutions to the highest standards, using the latest 3D and 4D simulations as part of our design and testing processes.

We've rehabilitated and upgraded many brownfield and greenfield hydroelectric developments and performed numerous dam safety assessments. We work side-by-side with clients, regulatory agencies, and local stakeholders to develop solutions integrated with the surrounding natural environments, decreasing operational risk, and increasing project viability.

[Find out more](#)

Our expert teams have delivered hydropower projects across the world ranging from a few kilowatts to several thousand megawatts. The breadth of our complete hydropower solutions offering includes:

- Dam safety
- Flood and water assessments
- Geotechnical assessments
- Environmental assessments
- Detailed design of greenfield and brownfield facilities
- Construction support for new hydro facilities
- Engineering, Procurement, and Construction Management (EPCM) services
- Pumped hydro energy storage





ALTERNATIVE ENERGIES AND TECHNOLOGIES

To achieve net zero by 2050, a variety of solutions are needed to decarbonize electricity and oil and gas use. Energy producers and users must transition together, and we help clients select and deliver the right combination of solutions for their transition to net zero.

| Hydrogen | Renewables | Energy storage | Carbon capture and storage (CCS) |
|--|--|---|--|
| <p>Hydrogen is a versatile and storable energy source crucial for achieving net zero. We help clients reduce economic and technology risk through our expertise in low carbon hydrogen, from production to end use. Our services include:</p> <ul style="list-style-type: none">▪ Electrolysis (green hydrogen project delivery)▪ Green ammonia project delivery▪ Reforming (blue hydrogen) <p>We also work with clients across industrial, transportation, and building sectors to assess hydrogen's potential in their decarbonization pathways.</p> | <p>We provide professional, design, and environmental services to renewable energy clients worldwide, covering:</p> <ul style="list-style-type: none">▪ Offshore wind▪ Onshore wind▪ Solar <p>We've supported the engineering and construction of over 500 MW of solar projects and engaged in over 70 wind projects, ensuring high-quality project delivery with a 'whole system' approach.</p> | <p>Developing large-scale energy storage is vital for system resilience and balance. As experts in network planning and renewable energy integration, we offer:</p> <ul style="list-style-type: none">▪ EPCM services▪ Planning, grid integration, project financing, design, and project management <p>We understand all storage technologies, from hydrogen and compressed air in salt caverns to batteries, liquid air, and pumped hydro. We've also managed sub-surface hydrogen storage projects.</p> | <p>Our Carbon Capture and Storage (CCS) front end study experience includes an extensive list of feasibility, conceptual design, due diligence and preFront End Engineering Design (FEED) studies. Our combined CCS Engineer Procure Construct (EPC), Owner's Engineer, advisory and study experience enables us to bring 'reality' to the front end of a project. The knowledge, lessons learned and in-house CCS expertise means we can consider deliverability issues at an early stage of a project, thus significantly de-risking a project and potentially accelerating its development programme. We are at the forefront of Carbon Capture, Utilisation, and Storage (CCUS) technologies to reduce atmospheric CO₂sa emissions.</p> |

[Find out more](#)





OUR SERVICES AND CAPABILITIES

CONNECT INTO OUR POWER EXPERTISE

Building the infrastructure and the talent for a clean energy future

We are helping governments and organizations create new sustainable energy systems around the world while decarbonizing existing operations. We support clients across the entire lifecycle of their power generation and delivery assets. We're also keeping our heads up, forecasting the essential skills needed to continue decarbonizing the world's energy production. On every project, we look beyond engineering and consider the impacts on the surrounding environment and communities.

The world's energy future will combine renewable generation, stable baseload generation from hydro, clean nuclear power and peaking plants to manage network stability. We can contribute on all three counts.



CONNECT INTO OUR POWER EXPERTISE

Our 100+ years of experience in energy, power and renewables is just the beginning. When it comes to creating planet-friendly power systems, we are our clients' architect, builder, and partner, for the full asset lifecycle. We're powering towards net zero, engineering more sustainable energy systems – for good.





We care about the big issues facing the planet and are committed to engineering a better future for its people.

[Find out more](#)





OUR EXPERIENCE

We deliver innovative engineering solutions on projects across the globe.

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ADNOC Offshore Operations Power, Abu Dhabi UAE

Enhancing the sustainability and efficiency of offshore operations

The ADNOC Offshore Operations Power Project, supported by AtkinsRéalis, is the first HVDC-VSC subsea transmission system in the MENA region. This four-year project aims to power ADNOC's offshore production with cleaner energy, aligning with the UAE Net Zero by 2050 initiative. Our role includes design review, grid integration, quality assurance, and construction supervision, ensuring high standards in quality, safety, and environmental impact. The project involves developing two subsea HVDC links, replacing offshore gas turbines with sustainable power, reducing ADNOC's offshore carbon footprint by over 30%.

30%

Expected reduction
in carbon emissions

2

Subsea HVDC links
being developed

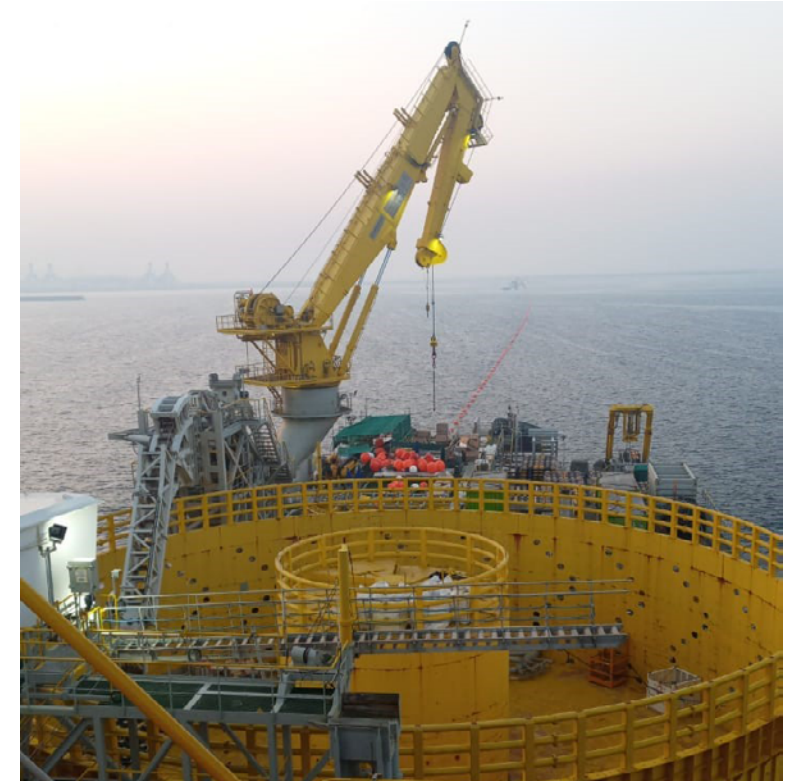
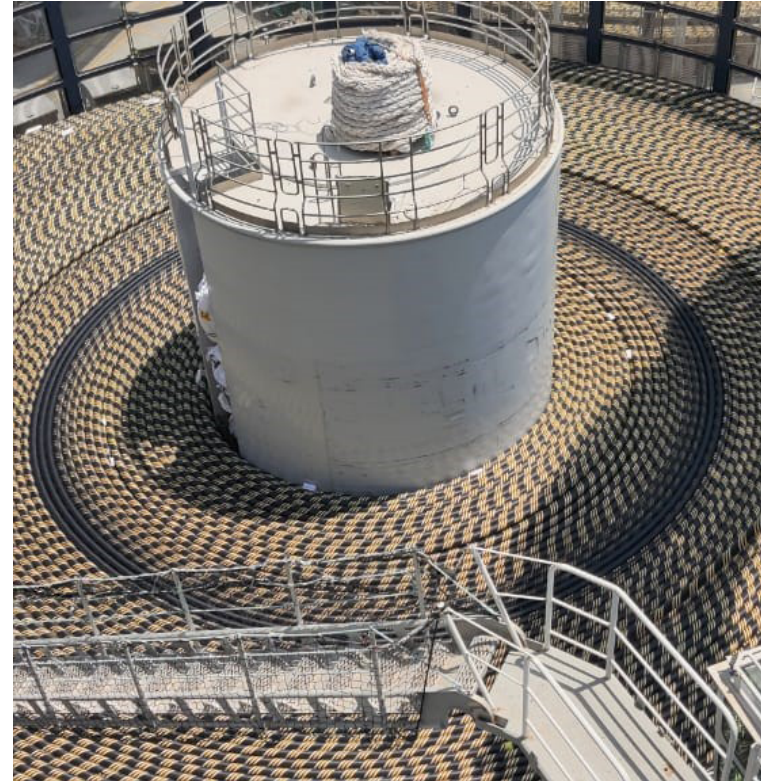
48 months

Duration

Completion date: December 2025

Client: Abu Dhabi Offshore Power, Transmission Company, Limited LLC (ADOPT)

Collaborators: ADNOC, TAQA, EDF, KEPCO and KYUSHU



By leveraging advanced HVDC technology and our global expertise, the project is set to deliver significant environmental benefits while supporting ADNOC's operational efficiency. The project demonstrates how, via successful collaboration, a greener and more sustainable future for the energy industry can be achieved.

[Find out more](#)



Aldbrough Hydrogen Pathfinder Project, UK

Creating one of the world's largest hydrogen storage facilities

The Aldbrough Hydrogen Pathfinder project, developed by SSE Thermal in partnership with Equinor, is a pioneering initiative aimed at creating one of the world's largest hydrogen storage facilities. Located in East Yorkshire, UK, the project is designed to store low-carbon hydrogen, which is crucial for balancing supply and demand in a future hydrogen economy.

AtkinsRéalis has been responsible for the feasibility study and concept design of an electrolyser system, underground hydrogen storage solution and a hydrogen fired Open Cycle Gas Turbine (OCGT). The project will produce hydrogen using renewable energy in a 35-megawatt electrolyser which will be stored in an underground salt cavern. The stored hydrogen will then be used to fire a OCGT which can export power to the grid when demand is high.

With an expected capacity of 320 GWh, enough to power 860 hydrogen buses annually, this project is a key component of the UK's broader Zero Carbon Humber initiative, supporting the nation's net-zero goals by 2030.

320 GWh

Expected capacity

Completion date: The facility could be storing low-carbon hydrogen by early 2028

Client: SSE Thermal and Equinor



“Aldbrough Hydrogen Pathfinder is a hugely exciting and ambitious project that aims to bring together hydrogen production, storage, and power generation in one location”, Sally O'Brien, Project Manager at SSE Thermal.

[Find out more](#)



Boundary Dam, Canada

A landmark in carbon capture

The Boundary Dam project was a significant initiative in Canada aimed at reducing carbon dioxide (CO₂) emissions from power generation. Spearheaded by SaskPower and located in Saskatchewan, the Boundary Dam Power Station underwent a major retrofit to integrate a Carbon Capture and Storage (CCS) system. The project marked one of the world's first commercial-scale retrofits of a coal-fired power plant with CCS technology. This included the installation of new equipment to capture CO₂ from the flue gases, compress and transport the captured CO₂, and inject it into deep geological formations for permanent storage.

AtkinsRéalis' role encompassed engineering, construction, and commissioning of the CO₂ capture system. Having initially completed a successful Front-End Engineering Design (FEED), in 2010, we secured a turnkey EPC (Engineering, Procurement, and Construction) contract for the project. Construction began in 2011, and the CO₂ capture system became operational in 2014.

The CCS retrofit was a landmark in demonstrating the feasibility of large-scale CCS technology. It captures up to 1 million tonnes of CO₂ annually, significantly mitigating greenhouse gas emissions from coal power generation.

1 m tons

Of CO₂ captured annually

Completion date: 2014

Client: Sask Power



The project provides both environmental and economic benefits, supporting sustainable development and enhancing community well-being.

[Find out more](#)

BP Integrated Midwest Energy Hub, US

Helping decarbonize the industry with cleaner energy

The bp Integrated Midwest Energy Hub Project is centred on the development of a major hydrogen hub at the bp Whiting Refinery in Indiana. This project, part of a broader initiative to create hydrogen hubs across the country is designed to reduce carbon emissions by providing a cleaner energy alternative for industries in Indiana, Illinois, and Michigan.

The project will be one of the largest in the region's history. It is anticipated to generate 16,000 construction jobs, significantly impacting the local economy. The project involves collaboration with various industries, incorporating carbon capture and storage for neighboring steel mills and power plants. Additionally, it will produce significant quantities of blue hydrogen to support the refining business, fuel buses and trucks, and supply neighboring steel mills.

AtkinsRéalis has been embedded within the bp Whiting site for the last 15 years. Drawing on our extensive experience, expertise and knowledge of the site enables us to provide multiple project controls services to the various capital projects involving the maintenance, refurbishment and replacement of the existing plant.

1.6 m tons

Annual reduction
in operational
CO₂ emissions

7,000

Barrels sustainable
aviation fuel (SAF)
produced per day

8,000

Barrels alternative
feeds processed per
day to existing units
such as waste, waxes
or other biofuels

16,000

Construction
jobs created

Completion date: Construction phase is projected to start in 2025 with completion targeted for 2030

Client: bp Whiting Refinery



The hydrogen hub will position the Midwest as a leader in the transition to cleaner energy, helping decarbonize the industrial sector and contributing to long-term sustainability goals.

[Find out more](#)



Calabogie Generating Station Redevelopment, Canada

Preserving the past, powering the future

The Calabogie Generating Station, a key part of Ontario Power Generation's infrastructure since 1917, was revitalized after a tornado in 2018 rendered it inoperable. The project aimed to maximize generating capacity, adhere to the Water Management Plan, and minimize environmental impacts, ensuring a sustainable energy source for Ontario.

In partnership with M. Sullivan and Son, AtkinsRéalis led the redevelopment, nearly doubling the station's output from 5 MW to 10.7 MW and increasing annual green energy production from 22 GWh to 46.5 GWh. Effective project management and stakeholder collaboration were crucial, involving Indigenous communities like the Algonquins of Ontario.

The project significantly reduced carbon emissions, boosted the local economy through job creation, and maintained environmental integrity. It stands as a model of innovation, collaboration, and sustainable energy production.

11 MW

Total generation capacity

175

Construction-related
employees

10,000

Homes powered with
clean renewable
hydroelectricity

Completion date: 2022

Client: Ontario Power Generation (OPG)

Collaborators: M. Sullivan and Son



The new facility improves efficiency and reliability, generating the same amount of electricity with less water flow.

[Find out more](#)



Gulf Coast Carbon Capture and Storage (CCS) and Hydrogen Production, US

Advancing decarbonization with collaboration

The Gulf Coast Carbon Capture and Storage (CCS) and Hydrogen Production project is a collaborative effort between bp and Linde aimed at advancing decarbonization in the Texas Gulf Coast. Located in the Greater Houston area, this initiative focuses on capturing and storing CO₂ from Linde's hydrogen production facilities. The goal is to produce low carbon hydrogen, which will be distributed through Linde's pipeline network under long-term contracts for use in low carbon chemicals and fuels. The project, with a potential start-up by 2026, is set to store up to 15 million metric tons of CO₂ annually - equivalent to removing about 3 million cars from the road.

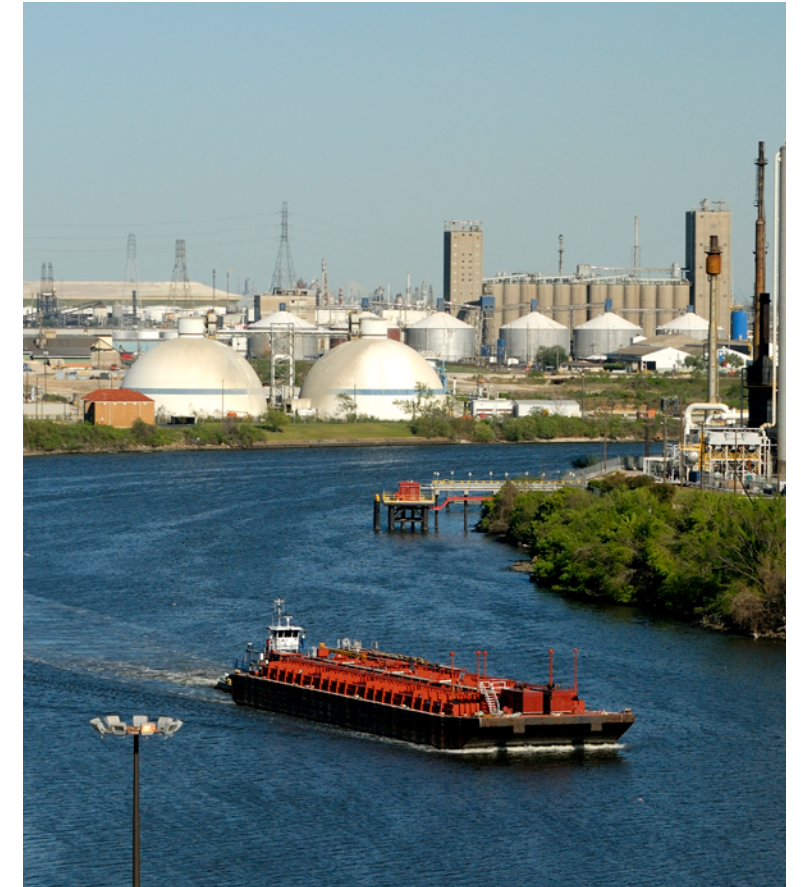
Appointed by bp, our role involves delivering project control and project management services, leveraging our industry experience and local knowledge to support the project's successful execution. Our experience in delivering project controls services, coupled with our knowledge of the industry and location, enables us to provide the right skillset to deliver the project's specific requirements successfully.

15 m metric tons

Annual CO₂ storage capacity

Completion date: Potential start-up by 2026

Client: bp and Linde



We are embedded within the client team providing daily support at their Houston location.

[Find out more](#)



Hackney Waltham Cross Upgrading (HWUP) - North London Reinforcement Scheme, UK

Powering North London with innovation and reliability

The HWUP - North London Reinforcement scheme is a critical infrastructure project aimed at strengthening electricity supply and ensuring reliable power delivery to millions of residents and businesses in North London.

As part of the UK's broader efforts to enhance energy electricity demands, National Grid Electricity Transmission (NGET) initiated this project to uprate an existing 275kV overhead line route and upgrade substation equipment across six key substations in the region. This included a new gas insulated substation, multiple transformer replacements, and installation of quad boosters and mechanically switched capacitor with damping networks (MSCDNs).

AtkinsRéalis provided comprehensive optioneering and FEED design for the scheme. We delivered multidisciplinary substation designs, including HV plant, civil, cable, and protection & control, and project management services to deliver an effective solution that was compliant with NGET standards and ensured planning DCO constraints were taken into consideration. The project involved extensive surveys and environmental assessments, including geotechnical studies, ground investigations, and flood risk assessments.

275kV

Overhead line uprated

6

Substations

Completion date: 2024

Client: National Grid Electricity Transmission (NGET)



Use of 360° camera footage allowed for virtual site walkdowns, reducing carbon emissions and time impacts.

[Find out more](#)



Jimmie Creek Hydroelectric Project, Canada

Harnessing nature's power for a sustainable future

The Jimmie Creek Hydroelectric project consists of a run-of-river hydroelectric generation facility on the Jimmie Creek in Toba Valley, British Columbia. Its purpose is to generate clean, renewable energy while supporting local economic development and protecting the environment. The 62 MW project respects the natural flow of Jimmie Creek and provides renewable power to approximately 14,000 residents. Commercial operations began on August 1, 2016.

AtkinsRéalis was awarded the engineering, procurement and construction management contract for the Jimmie Creek Hydroelectric Project in May 2014. This followed the successful completion of the initial definition phase that commenced in 2012. Our role included engineering, procurement, construction management, environmental supervision, and transmission line design. The project fostered strong relationships with the Klahoose First Nation and local communities, offering apprenticeships, employment, and contracting opportunities.

170 GWh

Of clean, renewable energy every year

14,000

Residents provided renewable power

Completion date: August 2016

Client: Innergex Renewable Energy Inc.

Collaborators: Klahoose First Nation



Winner of the Excellence award at the Natural Resources, Mining, Industry & Energy category at the Canadian Consulting Engineering Awards.

[Find out more](#)





John Hart Generating Station Replacement Project, Canada

Empowering communities with sustainable energy solutions

The John Hart Generating Station Replacement Project is a significant hydroelectric redevelopment located on Vancouver Island, British Columbia. The project aimed to replace the aging 126 MW powerhouse with a more reliable, seismically robust, and environmentally friendly facility with a capacity of 138 MW.

BC Hydro awarded AtkinsRéalis the contract to design, build, finance, and maintain the new facility. The CA\$700 million project, funded 60% by BC Hydro, marked Canada's first P3 hydropower project.

The project involved constructing an underground tunnel and generating station, removing three penstocks, and minimizing the environmental footprint. It also included a new water bypass facility to protect fish habitats and ensured the Campbell River's flow through the station. The new facility powers over 80,000 homes and has won multiple awards for its innovative solutions and environmental considerations.

| | | | |
|--|---------------|---------------|-----------------------|
| 11% | 138 MW | 80,000 | 1st |
| Of Vancouver Island's electricity produced | Capacity | Homes powered | P3 hydropower project |

Completion date: 2019

Client: BC Hydro



The new facility powers over 80,000 homes and has won multiple awards for its innovative solutions and environmental considerations.

[Find out more](#)





Muskrat Falls Hydroelectric Project, Canada

Powering communities with renewable strength

The Muskrat Falls Hydroelectric Project is a major hydroelectric development located on the Lower Churchill River in Labrador, Canada. It aims to provide renewable energy with a capacity of 824 megawatts.

AtkinsRéalis has played a significant role in the project, serving as the lead engineer during construction. Our responsibilities included detailed engineering and construction support of the hydroelectric power plant, the Labrador transmission asset and Island Transmission Link. The project has been a key component of Newfoundland and Labrador's energy strategy, providing clean energy to the province and beyond.

824 MW

Capacity

4.9 TWh

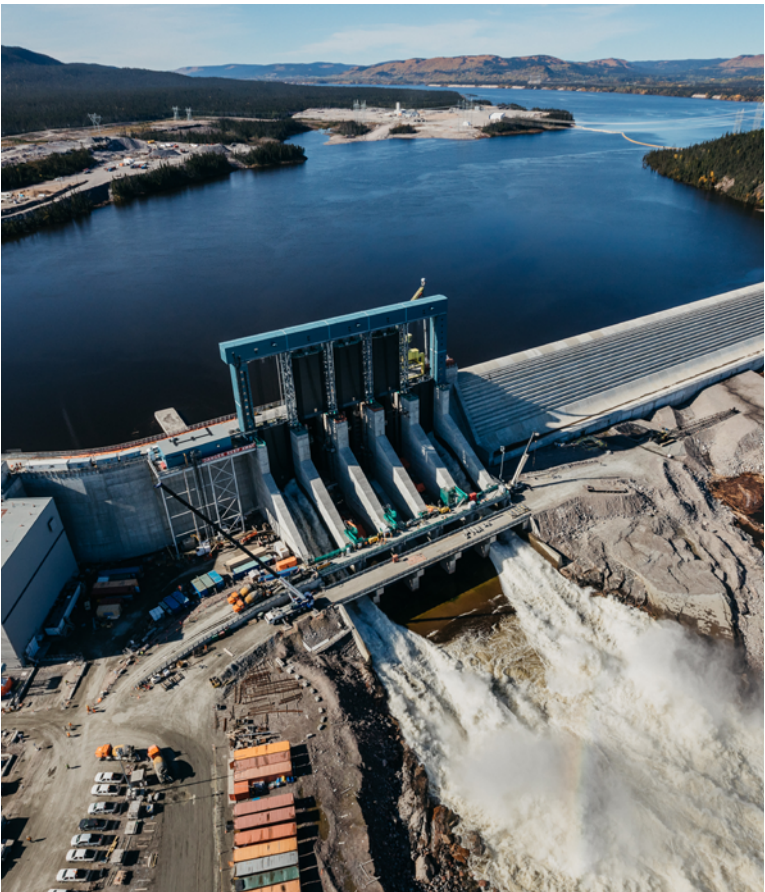
Annual energy output

1,600 km

Transmission line

Completion date: 2023

Owner: Newfoundland & Labrador Hydro



The Muskrat Falls Hydroelectric Project won the 2022 Best Constructed Project Award from the Canadian Dam Association.

[Find out more](#)





Power Grids Interconnection Project, Egypt and KSA

Connecting power, empowering nations

The Egypt-KSA HVDC Interconnection Project is a \$1.8 billion initiative linking the power grids of Egypt and Saudi Arabia, spanning 1,300 kilometers. AtkinsRéalis are delivering Project Management Office (PMO) and engineering design review services.

As the first large-scale HVDC interconnection in the MENA region, the project enables the exchange of up to 3 GW of electricity, benefiting over 20 million people. The project includes a critical 20.4 km submarine and underground cable crossing the Gulf of Aqaba. By enhancing grid stability and optimizing energy sharing, the project strengthens energy security for both nations. AtkinsRéalis leverages its regional expertise and global HVDC experience to ensure successful delivery, setting a new standard for sustainable energy infrastructure in the region.

1,300 km

Length

20m

People benefitting

3 GW

Of electricity

Completion date: 2026

Client: Saudi Electric Company and the Egyptian Electricity Transmission Corporation



"Our unrivalled engineering capabilities and understanding of the energy market are coupled with the highest quality standards and latest technologies to ensure we deliver sustainable power solutions to our global clients and the communities they serve."
Ian L. Edwards, president and CEO, AtkinsRéalis.





Site C Clean Energy Project, Canada

Renewable energy for a resilient future

The Site C Clean Energy Project is a large hydroelectric dam and generating station being constructed on the Peace River in British Columbia, Canada. The project is being developed by BC Hydro and once completed, expected to generate approximately 1,100 megawatts (MW) of capacity and produce 5,100 gigawatt-hours (GWh) of electricity annually, enough to power 450,000 homes per year. The project is seen as a crucial part of BC Hydro's long-term energy plan, which aims to provide reliable power while reducing greenhouse gas emissions.

AtkinsRéalis was appointed in July 2015 to provide engineering services of the dam and related infrastructure. Our involvement has been integral to ensuring the project's execution aligns with safety, environmental, and technical standards.

| | | | |
|----------------------------|------------------------|-----------------------|----------------------------------|
| 100% | 450k | 1,100 MW | 5,100 GWh |
| Renewable energy generated | Homes powered per year | Of capacity generated | Of electricity produced annually |

Completion date: 2025

Client: BC Hydro



The project is expected to deliver significant benefits in terms of renewable energy generation and economic development.

[Find out more](#)





What makes us different
is the way we work, and
the way we think.

[Read the latest thought leadership and
opinion from our experts](#)





OUR GLOBAL MARKETS AND SERVICES

From designing entire cities to delivering nuclear power stations, we focus on areas that greatly enhance the way we are all housed, connected, powered, and protected.



MARKETS

Our primary aim is to deliver value across high-growth, high-quality end markets in infrastructure and nuclear:



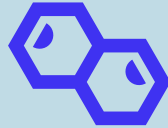
**Buildings
& places**



Defense



Industrial



**Minerals
& metals**



Nuclear



**Power &
renewables**



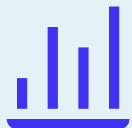
Transportation



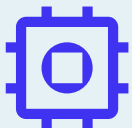
Water

SERVICES

We deploy global capabilities locally to our clients and deliver unique end-to-end services across the whole life cycle of an asset including:



**Consulting, strategy
& advisory**



**Engineering
& design**



**Project & program
management**



**Project
delivery**



**Operations
& maintenance**



Capital



Decommissioning



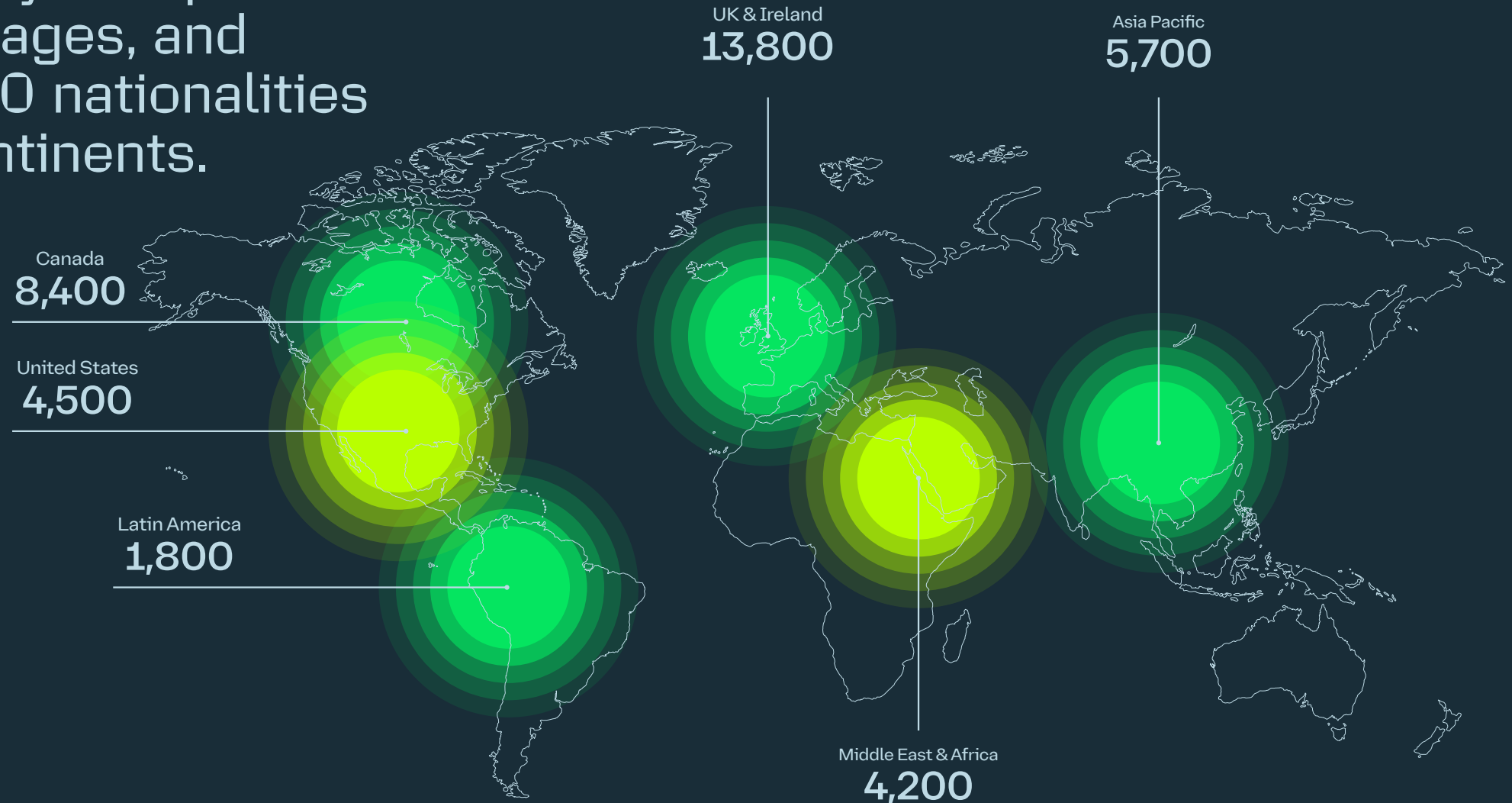
Every day, we're striving to be more inclusive, more collaborative and more innovative in how we drive change. To us, different makes a difference.

[Find out more](#)





Our global team of over 38,000 employees speaks over 70 languages, and represents 130 nationalities across six continents.





OUR VALUES

Our values are the essence of our Company's identity. They represent how we act, speak and behave together, and with our clients and stakeholders.

Safety

We put safety at the heart of everything we do to safeguard our people, assets, and the environment.

Collaboration

We work together and embrace each other's unique contribution to delivering amazing results for our clients, our communities, and our planet.

Innovation

We redefine engineering by thinking boldly, proudly, and differently.

Integrity

We do the right thing, no matter what. We are accountable for our actions.

Excellence

We are proud to do our best, achieve high standards, creating environments where all can thrive.



Engineering a better future for our planet and its people.

atkinsrealis.com/power-and-renewables

#PowerAndRenewables

