



29° 44' 56" N | 93° 52' 39" W

Sabine Pass Liquefaction Project, Louisiana, USA

INFRASTRUCTURE

MINING & METALS

NUCLEAR, SECURITY & ENVIRONMENTAL

OIL, GAS & CHEMICALS



THE BECHTEL REPORT 2019



▲ Plant Vogtle Units 3 & 4,  
Georgia

## Partnership and purpose

Our customers' projects are an investment in the future. They create jobs and economies; improve the resiliency of the world's infrastructure; increase access to energy, resources, and vital services; and make the world a safer, cleaner place.

While our expertise enables delivery, ongoing collaboration is critical to long-term success. By aligning our capabilities to our customers' goals, we help them achieve operational and performance excellence – driving innovations across the project lifecycle, mitigating risk, and contributing to a lasting positive legacy.

Since 1898, we have been the trusted partner of industry and governments worldwide, helping them deliver more than 25,000 projects in 160 countries on all seven continents. We serve the infrastructure; power; water; pipeline; nuclear, security & environmental; oil, gas & chemicals; and mining & metals markets. Our services span from initial planning and investment through start-up and operations.

Core to Bechtel are our values – ethics, safety and health, quality, people, culture, relationships, innovation, and sustainability – and our covenants: integrity, respect, collaboration, trust, and delivery. They are what we believe, what customers can expect, and the way we deliver.

## Executive letter

Through ambitious projects around the globe, Bechtel customers are working to meet challenges vital to a safe, sustainable, and prosperous future. In 2018 – our 120<sup>th</sup> year – we were privileged to partner with our customers to help them realize their goals and aspirations.

We understand that in today's increasingly competitive, complex, and dynamic markets, customers are seeking more than a contractor. They need a responsive partner whose approach combines deep expertise and experience with an unwavering commitment to excellence, value, collaboration, and shared success.

Our work with customers today is laying foundations for future commercial and economic growth, developing new supplies of energy and natural resources, creating better-connected and more livable cities, protecting the environment, and strengthening security.

Last year, our partnerships yielded new natural gas liquefaction facilities in the U.S., a new combined-cycle power plant in Pennsylvania, and key firsts on large mining and smelting operations in the Kingdom of Bahrain and Australia. These milestones were coupled with further progress on major rail, aviation, nuclear energy, industrial, and national security projects.

In total, our projects generated work-off revenue of \$25.5 billion in 2018, making Bechtel the top U.S. company among global contractors.

We also entered into new partnerships. Customers entrusted Bechtel to help deliver the Western Sydney Airport in Australia and a high-speed rail line in Texas. We started new and expanded roles on government and commercial projects. We also kicked off front-end engineering work on a series of potential engineering, procurement, and construction (EPC) projects driven by improving market conditions in the oil and gas sector.

These and other projects accounted for \$17.3 billion of new work booked and a year-end backlog of \$46.9 billion.

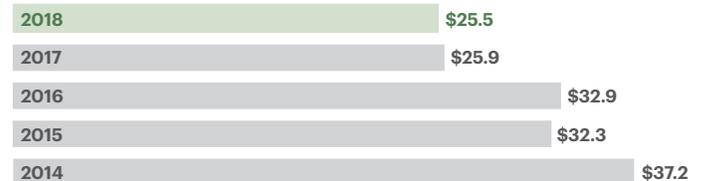
Decades ago, Steve Bechtel, Jr., who led our company from 1960 to 1990 and retired from our board at the end of 2018, defined our success as being the best at what we do, rather than the biggest in the industry. This view guides us today. As we streamline our company, we remain focused on the quality of the relationships we build and the results we enable customers to achieve.

With that in mind, we continued to devote substantial time, talent, and treasure to investing in our people and encouraging innovation and technical excellence. These efforts included initiatives to attract and retain top-quality craft workers, build key skills, and develop future leaders. They also included further work to increase diversity and inclusion at all levels of our organization. We accomplished these efforts while reducing our overhead and delivery costs.

Last year capped the third year of our Future Fund initiative, an effort to increase applied innovation that creates value-enhancing performance for customers. The result has been a healthy, robust, and growing pipeline of innovation opportunities. Over the course of the program, 6,000 Bechtel colleagues put forward more than 3,000 ideas employing new technologies, processes, and solutions. To date, we have taken 180 of these proposals – including more than 20 in 2018 – from the concept stage through prototype and readiness for deployment on projects.

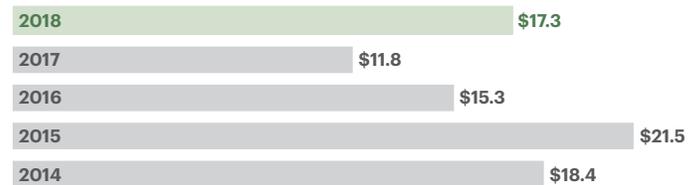
### Revenue

in billions of US dollars



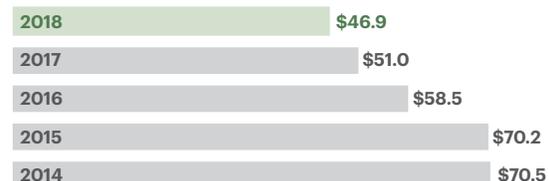
### New Work Booked

in billions of US dollars



### Backlog Revenue

in billions of US dollars





**Brendan Bechtel**, Chairman  
& Chief Executive Officer



**Jack Futcher**, President &  
Chief Operating Officer

This increased focus on innovation is already delivering rewards. Among other benefits, it has been a key driver in our progress toward near-term goals of reducing project costs by 20 percent and improving schedule performance by 30 percent.

Innovation will remain a key part of Bechtel's larger commitment to improve productivity. The compelling results of the Future Fund have led us to continue our innovation initiative through 2019 and beyond.

We are confident that the most significant gains still lie ahead as we design and build a fully integrated digital foundation across our EPC operations. This work is underway and will significantly expand our ability to leverage technology and data to empower colleagues and safely deliver quality projects faster and more cost effectively.

Ultimately, we see these efforts as important to more than just our company and customers. The more efficiently our industry can meet the world's enormous infrastructure and energy needs, the more successful it will be in raising living standards, strengthening resiliency, expanding economic opportunity, and addressing inequalities. We believe Bechtel has a responsibility to help our industry lead the way in meeting these long-term sustainability challenges.

We strive to set the standard when it comes to safety, ethics, and stewardship. Our safety results remain among the strongest in the industry, and we hold ourselves accountable for doing the right thing in all interactions with customers, colleagues, communities, and the environment. That being said, we will be constantly dissatisfied with our performance until we achieve our goal of zero accidents across our entire portfolio of projects.

As we look ahead through 2019 and beyond, we are confident that Bechtel's commitment to collaboration and building lasting partnerships with customers will be the foundation for ongoing growth and mutual success. We strongly believe our purpose is to partner with customers to make a better, safer world for everyone. Accordingly, we will invest in our people and capabilities to better serve our customers and their missions.

On behalf of our colleagues worldwide, thank you for your interest in Bechtel and the extraordinary projects we are helping customers bring to life. We are proud to highlight many of these in this year's report, and we look forward to sharing our progress.

Sincerely,

**Brendan Bechtel**  
Chairman & Chief Executive Officer

**Jack Futcher**  
President & Chief Operating Officer



# Project highlights

## INFRASTRUCTURE

**1. Edmonton Valley Line Light Rail Transit (EVLRT):** Constructing the EVLRT line, an 8-mile (13-kilometer) route with 11 new stops and one new station for the City of Edmonton.

**2. Keeyask Generating Station:** Leading a partnership in Manitoba, Canada, to build a seven-unit powerhouse, concrete spillway, 1.4 miles (2.2 kilometers) of earthen dam structures, and 14.3 miles (23 kilometers) of dikes for Manitoba Hydro.

**3. Hummel Station Power Plant:** Completed project management, EPC, and startup services for Panda Power Fund's 1,124-megawatt, combined-cycle power plant in Pennsylvania, which will supply more than twice the power of the coal plant it replaces, reduce key emissions by more than 90 percent, and be one of the cleanest natural gas-powered plants in the United States.

**4. Cricket Valley Energy Center:** Designing and building a new 1,100-megawatt, combined-cycle natural gas power plant in New York for Cricket Valley Energy Center LLC.

**5. Telecommunications:** Deploying wireless networks for major communication networks throughout the United States.

**6. Texas High Speed Rail:** Managing the development of the groundbreaking 240-mile (386-kilometer) high-speed rail line that will connect Dallas-Fort Worth with Houston at speeds up to 200 mph (322 kph) for the privately owned Texas Central Railroad.

**7. Gabon National Infrastructure:** Executing the build-out of national infrastructure to support sustainable economic development for the government of Gabon.

**8. Crossrail:** Supporting the delivery of a new railway from east to west London that will add 10 percent to the transport capacity of the capital, including 13 miles (21 kilometers) of twin tunnels for Crossrail Limited and Network Rail.

**9. London City Airport:** Managing the development program to expand the existing terminal and build a new passenger pier, seven new aircraft stands, and a new aircraft taxi lane for London City Airport.

**10. Gatwick International Airport:** Supporting delivery of a major capital investment program, while keeping the airport operational for 46 million passengers per year for Gatwick Airport.

**11. High Speed 2:** Serving as development partner for Phase 2b – Crewe to Manchester and Birmingham to Leeds – of the United Kingdom's second high-speed line for HS2 Limited.

**12. Kosovo Motorway:** Building Route 6, a new 37-mile (60-kilometer) motorway linking the capital, Pristina, to neighboring Macedonia for the government of Kosovo.

**13. Riyadh Metro:** Designing and building two metro lines in Saudi Arabia's capital for the High Commission for the Development of Arriyadh.

**14. National Project Management Organization:** Supporting the development and operation of a new government organization in Saudi Arabia to support effective delivery of complex national infrastructure projects for the government of Saudi Arabia.

**15. Jubail:** Building on decades of involvement with the development of Jubail Industrial City by providing management services for the world's largest industrial development project – Jubail and Ras Al Khair industrial cities – for the Royal Commission for Jubail and Yanbu.

**16. Muscat International Airport:** Completed construction of the new award-winning 28-gate international terminal and associated facilities for the government of Oman.

**17. Sydney Metro:** Managing the delivery of 9.6 miles (15.5 kilometers) of twin-bore tunneling and excavation for six new metro stations for Stage 2 of Australia's largest public transportation project for Transport for New South Wales.

**18. Western Sydney Airport:** Serving as project manager for design definition and delivery partner for a new airport in New South Wales for WSA Co.

## MINING & METALS

**19. Quebrada Blanca Phase 2:** Providing EPCM services for the Quebrada Blanca Phase 2 project that will have an ore-processing rate of 143,000 tonnes per day.

**20. Alba Line 6 Expansion Project:** Providing EPCM services for an expansion project in the Kingdom of Bahrain that will make Alba the world's largest single-site aluminum smelter for Alba Aluminium Bahrain.

**21. Al Taweelah alumina refinery:** Providing EPCM for a greenfield alumina refinery in partnership with Petrofac Emirates for Emirates Global Aluminium.

**22. Amrun:** Building a bauxite mine and its associated processing and port facilities to expand output at one of the world's largest bauxite deposits for Rio Tinto in Australia.

**23. Los Pelambres Expansion Project:** Providing EPC self-perform direct-hire services to Antofagasta Minerals for this plant expansion, desalination plant, and water transport pipeline.

## NUCLEAR, SECURITY & ENVIRONMENTAL

**24. Lawrence Livermore National Laboratory:** Managing and operating, alongside the University of California, one of the U.S. Department of Energy's most important national security laboratories, which employs more than 6,000 people.

**25. Los Alamos National Laboratory:** Managed and operated a premier U.S. Department of Energy facility for national security and scientific research at one of the world's largest multidisciplinary institutions.

**26. Hanford Waste Treatment and Immobilization Plant:** Designing, constructing, and commissioning the world's largest and most technically sophisticated radioactive waste treatment plant for the U.S. Department of Energy.

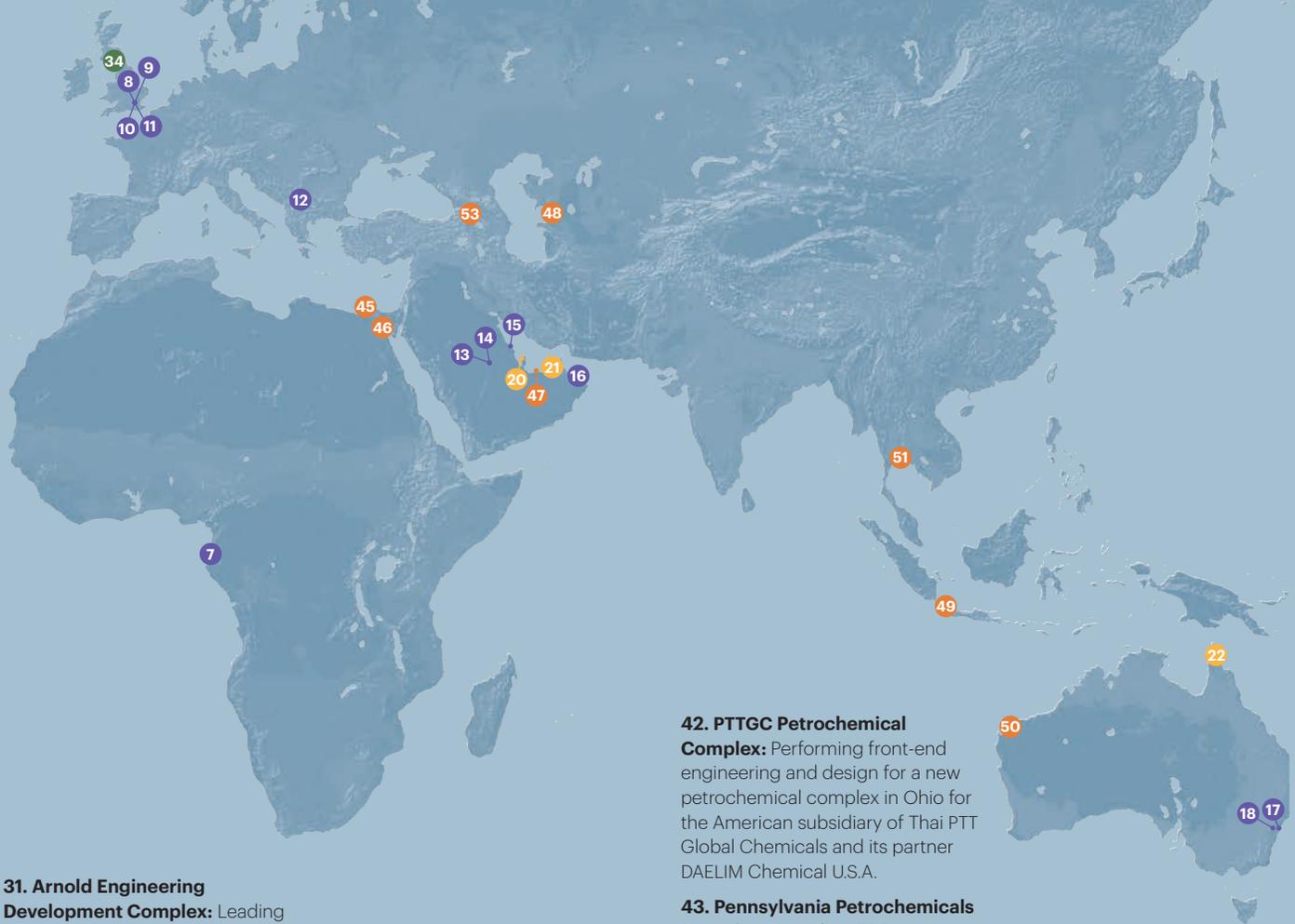
**27. Pueblo Chemical Agent-Destruction Pilot Plant:** Designed, built, systemized, pilot-tested, and now operating a first-of-its-kind plant that will safely destroy mustard agent inside munitions stored at the U.S. Army Pueblo Chemical Depot in Colorado.

**28. Uranium Processing Facility:** Constructing a multibuilding, state-of-the-art complex for enriched uranium operations related to nuclear security for the National Nuclear Security Administration.

**29. Consolidated Nuclear Security – Pantex Plant and Y-12 National Security Complex:** Managing and operating U.S. manufacturing and nuclear weapons assembly/disassembly facilities in Texas and Tennessee to ensure a safe and effective national nuclear weapons deterrent for the National Nuclear Security Administration.

**30. Savannah River Remediation:** Treating Cold War liquid radioactive waste and closing underground tanks at the Savannah River Site for the U.S. Department of Energy.





### 31. Arnold Engineering

**Development Complex:** Leading test operations and sustainment for the engineering complex at the Arnold Air Force Base, supporting ground testing of nearly every new U.S. air and space system.

### 32. Blue Grass Chemical Agent-Destruction Pilot Plant:

Designed, built, and now systemizing a first-of-its-kind plant to safely destroy the chemical weapons stockpile at the Blue Grass Army Depot.

### 33. Plant Vogtle Units 3 & 4:

Completing construction of the two-reactor expansion of a nuclear power plant near Augusta, Georgia, for Georgia Power.

### 34. Sellafeld Pile Fuel Cladding

**Silo Retrieval:** Designed, fabricated, and installed silo doors and waste retrieval and handling modules at a nuclear site for the U.K. Nuclear Decommissioning Authority.

## OIL, GAS & CHEMICALS

### 35. Corpus Christi Liquefaction:

Designing and building three LNG production trains and related facilities, including tanks and marine structures, for Cheniere Energy in Texas.

### 36. ExxonMobil North American Growth — Olefins Recovery

**Project:** Completed construction of an ethylene plant at ExxonMobil's complex in Baytown, Texas.

### 37. Beaumont SCANFINING

**Refinery Upgrade:** Completed engineering and construction of a new hydrofining unit to upgrade the refinery for ExxonMobil, applying the customer's proprietary technology to increase motor fuel production.

**38. Port Arthur LNG:** Executing front-end engineering and design on the lump-sum EPC contract to build an 11 mtpa LNG facility for a Sempra Energy wholly owned affiliate in Jefferson County, Texas.

### 39. Sabine Pass Liquefaction:

Designing and building six LNG production trains for Cheniere Energy in Louisiana.

**40. Driftwood LNG:** Designing one of the world's lowest-cost LNG production and export terminals for Tellurian Inc. near Lake Charles, Louisiana. Bechtel also made an equity investment in the project.

### 41. Garyville Coke Drum

**Replacement:** Providing engineering and procurement for the replacement of coke drums and gas plant modifications, as well as the front-end engineering for Marathon Petroleum at their refinery in Garyville, Louisiana.

### 42. PTTGC Petrochemical

**Complex:** Performing front-end engineering and design for a new petrochemical complex in Ohio for the American subsidiary of Thai PTT Global Chemicals and its partner DAELIM Chemical U.S.A.

### 43. Pennsylvania Petrochemicals

**Complex:** Providing EPC services to Shell Chemical Appalachia LLC for a world-scale cracker facility near Pittsburgh that will use ethane to produce 1.76 million tons (1.6 million tonnes) of polyethylene per year.

### 44. Tilbury LNG:

Performing EPC for a small-scale LNG facility including new storage capacity for FortisBC in British Columbia, Canada.

### 45. West Nile Delta Gas Processing

**Terminal:** Providing EPC services to BP for an onshore gas-processing plant near Alexandria, Egypt.

### 46. Tahrir Petrochemicals Project:

Providing project management services to Carbon Holdings for a new petrochemical complex near Suez, Egypt.

### 47. Hail and Ghasha Offshore

**Project:** Executing front-end engineering and design of a planned offshore/onshore ultra-sour gas megaproject in the northwest of the Emirate of Abu Dhabi for the Abu Dhabi National Oil Company.

### 48. Tengiz Facilities Upgrade and Future Growth Project Expansion:

Providing EPC services to add crude oil storage capacity to the Tengizchevroil oil production facility in Kazakhstan, in addition to civil, mechanical and piping, and electrical and instrumentation development for the \$37 billion Future Growth Project.

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**49. Pertamina Refining:** Providing engineering and project development services to develop new refineries and improve capacity at existing refineries for Pertamina in Indonesia.

**50. Wheatstone LNG:** Completed a two-train LNG plant and related facilities for Chevron in Western Australia.

### 51. Thai Oil Clean Fuels Project:

Providing project management services to Thai Oil for their clean fuels refinery expansion in Sri Racha, Thailand.

### 52. Galeota Expansion Project:

Providing EPCM services to BP for upgrades to their facility in Trinidad and Tobago.

### 53. South Caucasus Pipeline Expansion Project:

In conjunction with joint venture partner ENKA, completed the construction of two large gas compressor stations and a pressure reduction and metering station for BP and its partners in Georgia.

29° 44' 56" N | 93° 52' 39" W

**Sabine Pass Liquefaction Project, Louisiana, USA**



# Vision, Values & Covenants

## Vision: What we aspire to do

Be the world's premier engineering, construction, and project management organization by achieving extraordinary results for our customers, building satisfying careers for our people, and earning a fair return on the value we deliver.

## Values: What we believe

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Building on a family and leadership heritage that spans more than a century, we are privately owned by active management and guided by our Vision, Values & Covenants. We value:

- **Ethics.** We are uncompromising in our integrity, honesty, and fairness.
- **Safety & Health.** We are relentless in keeping people safe from harm, and we provide a healthy work environment.
- **Quality.** We are passionate about excellence and doing our work right the first time. Our reputation depends on our delivered value in the eyes of every customer and community.
- **People.** We inspire each other with important work full of purpose, challenging development opportunities, and rewarding careers. We aspire to be the employer of choice in our industry.
- **Culture.** We actively build a diverse, inclusive, and collaborative work environment where all views are welcomed, openness is encouraged, and teamwork and merit are cornerstones. We are proud of what we do and how we do it – and we enjoy doing it!
- **Relationships.** We build positive, long-term relationships with our customers, joint-venture partners, subcontractors, suppliers, and colleagues that are built on trust, respect, and collaboration.
- **Innovation.** We develop and apply world-class technology. We listen, learn, and seek out the best ideas. We attack complacency and continually improve.
- **Sustainability.** We improve the quality of life in communities where we work by respecting local cultures, engaging local people, and protecting the environment.

## Covenants: How we do it

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Wherever we go and whatever we do, we:

- **Demonstrate Integrity.** Exercise the highest level of professional and ethical behavior.
- **Are Respectful.** Treat people with respect and dignity. Listen actively. Communicate in a timely and forthright manner. Never undermine colleagues.
- **Collaborate.** Ask for and welcome help; offer and give it freely. Mutually resolve ambiguity and conflict.
- **Build Trust.** Make commitments responsibly and always keep our word. Be candid while building shared understanding.
- **Deliver.** Set high aspirations, plan responsibly, and honor all commitments.
- **Learn It, Do It, Share It.** Be curious. Seek, share, and build upon experiences and lessons learned.
- **Live Our Culture.** Embrace, embody, and actively contribute to our Vision, Values & Covenants. Nurture a proud legacy.

# Helping deliver clean, affordable energy

## Investing in the future of LNG

As the world moves toward a lower-carbon energy mix, liquefied natural gas has become a go-to transition fuel.

Bechtel has partnered with leading energy companies around the world to deliver an unprecedented 14 LNG trains in less than four years – contributing 30 percent of the world's LNG capacity. These companies now provide about 67 million tons (61 million tonnes) of LNG to the energy market each year, enough to power more than 85 million homes.

### Cheniere Energy Partners – Corpus Christi Liquefaction Project, Texas and Sabine Pass Liquefaction Facility, Louisiana

In November, we continued our 15-year partnership with Cheniere Energy Partners by celebrating two significant LNG milestones on the U.S. Gulf Coast. The Sabine Pass Liquefaction facility in Louisiana produced its first cargo of LNG from Train 5, and the Corpus Christi Liquefaction project in Texas produced its first LNG through Train 1. Both milestones were achieved months ahead of schedule, enabling Cheniere to deliver LNG energy to the global market much earlier than planned. Bechtel has delivered six trains with Cheniere, and three more are under construction.

- **Corpus Christi Liquefaction project, Texas**  
As the first exporter of LNG from the state of Texas, as well as the first greenfield LNG export facility in the lower 48 states in nearly 50 years, the Corpus Christi Liquefaction project is projected to bring a \$17 billion economic impact to Texas during the nine-year construction period. The project created 4,000 jobs during construction and is expected to create 430 permanent jobs upon completion.
- **Sabine Pass Liquefaction facility, Louisiana**  
Bechtel helped Cheniere send out its first cargo in February 2016. Since then, the Sabine Pass facility has delivered more than 500 cargoes to approximately 29 countries. In November, we finalized the EPC contract for Train 6.

### Tellurian – Driftwood LNG, Louisiana

Bechtel is partnering with Tellurian, Chart Industries, and General Electric to deliver Driftwood, Tellurian's LNG export facility near Lake Charles, Louisiana. The facility's design will enable delivery of low-cost LNG while offering flexibility to respond to the changes in market demand. Bechtel also became an equity investor in Tellurian, reinforcing our long-term partnership and mutual commitment to deliver the next wave of low-cost LNG.

## MAKING A DIFFERENCE – EVERY DAY

"The proudest moment for the Corpus Christi team was November 14, at exactly 7:27 AM when we produced first LNG. We had been working for 42 months on this project. Our mindset was always on safe delivery of first LNG and first cargo. For the last few months, many of the team members spent days and nights at the project to ensure all

went well and safely. We understand that the project is our partnership with Cheniere, and the only acceptable outcome is success."



**Bhupesh Thakkar**  
Bechtel Program Manager  
for Cheniere Projects

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## Corpus Christi Liquefaction, Texas, USA



### **Chevron – Wheatstone LNG, Onslow, Australia**

We proudly announced a smooth transition to operational status of the Chevron-operated Wheatstone LNG project in Western Australia. Wheatstone is one of Australia's largest resource projects with a combined capacity of 9.8 million tons (8.9 million tonnes) per year of LNG. The project created approximately 6,500 direct and indirect jobs, and supported the economic participation of indigenous populations.

Multiple innovative technical solutions were created and adopted during the execution of the project, including modularization, use of high-density polyethylene (HDPE) for underground water piping, using polyisocyanurate (PIR) where safe and feasible for insulation, and optimizing temporary construction facilities.

### **Meeting demand: front-end engineering and design**

We are working with a variety of partners to conduct front-end engineering and design of LNG facilities to find the most efficient solutions that meet rising global energy demand. They include:

- Cheniere for Corpus Christi LNG Stages 3 and 4 in Texas.
- Sempra LNG and Port Arthur LNG for a two-train facility in Jefferson County, Texas.
- Freeport LNG for a fourth train at their facilities in Freeport, Texas.
- NextDecade for Rio Grande LNG, a greenfield six-train facility in Brownsville, Texas.
- Pluto Expansion for Woodside to add a second train to their Dampier, Australia, facility.

### Growing capacity and skills with nuclear energy

Soon after World War II ended, Steve Bechtel, Sr. recognized that nuclear energy would revolutionize electric power generation. Since then, Bechtel has helped our customers complete more than 74,000 megawatts of carbon-free nuclear generation capacity through more than 150 nuclear plants worldwide. We continue to deploy the expertise and experience of our teams to support our customers in delivering the next generation of carbon-free energy.

#### Plant Vogtle Units 3 & 4, Georgia

The two-unit expansion of the Vogtle nuclear power plant is the only new nuclear project under active construction in the U.S. Each new reactor is expected to generate 1,100+ megawatts of zero-emission electricity, enough to power 500,000 homes and businesses.

At projects all over the world, we work to help build a local workforce to ensure the long-term success of each customer's project and the vitality of the community. This was particularly critical at Vogtle due to the shortage of qualified workers that resulted from large demand and the lack of new nuclear development. To address the issue, we are working together with our labor partnerships to recruit and train tradesmen and women.

#### Hinkley Point, Somerset County, UK

We are providing management consulting services to EDF Energy/NNB Generating Company as it builds two 1,650-megawatt European pressurized reactor units at Hinkley Point in southwest England. Upon completion, the two-unit plant will have the capacity to generate 3,300 megawatts of power.

#### ▼ Plant Vogtle Units 3 & 4, Georgia

Image: © Georgia Power

### MAKING A DIFFERENCE – EVERY DAY

"It's rewarding knowing that we're helping Georgia Power accomplish something no one else is doing. Our partnership with them is making a difference for our nation and the need to have a diversified and balanced energy portfolio that contains sources of power that don't emit greenhouse gases. The project is also having a tremendous positive impact on the local economy. It makes me proud to know the team has come through for our customer and increased safety and productivity."



**Brian Reilly**  
Project Director  
Plant Vogtle Units 3 & 4



**MAKING A DIFFERENCE - EVERY DAY**

"Customers are relying on Bechtel to deliver so they can meet their commitments to the marketplace. Timely completions – and high quality – are critical. Over the past few years, we developed a reusable, successful design that saves on engineering costs, increases productivity, and offers competitive schedules.

Hummel Station Power Plant is our fifth project with Panda Power Funds. Our long partnership has enabled us to better understand their needs and align to their goals. One of the exciting things about the Hummel project was the difference in the air emissions from the old coal plant being replaced and the new plant. It was literally a 98-percent reduction. It was great to help deliver that kind of change."



▲ **Hummel Station Power Plant,**  
Pennsylvania

**US Department of Energy Nuclear Research**

We remain committed to the next generation of advanced nuclear power, working with companies to develop simpler and safer reactors. We are currently part of two separate teams that received awards from the U.S. Department of Energy for critical research on advanced nuclear energy.

- GE Hitachi, MIT, Exelon, and Bechtel are investigating ways to efficiently build a plant using GE Hitachi's BWRX-300 reactors.
- GE Hitachi and Bechtel are advancing the conceptual design and cost estimates for the Versatile Test Reactor.

**Clean energy with combined cycle**

Our long history in natural gas power generation began in 1940 with the construction of an oil-and-gas-fired power project in California. In the decades since, we have helped our customers deliver 100 combined-cycle gas turbine projects with more than 50,000 megawatts of capacity. Since 2012, we have established a standard plant design that has significantly improved cost and schedule efficiency for our customers. This year we completed:

- Hummel Station Power Plant, Shamokin Dam, Pennsylvania Panda Power Funds is now generating 180 percent more power, using 97 percent less cooling water and reducing key emissions by more than 90 percent at Hummel Station, one of the cleanest natural gas-powered plants in the U.S. At 1,124 megawatts, it is one of the largest coal-to-gas power site conversion projects in the U.S. to date. We have partnered with Panda Power to deliver four plants since 2012.



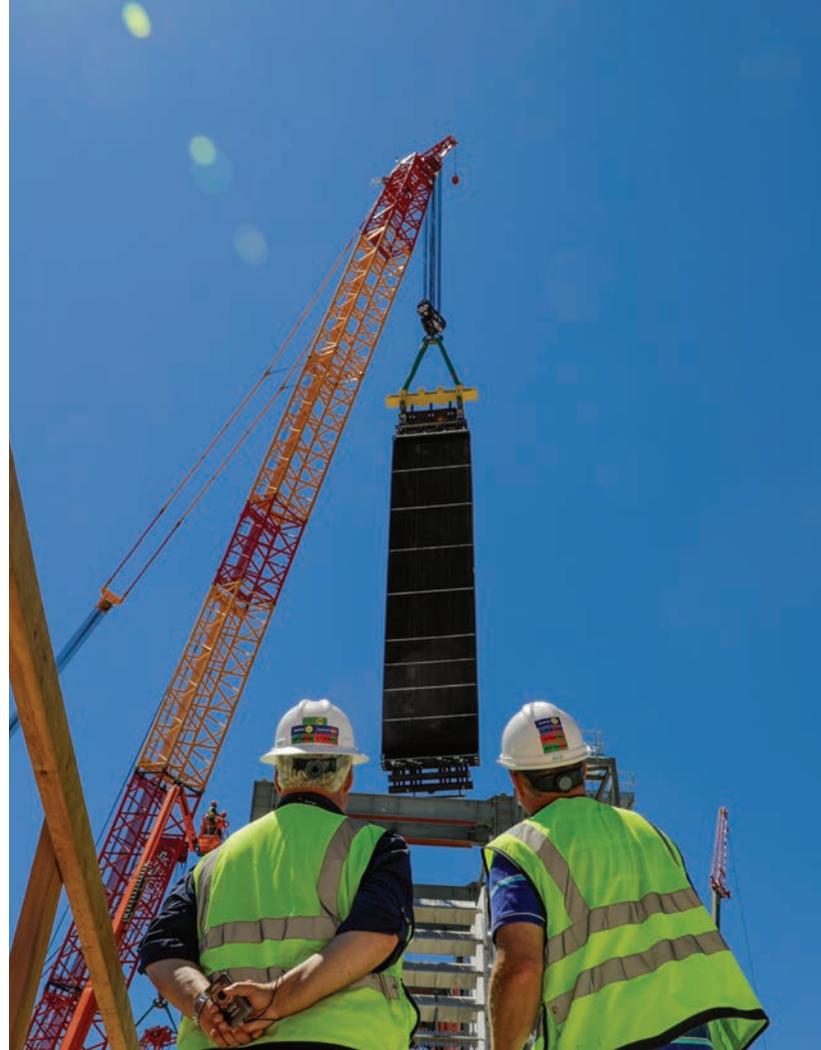
**Donna Hobbs**  
Project Manager  
Hummel Station  
Power Plant

In progress:

- Cricket Valley Energy Center, Dover, New York  
We are currently helping Cricket Valley Energy Center, LLC transform an abandoned industrial site into one of the cleanest, most efficient, power generation facilities in the U.S. Cricket Valley Energy Center will provide electricity for 1 million homes and create approximately 1,100 jobs at peak construction.

This year, the U.S. Department of Energy awarded Bechtel a project to develop our Turbo-Compound Reheat Gas Turbine Combined Cycle for small-scale demonstration. We also submitted a patent for our Gas Turbine Combined Cycle for High Flexibility.

► **Cricket Valley Energy Center, New York**



### **Clean Energy Innovation — 10 degrees south of the Arctic Circle**

The Bechtel-led BBE Hydro Constructors Limited Partnership is building the Keeyask Generating Station for Manitoba Hydro, a 695-megawatt hydroelectric plant on the Nelson River that will provide enough renewable energy to power 400,000 homes. The team was recognized by *Engineering News-Record* for its innovative ways to continue construction in temperatures well below zero.

In addition, Manitoba Hydro partnered with four indigenous communities: the Tataskweyak, War Lake, York Factory, and Fox Lake Cree, who have lived in the region for generations. The First Nation heritage was also honored at ceremonies throughout the year.

◀ **Keeyask Generating Station, Canada**

**MAKING A DIFFERENCE – EVERY DAY**

“The thing that's always impressed me about our folks at Bechtel is the caliber of everyone's drive, hard work, and their 'get it done' attitude. A big moment for the project team at Keeyask was moving the river and diverting it through the spillway. *Engineering News-Record* used a picture of the spillway for the cover picture of the article on the project. It was a proud moment

that garnered a tremendous amount of pride by the team, to be able to take that magazine, point to it and say, 'I helped build that, that's my project.'”



**J.Q. Hicks**  
Senior Project Manager  
Keeyask Generating Station

▼ **Keeyask Generating Station, Canada**



## Making the world cleaner, safer, and more secure

For more than 40 years, we have partnered with industry, academia, and allied governments to make the world a cleaner, safer, and more secure place. We have performed environmental cleanup work at more than 500 contaminated sites across the world, managed operations at vital national security projects, and helped the U.S. and other countries reduce threats posed by weapons of mass destruction.

### Pueblo Chemical Agent-Destruction Pilot Plant, Colorado

The Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) is a state-of-the-art facility built to safely and efficiently destroy the chemical weapons stockpile stored at the U.S. Army Pueblo Chemical Depot near Pueblo, Colorado. In 2018, we helped PCAPP deliver on its mission with test demonstrations to ensure the plant is operating as designed – the final step before the plant can begin regular operations. As of December, the Pueblo facility safely eliminated more than 89,000 munitions. Combined with the Explosive Destruction System operations, PCAPP has destroyed more than 523 tons (574 tonnes) of deadly chemical weapons.

### Saltstone Disposal Unit 6, South Carolina

As a member of Savannah River Remediation, LLC, we helped the U.S. Department of Energy deliver Saltstone Disposal Unit 6 (SDU6), a first-of-its-kind, 28-million-gallon (124-million-liter) tank and the largest rubber-lined tank in the world. SDU6 was created to safely store 36 million gallons (136 million liters) of treated, low-level radioactive waste contained from 43 underground waste tanks at the Savannah River Site in Aiken, South Carolina.

### Uranium Processing Facility, Tennessee

The Uranium Processing Facility (UPF) is a state-of-the-art complex for enriched uranium operations being constructed at the Y-12 National Security Complex. The UPF will replace World War II era facilities to help ensure the long-term viability, safety, and security of the nation's enriched uranium capabilities; support the U.S. nuclear weapons stockpile; prevent proliferation of weapons-grade uranium; and supply fuel for U.S. Navy submarines and aircraft carriers.

In 2018, Consolidated Nuclear Security, LLC, a Bechtel-led company, began construction on the UPF. The work includes the Main Processing Building for high-risk nuclear materials, the Salvage and Accountability Building for low-risk nuclear materials, and the Mechanical Electrical Building.

The new facility will improve worker safety, reduce operational costs, and allow more efficient mission delivery.



Follow

Proud to participate in the groundbreaking ceremony at the new Saltstone Facility at @Energy's Savannah River Site, @SRSNews. Congrats on progress that is both on time and on budget! #energy #security #usa



▲ U.S. Energy Secretary  
Rick Perry at the SDU7  
groundbreaking ceremony

The UPF consists of multiple safety-related structures and equipment that must be designed to withstand a severe earthquake. To determine what was needed required propagating seismic waves from a depth of more than 10,000 feet (3,048 meters) to the surface, through the complex geology.

This analysis was performed using a first-of-a-kind, very large, two-dimensional site model developed by a team of Bechtel's earthquake engineering specialists. The analysis was completed successfully and accepted by the U.S. Department of Energy and their reviewers, yielding a defensible design basis for the project. This enabled the project to complete an important component of engineering on schedule, and, more importantly, seeks to ensure that the facility will be safe in the event of an earthquake.

### Pile Fuel Cladding Silo, Sellafield Site, UK

From 1952 to 1964, the U.K. disposed of radioactive debris from its early nuclear fuels in a 60-foot (18-meter)-tall silo building with six compartments. As part of Bechtel Cavendish Nuclear Solutions, our team has designed and fabricated, and is now installing, an innovative waste retrieval system using a remote-operated arm and a grapple that will be lowered into each chamber.

To assure the waste materials can be handled and removed safely, the compartments are filled with argon gas to minimize risk of a spontaneous fire. The retrieval system must maintain an airtight seal.

Once retrieved, the waste will be packaged in robust containers for disposal, addressing a long-term environmental risk in what is described as one of Europe's most hazardous buildings.

## MAKING A DIFFERENCE – EVERY DAY

“I’m proud of the team and their accomplishments, and their pride in ownership. With just about every indicator, we’ve exceeded expectations. And now, we’re building another tank [SDU7]. So not only were we able to do this first-of-a-kind accomplishment, but the team is working together again for the next challenge.”



**Jim Rugg**

Director of Projects,  
Design, and Construction  
Savannah River Remediation

## Safety, sustainability, and innovation at SDU6

- Worked 692,130 hours with zero OSHA recordable events.
- Generated more than \$500 million in lifecycle savings.
- Used 2D thermal modeling to better predict temperature gradients, allowing for the elimination of exterior insulation and savings of \$1 million.
- Delivered significant water security and preservation by:
  - Reducing expensive domestic water usage by more than 90 percent.
  - Conducting first-of-a-kind hydrotesting using a fluorescent dye for leak detection at concentrations safe for environmental release.
  - Returning more than 60 million gallons (227 million liters) of water from hydrotesting to the aquifer through systematic discharge locations, enhancing local habitats.
- Reduced waste disposal by reusing 55,000 square feet (5,109 square meters) of insulation material and 1,500 gallons (5,678 liters) of chemical product.
- Trained 20 craft painters from the Augusta building trades to install rubber liner material. These craft workers are available to support other projects in the region, including hurricane recovery efforts in the Carolinas and Florida.
- Earned the U.S. Department of Energy’s Project of the Year Award.

## ▼ Saltstone Disposal Unit 6, South Carolina



## Connecting and powering communities

Population growth, increased globalization, and rising demand will put a heavy strain on the world's infrastructure. The challenge for governments and industry today is to find a way to meet future transportation demands by increasing airport and rail capacity, in a safe, sustainable, and efficient manner.

### Airports: Linking people and economies

#### London City Airport, London, UK

We are serving in the role of delivery partner to manage the \$700 million (£551 million) City Airport Development Programme (CADP). The CADP includes expanding the existing terminal by 258,333 square feet (24,000 square meters), constructing a three-story passenger pier, adding seven new aircraft stands,

and constructing a new parallel aircraft taxiway. The upgrade will increase capacity to handle 6.5 million passengers per year by 2025. Additionally, the program will help the airport accommodate the next generation of quieter, longer-range, and more fuel-efficient aircraft.

#### Western Sydney Airport, New South Wales, Australia

We were selected by WSA Co as the project manager for design definition and delivery partner for the new airport in Badgerys Creek, New South Wales. Demand for aviation services in the Sydney region is forecast to double over the next 20 years. The airport is expected to support 11,000 direct and indirect jobs during construction and almost 28,000 once it is fully operational.

#### ▼ London City Airport, United Kingdom

Image: © Andrew Holt





## MAKING A DIFFERENCE – EVERY DAY

"Our appointment for Pier 6 is a positive reflection on our long-term strategic partnership with GAL and our expertise in delivering construction projects in complex work environments. We sit within the customer's office and work as a part of their team. That is really powerful in terms of being able to reach into their organization to solve challenges which inevitably come about when working in the middle of the airfield, at the world's most efficient single runway airport. We can resolve things very quickly through our relationship with our customer's operational team. Nurturing that relationship is key to enabling success."



**Will Close**  
Project Manager  
Gatwick Pier 6

### ▲ Muscat International Airport, Oman

#### **London Gatwick Airport, London, UK**

Gatwick's Airport is the U.K.'s second largest airport. It serves more than 230 destinations in 74 countries for 46 million passengers per year on short- and long-haul point-to-point services. Gatwick is also a major economic driver and generates around 85,000 jobs nationally, with 24,000 of these located at the airport. We have been helping Gatwick Airport Limited (GAL) as a strategic partner since 2009 to drive growth, deliver capital works efficiently, and enhance passenger experience. In 2017, we were appointed to lead the delivery of the Pier 6 program, which is the airport's largest single investment. For the Pier 6 works, we are responsible for the EPC management integrated alongside Gatwick's construction and operational teams.

Gatwick is more than halfway through a \$3.53 billion (£2.7 billion) program of investment to transform the airport at every touch point for passengers. Pier 6 follows major transformation projects such as the redevelopment of the North Terminal and the newly constructed Pier 1, as well as major works on Pier 5 to create a second level.

#### **Muscat International Airport, Oman**

In November, we joined the Oman government in celebrating the official opening of the Muscat International Airport. A Bechtel-led consortium designed and built the new terminal and associated facilities, incorporated state-of-the-art technology, and designed the airport to deliver an exceptional passenger experience. The airport has an initial capacity of 20 million passengers per year, with an expansion potential for 75 million passengers per year.

53° 32' 34" N | 113° 30' 14" W

Edmonton Valley Line Light Rail Transit, Canada





▲ Crossrail, United Kingdom

## Connecting communities with rail

### Edmonton Valley Line Light Rail Transit, Canada

Edmonton is Canada's second fastest-growing city and its population is expected to grow by 50 percent by 2040. The Valley Line, a multi-phased, 16.7-mile (27-kilometer) urban route that will serve an estimated 100,000 daily commuters, is central to the city's future.

Bechtel and its TransEd Partners – Bombardier, EllisDon, and Fengate Capital Management – completed the first track of the light rail system and delivered the first of 26 Bombardier-made light rail vehicles.

### 2018 Project of the Year – Crossrail West, UK

Network Rail, Bechtel, and the supply chain delivering Crossrail West won Major Project of the Year at its 2018 National Rail Awards. According to the judges, "This is a project that has been delivered on time and on budget with a good safety record, and which is already benefitting passengers. A clear winner in our view."

### Riyadh Metro, Saudi Arabia

Riyadh's population is forecast to increase from 6 million people today to 8 million people by 2030. The new metro system will meet the demands of the growing population while reducing traffic congestion and improving air quality.

Bechtel, as part of the BACS consortium, which includes Altabani General Contractors, Consolidated Contractors Company, and Siemens, is responsible for design, construction and the electrification of two of the six new lines.

### Sydney Metro, Australia

Sydney's population is expected to pass 6 million by 2036. Sydney Metro will make it easier and faster to get around the city and boost economic productivity by bringing new jobs and new educational opportunities to the region.

Transport for NSW selected a Bechtel-led team as its delivery management partner for its Tunnel and Station Excavation Works Package, part of the Sydney Metro City and Southwest projects. The team began tunneling in 2018.

### Texas High Speed Rail, Texas

We were selected by Texas Central to manage the development of the Texas High Speed Rail project. Once complete, the railway will connect North Texas, the Brazos Valley, and Houston in 90 minutes, potentially reducing travel times by one hour for the 16 million people living in the train's service areas compared to air or road travel.

## Expanding responsible access to natural resources

The mining industry has experienced historic highs and lows in the last decade, with more change expected in the years to come. The industry is looking toward technology to transform the way it does business. Specific emphasis is being placed on decreasing any impact to the environment, local communities, and water use.

### Amrun, Weipa, Australia

We are working with Rio Tinto to deliver Amrun, a new bauxite mine in Queensland. Bauxite is the mined rock used to make aluminum. In addition to the expected production of about 25 million tons (23 million tonnes) of bauxite per year, the mine will continue to support economic growth in the Weipa region.

Critical to the project's success is working closely with the Aboriginal Traditional Owners in the region – the Wik-Waya people – to ensure the benefits generated from mining support future generations and to responsibly address important cultural heritage sites.

The Amrun project team used virtual reality to enable the Traditional Owners to visualize the future of the Amrun Project and understand the changes expected. Traditional Owners were able to see the impact of the project to the coastline as well as the long-term growth and regeneration of different plant species to show how the area will likely appear in the future.

In December, the project shipped its first cargo of bauxite, six weeks ahead of schedule.

▼ **Henry Kelinda**, Wik-Waya  
Traditional Owner using Amrun  
Project's virtual reality tool



12° 42' 7" S | 142° 4' 1" E

**Amrun**, Weipa, Australia



#### MAKING A DIFFERENCE - EVERY DAY

"I'm incredibly proud of the endeavors of the project team at Amrun. The camaraderie and the one-team approach between ourselves and Rio Tinto were also exemplary. It was one team, one outcome. A lot of people talk about that, but we were truly aligned. Our monthly top 10 goals were Rio Tinto's monthly top 10. Their KPIs were our KPIs. So if we failed to deliver a milestone,

they failed to deliver it. And we wouldn't let that happen.

So we stayed on point, focused on the drivers of the job. We delivered six weeks early."



**Phil Newsome**

Project Manager for  
Aluminum & Bunks



▲ **Alba Line 6 Expansion Project,**  
Kingdom of Bahrain

**Alba Line 6 Expansion Project, Kingdom of Bahrain**

Our relationship with Aluminium Bahrain B.S.C. (Alba) spans more than 25 years, most recently collaborating on the Line 6 Expansion Project. In 2018, Alba officially energized the first of 424 pots and achieved First Hot Metal on December 13. The early completion set a record as the fastest construction ever delivered in the industry.

At full production, Alba will become the world's largest single-site aluminum smelter. Potline 6 will add 540,000 mtpa to Alba's capacity of 1,000,000 mtpa, and involves the construction of 424 pots, using Emirates Global Aluminium's (EGA's) proprietary DX+ Ultra high-productivity, low-energy cell technology.

**Quebrada Blanca Phase 2, Chile**

We are teaming with Teck Resources Limited to deliver the Quebrada Blanca Phase 2 (QB2) Project. The project will include the construction of a new 154,000-ton-per-day (140,000-tonne-per-day) concentrator, tailings storage facility, concentrate pipeline, water supply pipeline, desalination plant, concentrate filtration plant, and port to produce copper and molybdenum concentrates.

Located in northern Chile, QB2 will provide significant economic and social benefits for the country and the region. The project will create an estimated 9,000–11,000 jobs during peak construction and more than 2,000 ongoing direct and indirect jobs during operation.

The project incorporates extensive environmental measures, including the first large-scale use of desalinated seawater for mining in Chile's Tarapacá Region, in place of freshwater use. The QB2 project has also consulted extensively with local communities and will continue to work cooperatively with stakeholders throughout the life of the project.

Working together with Teck, we have developed a capital-efficient design and are applying innovative productivity methodologies to help deliver the lowest possible construction costs in Chile. For example, during the detailed engineering phase, the team identified a series of opportunities that are expected to deliver field productivity improvements of 10 percent. The project is using 15 percent pre-cast concrete, a first in the copper industry, which has led to improved quality and performance. The modularization of electrical rooms and pre-assembly of pipe racks has also been implemented to increase productivity, quality, safety, and reduce costs.

26° 05' 23" N | 50° 36' 16" E

**Alba Line 6 Expansion Project**, Kingdom of Bahrain



## Improving safety, productivity, and cost

Our industry is evolving faster than ever. This moment is a unique opportunity for Bechtel to continue leading the way. We challenge our colleagues to continue to innovate, adapt, and transform, finding more effective ways to deliver excellence for our customers and improve safety.

### Environmental, Safety & Health (ES&H)

Our ES&H program is committed to protecting people and the environment at all our project sites. Our team is made up of dedicated professionals who specialize in all aspects of ES&H management and technical subjects ranging from industrial hygiene and medical services to safety and environmental impact mitigation measures for all forms of construction and site operations.

Risk reduction for colleagues and nearby communities is a cornerstone of our programs. In the past year, we trained thousands of colleagues and craftsmen in the principles of safety, healthy work practices, and measures to protect the environment.

### MAKING A DIFFERENCE – EVERY DAY

“MTA wanted to provide continuous cellular connectivity for all metro riders and a simpler way for dispatchers to communicate service changes. Most of the other submissions focused on solutions by relying on new technology, like installing high-speed fiber optic cable or putting wireless receivers in the tunnels. However, we felt a better solution would be to focus on how this technology would be installed. New York City has the only subway system in the world that stays open 24 hours a day, seven days a week. You only get a small window to make changes, so mobilizing and demobilizing efficiently is critical.

We proposed a robot to drill holes into the tunnel walls and another robotic system to assist in the bracket placement for mounting pipes, conduits, and cabling to the tunnel walls. We used a similar solution on the Crossrail project. This way, whatever technology MTA decides to go with to provide connectivity for commuters and communication services for dispatchers, they can install it fast.”



**Peter Toth**

Business Development  
and Innovation

“Innovation isn’t inherent. It’s a muscle and a skill set that needs to be developed, flexed, and strengthened.”

- David Wilson, Chief Innovation Officer



**Bechtel Mobile Hazard School**

We recently created the Bechtel Mobile Hazard School to enhance safety training by allowing craft workers to experience the hands-on application of safe practices in a simulated work environment. The school consists of three custom-configured trailers with the required props, tools, lesson plans, and instructional guides so that craft teams can be trained on site versus traveling to an off-project location. The knowledge imparted on safety, health, and environmental protection remains with the craft workers after project completion, which is important for them, their families, and communities where they live.

◀ Bechtel Mobile Hazard School

▼ Welding and Applied Technology Center, Houston

**Ongoing technical innovation**

Each year we implement a technical grant program within the company that encourages colleagues to propose innovative ideas. Since its inception in 1985, we have awarded 164 grants. The grants have helped develop new technologies, advanced design and construction techniques, and applied novel tools to our work processes.

**Helping New York City visualize the next generation of rail - the MTA Genius Award**

Bechtel was named a winner of the prestigious New York Metropolitan Transportation Authority (MTA) Genius Transit Challenge for a semi-robotic solution that can rapidly and safely install communications and control systems infrastructure in subway tunnels. We will be using the award money to partner with MTA to co-create this solution. New York Governor Andrew M. Cuomo created the international competition seeking groundbreaking and innovative solutions to increase the capacity and improve the reliability of New York City’s subway service.





#### ▲ Drone testing

##### **Using technology to increase safety at Amrun**

We continue to deploy technology to protect people and the environment, including the use of drones. At our Amrun project in Australia, drones were used for survey work across a 1,976-acre (800-hectare) tailings facility and a 1087-acre (440-hectare) water dam. Removing personnel from ground survey work reduced the risk of injury to personnel working near heavy mobile equipment. We used drones to monitor bushfires and protected avian nests to restrict and schedule vegetation clearing. Drone imaging and mapping also helped identify potential hazardous areas on the jobsite and areas where additional traffic management was needed.

##### **Increasing safety at Shell's Pennsylvania Petrochemicals Complex**

Recently, our team at Shell's Pennsylvania Petrochemicals Complex, a world-scale facility that will use ethane to produce 1.7 million tons (1.5 million tonnes) of polyethylene per year, saw an opportunity to improve efficiency, quality, and safety by changing a process in the construction of components of the chemical storage vessels.

The team created tilt tables so parts of the storage vessels could be welded on the ground. This approach not only improved productivity, efficiency, and quality but also reduced the number of joints needed to be welded at height when the plates are in their final design position, ultimately increasing worker safety.

### Welding and Applied Technology Center, Houston

Bechtel's Welding and Applied Technology Center (WATC) provides full-service materials testing, physical experimentation, and failure analysis. Integration among on-site welding, non-destructive examination, and Materials Testing Laboratory subject matter experts yields novel solutions to our projects' most challenging problems. From strain gauge analysis of design components to materials property testing, the WATC is ready to provide answers.

The WATC also provides an essential environment for training and development. Since the opening of the full-scale welding, testing, and construction laboratory in the Houston Energy Corridor, nearly 150 veterans have completed the Military to Project Program (M2P). Many of these veterans are working on Bechtel projects as electricians, instrument fitters, insulators, pipe fitters, riggers, and tower workers.

### Mining & Metals Innovation Center

We opened the Bechtel Mining & Metals Innovation Center to lead the development of technologies that boost productivity, promote environmental sustainability, and improve worker safety within the mining and metals industry.

Located in Santiago, Chile, the center leverages our construction and copper concentrator design expertise to achieve greater efficiencies in mining projects. In addition, we are developing technological innovations to improve product recovery and decrease water and power consumption. We are also using the innovation center to explore ways to make construction jobs safer and more efficient. For example, the center includes a virtual reality crane simulator that permits future operators to perform a series of maneuvers to certify their skills or test their abilities in complex scenarios.

This new facility joins similar innovation centers currently active in Houston, New Delhi, and London.

### Helping achieve UN Sustainable Development Goals

In 2016, the UN adopted 17 Sustainable Development Goals (SDGs) with an aim that countries around the world will take a unified approach to end all forms of poverty, reduce inequality, and tackle climate change, while ensuring that no one is left behind. As part of our sustainability efforts, Bechtel has committed to contributing 100 ideas by 2030 to help address these goals. In 2018, Bechtel colleagues delivered seven:

- Balancing economic growth with low-carbon energy solutions.
- Applying new approaches to building resilient communities.
- Controlling flooding with permeable concrete.
- Leveraging the human factor to manage extreme weather events.
- Incorporating resilience in national infrastructure plans.
- Building inclusivity from the beginning.
- Developing ways businesses can help prevent human trafficking.

### Improving resilience in Puerto Rico

On September 20, 2017, Puerto Rico was hit by Hurricane Maria, a Category 4 storm. The event had a rippling effect on the Puerto Rican government and society, highlighting an urgent need for greater resilience in the face of similar events. At the request of IBM through their corporate responsibility initiative, Bechtel volunteers provided emergency preparedness planning to support the Puerto Rico Department of Education (PRDE). We joined PRDE and IBM colleagues to conduct a disaster risk reduction assessment of the public school system and develop a more structured response process for future extreme weather events.

### Top 10 projects with the most safe hours since last lost time incident (LTI)

(through December 31, 2018)

Job Name	Hours since last LTI
Wheatstone Onslow Site LNG	61,261,566
Savannah River Remediation, LLC	36,568,259
Muscat International Airport	27,020,499
Tengiz: Senimdi Kurylys	25,772,937
Angola LNG Project	22,299,016
Corpus Christi Liquefaction Project	16,316,577
Tengiz: Crude Shipment Capacity	12,869,725
Kwajalein Range Services	11,460,217
Pueblo Chemical Agent-Destruction Demilitarization Pilot Plant	11,163,272
Blue Grass Chemical Agent-Destruction Demilitarization Pilot Plant	11,156,702

## Inspiring the next generation of STEM professionals

We were proud to help the Science Museum in the U.K. with its program to support the government and industry-wide Year of Engineering initiative, engaging more than 250,000 people through engineering activities. Through the initiative, we took part in the Science Museum's Engineering Family Festival, where 300 engineers participated – 50 percent of whom were female and 36 percent of whom were ethnic minorities. We also helped create a film titled "Engineering the Now," which showcased the future of engineering. More than 50,000 people viewed the film in the first year.

### Dream Big

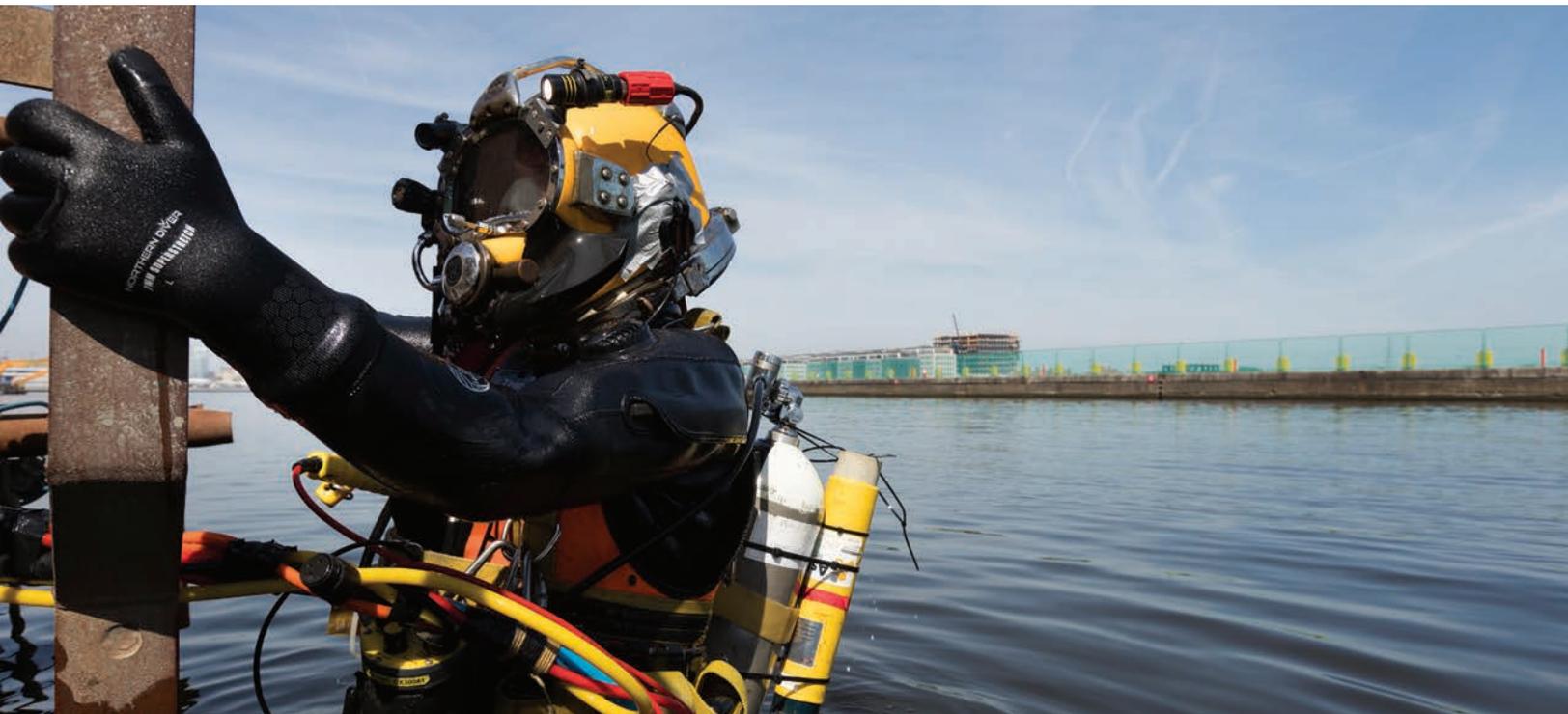
The Bechtel-sponsored film "Dream Big: Engineering Our World" is a first-of-its-kind film for IMAX and giant screen theaters. Narrated by Academy Award winner Jeff Bridges, the film aims to transform how people, and especially students, think about engineering careers. The film celebrates the human ingenuity behind the world's engineering marvels. More than 2.5 million students and adults have viewed the film since its opening in 2017, including more than 1 million in 2018.

We also distributed more than 380 "Dream Big" toolkits to educators as part of our Dream Big in the Classroom initiative. The kit is designed to help educators in teaching and encouraging STEM careers at all grade levels.

### ▼ Dream Big showing



# 2018 sustainability performance



▲ London City Airport, United Kingdom

## Keeping people safe

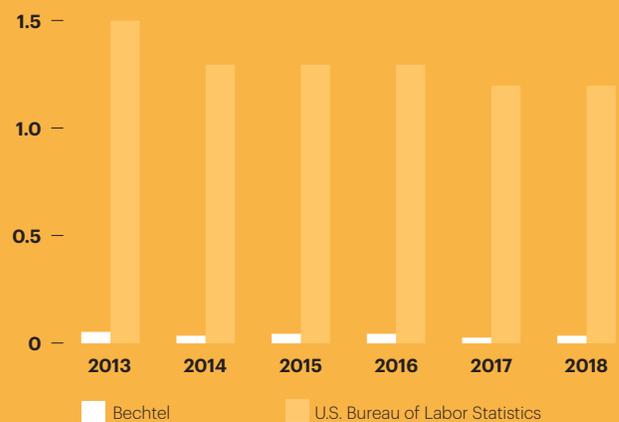
We remain steadfastly committed to reach zero incidents. We have five focus areas: mobile equipment/personnel interface, lockout and tagout, crane safety, fall protection, and dropped objects.

The Construction Industry Institute ranks our safety and health program among the best, and our recordable incident rate is 90 percent better than the average for our peers.

**Total Recordable Incident Rate 2013-2018**



**Lost-Time Incident Rate 2013-2018**



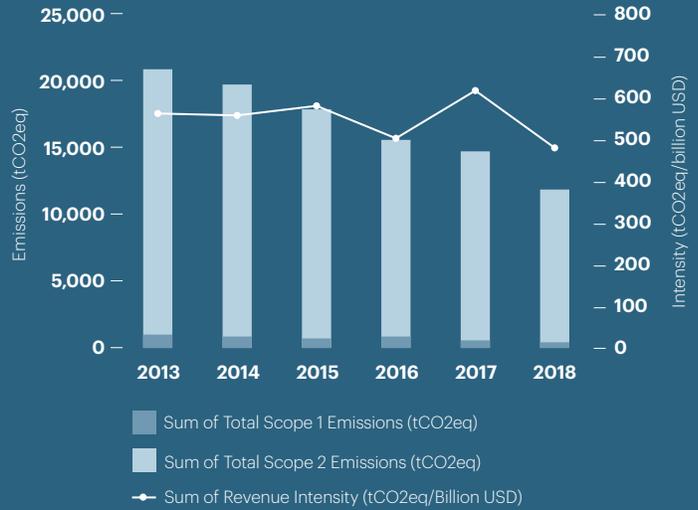
Rates calculated following OSHA regulations.

### Reduce greenhouse gas emissions

Since 2013 we have reduced our greenhouse gas emissions (GHG) by 42 percent. GHG emissions per billion dollars in revenue went down by 14.1 percent.

At our offices, we continued to focus on reducing direct emissions from boilers and furnaces (scope 1) and indirect emissions from electricity (scope 2). The 14 non-project reporting offices for 2018 were selected based on average office population for the year. In 2018, Bechtel consolidated some of its non-project offices impacting the size of the office population. Accounting is based on the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard.

### Greenhouse gas emissions 2013-2018



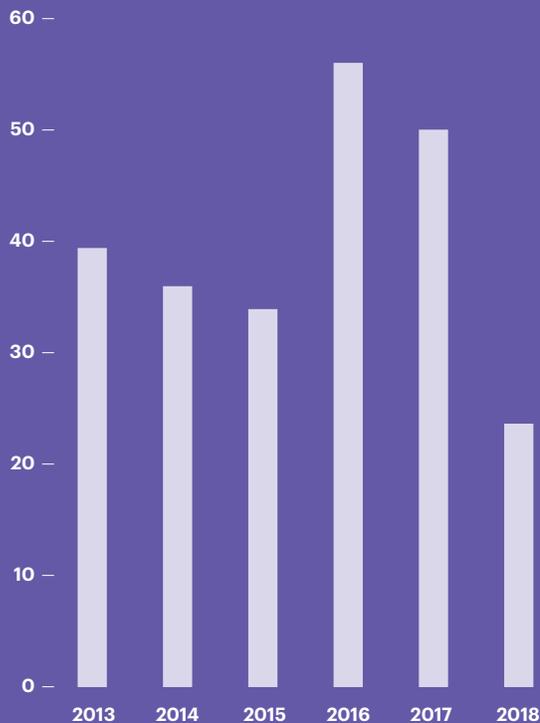
### Reducing water consumption

We reduced water use at key permanent offices by 40.1 percent compared with 2013.

Our total water use for the year was 23.6 million gallons. We collected water consumption data from 11 reporting offices.

### Reducing water consumption 2013-2018

Million gallons of water

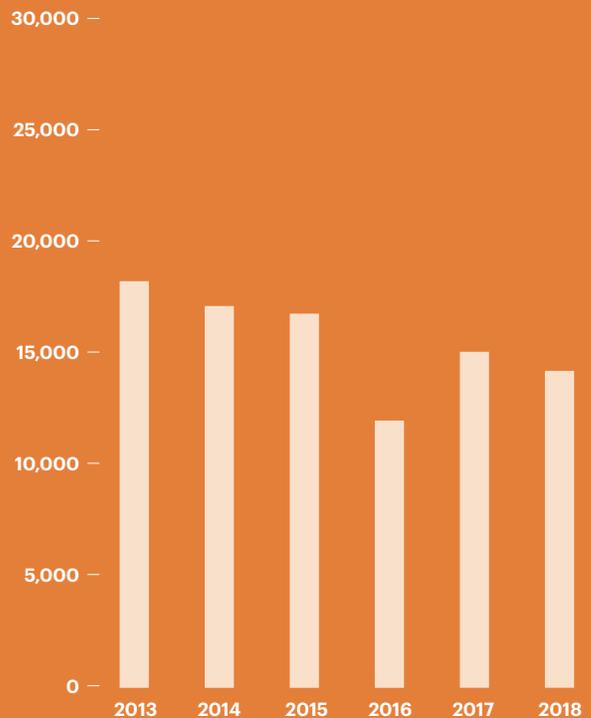


### Generating economic opportunities

In 2018, we spent \$14.2 billion on goods and services globally, including purchases from local, small, and disadvantaged businesses.

### Procurement and contract awards 2013-2018

Annual spend (USD) millions



# Leadership

(January 31, 2019)

Brendan Bechtel  
Chairman & CEO

Jack Fatcher  
President & COO

Michael Bailey  
General Counsel

Catherine Hunt Ryan  
Chief Financial Officer

Mary McLaughlin  
EPC Functions

Justin Zaccaria  
Chief Human Resources  
Officer

## Infrastructure

Craig Albert  
President

Americas  
Scott Osborne

Asia Pacific  
Ailie MacAdam

Europe, Africa, Middle East  
Mike Wilkinson

United Kingdom  
Paul Gibbs

Aviation  
Mark Smethurst (acting)

Civil  
Dave Lawson

Communications  
Kelley Brown

Power  
Scott Austin

Rail  
Steve Kay

## Mining & Metals

Paige Wilson  
President

Bulks & Aluminum  
Phil Newsome

Copper  
Bill Swanson

Strategy & Business  
Development  
Lucy Martin

## Nuclear, Security & Environmental

Barbara Rusinko  
President

Defense & Security  
Michael Costas

Environmental  
James Taylor

Nuclear Security &  
Operations, Nuclear Power  
Peggy McCullough

## Oil, Gas & Chemicals

Alasdair Cathcart  
President

Downstream & Chemicals  
Joe Thompson

LNG  
Darren Mort

Tanks  
Chris Desjardins

Water and Pipeline  
Joe St. Julian

## Regions & Corporate Relations

Stuart Jones  
President

Africa  
Andrew Patterson

Asia Pacific  
John Stroud

Corporate Affairs  
Charlene Wheelless

Europe & Middle East  
Stuart Jones

Government Affairs  
Washington, DC Office  
Jay Farrar

Latin America  
Carlos Alarco

Security  
Garry Robison

## Other Management

Bechtel Enterprises  
Keith Hennessey

Construction & Bechtel  
Equipment Operations  
Doug Omichinski

Digital Enterprise Program  
Ross Hamilton

Engineering & Technology  
Greg Ashley

Environmental,  
Safety & Health  
Brent Landry

Ethics & Compliance  
Nancy Higgins

Information Systems  
& Technology  
Carol Zierhoffer

Innovation  
David Wilson

Internal Audit  
Steve Kuxhausen

Procurement & Contracts  
Alva Hankins, Sr.

Project Controls  
Scott Edmunds

Quality  
Craig Stoker

Risk Management  
Cliff Rankin

Startup  
Joe Diaz

## Board of Directors, Bechtel Group, Inc.

### Executive Directors

Craig Albert  
Michael Bailey  
Brendan Bechtel  
Alasdair Cathcart  
Jack Fatcher  
Mary McLaughlin  
Barbara Rusinko

### Non-Executive Directors

Riley Bechtel  
Former Chairman of the  
Board and CEO, Bechtel  
Group, Inc.  
  
Leigh Clifford, AO  
Former Chairman, Qantas  
Airways Limited, and former  
CEO, Rio Tinto Group

Alan Dachs  
President & CEO,  
Fremont Group

Peter Dawson  
Former Bechtel Chief  
Financial Officer

David O'Reilly  
Former Chairman and  
CEO, Chevron

Dan Warmenhoven  
Former Executive  
Chairman, NetApp



40° 50' 20" N | 76° 49' 30" W

**Hummel Station Power Plant**, Pennsylvania, USA





[www.bechtel.com](http://www.bechtel.com)

Bechtel is one of the most respected global engineering, construction, and project management companies. Together with our customers, we deliver projects that foster long-term progress and economic growth. Since 1898, we've completed more than 25,000 extraordinary projects across 160 countries on all seven continents. We operate through four global businesses: Infrastructure; Nuclear, Security & Environmental; Oil, Gas & Chemicals; and Mining & Metals. Our company and our culture are built on more than a century of leadership and a relentless adherence to our values, the core of which are safety, quality, ethics, and integrity. These values are what we believe, what we expect, what we deliver, and what we live.

