



The only proven **solution** for the Czech nuclear program and industry

Vogtle Electric Generating Plant, Unit 3 & 4, Reactor AP1000®



AP300 SMR Technology™ visualisation



Bechtel Presentation to: All for Power Conference, Prague



Bechtel & Nuclear Power

November 2023

Vogtle Electric Generating Plant – Units 3 & 4
©2022 Georgia Power Company

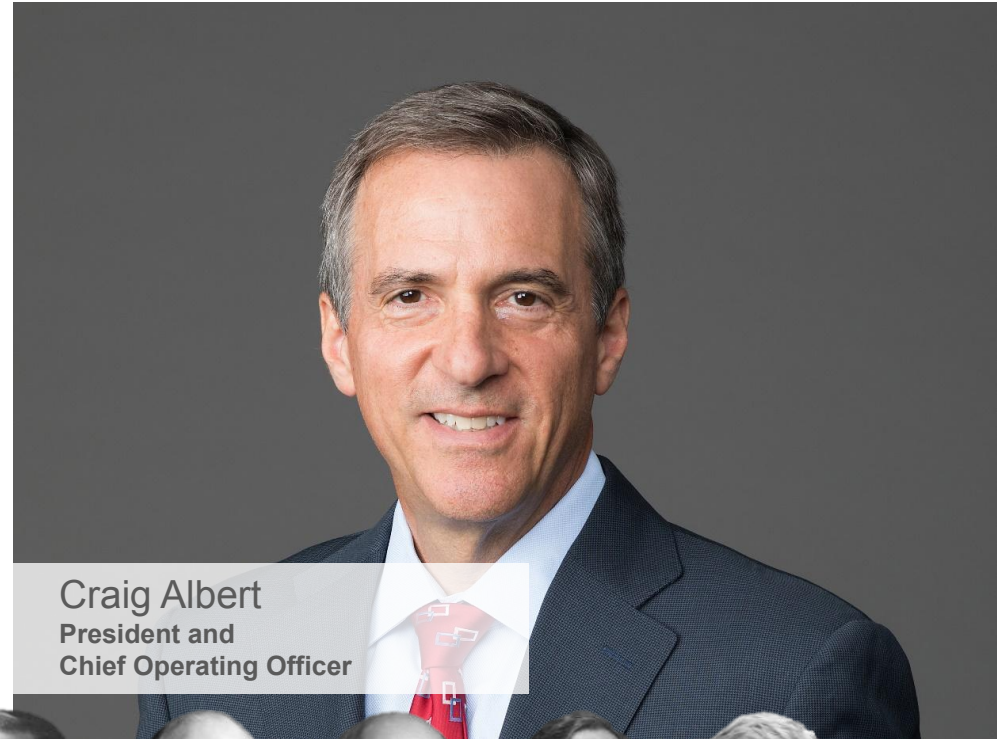




Helping Our Customers Solve Challenges Since 1898



Brendan Bechtel
Chairman and
Chief Executive Officer



Craig Albert
President and
Chief Operating Officer

- Five generations of family leadership
- Financially sound; does not answer to Wall Street



Bechtel's businesses are trusted engineering, construction, and project management partners to industries and governments across the globe. We align our capabilities to our customers' missions with safety, quality, ethics, and integrity.



Nuclear, Security & Environmental	Energy	Mining & Metals	Infrastructure	Manufacturing & Technology
<ul style="list-style-type: none"> 80% of nuclear plants in the U.S., and 150 worldwide designed, serviced, or delivered by Bechtel Construction and operation of national security facilities Building the world's largest and most complex radioactive waste treatment plant 	<ul style="list-style-type: none"> Designed and built 1/3 of global LNG capacity 275+ refinery expansions and modernizations 50,000 miles (80,500 km) of pipeline systems 380+ major chemical and petrochemical projects 	<ul style="list-style-type: none"> 200 million metric tons per annum of installed iron ore productions 42 major copper projects 30 aluminium smelter projects 8 alumina refinery projects 	<ul style="list-style-type: none"> 300 subway and rail projects 17,200+ miles (27,700 km) of highways and roads 6,200+ miles (10,000 km) of railroads 390 individual power plants 	<ul style="list-style-type: none"> 75 industrial, manufacturing, and technology projects Sectors include semiconductor, E.V. charging, data centre, and synthetic material markets Expertise in digital delivery, advanced manufacturing, automation, and robotics
<p>Vogtle 3 & 4 Site, United States</p>	<p>Curtis Island LNG, Australia</p>	<p>Fjarðal Aluminium Smelter, Iceland</p>	<p>Reading Station, United Kingdom</p>	<p>Intel Semiconductor Facility, United States</p>

Mining & Metals HQ
Santiago, Chile

Selected Bechtel Projects in Europe

Roads & Bridges



Kosovo Motorway, Route 6

- Bechtel has delivered over 800 km of new motorways in Europe
- Projects delivered across Croatia, Albania, Turkey, Serbia, Kosovo, and Romania
- Excavations totaled more than 334 million m³ and concrete totaled over 5 million m³
- Today, Bechtel is working in partnership with ENKA to build Serbia's first 5G-ready motorway, a 112 km dual carriage way

Rail



Crossrail (Elizabeth Line)

- Bechtel has delivered many of the UK's most iconic rail projects, including The Channel Tunnel, High Speed 1 (HS1), West Coast Mainline Upgrade, Reading & Vauxhall Stations, and Crossrail
- Bechtel was program manager/delivery partner on the \$24 billion Crossrail project, Europe's largest construction project that delivered 100km new rail line with 42 km of new tunnels under central London
- HS1 was an \$11 billion project, scope included project management, engineering, procurement and construction management

Nuclear Security & Environmental



Chornobyl New Safe Confinement

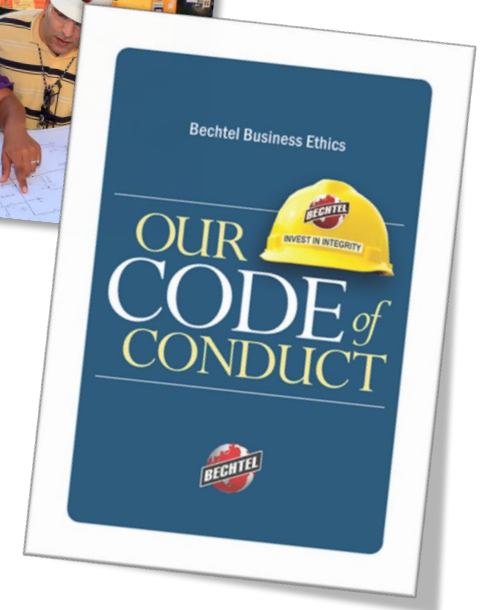
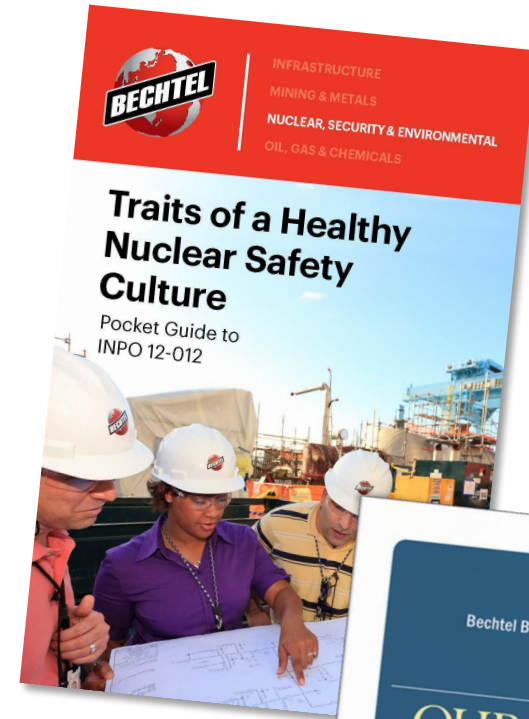
- For over 20 years, Bechtel was overall project manager of the 33,000t New Safe Confinement at Chornobyl, integrating an international delivery team for EBRD & Ukraine Ministry of Energy
- Bechtel is leading the Pile Fuel Cladding Silo Project at Sellafield, UK, resulting in over \$150m in savings against a \$830m program budget
- In support of the UK's Continuous At Sea Deterrent (CASD), Bechtel is working on a number of undisclosed nuclear infrastructure projects



Nuclear Safety & Quality Culture

Nuclear safety and quality are core values and in our DNA – integral to how we deliver nuclear projects

- Bechtel worked with INPO to customize its Traits of a Healthy Nuclear Safety Culture for our company working in the EPC industry:
 - Personal accountability
 - Questioning attitude
 - Effective safety communication
 - Leadership safety values and actions
 - Decision-making
 - Respectful work environment
 - Continuous learning
 - Problem identification and resolution
 - Environment for raising concerns
 - Work processes
- Bechtel’s NQA-1 compliant Topical Report approved by U.S. NRC, NUPIC, and technology providers
 - ASME and NBIC certifications (N, NPT, NA, NR) and ISO 9001:2015 certification



Next Generation Nuclear Engagement, Building on Long History of Success

- Since 1948, Bechtel led each generation of nuclear deployments – delivered 76 GW of nuclear generation to grid
- Full corporate commitment to support customers and help develop next generation of nuclear power.
- We can help customers deliver their nuclear missions, as our people have:
 - Active Large Reactor & SMR/Advanced Reactor new build expertise – project development/FEED, licensing, full EPC:
 - » Vogtle Units 3&4
 - » Poland AP1000 FEED & mobilizing for 3-unit deployment
 - » Wylfa Newydd ABWR
 - » Watts Bar Unit 2
 - » Natrium Sodium Fast Reactor
 - » Versatile Test Reactor
 - We've supported customers, transferred knowledge, and engaged local supply chains around the world, including:
 - » 11 units in South Korea
 - » 6 units in Taiwan
 - » 5 units in Spain

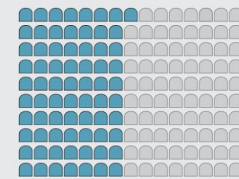
Currently engaged on
3 nuclear new builds



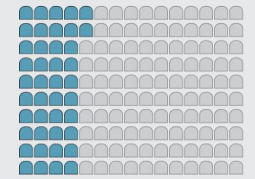
Services on
88% of U.S. fleet



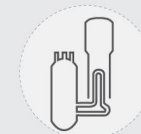
Worked on **150 plants worldwide**



Architect-engineer, 71 plants



Constructor, 42 plants



36

Steam Generator
Replacements



7

Extended
Power Uprates



4 Early site permits
& **9** COL projects
for 5 reactors



Certification &
engineering for **4**
advanced technologies

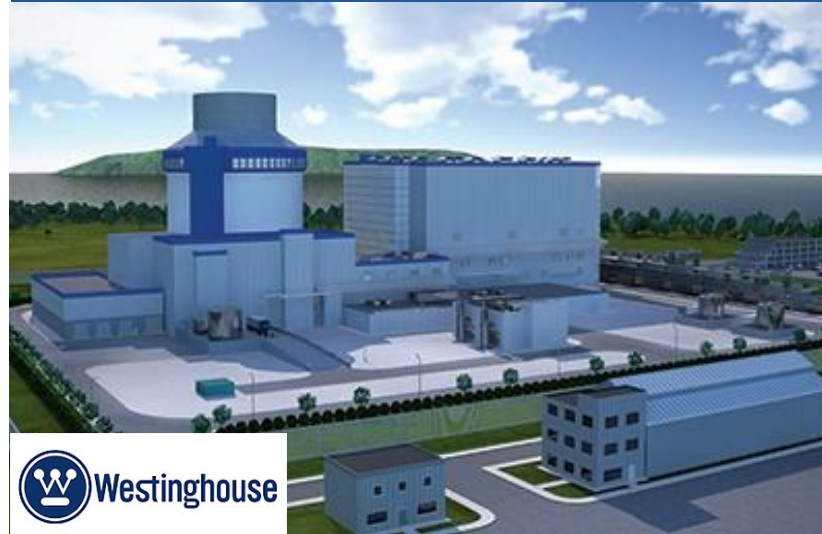
Vogtle Units 3 & 4 Construction Completion



Image Source: Georgia Power Company

- Bechtel selected to complete the AP1000 construction in 2017
- Bechtel performed ESP and COLA (issued in 2012, first license issued under 10 CFR 52)
- U3 in commercial operations
- U4 due in service imminently.

Lubiatowo-Kopalino Units 1-3 – Poland AP1000 Deployment



Artist's rendering of a nuclear power plant using a Westinghouse AP1000 reactor.
Courtesy: Westinghouse Electric Company.

- Bechtel-WEC team submitted FEED study in 2022 for three-unit AP1000 new build – funded by Gov't of Poland & U.S. Trade & Development Agency
- FEED included site/plant layout plans, licensing plan, risk assessment, and project cost estimate, schedule for EPC delivery
- May 2023 – Bechtel-WEC team and utility PEJ sign development agreement; initial Engineering Services Contract started Sept. 2023

Sodium SFR – DOE's Advanced Reactor Demonstration Program



- In 2020, U.S. DOE selected TerraPower team to deploy Sodium Sodium Fast Reactor (SFR) in FOAK advanced reactor public-private partnership
- Bechtel is team's EPC partner providing plant design, licensing, procurement, and construction for 345 MWe reactor & Integrated Energy Storage System
- Former coal plant in Kemmerer, WY selected site – Bechtel supported site selection & Geotech work
- Conceptual design complete, performing detailed design

BECHTEL Vogtle Plants 3 & 4 Delivery



Vogtle, Unit 3, Dome Placement

- Construction of two AP1000 units, the first new nuclear plants delivered to the US grid in a generation.
- Bechtel's role as EPC integrator, working alongside Westinghouse, delivering for our customer Southern Company began in 2017.
- At peak, 7000 highly skilled, men and women worked on site to make this project a success.
- This included engineers, constructors, welders, project managers, to name a few of the dedicated professional categories.



Nuclear Power Delivery – Example Construction Scopes

Main Works

- Civil
- Electrical
- Piping/Mechanical
- HVAC
- Ancillary Buildings

Early Works

- Earthworks
- Underground Services
- Intake/Outfall
- Tunneling

Specialty

- Fire Protection
- Fireproofing
- Specialty Doors
- Lifts
- Paintings & Coatings
- Insulation
- Waterproofing
- Hoists
- Liner Plate

Preliminaries

- Catering
- Busing
- VHL
Cranes/Operations
- Fuel
- Waste Management
- Facilities Operations
- Misc. other services



Nuclear Power Delivery – Example Construction Scopes

Civil / Structural

- Concrete Supply
- Rebar
- Structural Steel
- Embeds
- Structural Fill

Electrical / I&C

- Cable
- Tray & Fittings
- Conduit & Fittings
- Transformers
- Switchgear
- Panels (MCCs / Distribution)
- Lighting & Controls
- Battery & Charges
- Motors
- Heat Trace
- Instruments

Piping / Mechanical

- Pumps
- Valves
- Diesel Generators
- Pressure Vessels
- Chillers
- Piping & Supports
- Tubing

Support

- Construction Equipment
- Scaffolding
- Design Services
- Temp Buildings
- Misc. other services



Vogtle Plants 3 & 4 Lessons Learned - Delivery



- Program Management
- Processes & Approaches
- People & Culture

BECHTEL Vogtle Supply Chain Lessons Learned



- Attrition, familiarity with nuclear.
- Staying relevant.
- Spare & replacement parts.



Thank You.
Contact: ibaldwin@bechtel.com

