# LAMPASAS TO SAN SABA 138KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
33.4 miles of 138kV transmission line; steel and concrete poles

**LOCATION**
Lometa, TX

**CLIENT**
Lower Colorado River Authority

**START DATE**
December 2016

**COMPLETION DATE**
January 2018

Irby Construction was awarded the LCRA Lampasas to San Saba 138kV transmission line project in December of 2016. This was a project located in Lometa, TX with a scope of 33.4 miles of 138kV transmission line including steel and concrete poles.

The project had some tight environmental constraints at the outset. Portions of the project were in a bird habitat and Irby had a limited time frame to complete this portion of the work before March 2017 when the bird habitat restrictions would go into place. Irby provided tools and equipment with almost 60 people and finished before the restrictions started. Subcontractor Asplundh Brush Control assisted with installation of environmental controls on the ROW.

Irby's foundation group successfully self-performed the foundation scope which included 22 drilled pier foundations. A major hurdle on the project was that our drilling operation encountered much more rock than anticipated. Careful planning and redeployment of resources, (including a drill rig from sister company Longfellow Drilling), allowed us to continue to make schedule. The project also included a railroad crossing and a major highway crossin, which required significant planning and were accomplished successfully. With assistance from our affiliate operating unit North Houston Pole Line performing energized work in one section of the project, Irby successfully completed this project in January of 2018.

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1-601-709-IRBY (4729)

# HARWOOD TO WAELDER ENERGIZED 69KV TRANSMISSION PROJECT

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
13.9 miles of 69kV
energized transmission line

**LOCATION**
Harwood, TX

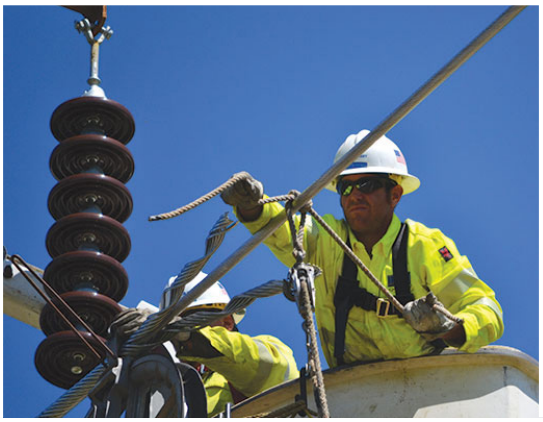
**CLIENT**
Lower Colorado River Authority

**START DATE**
November 2017

**COMPLETION DATE**
May 2018

The goal of this project was to increase the reliability and capability of transmission facilities on T145 between Harwood and Waelder substations. This was accomplished by upgrading the 12.6 mile 69kV stretch between substations to 138kV capable. The scope of work consisted of replacing 112 structures to complete the conductor upgrade.

In addition to the conductor upgrade, the scope included the installation of OPGW shield wire from Waelder substation to Flatonia substation. The construction for this project was performed on energized transmission lines. New structures include vertical configuration braced post concrete tangents and steel dead ends.



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# CORBETT-SUGAR-QUARRY 500KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
68.3 miles of 500kV

**LOCATION**
Palm Beach, Broward, and Miami-Dade Counties, FL

**CLIENT**
NextEra Energy Resources

**START DATE**
January 2018

**COMPLETION DATE**
In progress

Irby Construction was awarded the Corbett-Sugar-Quarry 500kV Transmission Line Project on January 16th and immediately started work.

The project runs 69 miles from the Corbett and Sugar substations in Palm Beach County down to the Quarry substation in Miami-Dade County. It is a 500kV, single circuit, triple bundled line carrying 1272 ACSR/AW, (one) .472" OPGW, and (one) 7#8 AW OHGW.

The full scope of work also includes surveying, clearing the right-of-way, building access roads and structure pads, installing drilled pier foundations and anchor piles, and setting steel H-Frame structures and 3-pole concrete deadends. The majority of this line traverses through the environmentally sensitive Florida Everglades.

Unique to this project will be the construction of 15 miles through canal waterways utilizing barges, concrete pump lines, and amphibious equipment. This project will serve as a critical tie between two 500kV substations to increase reliability on the Florida Power & Light grid. Construction began on January 22, 2018 and is scheduled to complete in May of 2019.

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# HURRICANE IRMA

**PROJECT TYPE**
Emergency Restoration

**SCOPE**
Over 300 Linemen

**LOCATION**
Various parts of Florida

**START DATE**
September 2017

**COMPLETION DATE**
September 2017

As Irby Crews were wrapping up work in Texas following Hurricane Harvey, Hurricane Irma made landfall as the first Category 5 hurricane of the 2017 Atlantic hurricane season. On September 10 Irma's winds reached 185 mph in Cuba. It was the most intense Atlantic hurricane to strike the United States since Katrina in 2005.

Less than one month after Harvey, but after that same amount of time on the job restoring power, Irby crews packed their bags and headed for Florida rather than going home.

"We had several crews working on a lot of different types of jobs before Hurricane Irma hit, but once we knew that she would hit Florida, they all sprang into action," Brent Croft, General Superintendent said. "We had crews down in Southern Florida before the hurricane even made landfall so that they could be ready to work immediately after it passed over them."

More than 300 Irby men performed work during the 2017 hurricane season. Many of those men worked both Hurricane Harvey and Hurricane Irma back to back. In total, Irby teams logged 114,000 restoration man-hours this hurricane season alongside many fellow Quanta companies.

Hurricane Harvey and Irma caused mass destruction to numerous regions in and surrounding the U.S. According to estimates from Moody's Analytics, damage and lost productivity cost as much as $200 billion.

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# HURRICANE HARVEY

**PROJECT TYPE**
Emergency Restoration

**SCOPE**
114,000 restoration hours

**LOCATION**
Various Parts of Texas and Louisiana

**START DATE**
August 2017

**COMPLETION DATE**
October 2017

On August 25, 2017, Hurricane Harvey made landfall near Rockport, Texas as a Category 4 hurricane. Harvey was the first major hurricane of the 2017 Atlantic hurricane season. It was devastating. Winds as strong as 130 mph left extensive damage to power infrastructure in their wake along the Gulf Coast from Rockport to Southeast Texas and into Louisiana.

Irby Construction crews were prepared before the storm hit. As Harvey made landfall, caravans of bucket trucks drove toward Texas, so the power restoration process could begin as soon as rain and winds subsided.

"Emergency restoration is both the most grueling and the most gratifying work Irby linemen address," said Chris Swindoll, Superintendent. "Restoring power is often restoring some sense of normalcy for communities hit by these storms. It's a process we're proud to be a part of."

More than 300 Irby men performed work during the 2017 hurricane season. Many of those men worked both Hurricane Harvey and Hurricane Irma, a storm that followed just days later, back to back. In total, Irby teams logged 114,000 restoration man-hours alongside many fellow Quanta companies.

Hurricane Harvey and Irma caused mass destruction to numerous regions in and surrounding the U.S. According to estimates from Moody's Analytics, damage and lost productivity cost as much as $200 billion.

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# PALO VERDE TO PINAL WEST 500KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
52.4 miles of 500kV

**LOCATION**
Phoenix, AZ

**CLIENT**
Salt River Project

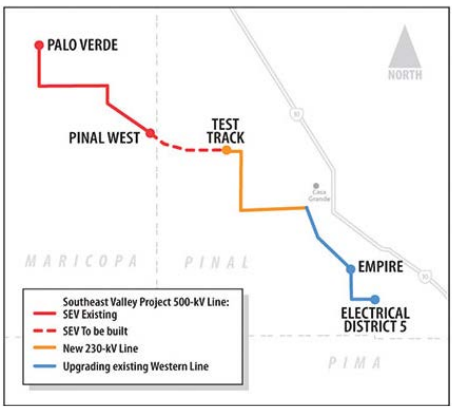
**START DATE**
May 2007

**COMPLETION DATE**
May 2008

Irby Construction was contracted by the Salt River Project to construct the Palo Verde to Pinal West 500kV transmission line in March of 2007. Located in Phoenix, AZ, this line consisted of 52.4 miles of single circuit triple bundle 1590 kCM ACSR 'Lapwing' conductor with one overhead ground wire, and one fiber optic ground wire on approximately 205 self-supporting lattice steel towers and one tubular steel pole.

The Palo Verde to Pinal West Project serves Pinal and Maricopa counties in Arizona and consists of a new 55-mile single circuit 500kV transmission line that connects the Palo Verde area to the Pinal West Switchyard. The Project serves six utility districts including the Salt River Project. The capacity of the line is 1,400 MW and increased the Arizona transmission system capacity in Pinal and Maricopa Counties.

Irby began construction on this line in May of 2007, and was responsible for pickup or receiving, unloading, sorting, checking, inspecting, storing, hauling, stringing and sagging of conductor material. Sagging was done using the transit level sag method. An adequate number of transits were employed based on the pull lengths. The foundation work for this project was performed by Can-Fer Construction Company, and the Leadline was performed by Air2, LLC. This project was successfully completed in May of 2008.

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# MEAD-PHOENIX 500KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
256 miles of 500kV

**LOCATION**
Phoenix, AZ

**CLIENT**
Salt River Project

**START DATE**
January 1994

**COMPLETION DATE**
September 1995

Irby Construction was contracted by the Salt River Project to construction the Mead-Phoenix 500kV AC transmission line in Phoenix, AZ. Construction for this project began in January of 1994. This line was 256 miles long and ran parallel to the pre-existing Mead-Liberty 345kV line. It incorporated the first application of a 500kV phase shifting transformer that enabled 1300MW transmission capacity.

The Mead-Phoenix transmission system was initially designed to transfer 1600 megawatts between the Phoenix area and southern Nevada, with ultimate capacity of up to 2200 MW. Irby installed 956 towers for this project. This line's purpose was to facilitate the area's load growth, coupled with difficulties in building new generating resources and limitations on interregional transfers of surplus energy, reinforcing the need of utilities to secure firm transmission on a long-term basis.

This transmission line was pre-designed and environmental permitted to be converted to a DC transmission line in the future. It is utilized to deliver electrical energy between Central Arizona and Southern Nevada. This project was successfully completed in September of 1995.

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# COMANCHE SOLAR PROJECT 34.5/230KV SUBSTATION AND INTERCONNECTION

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Substation

**SCOPE**
Construction of 34.5/230kV substation, 2.5mi of 34.5kV interconnection, and an underground 230kV transmission line

**LOCATION**
Pueblo, CO

**CLIENT**
CG Power Solutions USA

**START DATE**
December 2015

**COMPLETION DATE**
May 2016

Irby Construction was contracted by CG Power Solutions USA under an EPC agreement to build the Comanche Solar Project substation and a 2.5 mile 34.5kV interconnection between the east and west solar panel fields of the 120MW generating facility. The scope also incorporated the installation of a 230kV underground transmission line from the substation to Xcel Energy's generation plant, Comanche Generation Station.

Irby crews mobilized for construction of the greenfield substation in December of 2015, completing the project just six months later. Irby captured construction of the substation via a live stream camera mounted on our construction trailer. CG Power project management teams had 24-hour access to the site and was able to monitor progress from remote locations.

As one of the largest solar farms in the nation, the Comanche Solar farm generates enough power to energize over 31,000 homes east of the Rocky Mountains. Within its 25 year life, Comanche Solar is estimated to produce more than 6 billion kilowatt hours of clean solar energy and is expected to reduce CO2 emissions by approximately 3.5 million tons. This is the equivalent of taking more than 54,000 passenger vehicles off the road. Irby is proud to be a part of this project.

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# MARSHALL FORD TO LAGO VISTA 138KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
1.3 miles of 138kV

**LOCATION**
Austin, TX

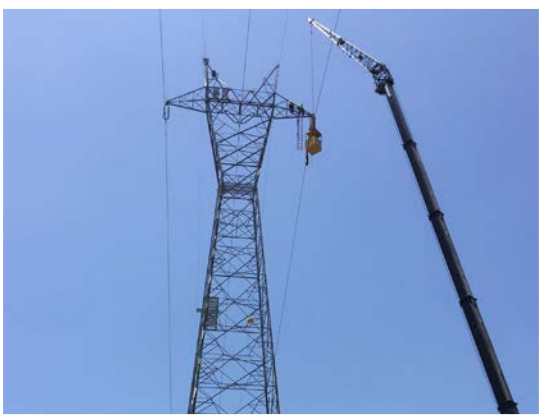
**CLIENT**
Lower Colorado River Authority

**START DATE**
March 2016

**COMPLETION DATE**
April 2016

Irby Construction was contracted by the Lower Colorado River Authority (LCRA) to replace a 1.3 mile segment of line over the waters of Lake Travis outside of Austin, TX. In March of 2016, Irby began construction on the Marshall Ford to Lago Vista project. The scope included replacing the existing 1233 kcmil 'Yukon' ACSS with single 3M Hudson ACCR 1158 conductor.

The entire project included the rebuild and upgrade of the existing 14.5 miles Marshall Ford to McNeil 69kV electric transmission line to a 138kV electric transmission line in its existing 100 ft wide right of way in northwestern Travis County, TX. The two existing lattice towers on either side of the lake remained in place, without required modifications. Due to significant population growth in northwest Austin, in both Travis and Williamson Counties, this project was a necessity to ensure reliability. Irby Construction successfully completed this project in April of 2016.



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# ATCO EASTERN ALBERTA TRANSMISSION LINE

**PROJECT TYPE**
Transmission

**SCOPE**
100 miles of 500kV DC line

**LOCATION**
Alberta, Canada

**CLIENT**
Alberta Transmission Company

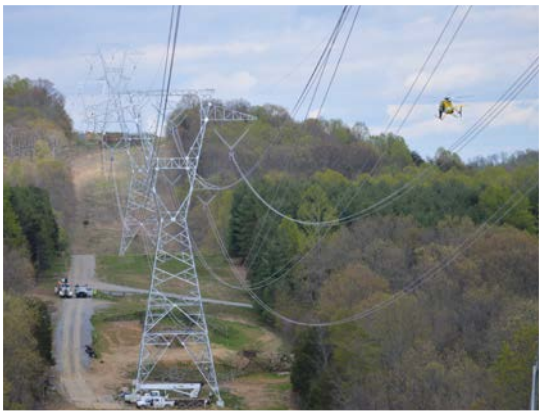
**START DATE**
August 2013

**COMPLETION DATE**
February 2015

Irby Construction was subcontracted to string 100 miles of conductor and OPGW on the Eastern Alberta Transmission Line (EATL) for Valard Construction, the project's prime contractor and Irby sister operating unit of Quanta Services.

Irby crews endured two harsh Canada winters working in subzero conditions with ice and snow to complete our portion of the work. Irby successfully completed this project in February of 2015.

The EATL project is a 300-mile, 500kV, bipolar, high-voltage direct current, overhead transmission line interconnecting Newell HVDC static inverter plant near Brooks, Alberta with Heathfield static inverter plant near Gibbons, Alberta—northeast of Edmonton. The transmission line includes 1,387 transmission towers, and the construction of the 500kV DC transmission line was energized in December of 2015. The $1.8 billion project reinforced Alberta's electrical grid to meet increased demand and ensure all Albertans have access to the most reliable and cost-effective electricity available.



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# LOOKOUT SUBSTATION

**PROJECT TYPE**
Substation

**SCOPE**
138kV Switchyard

**LOCATION**
Garland, TX

**CLIENT**
Garland Power & Light

**START DATE**
May 2016

**COMPLETION DATE**
November 2016

Irby Construction was awarded greenfield construction of Lookout Substation for Garland Power & Light (GP&L). Construction of the 138kV Switchyard began in May of 2016 and included all yard surfacing, flexible base restoration, structural concrete, foundations, grounding, structure erection, bus installation, equipment installation, and overhead lightning shielding installation. The contract also included cable trench installation, conduit system installation, emergency generator installation, fencing, backfilling, landscaping, irrigation, miscellaneous materials, incidentals, and labor.

Irby utilized American Site Builders for construction of the foundations and footings for this project. There were significant sub-surface issues in laying the cable trench system which were overcome by the use of skid-steer mounted rock saw and other innovative techniques deployed by Irby foremen on the job.

Irby captured images of the construction process via a live stream camera mounted on our construction trailer. Our cameras provided GP&L project management teams 24-hour access to the site and enabled them to monitor progress from remote locations.

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# BROWN TO GRADY 138KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
20.2 miles of 138kV line

**LOCATION**
Big Spring, TX

**CLIENT**
Sharyland Utilities

**START DATE**
April 2016

**COMPLETION DATE**
October 2016

Irby Construction was awarded construction of the Sharyland Utilities Brown to Grady 138kV transmission project in the Spring of 2016. As a subcontractor to the owner's engineer, McCord Engineering, Irby's scope of work incorporated tear-down and rebuild of 20.2 miles of the 138kV line including concrete and steel poles with 959 ACSS/TW Suwannee conductor and 48 count fiber OPGW installation. The location of the project was in Martin County north of Stanton, in West Texas. The transmission segment began at the Grady Substation (on TX 87) and went northeast for 20.3 miles to the Brown Substation. Five (5)OPGW splice cans were installed along the route locations. Construction also included four (4) highway crossings: TX 829, TX 137, TX 846, and TX 26.

Irby began this six-month project in April of 2016 utilizing Seaboard Foundations Inc. to complete all hole excavation and drilled-pier foundations. Construction took place during the hottest months of the year with temperatures often soaring above 100 degrees. Irby crews worked safely and efficiently through the environmental and climate conditions on this project.

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# PONDEROSA TO GRIMES 230KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
40 miles of 230kV

**LOCATION**
Montgomery, TX

**CLIENT**
Entergy

**START DATE**
September 2015

**COMPLETION DATE**
April 2016

Irby Construction was awarded the Ponderosa to Grimes Transmission project as a construction partner to Dashiell Engineering in September of 2015. Dashiell is also a member of the Quanta family of companies, and Irby was a proud partner on the project.

This project was located near Montgomery, TX and included 40 miles of 230kV line consisting of both steel and concrete poles. Construction addressed both future load growth and current reliability needs in Entergy Texas' western area. It also cleared congestion in the Grimes substation area.

Irby Construction worked with subcontractors Auger Services for the foundation work on site, and enlisted helicopter services from fellow Quanta company, Winco, to pull lead line and help clip the shield wire.

This project was successfully completed in April 2016.

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# LAKE CHARLES 230/500KV TRANSMISSION PROJECTS

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
15 miles of 230kV, 6.8 miles of 500kV

**LOCATION**
Lake Charles, LA

**CLIENT**
Entergy

**START DATE**
October 2016

**COMPLETION DATE**
February 2018

Irby Construction is providing services on the Lake Charles Transmission Project under subcontract by Dashiell Engineering. Entergy awarded this project to Dashiell as a turnkey EPC contract in early 2015. Dashiell is also a member of the Quanta family of companies, and Irby is a proud partner on the project.

Construction began in late October 2016, and is expected to be complete by February 2018. This project will provide enhanced reliability for existing customers in the Lake Charles area, and support new load needed in this growing region of Louisiana.

There are a combination of different types of work Irby is charged with on this project including rebuilding and constructing 15 miles of 230kV lines. These lines have both steel and concrete poles, the majority of which have vibratory caisson foundations.

Irby Construction will also construct nearly 7 miles of new 500kV lines built on tubular steel poles with vibratory caisson foundations. Our teams will also string approximately one mile of the 3M ACCR (Carbon Fiber Core) conductor across the river in Lake Charles.

Irby Construction has hired subcontractors including Auger Services to assist in the foundation and pole setting work on this project. We also plan to utilize a helicopter from our Quanta Services sister company, Winco, to assist with the wire operations.

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# VALLIANT TO NORTHWEST 345kV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
43.5 miles of 345kV

**LOCATION**
New Boston, TX

**CLIENT**
American Electric Power (AEP)

**START DATE**
April 2016

**COMPLETION DATE**
January 2017

Irby Construction was awarded the contract for the construction of the Valliant to Northwest Texarkana Transmission Line project for AEP Southwestern Electric Power Company (SWEPCO) and AEP Oklahoma Transmission Company near New Boston, Texas.

The Valliant-Northwest Texarkana Transmission Line project consisted of installing 43.5 miles of 345kV single steel pole transmission line on anchor-bolted foundations that had previously been installed under another contract. This was the Texas portion of a larger 78.7 mile project that also included 35.2 miles in Oklahoma constructed by another contractor. The project was new single circuit construction with poles that are double circuit capable with steel arms only installed on one side of the poles.

This project was identified and mandated as a priority project by Southwest Power Pool (SPP) to connect an existing Public Service Company of Oklahoma substation to an existing SWEPCO substation in Texas. The transmission line goes from Valliant in McCurtain County, Oklahoma to Northwest Texarkana in Bowie County, Texas.

Several subcontractors played an important role in making the Texarkana Project a success. Irby Construction used Erickson Air Crane to erect poles with a heavy-lift helicopter as well as Winco, Inc., a subsidiary of Quanta Services, Inc., to provide helicopter erection.

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# GRAY TO ALLEN CREEK 345kV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
24 miles of 345kV

**LOCATION**
Pampa, TX

**CLIENT**
Cross Texas Transmission (CTT)

**START DATE**
January 2016

**COMPLETION DATE**
August 2016

Irby Construction was awarded the CTT Gray to Allen Creek Transmission Line project in January of 2016. The scope consisted of constructing approximately 25 miles of single circuit 345kV transmission line. This required the installation of double bundled conductors, one static and one OPGW accompanied by all necessary insulating hardware and spacing. CTT built this line to integrate additional wind energy resources from the Salt Fork Wind project in Gray and Donley Counties.

The conductor is supported by mostly single pole weathered steel structures mounted onto drilled piers or direct embedded into concrete backfill. The requirements of the project included assembly of an experienced construction administration team, comprehensive quality control planning, managed material inventory and control program, earthwork, erosion control with monitoring, protection of critical habitats of endangered species, and precise project execution.

Several subcontractors played an important role in making the Gray to Allen Creek project a success. Aldridge Construction, Inc. performed the direct embed drilling and setting bases of the structures. Winco, Inc. assisted with wire operations by installing leadline and bird diverters, and B&M Telecom, Inc. performed fiber splicing for this project.

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# BURNT CHURCH-TRADEPORT 115KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
12.2 miles of 115kV transmission line with distribution underbuild

**LOCATION**
Brunswick, GA

**CLIENT**
Georgia Transmission Corporation

**START DATE**
April 2013

**COMPLETION DATE**
December 2013

Irby Construction built a majority of this line along environmentally sensitive terrains of the coastal salt marsh along I-95. To accomplish this, we used an Erickson Air Crane helicopter to haul each pole base into the marsh and special equipment vibrated them into the ground within minutes. Then, the same helicopter aligned and mounted the tops of the poles on each base. We successfully completed this project on schedule using this innovative technique.

To see more on this project, watch the project video produced by Georgia Transmission on www.irbyconst.com.

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# IID MASTER SERVICE AGREEMENT

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission, Substation, Distribution

**SCOPE**
Continuing transmission, distribution, substation and underground work in the Imperial, California area. Scope of work also includes maintenance work through 230kV (system wide).

**LOCATION**
Imperial, CA

**CLIENT**
Imperial Irrigation District

**START DATE**
1980

**COMPLETION DATE**
present

Irby Construction Company has worked for IID for over 25 years providing ongoing transmission, distribution, substation and underground electric distribution work in the Imperial, CA area.

With our many years in Imperial and Riverside Counties, we have hired and trained local personnel, giving support to the local economy. We also continue to support local charities and groups in support of our employees and the community. Our commitment to both IID and the community has strengthened us as a company.

# OHIO RIVER CROSSING
# 345KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
2.42 Miles of 345kV, (2) 420ft lattice towers

**LOCATION**
Bedford, KY

**CLIENT**
Kentucky Utilities

**START DATE**
August 2008

**COMPLETION DATE**
December 2008

Irby Construction and Can-Fer Utilities completed the Trimble County – PSI Ohio River Crossing job for Kentucky Utilities in 2009. This project consisted of 2.42 miles of 345kV double circuit line including the installation of two (2) 420 ft.  river crossing lattice towers.

Irby lead the project management with structure and wire installation. Can-Fer was utilized as a subcontractor on this project for the pier foundations (other than the river crossing towers). The foundations for the river crossing towers were installed by a third party subcontractor contracted by the owner.

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# ELIOT SWITCHING STATION – 345KV SWITCHYARD

**PROJECT TYPE**
Substation

**SCOPE**
345kV Switching Station

**LOCATION**
Eliot, ME

**CLIENT**
Eversource Energy

**START DATE**
May 2012

**COMPLETION DATE**
December 2013

Irby Construction built Eliot Substation as part of an EPC coalition of Quanta Services firms including Dashiell Engineering and Real-time Engineering.

Eliot Substation was a new greenfield station, located in Eliot, ME. This station is comprised of a 345kV switchyard, with a three-line double breaker ring bus configuration and new control house. The design for the new substation connected the existing 345kV Newington-Deerfield 307 line, located in New Hampshire, to the Central Maine Power (CMP) System.

At project completion, there were three new 345kV line terminals constructed at Eliot Substation; #307 from Deerfield, #3176 from Newington, and #3022 to Maguire Road.

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# PATENT GATE 345/115KV SUBSTATION

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Substation

**SCOPE**
Greenfield construction of a 345/115kV substation including installation of ground grids, conduit systems, cable trench, concrete foundations, steel structures and electrical bus work. Installation of all major equipment including power circuit breakers, instrument transformers, and disconnect switches at 171 acre site.

**LOCATION**
Arnegard, ND

**CLIENT**
Basin Electric Power Cooperative

**START DATE**
August 2015

**COMPLETION DATE**
December 2016

Basin Electric identified the need for additional electric transmission capacity in northwestern North Dakota as a result of increased demand, and to meet reliability and system stability requirements for the region. To resolve these issues, Basin Electric will construct, own and operate a new 345kV transmission line and associated supporting infrastructure including the Patent Gate Substation.

A live feed of this project in progress can be viewed via www.irbyconst.com/patent-gate.

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# THE SOUTHERN LOOP – 345KV TRANSMISSION LINE

**PROJECT TYPE**
Transmission

**SCOPE**
53 miles of 345kV and 115kV

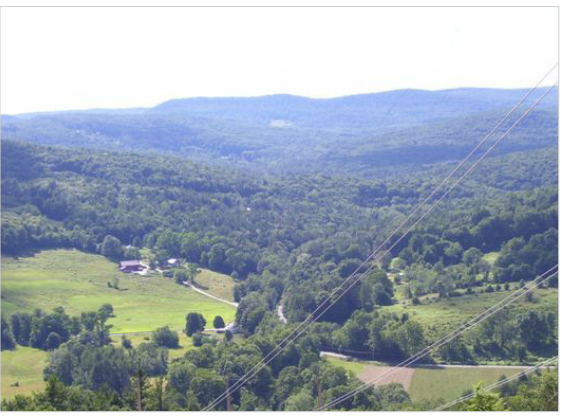
**LOCATION**
Vermont

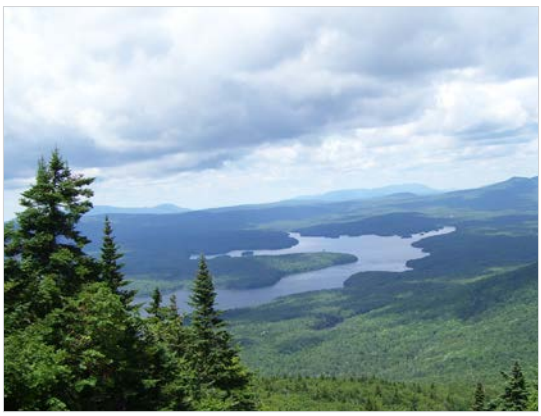
**CLIENT**
Vermont Transco, LLC

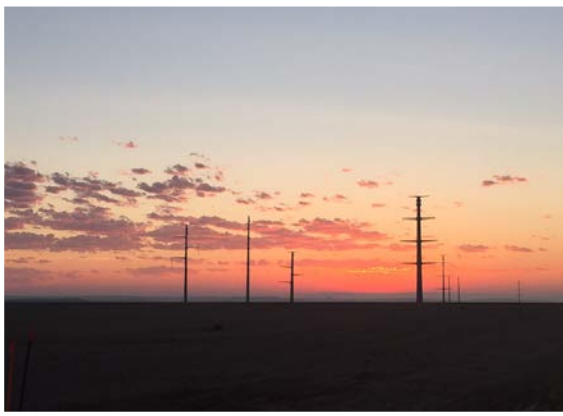
**START DATE**
February 2010

**COMPLETION DATE**
October 2010

Irby Construction Company was a subcontractor to Cianbro on the construction of 345kV transmission line for the Southern Loop project including installation of a new 345kV transmission line and relocation of existing 345kV and 115kV interconnection lines. This project totaled 53 miles of which Irby installed approximately 25 miles of conductor and fiber. The project included direct embedded wood H-frame structures, steel mono-pole structures on anchor bolt foundations, twin bundled 954 ACSR conductor, and two OPGW static lines.







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# THOMSON-VOGTLE 500KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
47.08 miles, 500kV

**LOCATION**
Augusta, GA

**CLIENT**
Georgia Power Company

**START DATE**
July 2015

**COMPLETION DATE**
April 2017

Irby Construction was awarded construction of a new 47.08 mile, 500kV transmission line for Georgia Power along existing ROW. The line carries 1113 45/7 ACSR (Bluejay) conductor and utilizes 2-7#8 AW shieldwire.

The Thomson-Vogtle 500kV transmission was built to add the necessary transmission infrastructure to support two new nuclear units. The total line route is 55 miles long beginning at Plant Vogtle in Waynesboro, GA ending at the Thomson Primary substation in Thomson, GA. Construction of the transmission line was complete and energized in April 2017.

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# HORSE HOLLOW-KENDALL 345KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Renewables, Transmission

**SCOPE**
235 miles of 345kV, 12 miles of 138kV

**LOCATION**
Brady, TX

**CLIENT**
Horse Hollow Generation Tie, LLC

**START DATE**
April 2009

**COMPLETION DATE**
April 2010

This project was developed by NextEra Energy in order to transmit clean energy from their five wind farms in the Abilene area to the San Antonio area. The 345kV transmission line was 235 miles with an additional 13 miles of 138kV.

Irby Construction served as prime contractor and provided project management services for five Quanta Services companies including North Houston Pole Line, Dillard-Smith, Dashiell Engineering and Can-Fer Utilities.

Irby crews installed over 600 concrete, steel and hybrid poles, and strung over 90 miles of bundle conductor. This project was completed in a record time of just nine months.

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# CLEAR SPRINGS-HUTTO 345KV TRANSMISSION LINE

**PROJECT TYPE**
Transmission

**SCOPE**
160 miles of 345kV

**LOCATION**
Hutto, TX

**CLIENT**
Lower Colorado River Authority

**START DATE**
March 2010

**COMPLETION DATE**
February 2011

Irby Construction teamed up with Can-Fer Utilities to carry out the Clear Springs to Hutto Project for the Lower Colorado River Authority. The project consisted of 88 miles of 345kV new transmission line construction with approximately 160 circuit miles of bundled, 959.6 ACSS/TW "Suwannee" conductor on lattice towers and steel poles. Engineering was provided by the owner.

Irby has worked continuously for LCRA for the past 10 years, during which we have built over 1,000 miles of 138kV and 345kV lines on the LCRA system.

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# THOMAS-WARTHEN 500KV TRANSMISSION LINE

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
38.75 miles of 500kV

**LOCATION**
Gibson, GA

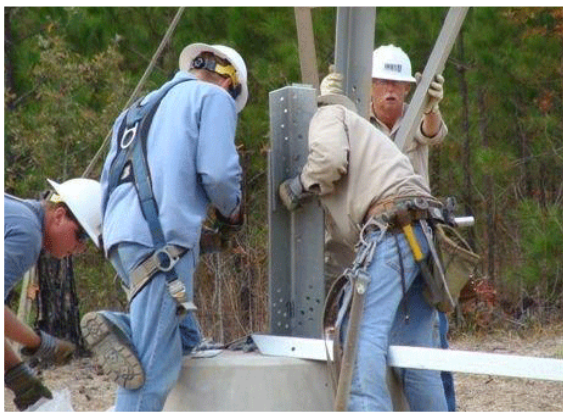
**CLIENT**
Georgia Transmission Corporation

**START DATE**
May 2015

**COMPLETION DATE**
May 2017

Irby Construction built 38.75 miles of 500kV line for Georgia Transmission. This project crossed over several high voltage transmission lines and included installing 157 lattice steel towers on reinforced concrete pier foundations.

Irby worked on this project in conjunction with Reliable Constructors, Inc. and together we were able to complete the job six (6) months ahead of schedule.



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# CREZ 345KV TRANSMISSION PROJECTS

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
~1,000 miles of 345kV
(with small portions of 138kV)

**LOCATION**
Central Texas

**CLIENTS**
- Electric Transmission Texas (ETT)
- Lower Colorado River Authority (LCRA)
- Lone Star Transmission, LLC
- Sharyland Utilities
- South Texas Electric Cooperative (STEC)

**START DATE**
October 2011

**COMPLETION DATE**
December 2014

CREZ projects were primarily designed to move electricity generated by renewable energy sources (primarily wind) from remote parts of Texas (i.e., West Texas and the Texas Panhandle) to the more heavily populated areas of Texas (e.g., Austin, Dallas-Fort Worth, San Antonio). Several of these lines provide transmission infrastructure necessary to meet the long-term needs of the growing area west of the I-35 corridor between San Antonio and Killeen.

Approximately 2,400 miles of electric transmission line were ordered by the Public Utility Commission of Texas (PUCT) and awarded to 10 transmission service providers. Irby Construction Company provided transmission construction services to five of those service providers: Electric Transmission Texas, Lower Colorado River Authority, Lone Star Transmission, Sharyland Utilities and South Texas Electric Cooperative. As a prime contractor for several Quanta companies, Irby collectively built ~ 1,000 miles of line.

The majority of the lines were 345kV, with small portions of 138kV throughout the paths.

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# MAINE POWER RELIABILITY PROGRAM (MPRP)

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Transmission

**SCOPE**
200 miles of 34.5kV, 115kV, and 345kV

**LOCATION**
Lewiston, ME

**CLIENT**
Central Maine Power

**START DATE**
December 2010

**COMPLETION DATE**
May 2015

Irby Construction was awarded the contract for the Central Loop of Maine Power Reliability Program (MPRP) for Central Maine Power Company in December 2010. The MPRP Central Loop consisted of 230 miles of installation, modification and/or removal of 345kV and 115kV electric transmission lines. With work in 13 of Maine's 16 counties, the MPRP is the largest construction project in the state's history.

This project consisted of twenty separate sections and segments with separate Milestone Completion Dates for each section/segment. Irby Construction successfully met all milestone completion dates, as well as all outage dates. The project included the removal of lattice towers and construction of new lattice towers on several major river crossings. Approximately 30,000 timber mats were used to build roads on the ROW to safeguard the Maine environment.

Construction was completed on schedule with the contractual completion date in May 2015. Burns and McDonnell served as the program manager for this project, and engineering on the project was provided by owner. This project could not have been such a success without the help of its subcontractors. Irby Construction subcontracted the scope to a Joint Venture between Irby and Cianbro Corporation, a Maine company. Other various subcontractors such as Winco and Crux Subsurface, Inc., Quanta Services companies, assisted the JV with foundation installation (micro pile foundations) and helicopter support. Other subcontractor support included fiber splicing and testing, blasting, concrete pier foundation, lead abatement, etc.

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# GILLESPIE SUBSTATION

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Substation

**SCOPE**
Replacement of six 138kV breakers

**LOCATION**
Fredericksburg, TX

**CLIENT**
Lower Colorado River Authority

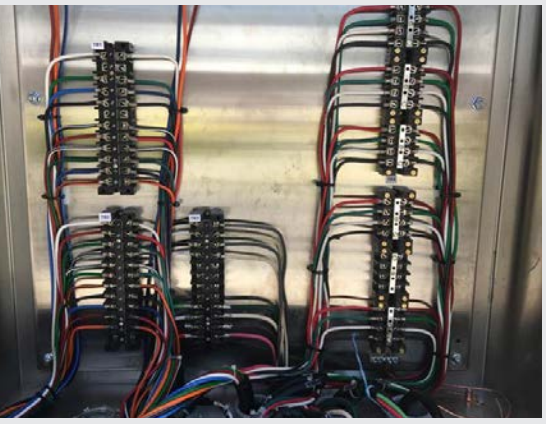
**START DATE**
March 2018

**COMPLETION DATE**
April 2018

Irby Construction was awarded the Gillespie Substation project in February of 2018. The scope included the replacement of six 138kV oil filled circuit breakers with six new 145kV 3000A 40kAIC circuit breakers. This project also included replacing all the busswork and jumpers on the high side as well as installing new control cable, and junction boxes at each breaker stand. From there we were to wire the existing cable in the new junction box to the new breakers.

This project also consisted of testing 108 CT's on all the new breakers and providing test reports to LCRA. Irby contracted out to Electrical Reliability Services, Inc., to perform testing and commissioning services.

Throughout this project, Irby was able to display its craftsmanship specifically pertaining to aluminum busswork, bending and termination, as well as control cable installation and termination.



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# COLTON SUBSTATION

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Substation

**SCOPE**
Demo existing and install new 138kV busswork and steel

**LOCATION**
Austin, TX

**CLIENT**
Lower Colorado River Authority

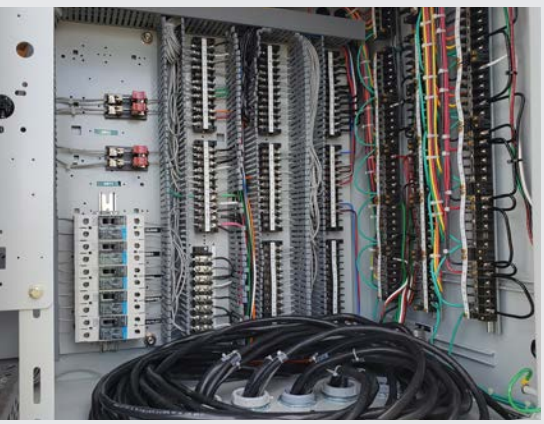
**START DATE**
July 2018

**COMPLETION DATE**
September 2018

Irby Construction was the successful bidder on the Colton Substation project for LCRA. Upon award of the substation it was announced that LCRA needed the station constructed and turned back over to them 27 days earlier than originally scheduled.

Irby was able to demo the 138kV side of the station, perform foundation installations with seven-day breaks on concrete and construct the substation up to the newly rated 3000A capacity.

Irby completed the station work within the timeframes requested by LCRA incident free and was also able to deliver a quality substation product to LCRA.



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# LONESTAR TRANSMISSION SUBSTATION

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Substation

**SCOPE**
345kV Motor Operator Installation Project

**LOCATION**
Sweetwater, Albany, Hillsboro & Corsicana,TX

**CLIENT**
NextEra Lonestar Transmission

**START DATE**
July 2018

**COMPLETION DATE**
October 2018

Irby Construction was awarded a series of upgrade projects from NextEra Lonestar Transmission to retro fit 120 MOABs on existing hand-operated 345kV switches. The project consisted of upgrading four major transmission stations with the maximum distance between them being 270 miles apart. The stations are: Novaro Switch Station, Sam Switch Station, West Shackelford Switch Station, and Claytonville Switch Station.

This project took daily, if not hourly, coordination/communication between Lonestar Transmission Construction Representatives and Irby's onsite foreman to ensure outages were delivered to multiple stations in one day. Irby worked Monday through Saturday, eight hour days to accomplish the replacement and installation of motor operators per the stringent outage schedule. This project had Irby on its toes at all times due to all the transportation between the stations to perform the swap outs during the outages.

Irby performed the construction to Lonestar's strict standards of craftsmanship and safety without incident.


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# CANYON SUBSTATION FLOOD REMEDIATION

IRBY CONSTRUCTION
A QUANTA SERVICES COMPANY

**PROJECT TYPE**
Substation

**SCOPE**
Installation of new control house, replace three 138kV breakers and re-wiring

**LOCATION**
San Marcos, TX

**CLIENT**
Lower Colorado River Authority

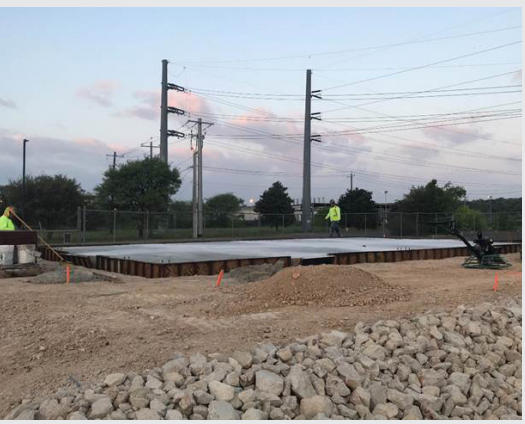
**START DATE**
March 2018

**COMPLETION DATE**
June 2018

Irby Construction was the successful bidder on the Canyon Substation Flood Remediation project for LCRA. This project included heavy coordination with LCRA as well as three Irby subcontractors within a tight construction schedule.

Irby was given a control house pad by LCRA to deliver foundation installations. Irby's subcontractor East & Westbrook constructed all the foundations on this project within the timeframe needed. Irby then subcontracted to Southwest Erectors to build the control building. Once complete, Irby built out the control house's internal components. Irby was on time and ready for LCRA's outages to remove and relocate 11 panels from the existing control house to the newly constructed control house, as well as install three new panels. This included a custom welded section of exterior cable tray by Irby's onstaff certified aluminum welders. Irby also had all the control cable pulled and terminated prior to LCRA's testing and commissioning staff.

One of the larger complex issues on this project was the installation of the Microwave Tower. This took several meetings between Irby and TNT Crane and Rigging. Due to the proximity of the control house, incoming 138kV lines, 12kV distribution bays, fencing, and control cable trench there were many obstacles to overcome. Irby had two jobsite preplanning meetings with TNT crane onsite prior to them mobilizing in the crane for this work. Irby is proud to say that within six hours the entire microwave tower was set and back bolted without incidents. It is important to note the amount of planning and time that went into this critical pick and placement so that Irby could see such a safe and amazing result of such a difficult installation.



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