

**TIMELINE**

- 2009-05-15** LCRA Open Houses Landowners notified
- 2009-06-01** CVA goes live on world wide web
- 2009-09-24** Motion to Delay & Expand Study Area
- 2010-02-15** 1/4 scale model lattice tower tours region
- 2010-02-15** LCRA Open Houses second round
- 2010-04-19** LCRA / Fish & Wildlife Scoping Meetings
- 2010-07-28** Filing of CCN
- 2010-09-01** Hearing on the Merits, Austin Conv. Center
- 2010-12-17** ALJ issued PFD recommendation to PUC
- 2010-12-23** CVA filed Exceptions to PFD
- 2011-01-13** PUC routing deliberations / Final Order

**TERMS**

- PFD** Proposal for Decision
- ALJ** Administrative Law Judge
- CVA** Clear View Alliance
- LCRA** Lower Colorado River Auth
- PUC** Public Utilities Commission
- CCN** Certificate of Convenience & Necessity
- TPWD** Tx Parks & Wildlife Dept.
- PURA** Public Utility Regulatory Act
- CREZ** Competitive Renewable Energy Zones
- CTO** CREZ Transmission Optimiz

**Monopoles** [www.ClearViewAlliance.org](http://www.ClearViewAlliance.org)



looking straight up from underneath the center of a typical lattice tower

**Monopoles**

If any rural area of the State of Texas deserves to have monopoles utilized for the length of the approved route, the Texas Hill Country is that area. The efficiencies of scale justify the global approval of the use of monopoles where feasible.

# MONOPOLES



**spun concrete monopole**



**corten steel monopole perma-rust surface**

## **Monopoles**

The ALJs state that they support the use of monopoles to the extent it is cost effective and particularly in any areas with denser population, such as along I-10 through population centers such as Sonora, Junction, and Kerrville if the line is ultimately routed through those communities. They also state that there was strong support from almost all intervenors for the use of monopoles, which tends to show that the use of monopoles is a strong community value. Ultimately, they conclude that the decision as to structure type necessarily rests with the Commission and its balancing of costs and benefits. LCRA TSC's witness Symank submitted rebuttal testimony that provides an evaluation of the cost implications of using monopole alternative structures for the line. He testified that the cost difference between lattice towers and various combinations of structure types has narrowed for this project. Although the estimates for construction using only lattice towers is still lower in cost than monopole alternatives, Mr. Symank concluded that using monopole tangents with lattice angles and dead-ends on a narrow right-of-way ("Mono/Lattice-100") results in an increase in estimated cost of only 15.8% on MK33.

The reduction in LCRA TSC's cost estimates for the use of monopoles is encouraging. CVA's position is that, wherever the line is built, it should be built using monopoles and not steel lattice towers. Monopoles have a smaller footprint and, as a result, occupy less land. They also are not as ugly and industrial to look at, an important consideration given that the supporting structures and the line will be a permanent fixture on the land. LCRA TSC has said that it will build the line with monopoles to the extent it is physically possible if the Commission orders it to do so. The Commission should issue that order.



**lattice tower**



**steel monopole that has been painted in Lubbock, Tx  
New Jersey only allows monopole structures  
painted to blend into scenery i.e. "pine tree green"**

Steel and spun concrete monopole structures are both proven technologies in the United States. When compared to other structures, the speed and ease of installation of monopoles is significantly better, the impact on land is less, and the economic decisions associated with easier installations and little post-installation maintenance result in low life-cycle costs. The use of monopole structures also allows much more flexibility with respect to width of right-of-way and height requirements for structures. Monopole structures are used successfully throughout the country, including the Horse Hollow NextEra line in the Hill Country. In constructing the transmission line along US 277 and I-10, use of monopoles would permit LCRA TSC in many instances to use a 100 foot right-of-way, rather than a 140 foot right-of-way. The use of monopole structures in this project is feasible, cost competitive in many instances and cost effective over the long run.

The impact on the land is much greater for steel lattice towers than for monopole structures. The time required on the landowner's property is greater for steel lattice towers than for monopole structures. The reduced time on the land reduces the impact on the landowner's use of his land and allows him to get back sooner to his normal operations. The footprint required for steel lattice towers is much larger than for monopole structures. The reduced footprint can require less right-of-way, easier operation on the ground during construction, and allow for more natural uses of land after construction.

CVA witness Dr. Jerry Wong testified that no large company is manufacturing steel lattice towers in the United States. The production plants of companies that advertise lattice towers are outside the United States. Generally, one needs to go to India, South America, Mexico, or Canada to buy lattice towers for large projects such as the CREZ transmission lines. When the production is outside of the United States, that situation adds complexities to the construction process and requires utilities to plan for possible problems in sourcing their towers due to problems in foreign countries.

**Shipper-Provided Short Form Bill of Lading -- Original-Not Negotiable**

Name & Address of CARRIER: <b>TRANSPORTACIONES INDUSTRIALS GUME SA DE CV</b>		Carrier's Number	Shipper's Number <b>N015708</b>	
RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, at <b>SAN NICOLAS DE LOS GARZA,NL</b> From <b>FORJAS METALICAS</b>		DATE: <b>7/10/2010</b>		
<small>The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destination below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any part of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.</small>				
<b>SHIPPER:</b>		<b>CONSIGNEE TO:</b>		
Name:	<b>FORJAS METALICAS</b>	Name:	<b>LOWER COLORADO RIVER AUTHORITY</b>	
	<b>SA DE CV</b>			
Address:	<b>AV. NOGALAR SUR No. 300 COL. NOGAR</b>	Address:	<b>1437 EAST RANCH ROAD</b>	
			<b>JUNCTION ,TX</b>	
Zip Code	<b>SAN NICOLAS DE LOS GARZA,NL</b>	Zip Code	<b>76849</b> Ph:	
<b>No.</b>	<b>Description of Articles, Special Marks, and Exceptions</b>	<b>Class</b>	<b>Weight</b>	<b>Value</b>
1TL	STRUCTURE STEEL		26365 k	
REMISSION	047705			
TRL #	547			
INVOICE #	907774			
SHIPMENT#				
<b>C.O.D. AMOUNT:</b>				
<small>Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be</small>				

**Bill of Lading shows source of lattice tower steel purchased by LCRA to have originated in Mexico**

Dr. Wong testified that there are several steel pole plants in Texas and a concrete pole manufacturer in Texas, outside of Houston. Lone Star Transmission, LLC is using that company for its monopole structures. The availability of in-state manufacturers seems to be more supportive of the Texas economy than spending money for the manufacture of steel lattice towers in areas where Texans do not benefit from those expenditures.



**LCRA rented a temporary laydown yard, approx. 40 acres, near Junction, TX.  
Yellow delivery trucks from Mexico stock pile loads of steel lattice tower materials July, 2010**

Dr. Wong's testimony included other benefits of using monopoles, including reduced maintenance. He testified that, in Florida Power & Light's experience with over 20,000 spun concrete poles in the field, these poles are the least expensive solution when considering overall construction and life cycle costs. The spun concrete poles do not deteriorate as quickly as steel lattice towers. In considering the use of monopoles it is important to look at the overall costs over the expected life cycle of the transmission line, not just the costs of construction. Dr. Wong testified that although Florida Power & Light regularly inspects all of its transmission line structures, it does not budget for maintenance costs for spun concrete poles for the first fifteen years of their life cycle. Steel lattice towers often have to have regular maintenance activities to look for loose bolts and corrosion at their many joints.

Expected life span also should be taken into consideration in doing a life cycle cost analysis. Spun concrete poles have an expected life span of 75 years. Depending on the local conditions, a steel lattice may be expected to last for fifty years, or even less in a corrosive environment. Assuming that LCRA TSC's projected construction costs are accurate, they nonetheless do not provide a complete picture of the life cycle costs of the structures. Dr. Wong testified that it has been Florida Power & Light's experience in many states and in many different environments that the life cycle costs of monopole structures, especially spun concrete, are lower than for steel lattice towers.



While there are differences between steel monopole and spun concrete monopole structures, they both are proven technologies in the United States. When compared to other structures, the speed and ease of installation of monopoles is significantly better, the impact on land is less, and the economic decisions associated with easier installations and little post-installation maintenance result in low life-cycle costs. The use of monopole structures also allows much more flexibility with respect to width of right-of-way and height requirements for structures.

LCRA TSC witness Mr. Curtis Symank testified that LCRA TSC is “not opposed to the monopole structures that many in the public request, and [that it] will build any feasible structure type ordered by the PUC if the Commissioners determine the structure type to be appropriate.” He also testified at the hearing that there is an efficiency of scale in having a large number of monopoles. He indicated that was one of the adjustments LCRA TSC made in consulting with its contractor that allowed for a cost reduction on concrete poles. Because LCRA TSC considered using monopoles for similar areas, the contractor did not have to estimate the cost of moving his cranes and crews from one area to the next. He thus would be able to utilize more efficient construction methods.

If any rural area of the State of Texas deserves to have monopoles utilized for the length of the approved route, the Texas Hill Country is that area. The efficiencies of scale justify the global approval of the use of monopoles where feasible. The Commission would be responding to a community value that has been expressed throughout the study area and helping to moderate the opposition of landowners who will bear the burden of the approved transmission lines.



