Utility Partners with L.E. Myers to Rebuild Most Challenging Section of 500kV Transmission Line

CASE **STUDY**

SNAPSHOT

Company: The L.E. Myers Co.
Customer: Dominion Energy
Project: Mount Storm to Valley Phase 3: 18 mi. of 500kV transmission rebuild. Completed 2023

Rebuilding North America's first 500kV electrical transmission loop, constructed in 1965, through rugged mountains and national forest would be a difficult undertaking. There was limited access to the transmission structure sites, travel time from one site to another could take an hour or more, and conductor wire would need to be pulled 1,000 to 4,000 feet across valleys.

When Dominion Energy needed the final, most difficult section of the line dismantled and rebuilt to increase line capacity they selected MYR Group subsidiary L.E. Myers to perform the line construction. With extensive experience constructing difficult transmission projects for utilities, they welcomed this challenge.

CLIENT INTRODUCTION

Dominion Energy provides electricity to 3.6 million homes and businesses in Virginia, North Carolina and South Carolina. It also built and owns the first 500kV transmission loop ever built in North America.

PROBLEM

Due to age and corrosion, Dominion Energy needed this entire 500kV line removed and replaced, in phases, to increase the line capacity. Increased capacity was a priority for Dominion Energy due to their service territory's ever-growing power demands.

The utility designed an entirely new family of lattice steel towers (5C towers) made of galvanized steel for the new line to withstand intense weather conditions, including ice.

Mt. Storm to Valley Phase Three would be the final and most difficult section to rebuild due to the line location and terrain. This 18-mile section of transmission runs along the edge of Virginia's Shenandoah Valley and traverses the George Washington National Forest with mountains, cliffs, and wide valleys.

West Virginia and Virginia environmental agencies, as well as the Forest Service imposed strict environmental requirements on the project including limits of disturbance (LODs) and time of year (TOY) restrictions.

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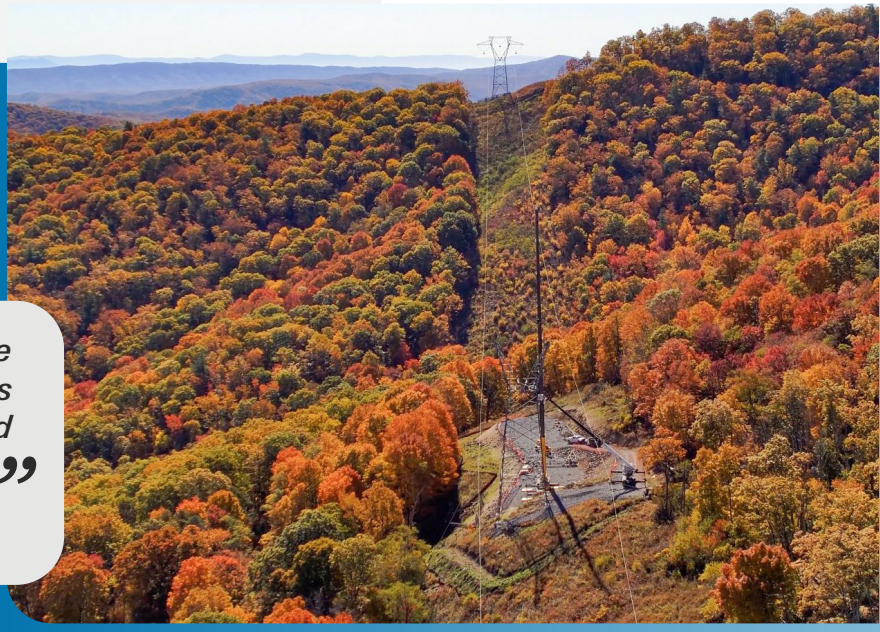


> *"This has probably been one of the most unique and challenging projects of my entire lineworking career, and I started back in 1984."*
>
> *Michael Comisford, L.E. Myers Senior Operations Manager and leader of the project team*

SOLUTION

L.E. Myers took on this complex transmission project, partnering with the customer throughout, to deliver it successfully. They worked closely with all the utility's teams including project management, forestry, permitting, SWPPP and technical consultants.

L.E. Myers provided a constructability analysis to Dominion for the Mt. Storm to Valley transmission line rebuid in 2017.

Having partnered with Dominion on many tough projects in the past, they were chosen to construct phases two and three due to the company's extensive history delivering quality work for Dominion, and a proven ability to mitigate cost and provide holistic solutions.

Phase Three's rugged terrain would be one of the most challenging L.E. Myers has undertaken with access challenges, tight constraints on lattice structure work areas, and compliance with many environmental requirements. Roughly 60 miles of access roads had to be constructed for this phase.

To complete the 18-mile wreck and rebuild, which included replacing 71 transmission towers and requiring wire pulls 1,000 to 4,000 feet long, the team employed superior planning, coordination and execution.

L.E. Myers provided solutions to the project's unique needs which included:

Pre-planning for site constraints: LODs set by the Forest Service and state environmental agencies to protect species necessitated constrained structure sites.

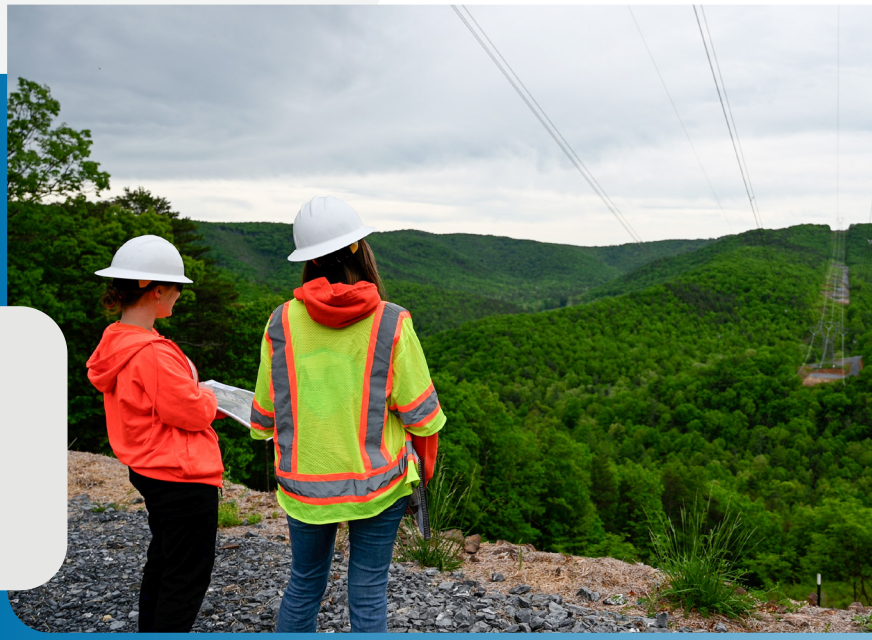
Many sites would only be allowed a pad the exact size needed for required heavy equipment. This made it difficult to get heavy, specialty equipment in and out and staked properly for use.

To manage that, L.E. Myers collaborated with the MYR Group fleet to conduct extensive pre-planning. Together they identified the right equipment to use and designed configurations so that large, specialized vehicles including cranes could be used on constrained structure sites.

Scheduling around TOY restrictions: TOY restrictions prevented ground disturbances for several months in the Cow Knob salamander's active areas.

To comply, the work of drilling foundations was scheduled and performed much earlier than it typically would have been. This ensured structures were completed and species were protected.

> *"A monumental feat of engineering, permitting, road building, and line construction ..."*
>
> *Dominion Energy Line Engineer Matthew Vinson*



> *"Successful completion of this project was only possible by the strong partnership ..."*
>
> *Dominion Energy Line Engineer Matthew Vinson*

SOLUTION CONTINUED

Unique structure plans adapted for mountainous terrain: Each lattice tower site had unique challenges because of the mountainous environment. Uneven terrain, steep drop offs and cliffs were common and many had LODs or TOY restrictions as well. L.E. Myers developed specific plans for each structure to determine how best to dismantle the old tower and construct the new one.

Adapting tower construction to site requirements: Site constraints often prevented laying out lattice tower materials in pick sections before setting the towers. Where they could, L.E. Myers obtained permission to set structures on cribbing outside of LODs. Where they couldn't, crews assembled the transmission towers one piece at a time. To remain efficient, they often had one crew removing an existing structure, while another crew was setting the new one.

THE RESULTS

Partnership and teamwork with the utility and other trade partners paved the way for successful completion. Throughout the project, Dominion Energy's engineering group solicited input from project partners that helped facilitate effective solutions to unique challenges.

All the planning, problem solving and collaboration bore excellent results and L.E. Myers finished the transmission construction work for Phase Three in late 2023, in time to meet the scheduled energization date.

Dominion Energy Line Engineer Matthew Vinson called the Mt. Storm to Valley rebuild, "a monumental feat of engineering, permitting, road building, and line construction," and added that Phase Three was the "most challenging" portion of the mountainous transmission line.

CONCLUSION

"Successful completion of this project was only possible by the strong partnership between Dominion Energy, the prime contractor L. E. Myers, and other subcontractors," Vinson added.