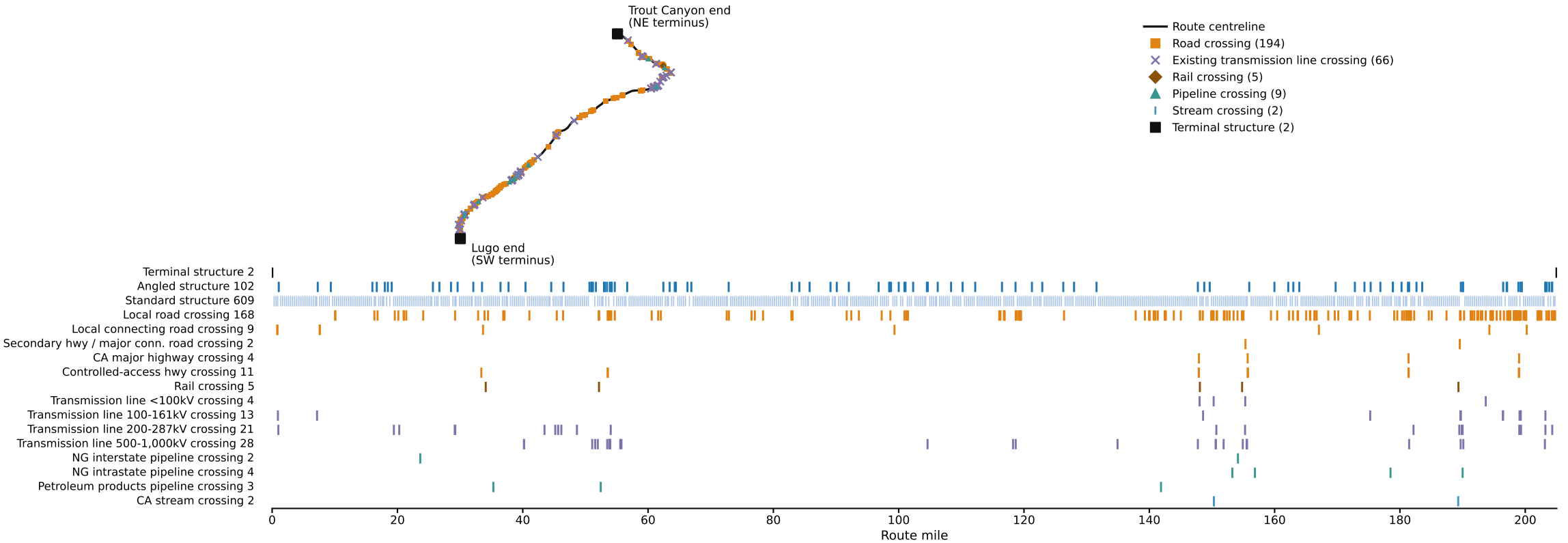


Trout Canyon to Lugo, transmission line: crossing schedule, structures and route exposure

205.02 route miles across San Bernardino County, California, and Clark County, Nevada (approximate, by coordinate). 713 structures and 276 physical crossings. Optioneer case Trout-Lugo Order 1000_v2, option 64576. Prepared for the CAISO 2026 TPP — Order 1000 Close demo, 10 August 2026.



Crossing schedule

Feature crossed	Crossings
Local road	168
Local connecting road	9
Secondary hwy / major conn. road	2
CA major highway	4
Controlled-access hwy	11
Rail	5
Transmission line <100kV	4
Transmission line 100-161kV	13
Transmission line 200-287kV	21
Transmission line 500-1,000kV	28
NG interstate pipeline	2
NG intrastate pipeline	4
Petroleum products pipeline	3
CA stream	2
Total	276

Structures

Type	Count
Standard steel tower	609
Angled steel tower	102
Terminal steel tower	2
Total	713

Crossing density

1.35 crossings/mile overall across 276 physical crossings. Heaviest cluster: miles 196-201 (34 crossings, 5.1x average). 7 stretches of ≥5 mi carry none, the longest miles 105-116.

Route profile

2D length 1,082,528 ft (205.02 mi); independent geodesic check on the downsampled centreline gives 1,076,307 ft (203.85 mi, 0.57% diff). 3D length 1,085,385 ft (205.57 mi). Elevation 862-5,036 ft at tower positions. Slope 0.000-29.53°; 84.7% of route under 5°, 1.6% over 16°.

Angle structure distribution

102 angled towers split 38 / 28 / 36 across the first, middle and final thirds; 75 turn ≤30°, 24 30-60°, 2 over 60°. Standard towers run 202 / 205 / 202, ~1,520 ft average span, consistent with single-circuit steel lattice.

Endpoints (inferred)

NE terminus 36.0623°N, 115.7662°W (near Trout Canyon / Mountain Springs, Clark Co., NV — 'Trout Canyon' node). SW terminus 34.3659°N, 117.3610°W (near Hesperia, San Bernardino Co., CA — 'Lugo' node). Route runs Trout Canyon → Lugo. Counties inferred from coordinates only, not a boundary layer — confirm before external use.

Environmental & land-use exposure

Layer	mi	% rte
FED National Public Lands	150.4	73.3%
CPAD Lands Protected for Open Space	111.5	54.4%
BLM Visual Resource Class III	104.8	51.1%
FED Area of Critical Env. Concern	91.6	44.7%
CA RETI Environmental Yellow Areas	53.8	26.2%
FWS HQ ES Critical Habitat	49.5	24.2%
BLM Visual Resource Class II	27.5	13.4%

Zero mileage through FED Wilderness, National Parks, National Monuments, Military Bases, tribal lands, State Parks, private conservation easements. Crosses the California-Nevada state line once (by coordinate); no international-border crossings.

% greenfield (engine): 5.4%. Major crossings flagged by engine: 18.

Cost summary (option 64576)

Item	\$
Standard tower capex	243,600,000
Conductor capex	96,911,904
Angled tower capex	61,200,000
Terminal tower capex	2,000,000
Layer & crossing capex	48,581,922
Total capex	452,293,826

Opex	7,486,600
Access-road capex	4,827,441
Total cost objective	464,607,866

Largest per-layer penalty drivers (optimizer units, not \$): FED National Public Lands (244.1M), CPAD Open Space (180.3M), FED ACEC (147.7M), Critical Habitat (Final) (79.9M), BLM VRC III (51.0M), BLM VRC II (44.4M). PENALTY objective 8.2M. Constraint violation: 0.0.

Structure positions, crossing locations, chainages and cost/penalty metrics retrieved live from the Optioneer MCP server for case Trout-Lugo Order 1000_v2 (config 7518), option 64576 — one of 35 options in the case, selected in saved view 1889 at the user's request rather than as a recommended or final option. The crossing schedule counts physical features only: it excludes cadastral PLS section lines (268), duplicate source datasets and administrative centrelines, together 435 further line intersections. Route length cross-checked by geodesic computation on a downsampled centreline (0.57% difference); map markers are grouped into feature families for legibility while the strip chart and schedule show each feature separately. High-risk aggregate costs appear both inside the CAPEX objective and as the standalone adder, reproducing engine values. Elevation and slope extremes are tower-position values. County and state attributions are inferred from coordinates, not a boundary dataset.