Separation Distance and Related Issues for New Transmission Lines in the West: A Wyoming Example

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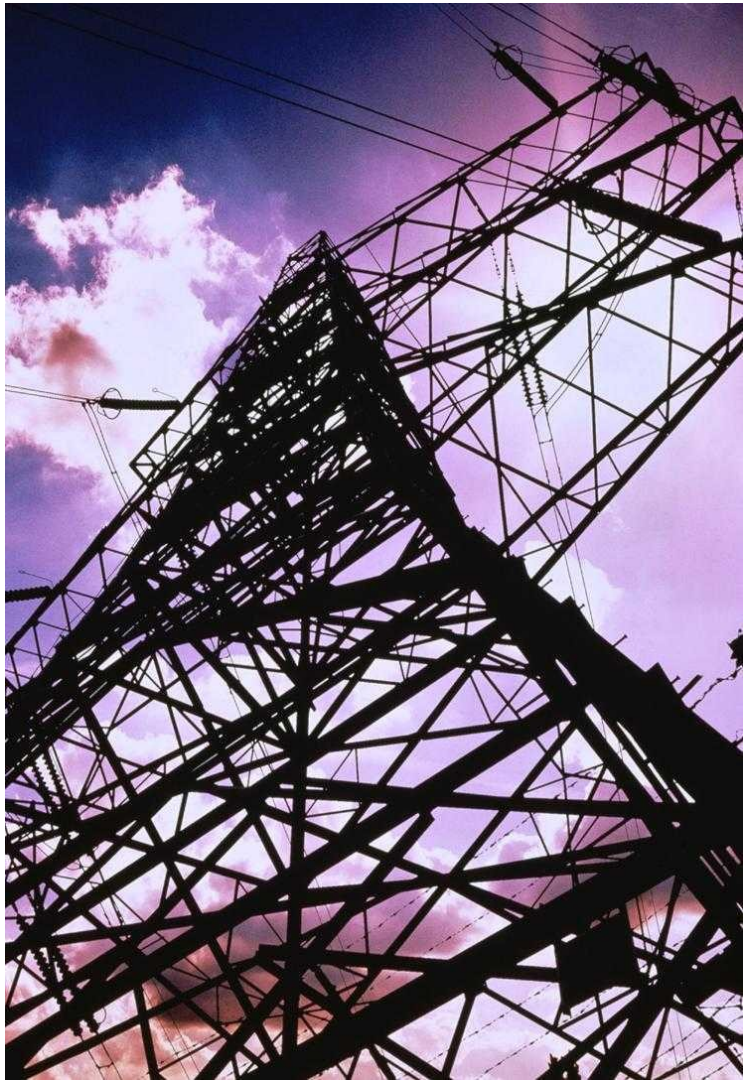
Presented by: Robert J. Henke, ICF International
Study funded by: Wyoming Infrastructure Authority

PRESENTATION OUTLINE

- Why New Transmission?
- Wyoming Example
- Separation vs. Reliability
- Separation Distance – How Much is Enough?
- Minimum Separation Distances
- What Next?

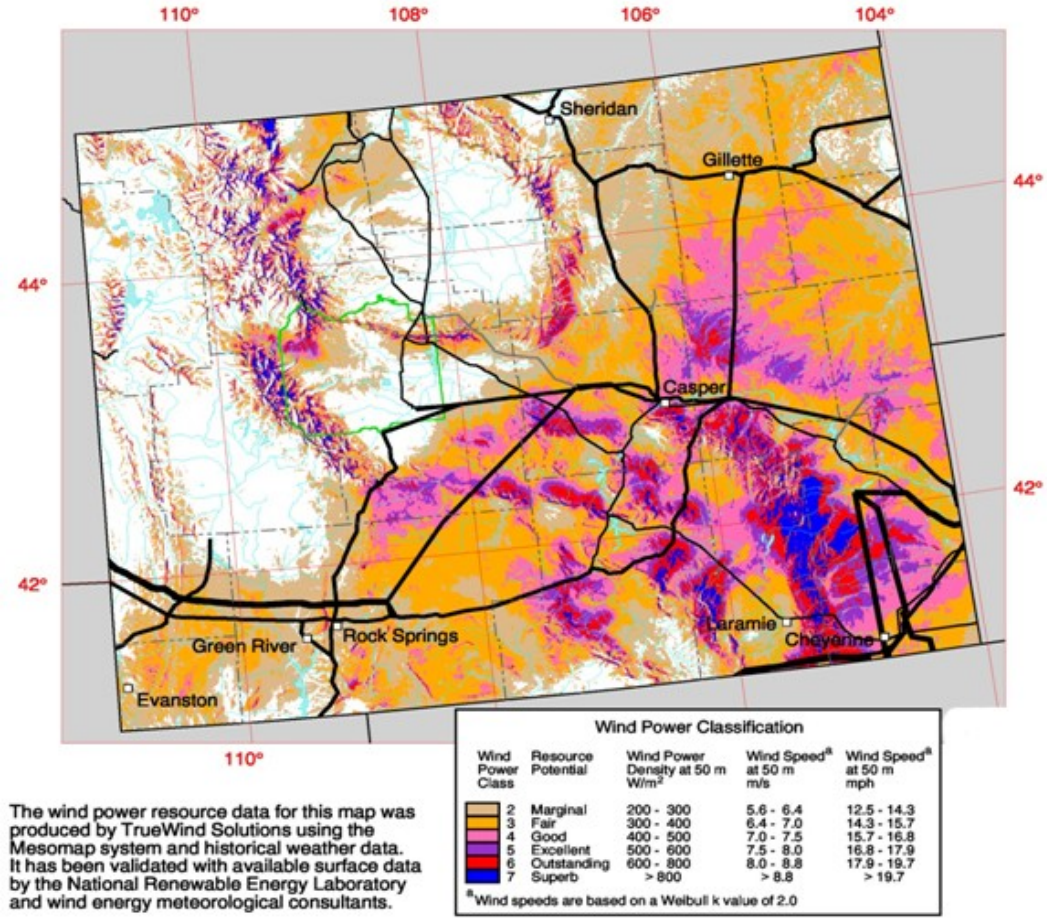


Why New Transmission?

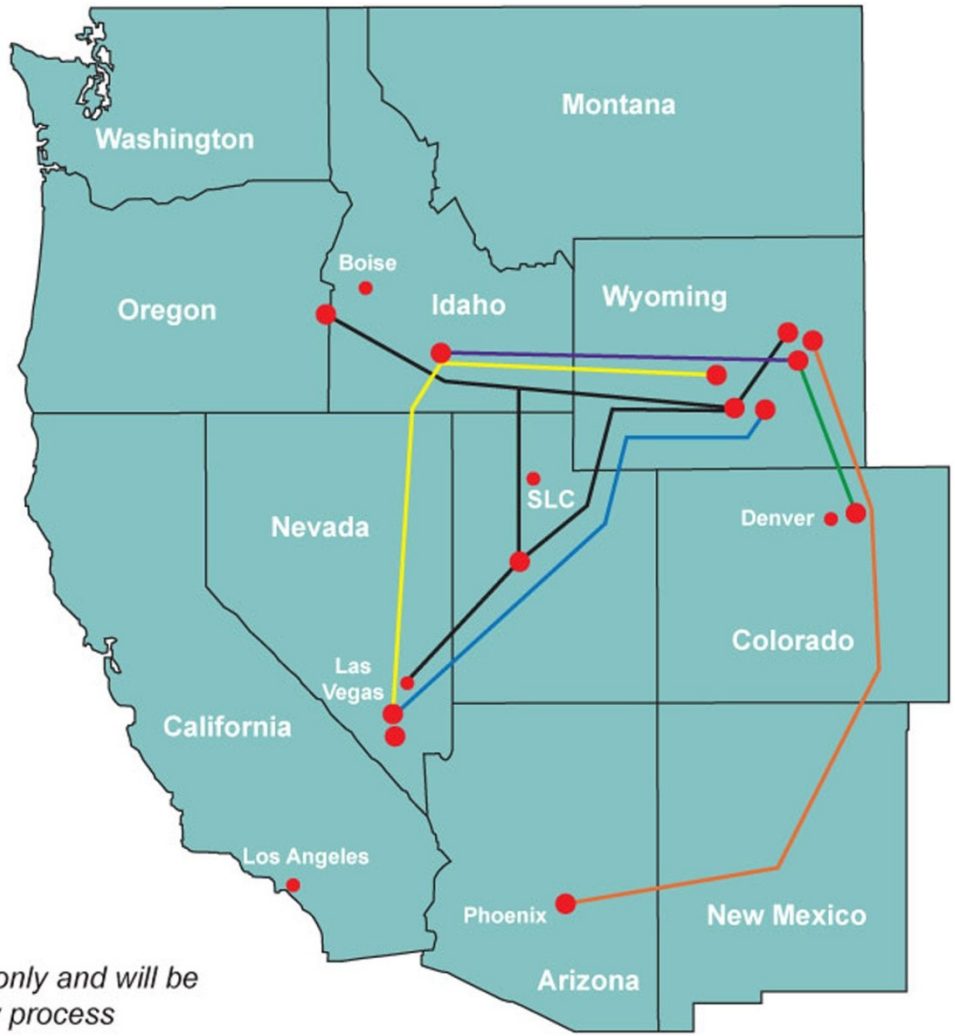
- Growing demand for energy
- Renewables portfolio standards (RPS)
- Greenhouse Gas (GHG) legislation
- Current power system is limited

Wyoming Example

- Low Population (532,668)
- Low Load
- > 50% of Class 6/7 Wind
- No 500-kV Lines
- 7 Proposed HV Lines



Proposed Transmission Projects in Wyoming

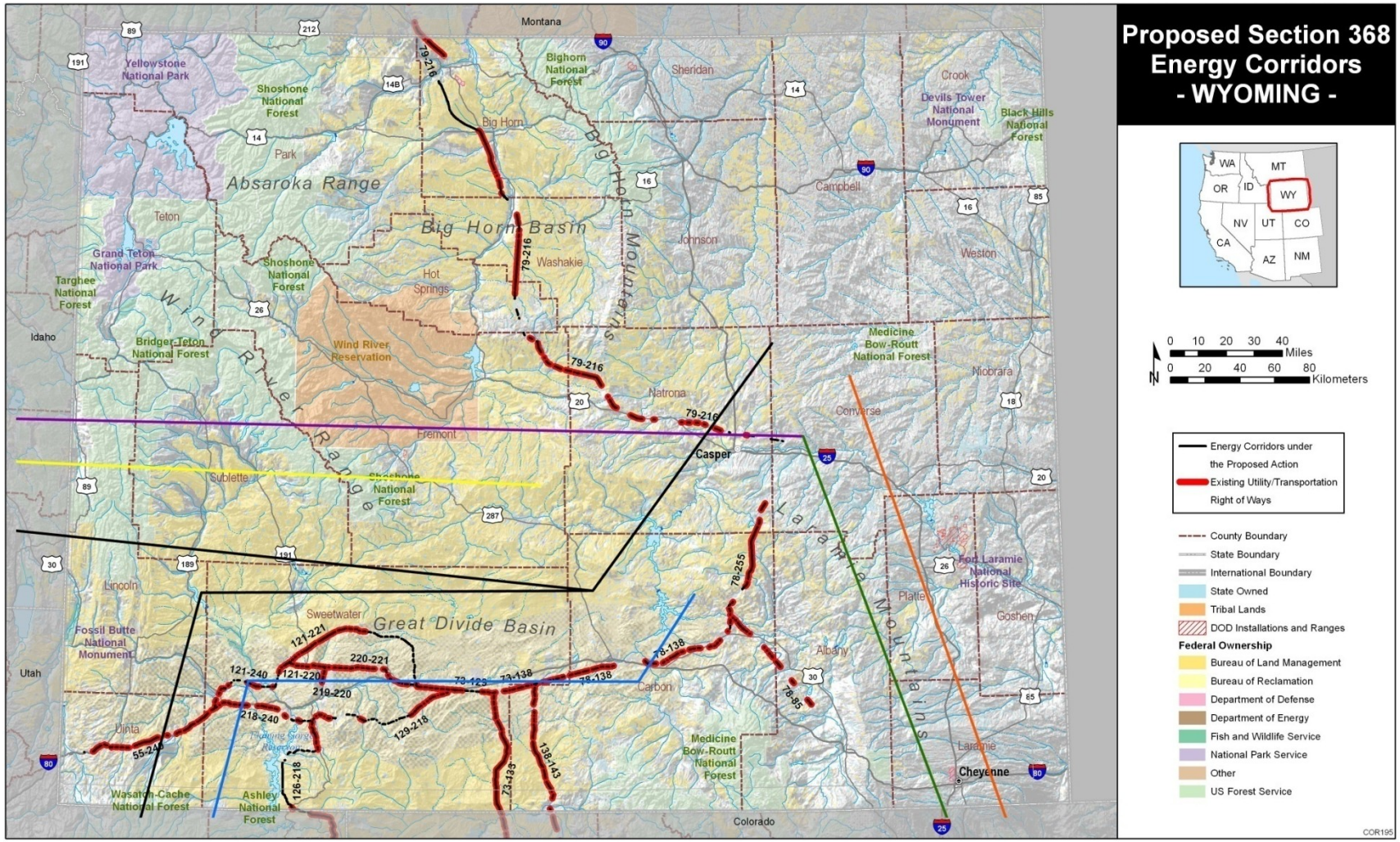


Projects

- Wyoming-Colorado Intertie
- Energy Gateway (West & South)
- TransWest Express
- High Plains Express
- Zephyr
- Overland Intertie

Routes shown are for illustrative purposes only and will be finalized following a comprehensive review process

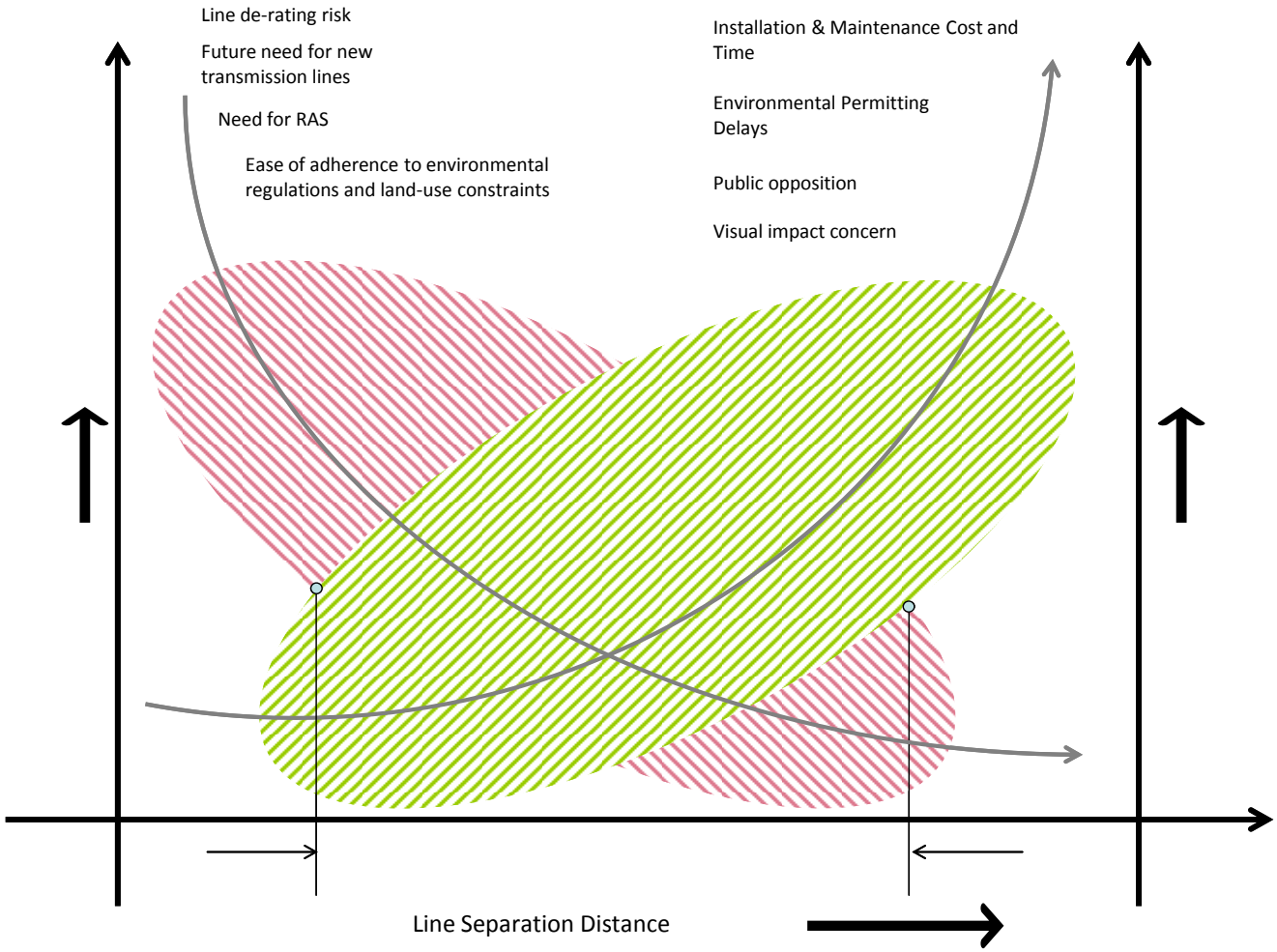
Proposed Transmission & Energy Corridors



Why Not In My Backyard?

- Visual/Scenic Values
- Surface Disturbance
- Invasive Species
- Habitat Loss/Fragmentation
- Long-Term Access Roads
- Land Use Impacts
- Special or Sensitive Places
- Eminent Domain
- Bird Collision/Electrocution
- Threatened/Endangered Species
- Artificial Predator Perches
- Electromagnetic Field

Separation Distance: Reliability Vs. Costs/Impacts



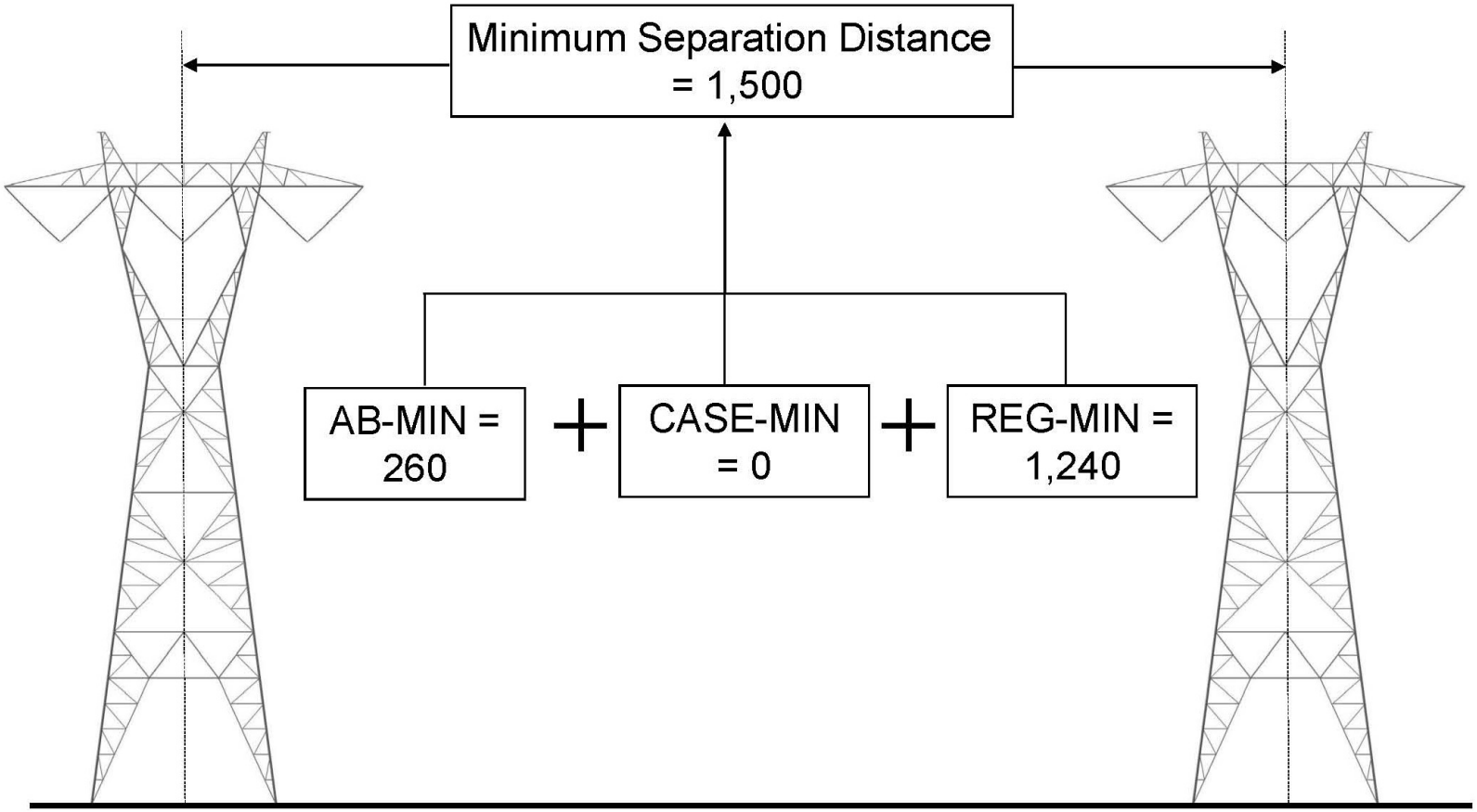
Separation Distance – How Much is Enough?

Separation Distance and Reliability - Example

- Dependent Factors (19-24%)
  - Lightning
  - High Winds
  - Tornadoes
  - Storms (ice/hail/snow)
  - Fire
- Independent Factors (75-81%)
  - Human error
  - Equipment failure
  - Sabotage
  - Vegetation
  - Other Misc.
  - Unknown

WECC 2006-2007 outages for 500–600-kV

Example Minimum Separation Distances[1] (feet) for Typical 500-kV Transmission Lines



[1] Invalid without application of associated assumptions and mitigation

For more information…

Framework For Analyzing Separation Distances between Transmission Lines in Wyoming

Download Report at: icfi.com/wytransmission

Robert J. Henke, ICF International
303-792-7810 (office)
303-520-9051 (cell)
rhenke@icfi.com

Study funded by: Wyoming Infrastructure Authority (*www.wyia.org*)