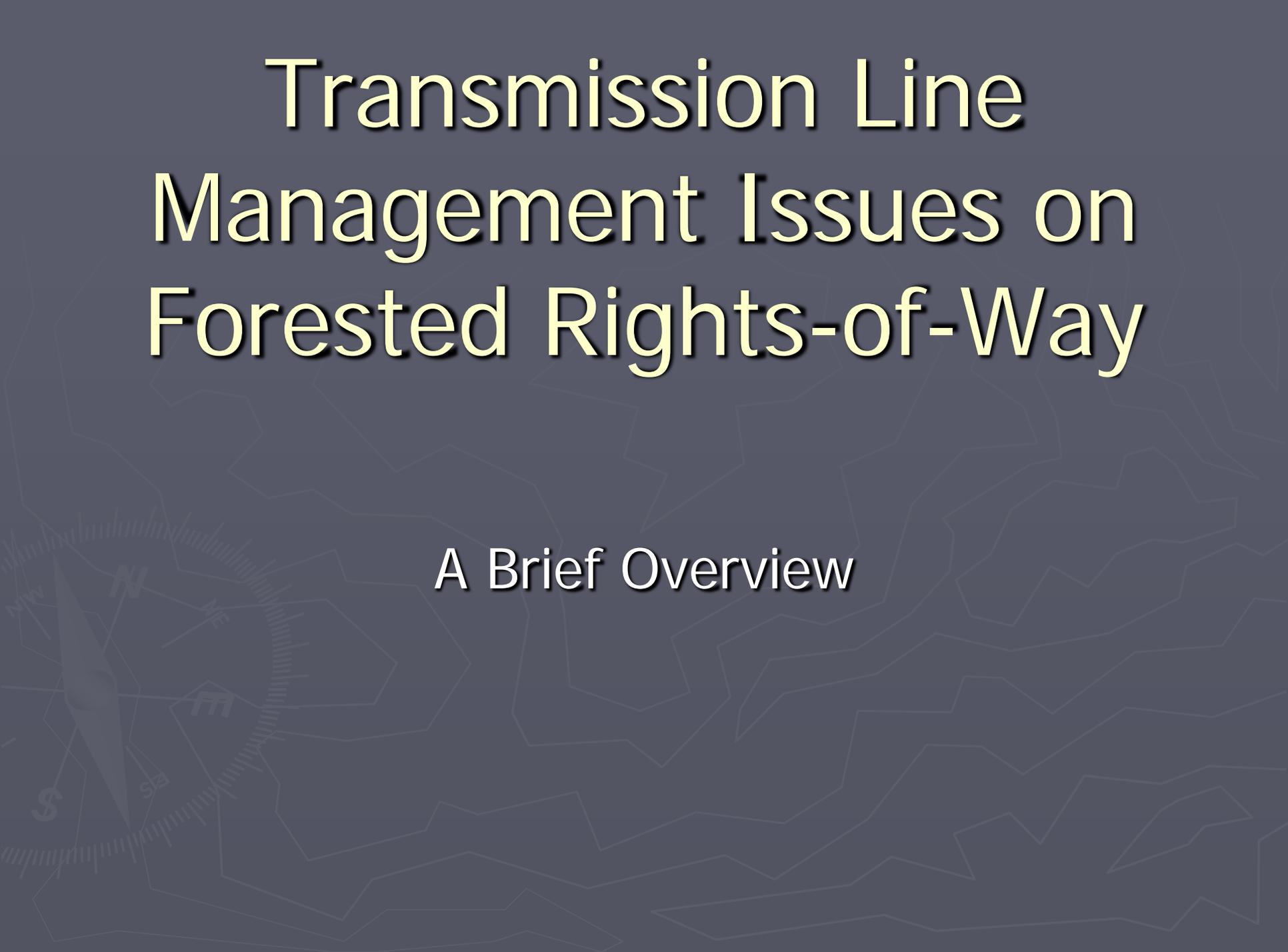


# Transmission Line Management Issues on Forested Rights-of-Way

A Brief Overview

The background of the slide is a dark blue-grey color. It features a faint, light-colored map of the United States with state boundaries. In the lower-left corner, there is a faint compass rose with a needle pointing towards the top-left, and the letters 'N', 'S', 'E', and 'W' are visible around it.

# Objectives

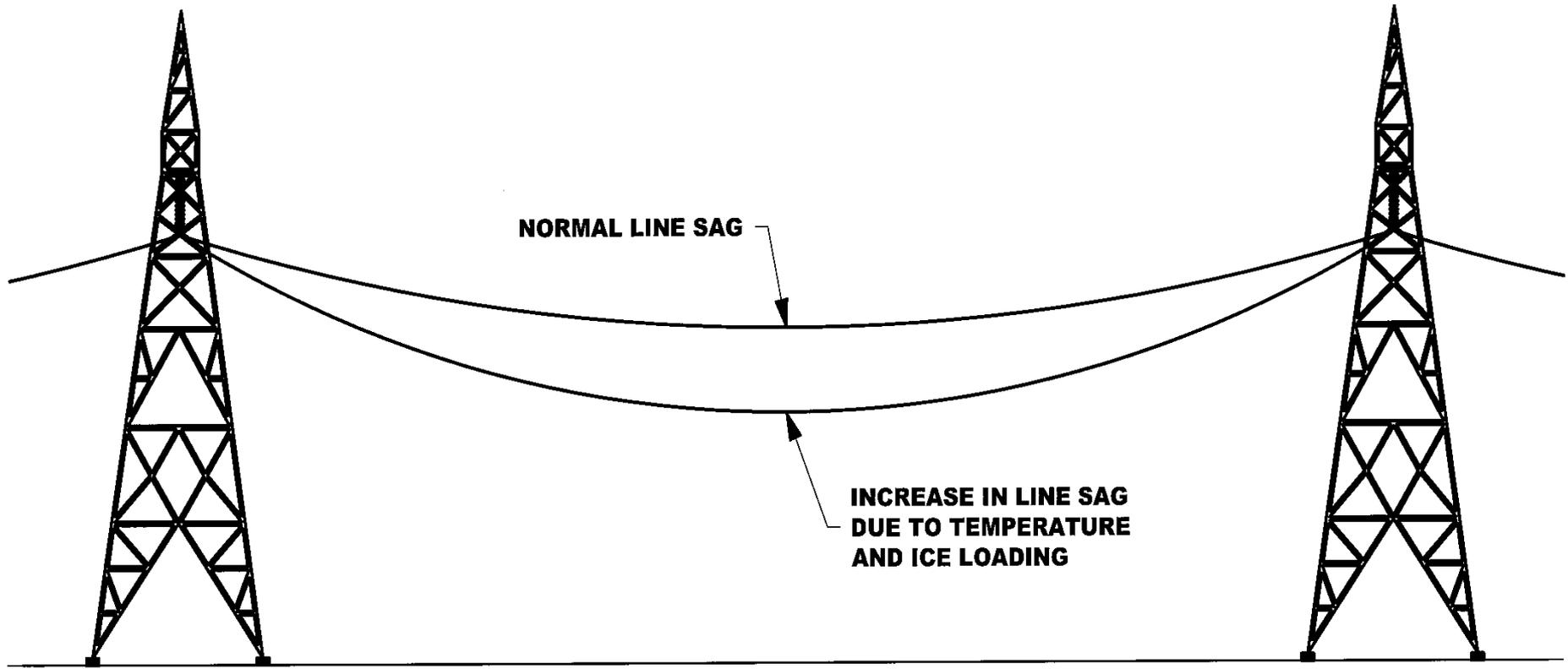
- ▶ Protect public and worker safety
- ▶ Reduce the risk of wildfires caused by transmission lines
- ▶ Ensure power system reliability
- ▶ Comply with current industry standards and mandatory reliability standards
- ▶ Achieve technical and economic efficiencies
- ▶ Reduce the risk to transmission system from wildfire
- ▶ Maintain flexibility to accommodate changing requirements in transmission system operation and maintenance

Goal: Manage rights-of-way to ensure safe, reliable transmission and incorporate environmental values



# Transmission line contact with trees is common cause of power outages

- ▶ Northwest Blackouts of August 1996 caused by a power line that sagged into filbert trees near Hillsboro, Oregon
- ▶ Main cause of the Northeast Blackout of August 2003, blamed on a power company's failure to trim trees. Loss of power to millions of customers in eastern Canada, Michigan to New York.
- ▶ Outages result in loss of service to residences, businesses, hospitals and are costly.



Transmission line conductors (wires) can sag in response to increased temperature. This can cause problems if vegetation below the transmission line is too tall.

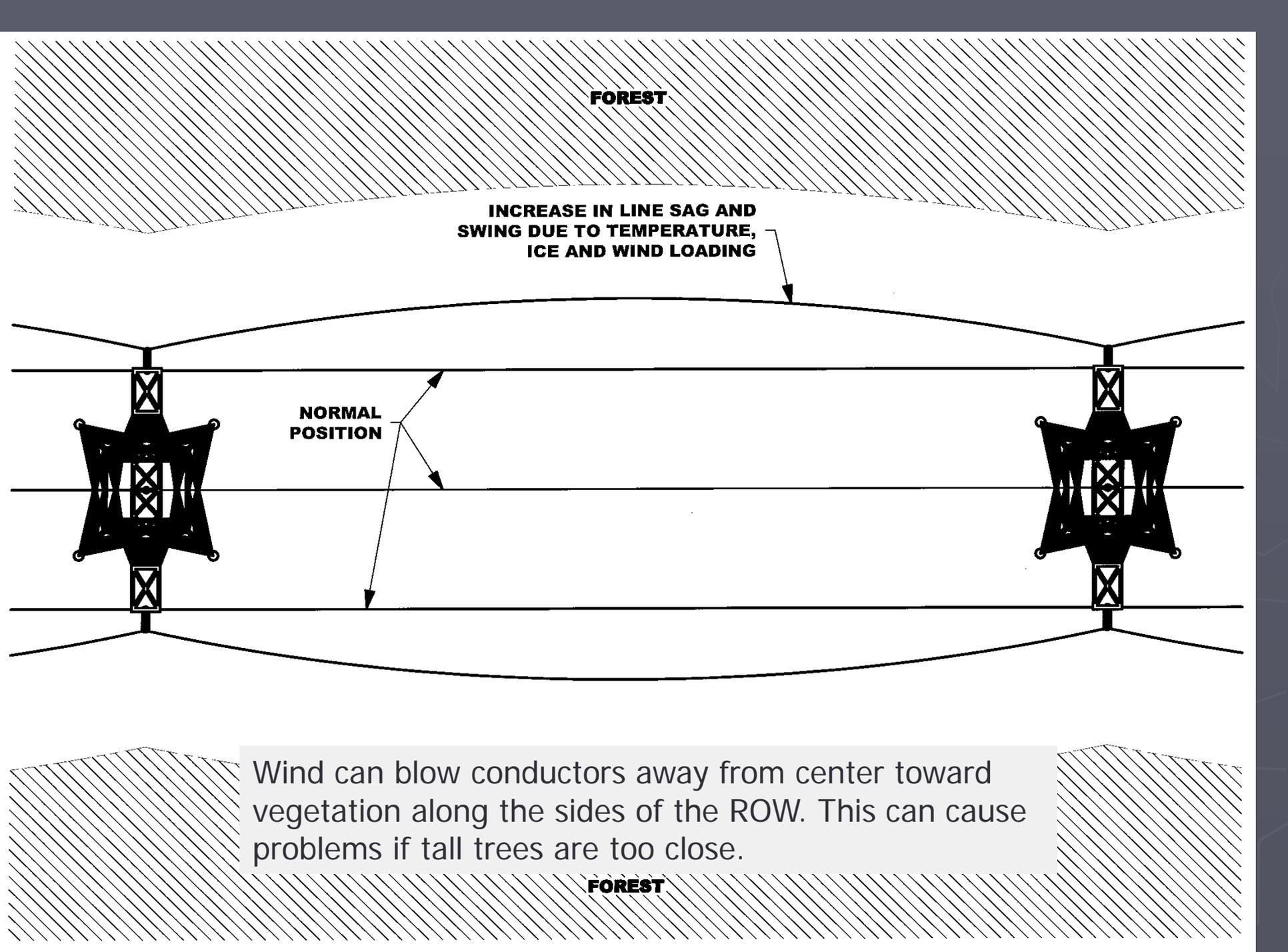
**FOREST**

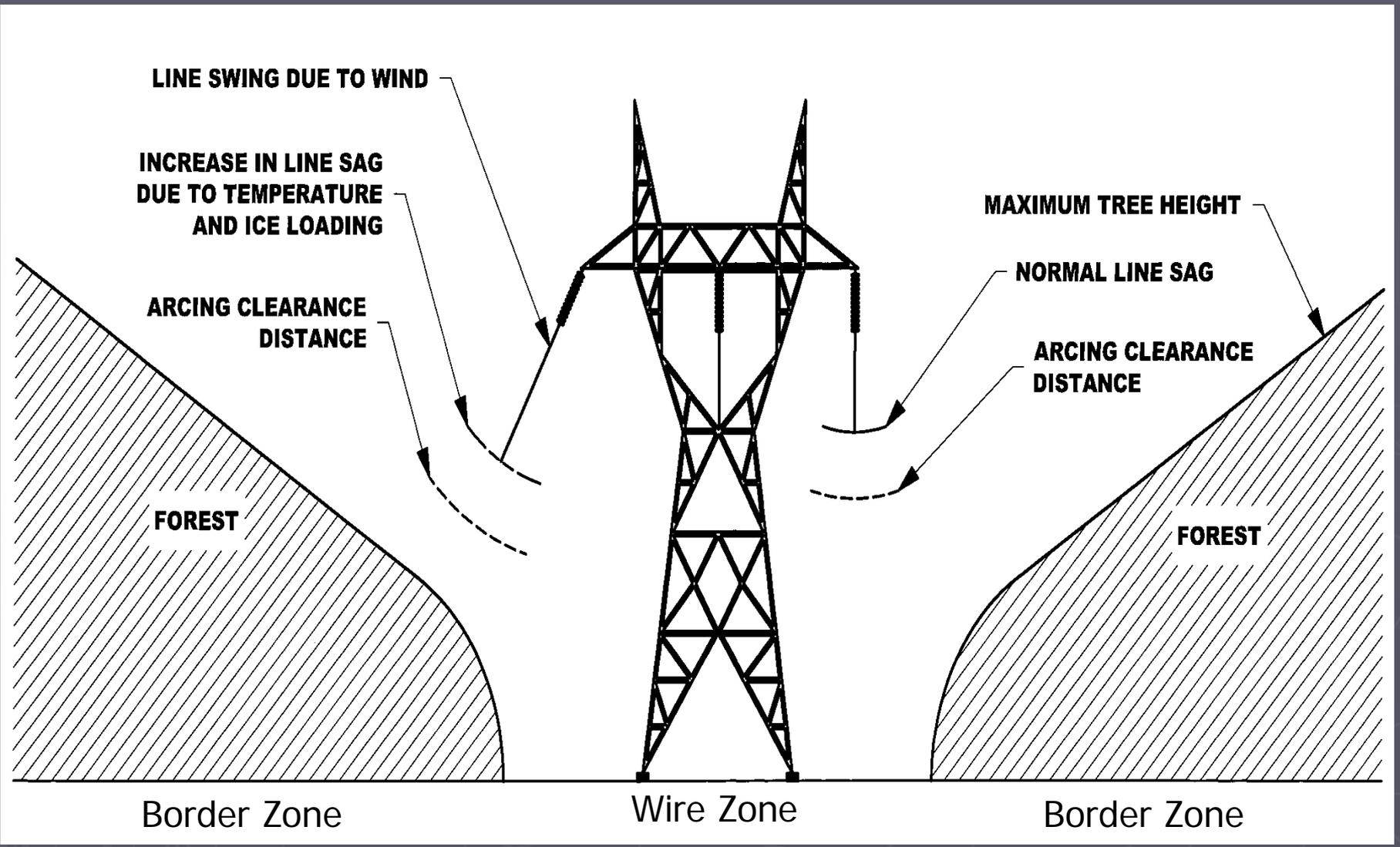
**INCREASE IN LINE SAG AND SWING DUE TO TEMPERATURE, ICE AND WIND LOADING**

**NORMAL POSITION**

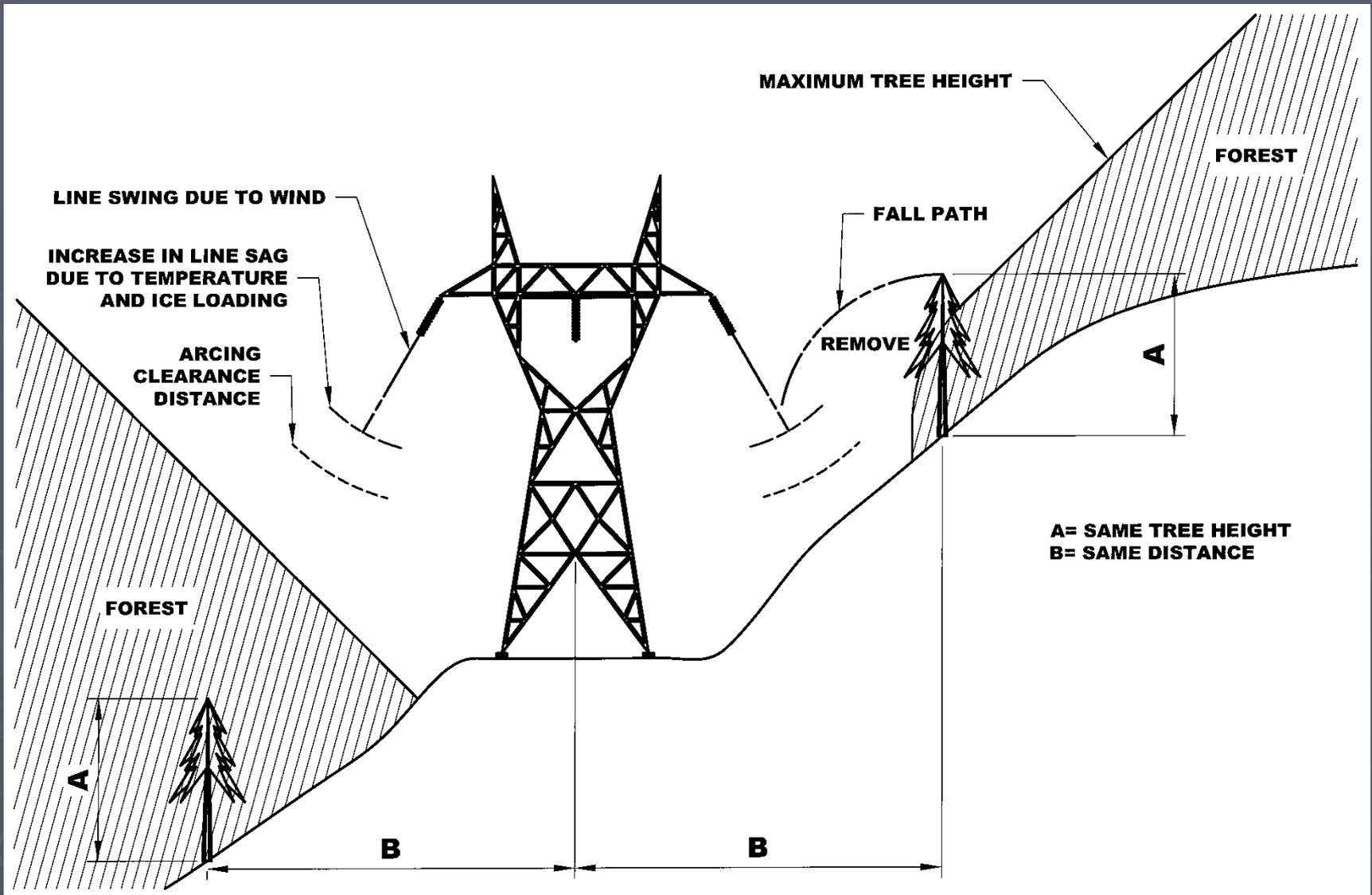
Wind can blow conductors away from center toward vegetation along the sides of the ROW. This can cause problems if tall trees are too close.

**FOREST**





Vegetation management requires consideration of both transmission line sag and swing.



Vegetation management on steep slopes requires additional consideration of trees upslope of the line.

Scorched tree tops are a common sight under many lines, indicating the tree top is too close to the conductor.



Vegetation regeneration and debris buildup in the ROW increases fuel load and the threat of wild fires.



The ROW vegetation was not managed adequately when this line was constructed. Now the dense vegetation must be addressed.



Natural re-vegetation of many transmission line maintenance roads disrupts access and may slow response during emergencies.





Maintenance road vegetation needs to be managed to prevent the build-up of fuels that could result in wild fire and to ensure access to the line.



Vegetation encroachment near towers prevents access for repair and maintenance. Trees may fall and damage structures or result in fuel sources too close to the structures.

# Legislation and Administrative Actions that focused attention on the utility grids

- ▶ Executive Order E.O. 13212
  - Signed in May of 2001
  - Declared the Electric Utility Grid to be a matter of national security
  - Improve and expedite cooperation among federal agencies to insure the supply and availability of energy for the country
- ▶ Energy Policy Act of 2005 (P.L. 109-58)
  - Required federal agencies to expedite approvals to comply with applicable reliability standards
  - Directed FERC and NERC to develop and enforce reliability standards
  - Specifically addressed vegetation management in electric utility ROWs
  - Enforcement began February 2007

# Considerations

- ▶ Compliance with NEPA, endangered species, cultural resource protection, water and other protections
- ▶ Powerlines and Forested Areas
  - Transmission line routes are permanently altered areas; tall trees are not compatible with power lines.
  - Electric utility rights-of-way need to be maintained to reduce wildfire risk, incorporate multiple use objectives, reduce fuels and ensure safety and reliability.

# Proposal

- ▶ Transition from a **Reactive** to a **Proactive** approach to maintaining electrical transmission line ROWs. Get out in front of the problem to effectively manage it.
- ▶ Use integrated vegetation management practices.
- ▶ Develop a phased, staged approach to implement changes.
  - Short-term - Clear ROWs of tall tree species
  - Mid-term - Manage vegetation threats to structures and conductors
  - Long-term - Maintain transmission lines and ROWs to ensure safety and reliability

Short-term — remove tall vegetation species from the ROW.



Mid-term — manage vegetation to reduce potential threats to structures and conductors.



Long-term — maintain transmission lines and ROWs to ensure safety and reliability.

