AEP TRANSMISSION TECHNOLOGY STRATEGY

By

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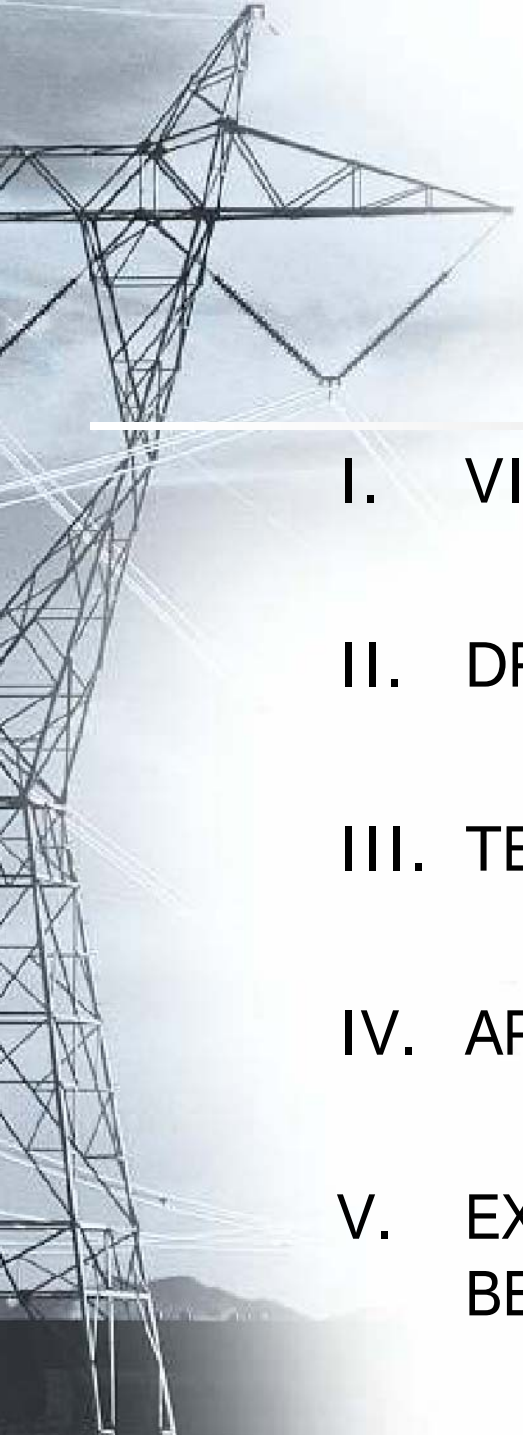


AEP TRANSMISSION TECHNOLOGY STRATEGY

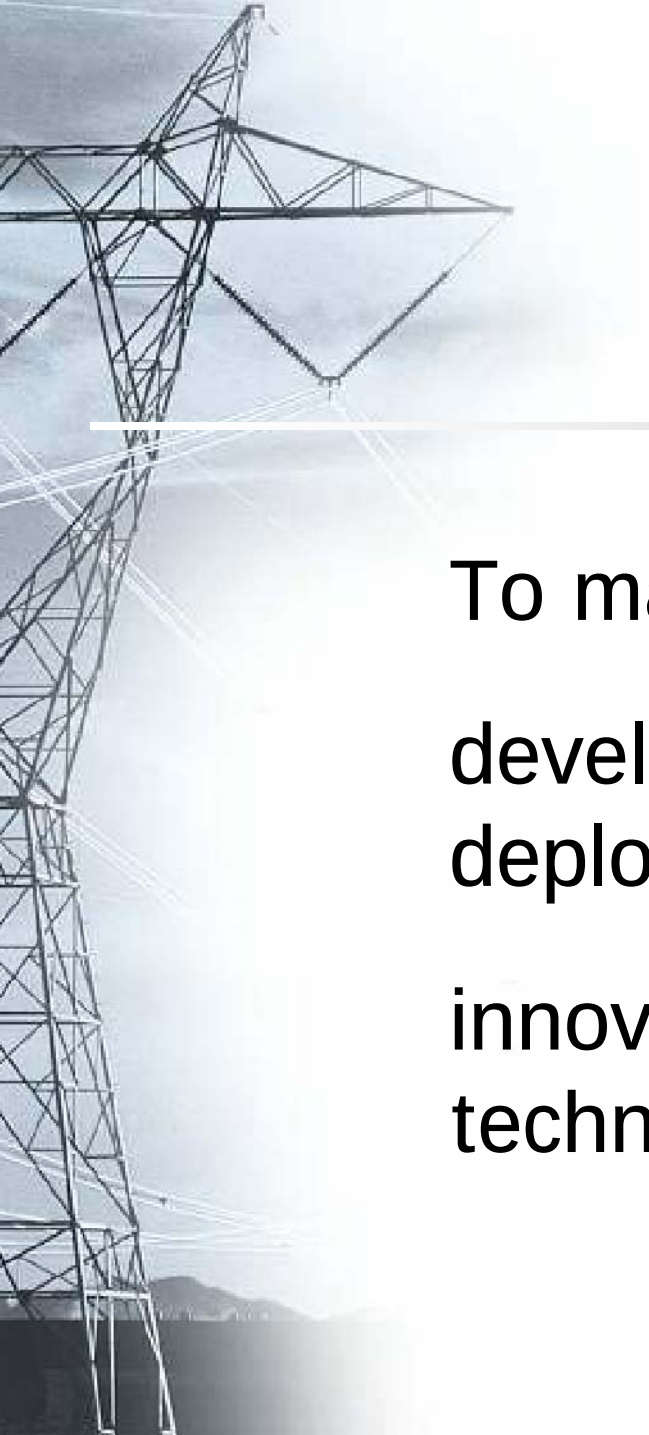
I. VISION

II. DRIVERS

III. TECHNOLOGY GOALS

IV. APPROACH

V. EXAMPLES TO TRANSMISSION TECHNOLOGIES BEING PURSUED BY AEP



I. VISION

To maintain AEP leadership in the

development, demonstration and deployment of

innovative transmission technologies

II. DRIVERS

External Drivers:

- Increasing role of transmission for interstate commerce
- Mandatory reliability standards

II. DRIVERS (continued)

Internal Drivers:

- Maintain the viability of existing (aging) infrastructure.
- Optimize the throughput of existing assets.
- Ensure adequate reliability levels of the interconnected network.
- Leverage AEP expertise and efforts.
- Employ limited R&D funding effectively.

III. TECHNOLOGY GOALS

DRIVER: Maintain the viability of existing (aging) infrastructure.

Technology Goals:

1. Better Diagnosis of Equipment Health
2. Life Extension

III. TECHNOLOGY GOALS

DRIVER: Optimize the throughput of existing assets.

Technology Goals:

3. Better use of Right of Way (ROW)

4. Power Flow Control Tools & Techniques

III. TECHNOLOGY GOALS

DRIVER: Ensure adequate reliability levels of the interconnected network.

Technology Goals:

5. Plan, reinforce and operate the AEP System to ensure adequate reliability levels in a cost effective manner.

III. TECHNOLOGY GOALS

DRIVER: Leverage AEP expertise and efforts
DRIVER: Employ limited R&D funding effectively

Technology Goals:

6. Propagate the 765 kV line technology.

7. In pursuing innovative technologies, proactively seek industry alliances.

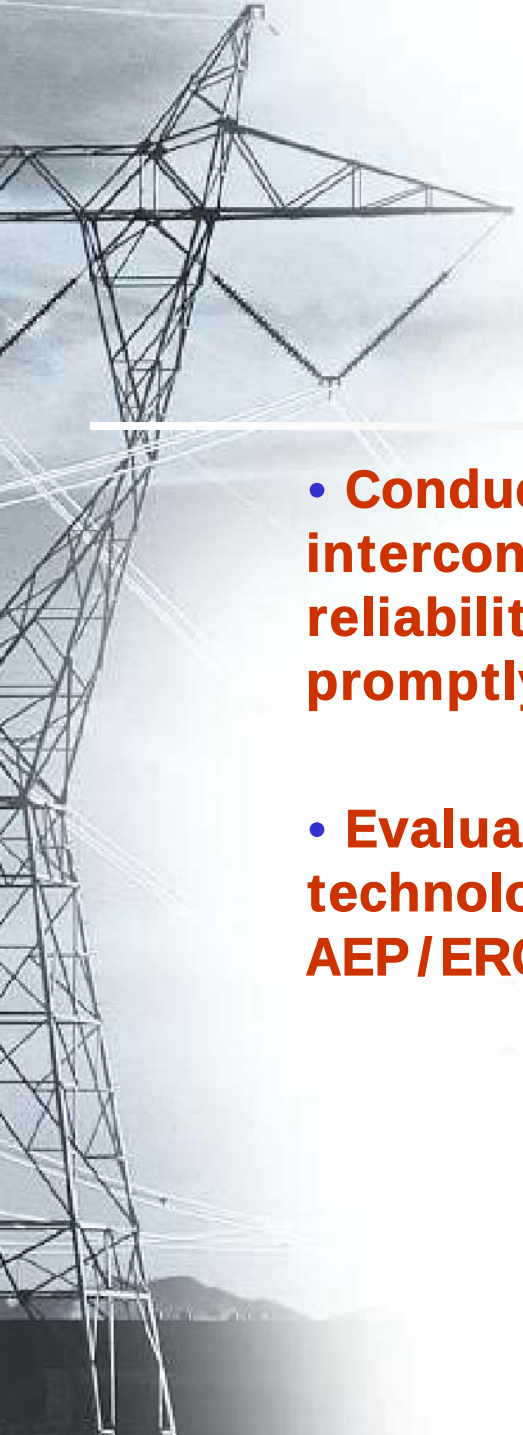
IV. APPROACH

- **Identify practical technologies in the following areas:**
  - Better use of right of way
  - Better diagnosis of equipment health
  - Life extension
  - Flexible electronics-based power flow control devices
  - Wide area measurement/monitoring/visualization
  - Advanced special protection schemes for automatic "safety nets"

IV. APPROACH

- **Proactively seek industry alliances for the development and demonstration of identified technologies.**

- **Deploy the identified technologies as an integrated part of Capital reinforcement plans.**
  - **An example is the deployment of relay-based phasor measurement technology through the station automation Capital projects.)**



IV. APPROACH

- **Conduct rigorous planning and operational analysis of interconnected power systems to identify potential reliability concerns and address these concerns promptly.**

- **Evaluate and promote the use of the 765 kV technology in reinforcing the AEP/PJM, AEP/SPP and AEP/ERCOT systems.**

V. EXAMPLES OF TRANSMISSION TECHNOLOGIES BEING PURSUED BY AEP

- Visualization
- Phasor Measurement (PMU)
- High Temp Low Sag Conductor
- EMI Diagnostics Technique

V. EXAMPLES OF TRANSMISSION TECHNOLOGIES BEING PURSUED BY AEP (continued)

- Facts Technology (To Facilitate Interconnected System Control)
- Internal Diagnostics Devices Within Large Equipment (For Example, Transformers)
- High Temperature Superconducting Technology