

Modernizing Transmission and Non-Wires Alternatives

NARUC National Council on Electricity Policy (NCEP)
Annual Meeting and Workshop

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Agenda

- BPA Overview
- Introduction
- Case Study
- Non Wires Framework
- Lessons Learned

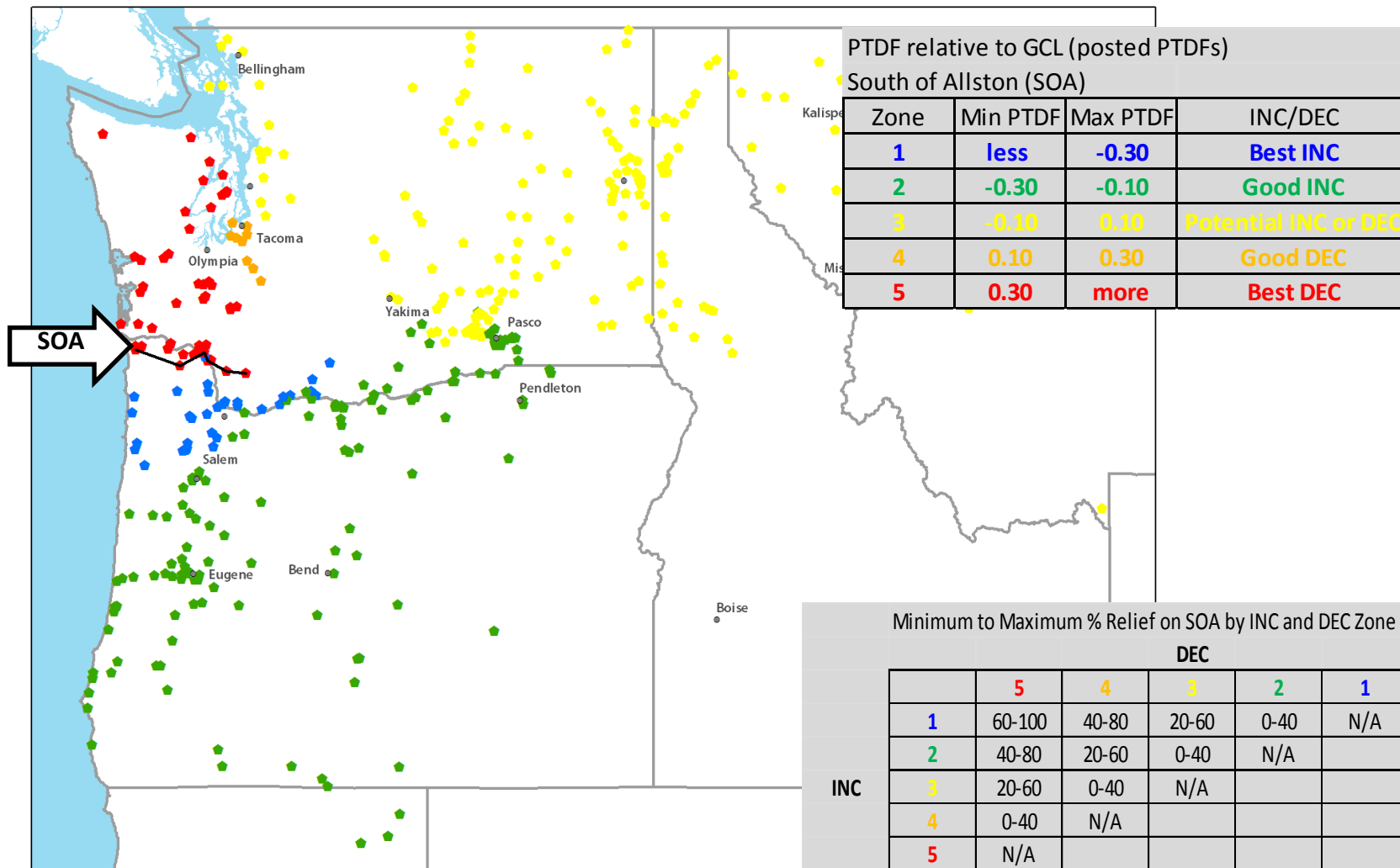


Case Study: I-5 Corridor Project

- Background – How did we get here?
- Analysis
 - Regional Review
 - Independent Review Panel
 - Internal Steps
- Decision
 - No Build
 - Flexible & Scalable Approach
- Non-wires pilots
 - Overview
 - Status



Case Study: Congestion Map



This map was created by BPA for prospective bidders to respond to BPA's RFO seeking non-wires

Case Study: Solution Set

- Operations
 - Forecasting tool
 - Methodology changes
 - Hourly firm
 - Re-dispatch
 - Curtailment
- Planning
 - Conditional firm product
 - Available transmission capacity
 - Non-wires, wires

Modernizing Transmission: Dynamic Grid

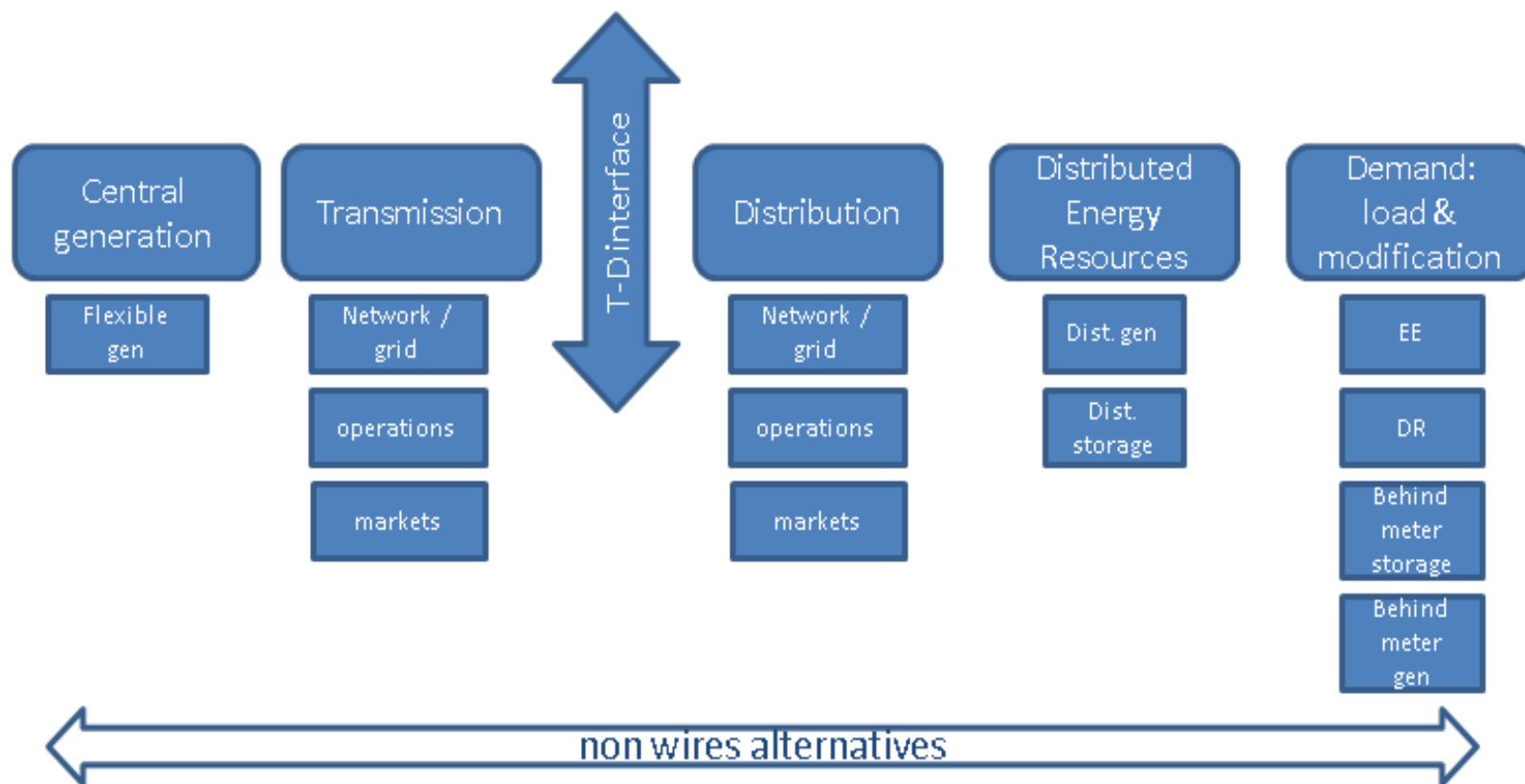
- Power system makeup and operation
 - Resource changes
 - DER
- Planning standards
- Reliability and Resiliency metrics
- Load Growth
 - Slowing in some areas
 - Accelerating in other areas
- Technology advancement



Non-wires alternatives definitions

- “An electricity grid investment or project that uses non-traditional T&D solutions, such as distributed generation, energy storage, energy efficiency demand response, and grid software and controls, to defer or replace the need for specific equipment upgrades, such as T&D lines or transformers, by reducing load at a substation or circuit level.” (Feldman)
- “While we require the comparable consideration of transmission and non-transmission alternatives in the regional transmission planning process, we will not establish minimum requirements governing which non-transmission alternatives should be considered or the appropriate metrics to measure non-transmission alternatives against transmission alternatives. Those considerations are best managed among the stakeholders and the public utility transmission providers participating in the regional transmission planning process. However, we note that in Order Nos. 890 and 890-A, as well as in orders addressing related compliance filings, we have provided guidance regarding the requirements of the Order No. 890 comparability transmission planning. Specifically, public utility transmission providers are required to identify how they will evaluate and select from competing solutions and resources such that all types of resources are considered on a comparable basis.” (FERC)

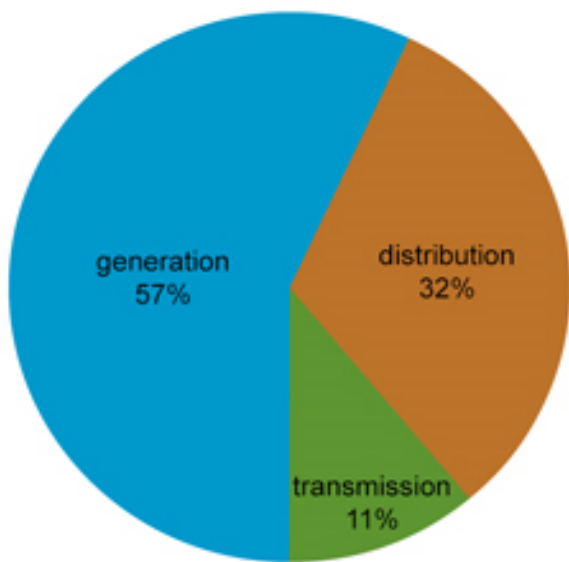
Non-wires alternatives definitions



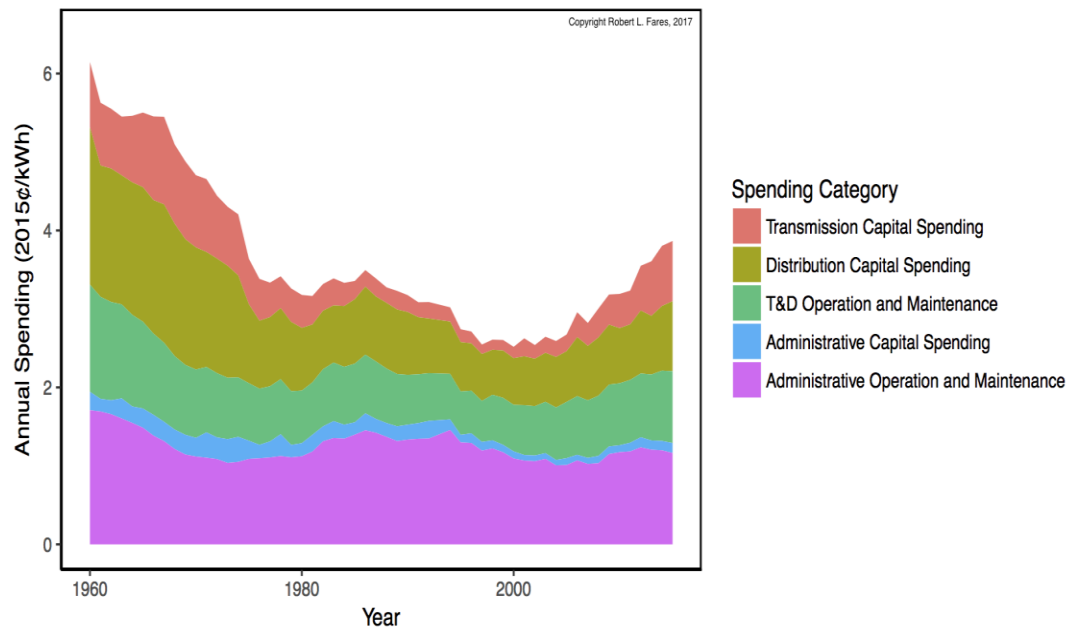
Price Components

The cost of generating electricity is the largest component of the price of electricity.

Major components of the U.S. average price of electricity, 2016



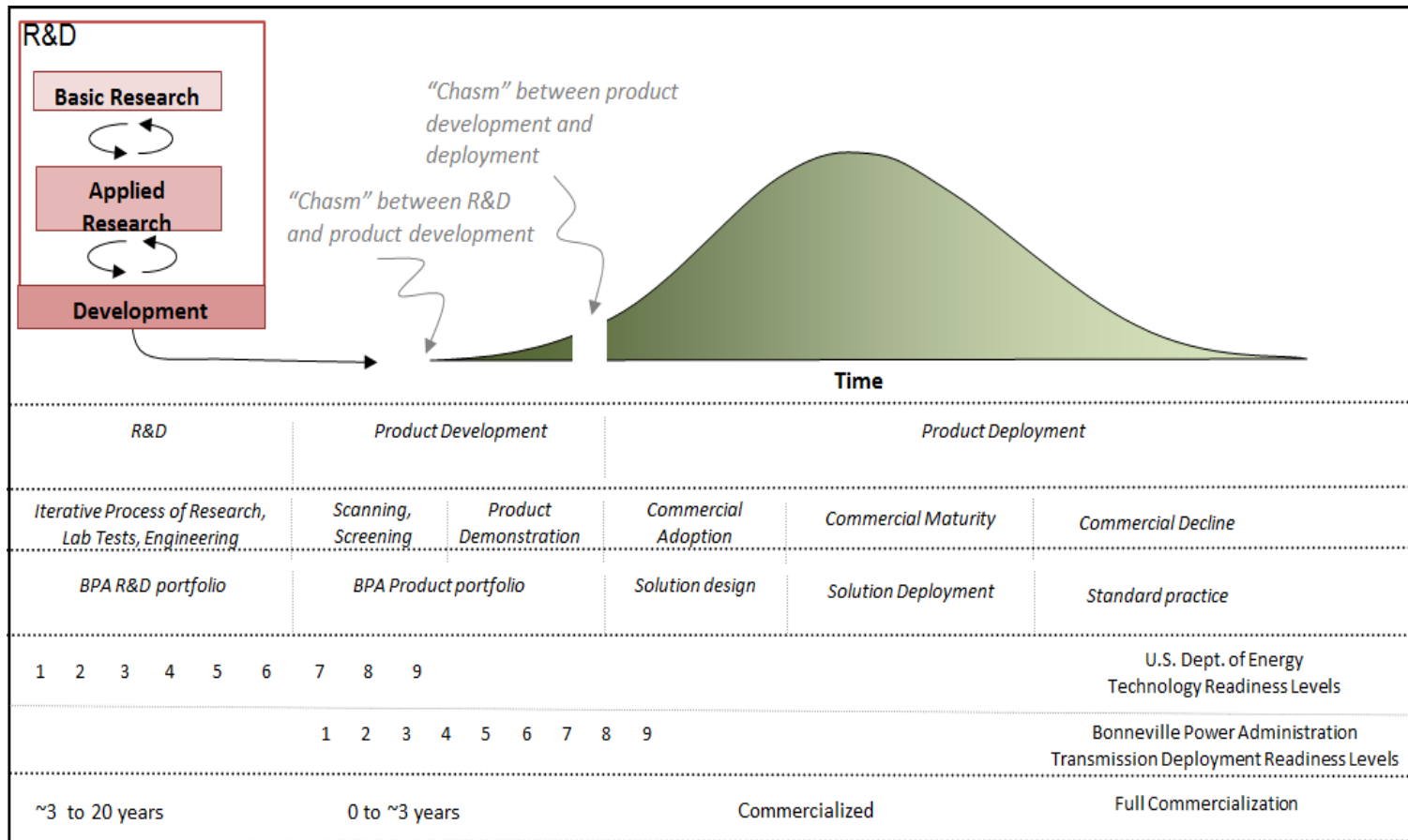
Source: U.S. Energy Information Administration, *Annual Energy Outlook 2017*, January 2017, Reference case, Table 8: Electrical supply, disposition, prices, and emissions



Non-wires process

- Planning
 - Define need
 - Load forecasts
 - Coincident demand
 - Shape, duration, frequency
 - Cause: load, stability, equipment
 - Solution Set
 - Scan, Screen, Assess
 - Technology neutral
 - Multi dimensional
 - Probabilistic
 - T-D interface
 - Systems thinking
- Procurement
- New Metrics

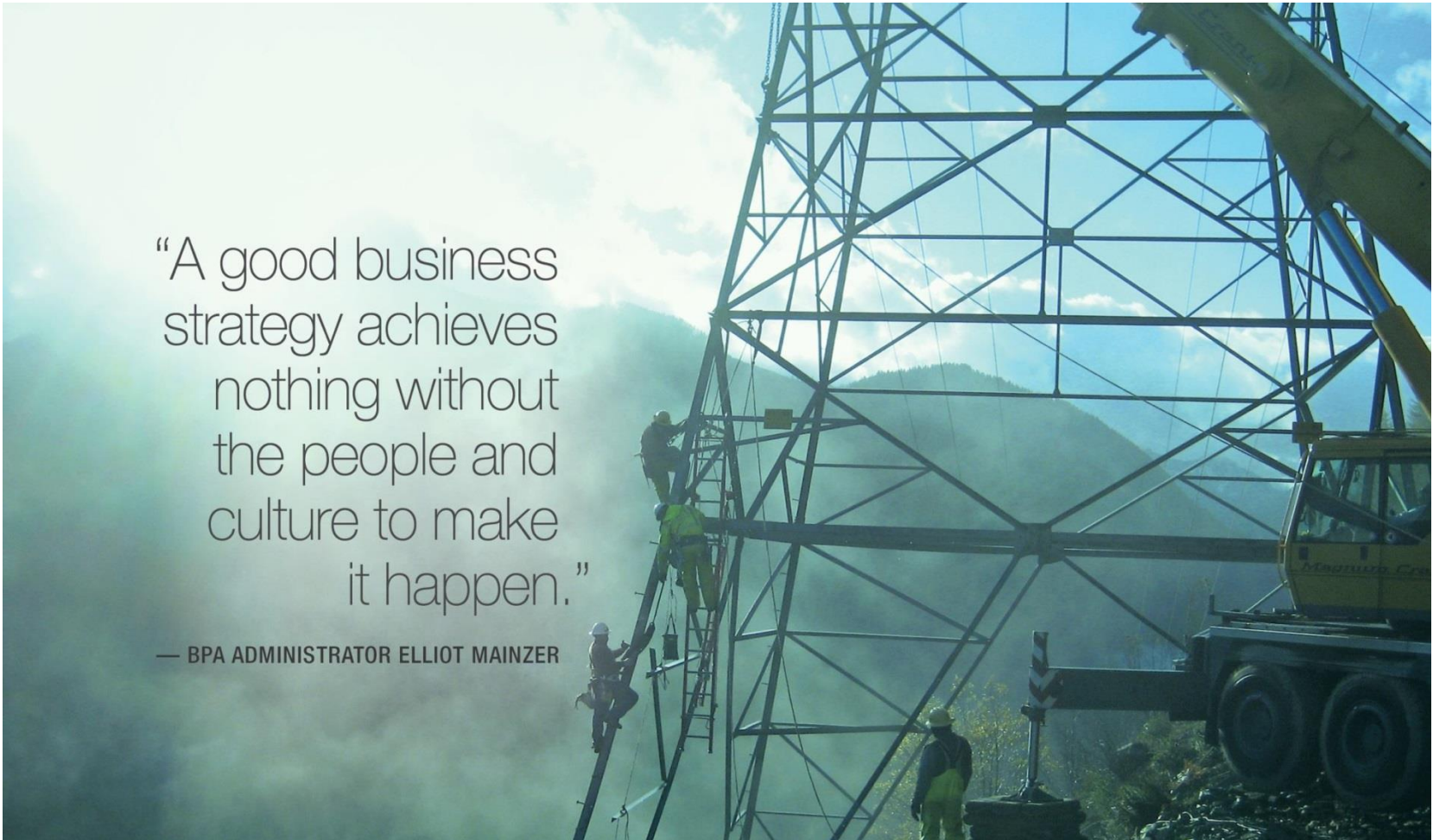
Transmission Deployment Readiness Criteria



Culture

“A good business strategy achieves nothing without the people and culture to make it happen.”

— BPA ADMINISTRATOR ELLIOT MAINZER



Thank You

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