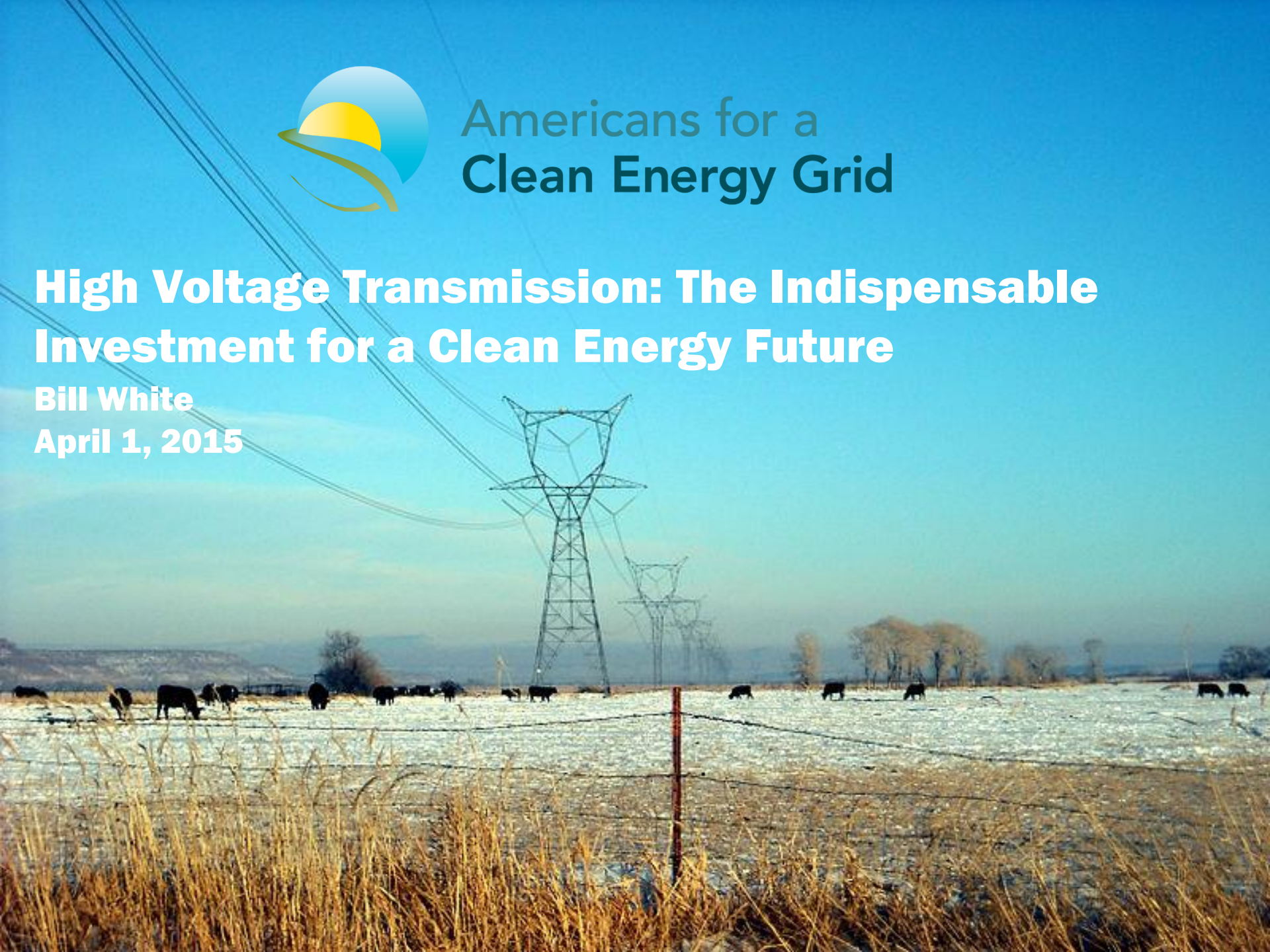


High Voltage Transmission: The Indispensable Investment for a Clean Energy Future

Bill White

April 1, 2015

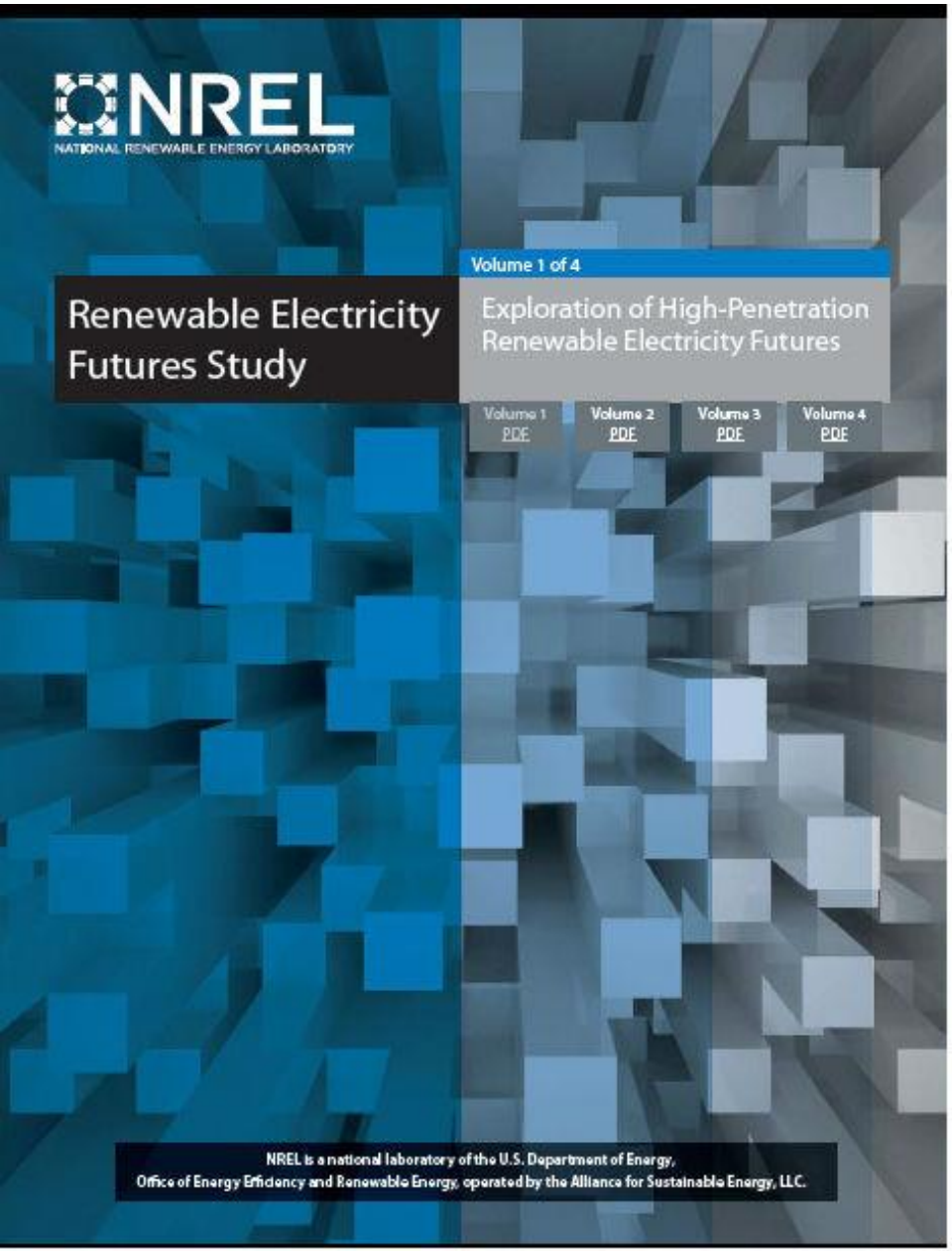
WHO WE ARE

Americans for a Clean Energy Grid support policies that will modernize the nation's electric power network and unlock clean energy and economic opportunities across the country. Smart state and federal policies that improve the way the grid is developed, planned, and paid for will help it become a more robust, network that supports expansion of renewable energy, competitive power markets, energy efficiency, and lower costs for consumers.

We are an initiative of the **Energy Future Coalition (EFC)** a broad-based, non-partisan alliance that seeks to bridge the differences among business, labor, and environmental groups and identify energy policy options with broad political support.

CLIMATE CHANGE GOALS ARE DRIVING THE CLEAN ENERGY TRANSITION

- Avoiding catastrophic impacts means cutting carbon emissions 80 percent or more by 2050
- Decarbonize electricity and electrify end uses, e.g. transportation
- Wind and solar could power the entire economy many times over reliably, at reasonable cost, and using existing technology.



EXPERTS: TRANSMISSION ESSENTIAL TO HIGH LEVELS OF RENEWABLE ELECTRICITY

National Renewable Energy Lab

"As renewable electricity generation increases, additional transmission infrastructure is required to deliver generation from cost-effective remote renewable resources to load centers, enable reserve sharing over greater distances, and smooth output profiles of variable resources by enabling greater geospatial diversity."

WHY IS TRANSMISSION SO CRITICAL FOR RENEWABLES?

- **Transmission enables development of the best wind and solar resources:** Concentrated in remote areas, far from population centers.
- **Economies of scale:** Larger scale wind and solar are much cheaper, have far greater potential and higher capacity factors, and account for the vast majority of installed renewable generating capacity in the US and globally.
- **Smooth out natural variability:** Connecting diverse resources over large regions slashes variability, reducing the need for more expensive resources like storage and fast-start generation.
- **Robust transmission networks support competitive markets:** Which give consumers more clean energy choices, reduce prices, and allow renewables to displace older, less efficient resources more rapidly.

“THE MISMATCH”

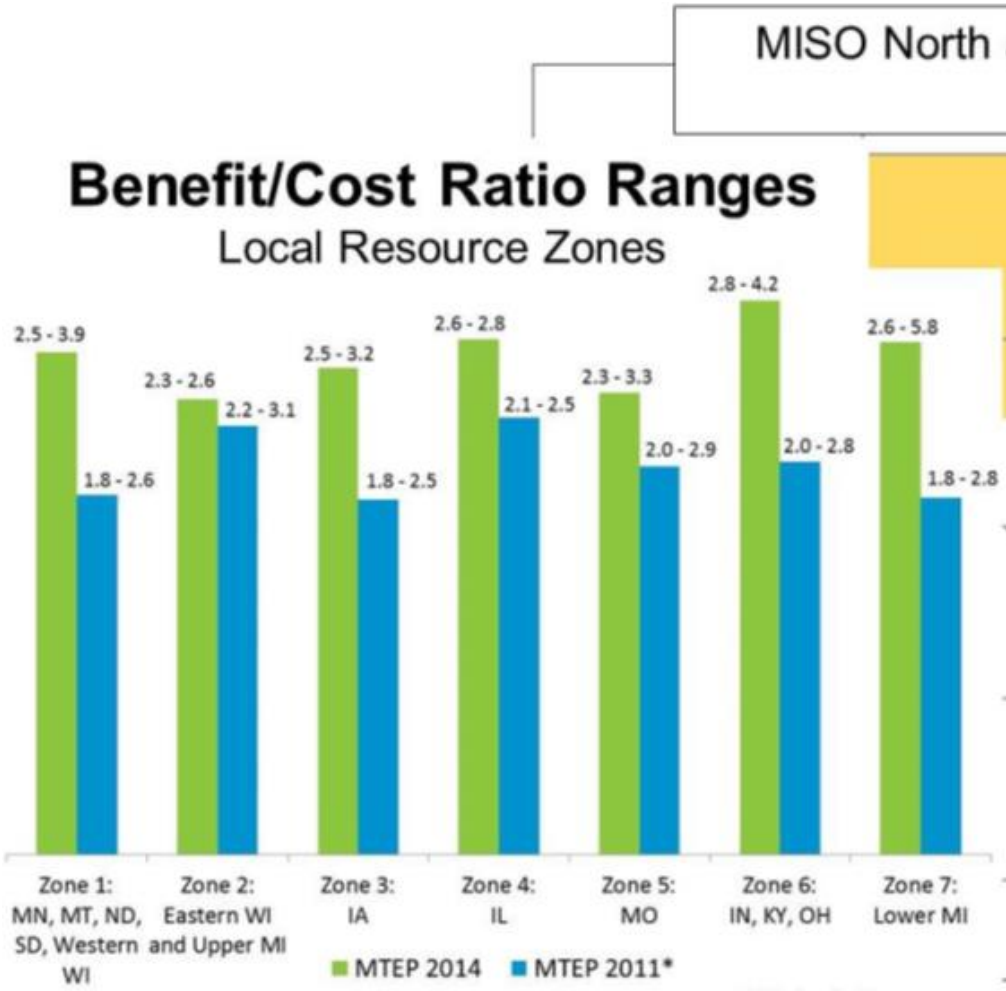
Renewable facilities can be built in 1-2 years.

High voltage transmission lines typically take 10 years or more.

"TRANSMISSION FIRST" PLANNING IS EMERGING AS THE FASTEST AND LEAST COST WAY TO ENABLE RENEWABLES

- **Texas Competitive Renewable Energy Zones (CREZ)**
  - 3600 circuit miles of new and upgraded transmission lines.
  - By 2016: 21,000 MW of wind & 6,000 MW of solar.
  - Transmission cost: $6.8 billion
  - Consumer benefit: $2 billion/year in fuel costs (payback < 4 years)
  - Reduce electric sector carbon emissions by 16 percent.
- **MISO Multi Value Projects (MVP)**
  - Seventeen 345kV lines across nine states, in service 2014-2019
  - $5.86 billion cost shared across eleven states.
  - Net benefits of $13.1 to $49.6 billion over 20 to 40 years; Benefit-to-cost ratio of 2.6 to 3.9
  - Enable 43 million MWh of wind energy through year 2028
  - Reduce electric sector carbon emissions 9-15 million tons per year through 2028, more than 15 million per year after.

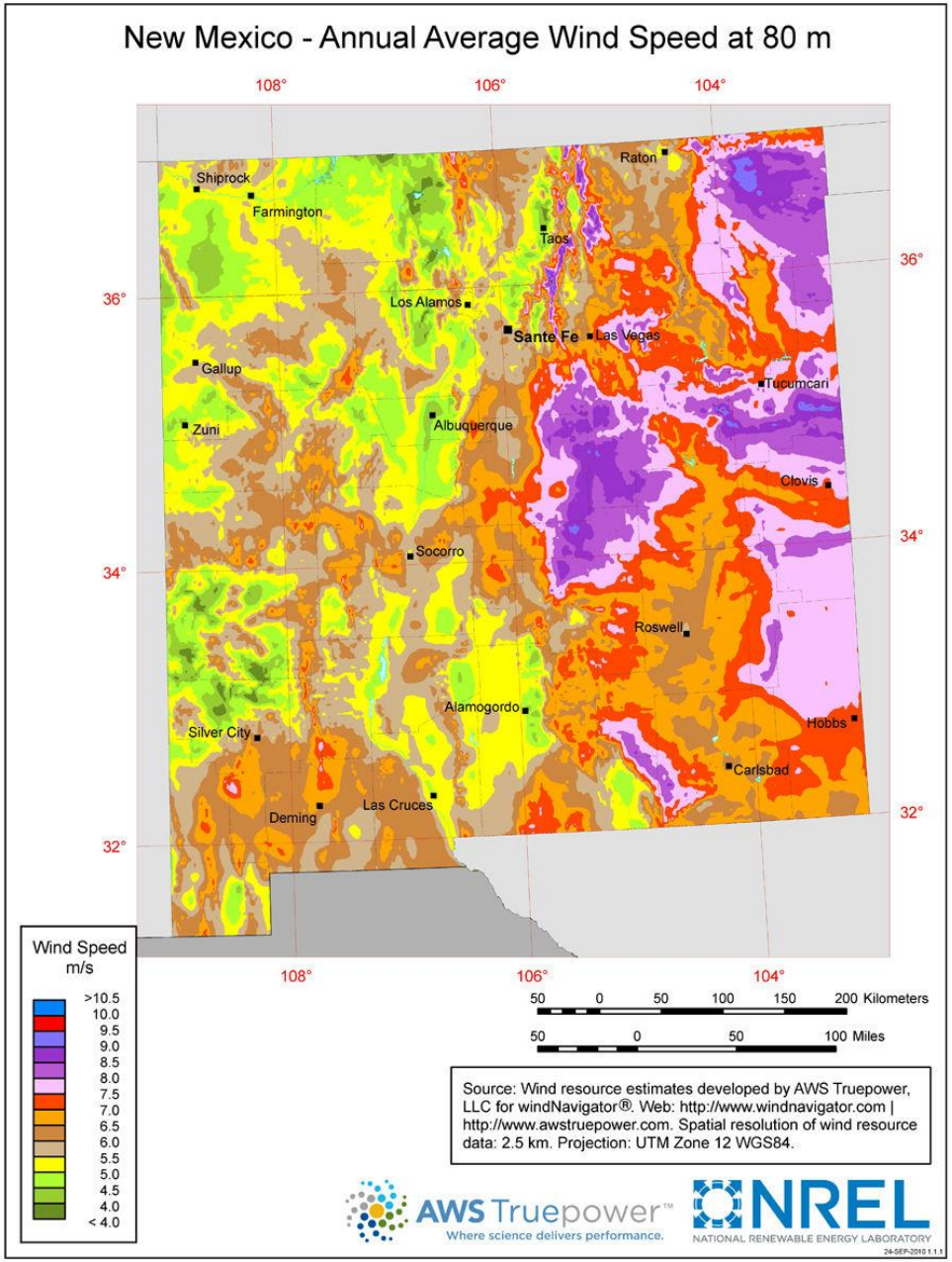
MVP LINES BENEFIT CONSUMERS IN EVERY REGION



** Value is the average of the Low and Historical Demand and Energy Business as Usual Futures*

TRANSMISSION AND CONSUMER COSTS

- Transmission is the smallest part of a customer's electric bill.
- By connecting lower cost generation – the largest part of an electric bill – transmission pays for itself quickly and cuts bills.
- Transmission networks – like the internet – open markets and foster competition, keeping prices low and stable.

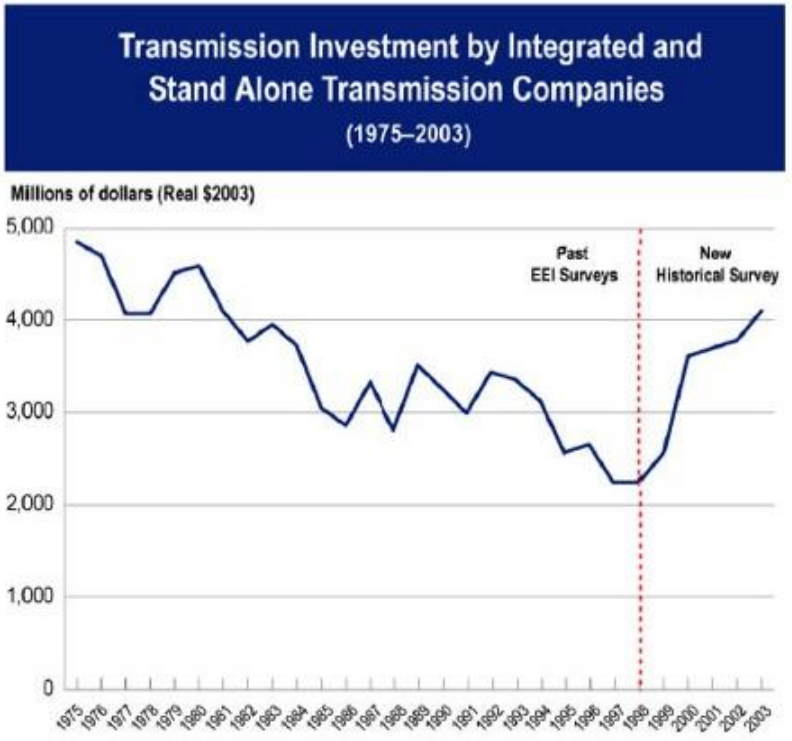


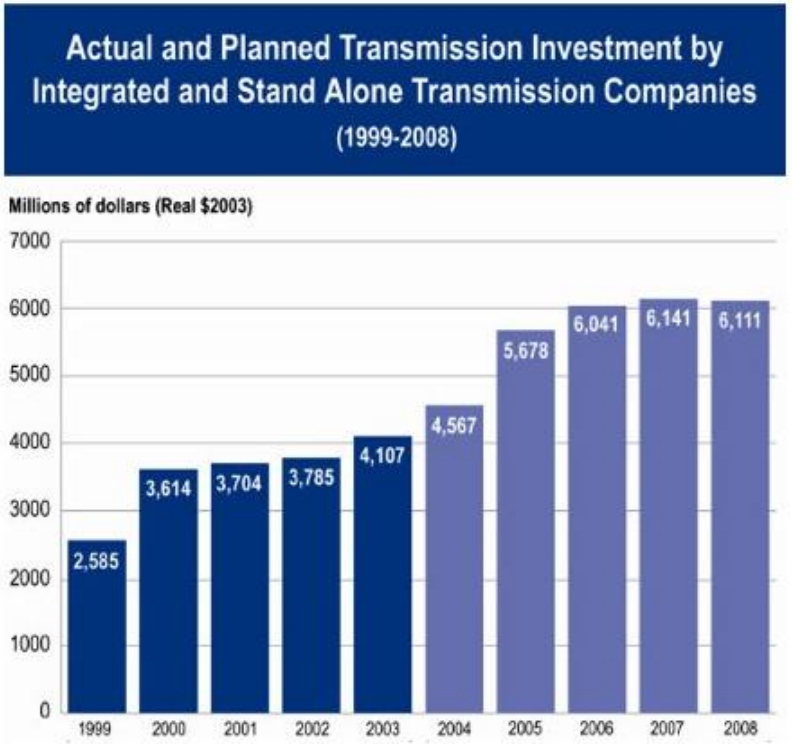
NEW MEXICO IS HOME TO ENORMOUS UNTAPPED RENEWABLE RESOURCES

- Ranks 11th in wind energy potential, enough to meet 73 times total state electricity demand.
- New Mexico ranks 2nd in potential for utility-scale solar generating capacity – enough to power the entire country many times over.
- Transmission would allow New Mexico to develop to replace retiring capacity and to export power to other states.

TO MEET LONG TERM CLIMATE GOALS, WE MUST CONTINUE INVESTING IN TRANSMISSION

- Still recovering from decades of underinvestment.
- New lines are needed to reach renewables and link regions.
- Avoiding or deferring transmission will slow urgently needed renewable energy deployment.





HOW IMPORTANT IS AFFORDABLE, RELIABLE, AND UNIVERSAL ZERO CARBON ELECTRICITY?

"Electricity is no longer a luxury. It is a definite necessity. It lights our homes, our places of work and our streets. It turns the wheels of most of our transportation and our factories. In our homes it serves not only for light, but it can become the willing servant of the family in countless ways. It can relieve the drudgery of the housewife and lift the great burden off the shoulders of the hardworking farmer."

President Franklin D. Roosevelt, September 21, 1932

"Widespread energy poverty condemns billions to darkness, to ill health, to missed opportunities. It is inequitable and unsustainable. Children cannot study in the dark. Girls and women cannot learn or be productive when they spend hours a day collecting firewood. Businesses and economies cannot grow without power. We must find a way to end energy poverty.

UN Secretary-General Ban Ki-moon, 2014


THANK YOU