

National Association of Regulatory Utility Commissioners Energy Regulatory Partnership Program

Discussion of Line Losses

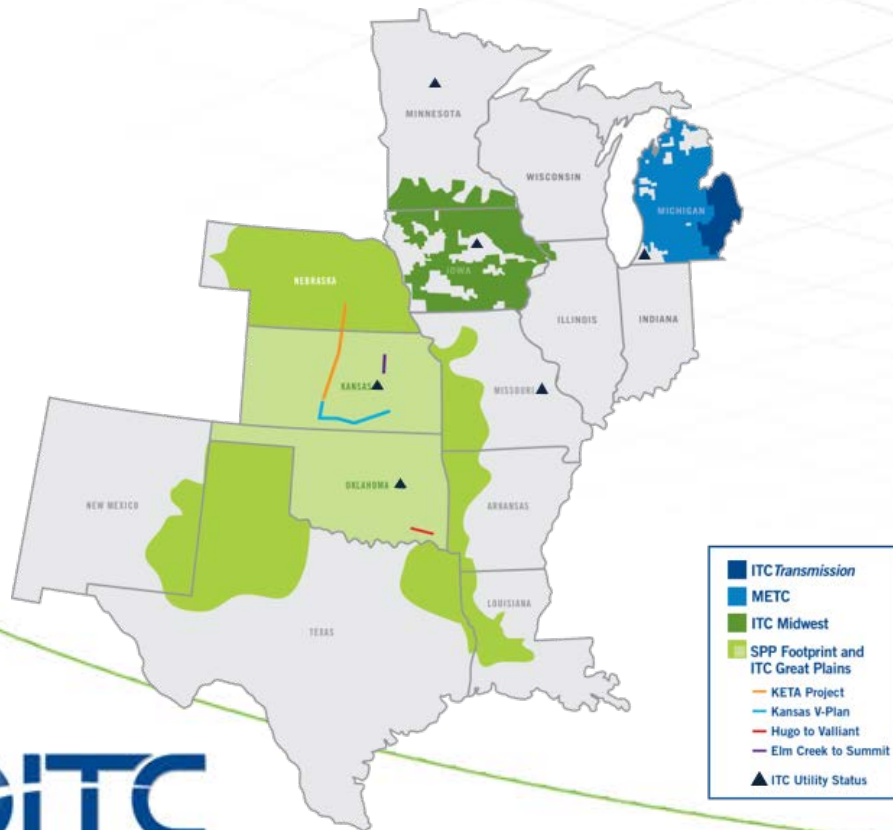
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ITC by the Numbers



1ST
FULLY INDEPENDENT
ELECTRIC TRANSMISSION COMPANY
IN THE NATION

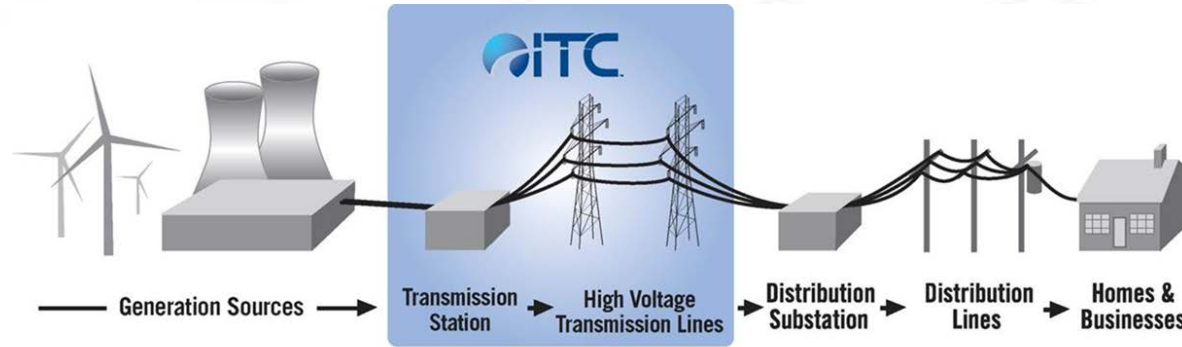
4 in 7
4 SUBSIDIARIES IN 7 STATES

15,000
CIRCUIT-MILES OF TRANSMISSION LINES

26,000
MEGAWATTS OF COMBINED PEAK LOAD



The Power Flow Process



ITC delivers bulk electrical energy from power generating plants along high-voltage lines to the local distribution system of the utility serving communities.

Generator Interconnections

Energy-Generation Neutral



Coal



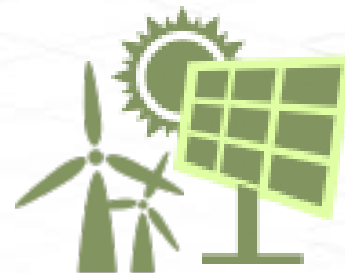
Hydro



Natural
Gas



Nuclear



Renewables

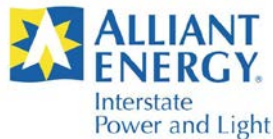
Our independent, sole focus on transmission promotes greater facilitation of generation interconnections and support for more favorable cost allocation policies for network upgrades

Customers

Comprehensive Outreach

- Electric reliability initiatives
- Power quality improvements
- System capacity issues
- Transmission infrastructure improvements

Wholesale



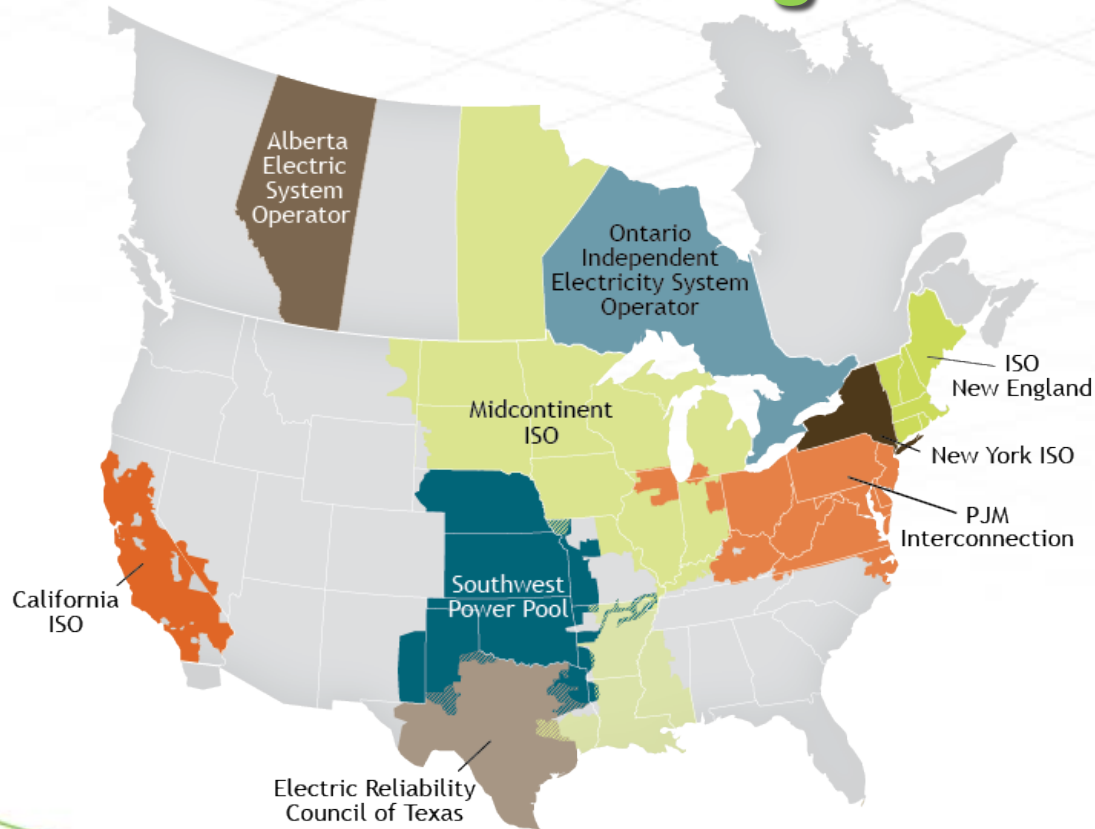
Industrial



Independent Power Producers

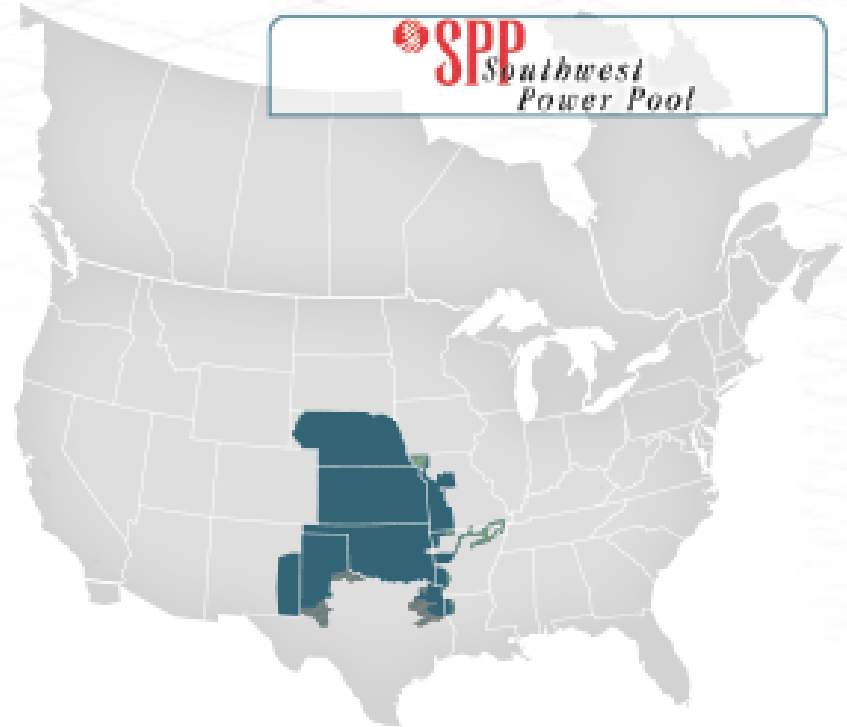


Regional Transmission Organizations



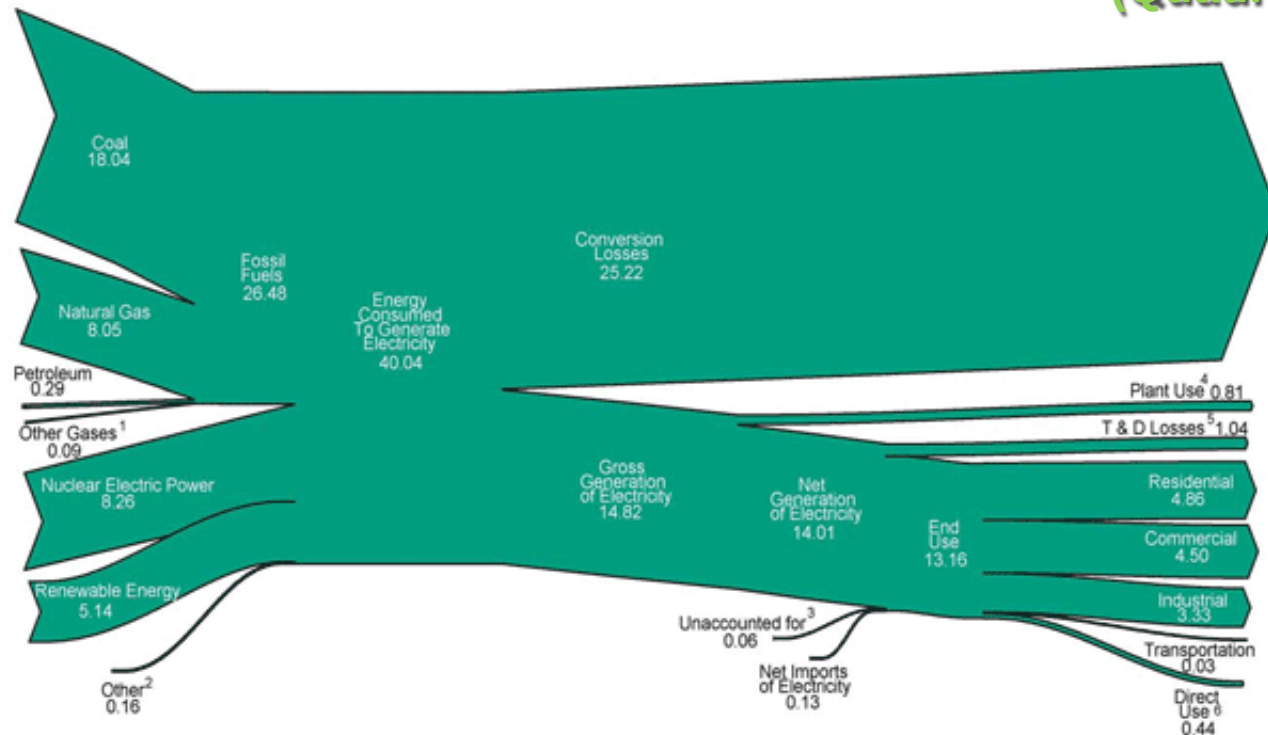
Regional Planning of Projects

ITC is a Member of Two Regional Transmission Organizations



Electric System Energy Losses, 2011

(Quadrillion Btu)



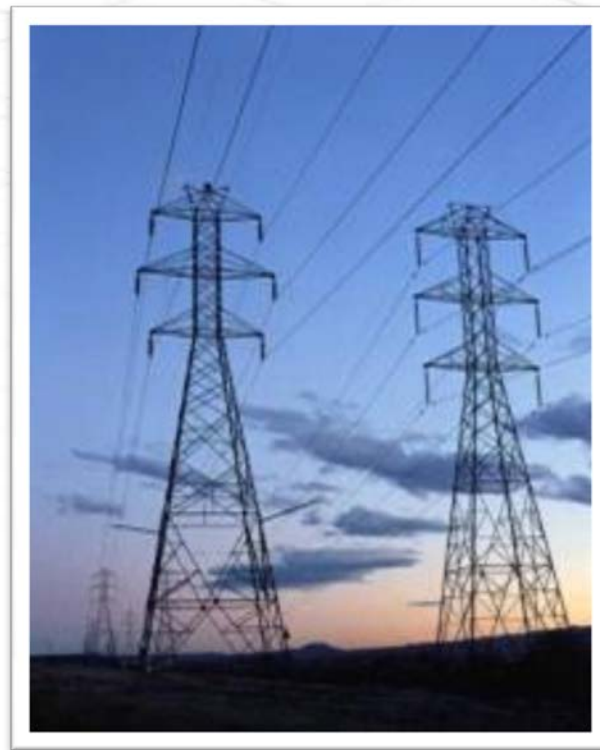
Line Losses

MISO Definition of Line Losses

- Loss of energy through transformers, transmission lines and other transmission facilities

Calculating Line Losses (for Billing)

- Transmission owners currently use Power System Analysis software to determine loss factors
- MISO evaluating uniform 'State Estimator' method



Line Losses Treatment in Other RTOs

SPP

Each Transmission Owner (TO) keeps a schedule showing its average zone loss factor. TO's submit their losses to SPP, which then summarizes and posts information for interested parties



ERCOT

ERCOT forecasts transmission loss factors based on metered information from the TO. Then ERCOT monitors losses and investigates any abnormal loss factors

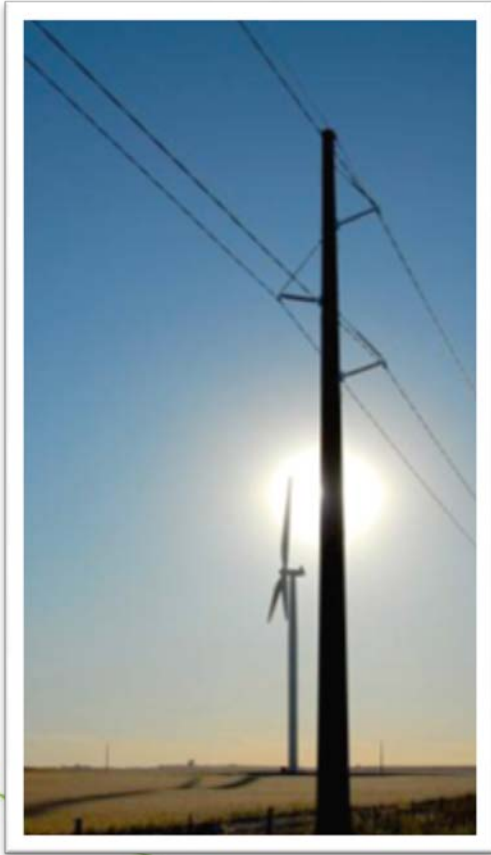


PJM

PJM assesses losses to energy market participants based on the loss component of the locational marginal price (LMP)



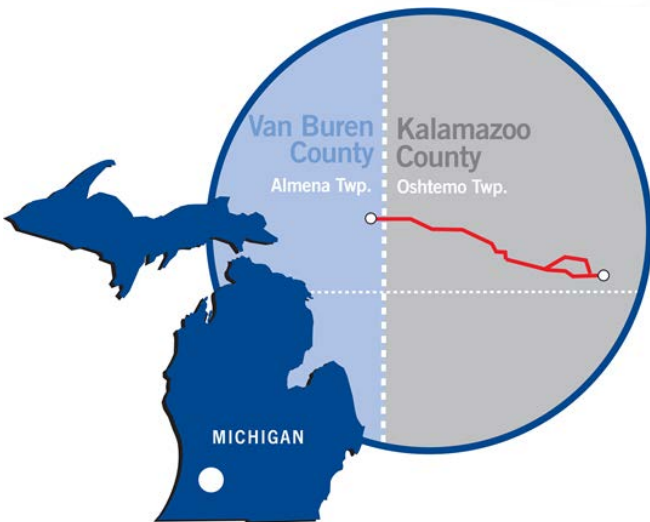
Reducing Line Losses



New transmission projects mainly address system reliability, generation interconnection or public policy needs

- Reduced line losses is typically a byproduct benefit
- New transmission lines reduce losses, thus reducing capacity and energy requirements
- The value of losses is usually not included in the transmission project cost-benefit analysis

Project Example: Reliability



Weeds Lake, Michigan

- Two new double-circuit 138 kV transmission lines, new 345/138 kV substation
- 6.3 miles
- Addresses reliability needs in Southwest Michigan

Byproduct benefit in line losses:

- Projected to reduce system losses during peak periods by 2.6 MW

Project Example: Public Policy



Thumb Loop Project, Michigan

- Result of Michigan's "Clean, Renewable and Efficient Energy Act," Public Act 295 of 2008
- 140 miles of double-circuit 345 kV lines replacing 120 kV
 - \$510 million investment in Michigan's grid
 - In-service date: 2015
- 345 kV alternative provides up to 58 MW of loss savings over lower voltage alternatives

Economic benefit:

- Construction phase impact to Michigan economy of \$366 million, including employment of local contractors, vendors and suppliers
- Estimated direct effect employment impact: 320 jobs

Summary



- New transmission projects mainly address reliability, generation interconnection and public policy considerations
- Line loss reduction typically is a byproduct benefit
- Our investments in the transmission grid:
 - o Improve reliability
 - o Expand market access
 - o Lower overall cost of delivered energy
 - o Facilitate interconnection of new generation

THANK YOU!

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...A Vision Forward