



# Power Systems – An Overview

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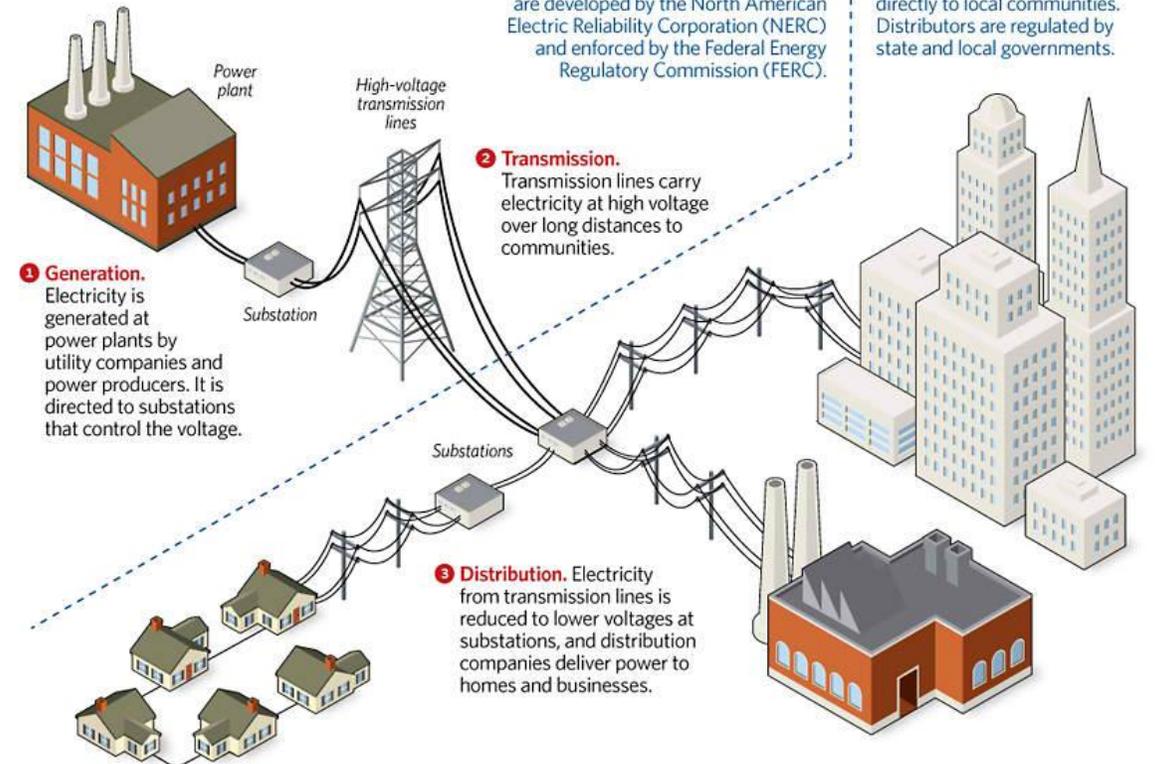
# Keeping the lights on



# Basic Structure of Power Systems

FIGURE 1

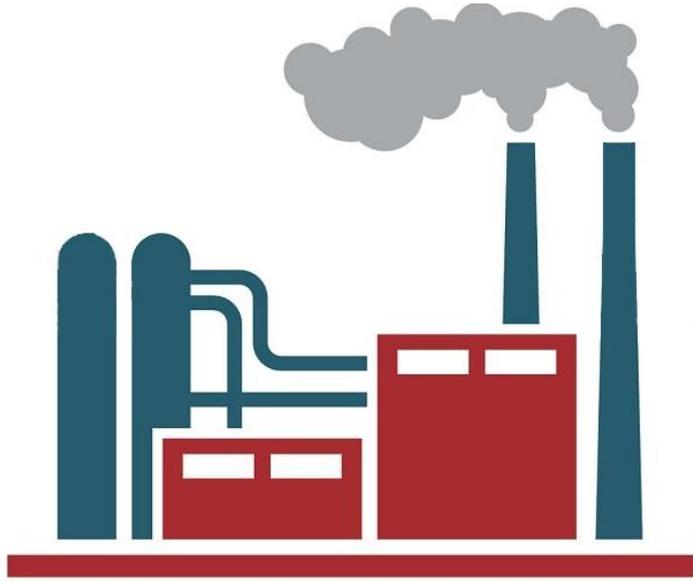
## The Grid: How Electricity Is Distributed and Regulated



Note: FERC regulation does not include Texas.

BG 2959 heritage.org

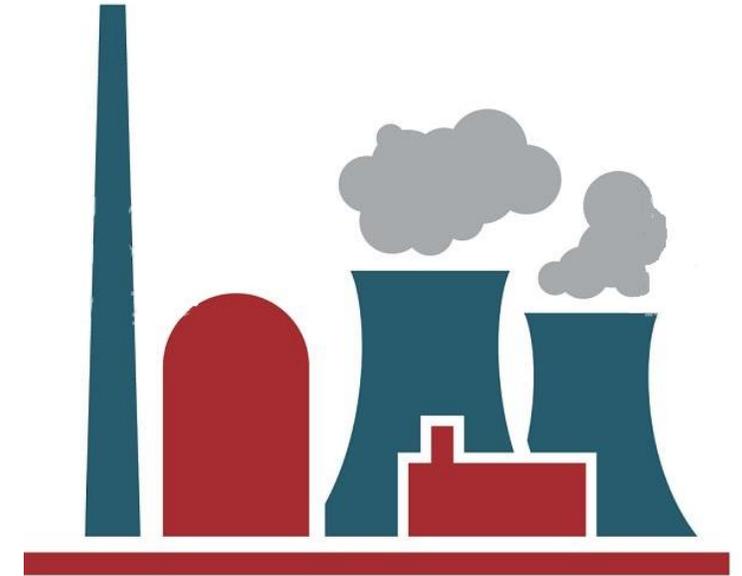
inmostcity.com



**Nuclear Power Plant**



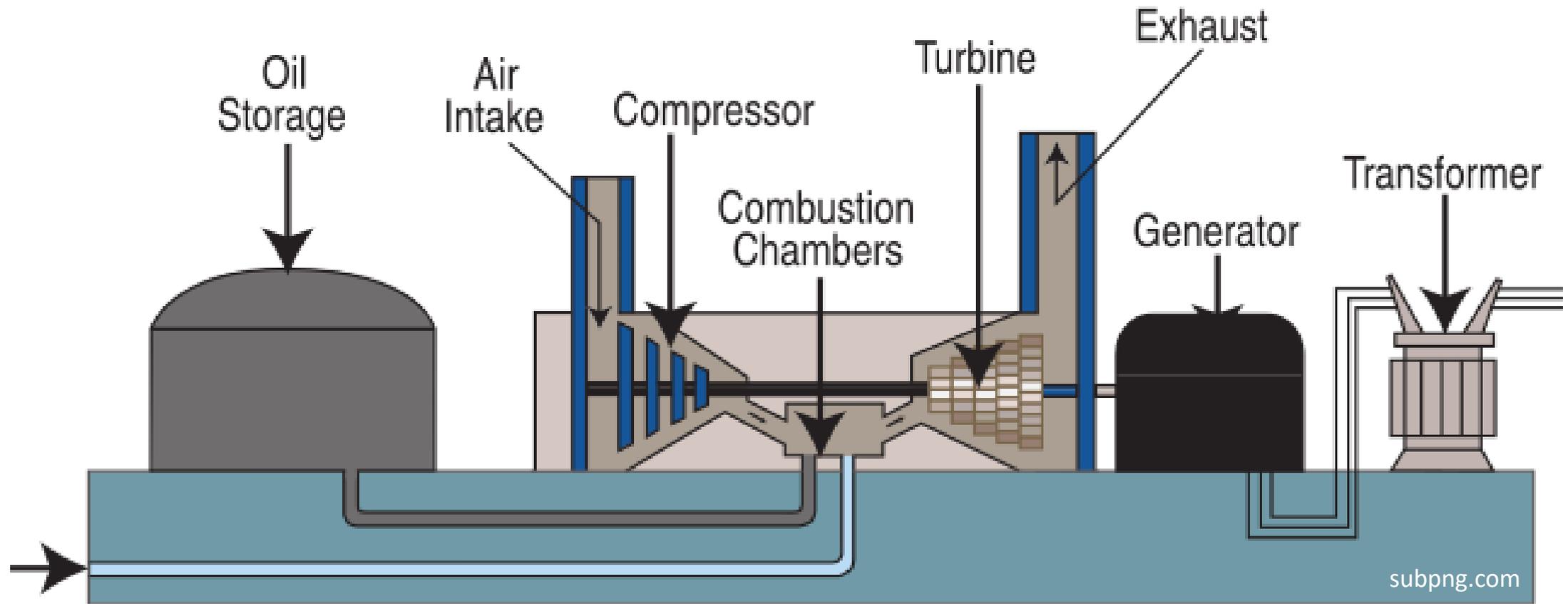
**Coal Power Plant**



**Gas Power Plant**

# Generation - Thermal Power Plants

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# A Conventional Power Plant

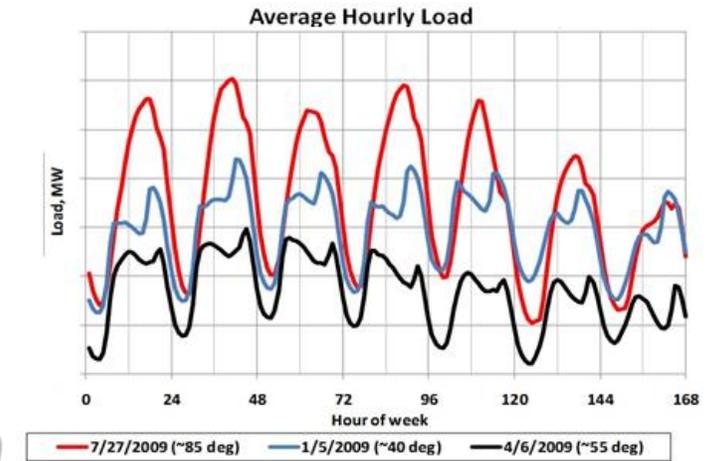


# Transmission

# Reliability



# Upholding the Delicate Balance



# Making Electricity Accessible and Affordable



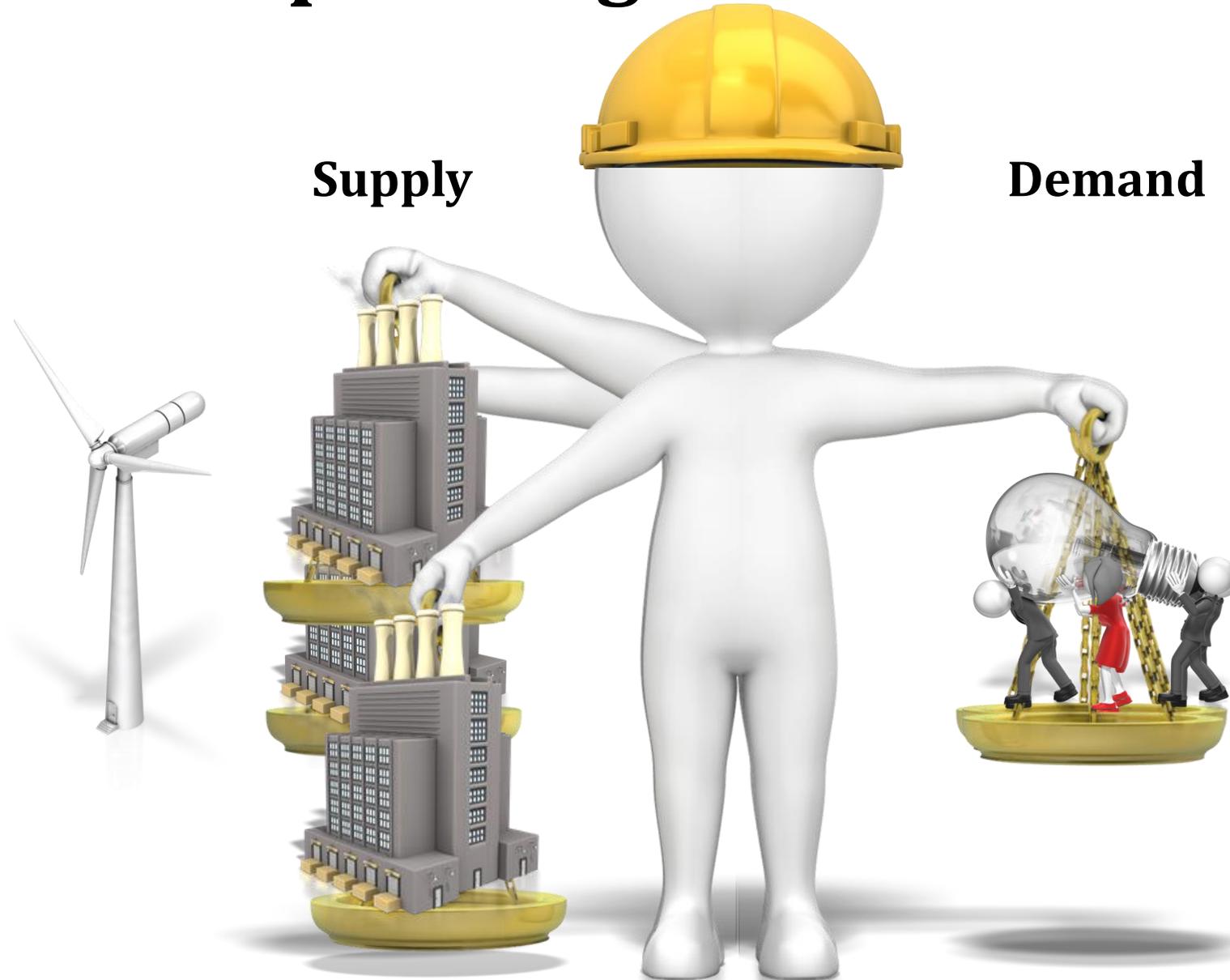
# Making Electricity Accessible Affordable and Green





# Renewable Energy

# Upholding the Delicate Balance



# Upholding the Delicate Balance

**Supply**

**Demand**



# Operational Flexibility

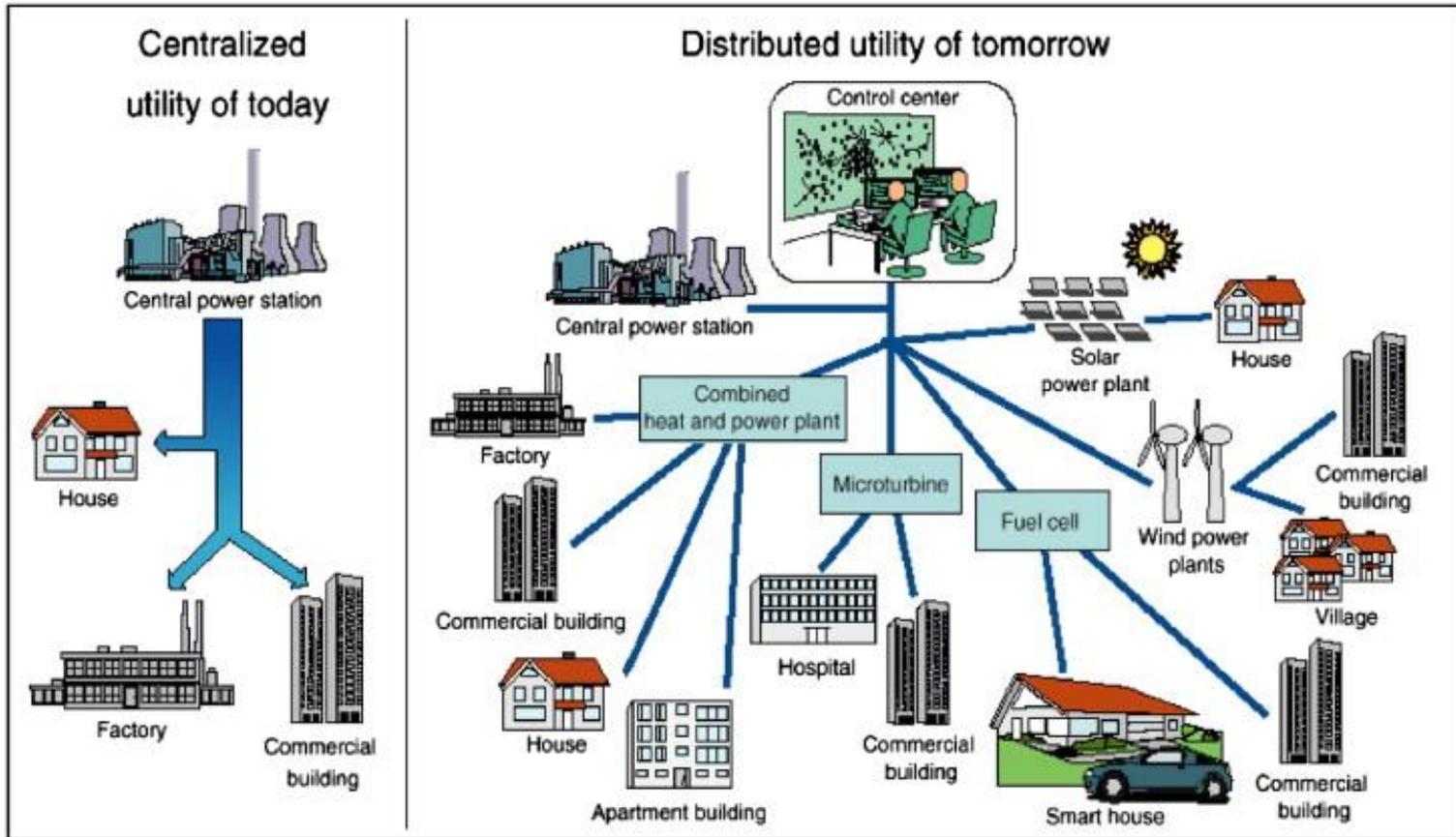




# Electric Storage-Batteries



**Electric  
Vehicles**



# Distributed Generation

R. Viral & D.K.Khatod<sup>1</sup>, "Optimal planning of distributed generation systems in distribution system: A review", Renewable and Sustainable Energy Reviews, Volume 16, Issue 7, September 2012, Pages 5146-5165





# Power System Economics





**Can we still keep the lights on?**