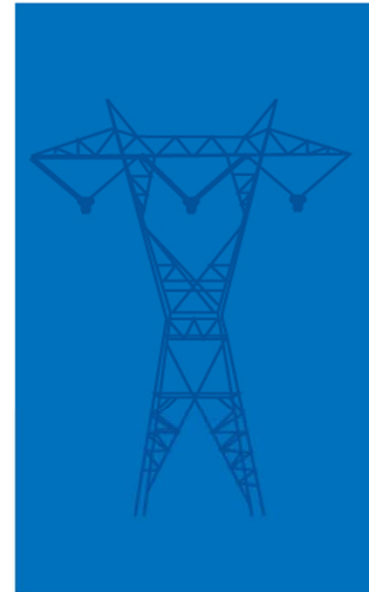


Utility Details and the Site Selection Process

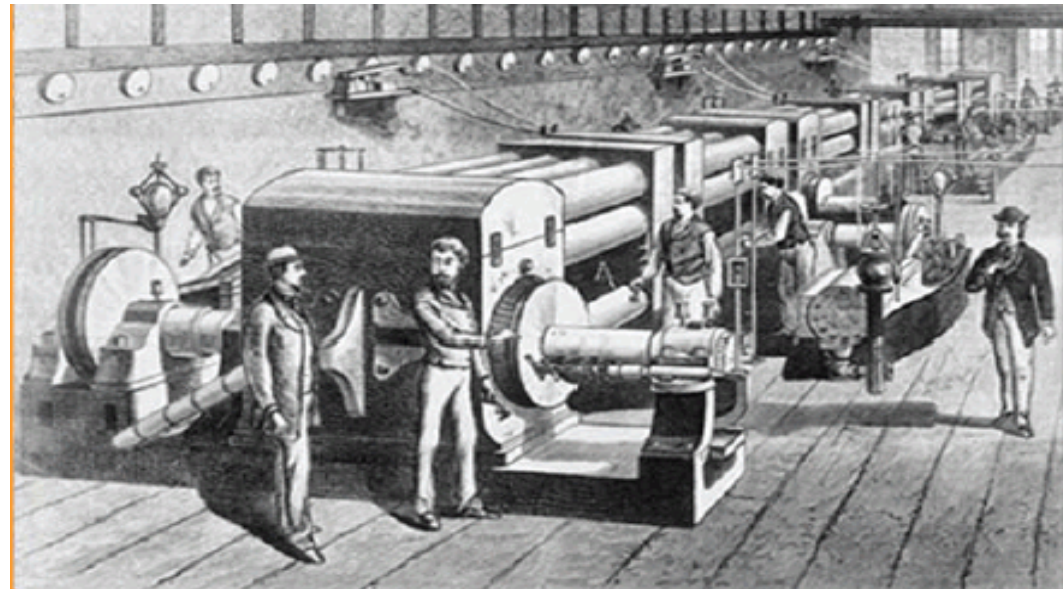
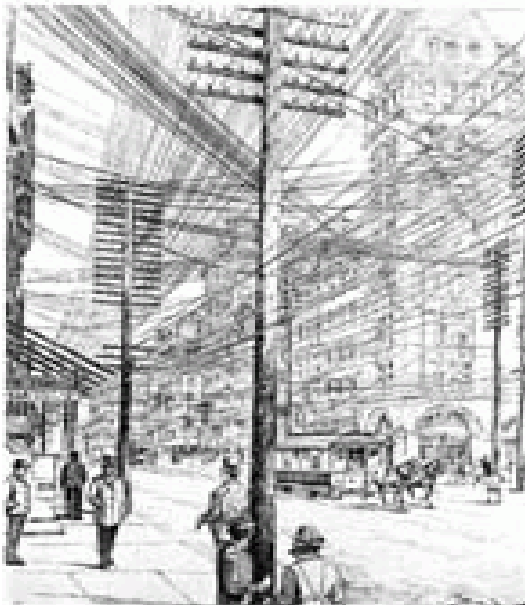
Basic Training for Our Economic Development Allies



VECTREN
Live Smart

Brief History of the Utility Industry

- The Early Days
 - Independent generators and distributors
 - Competition for customers
 - A tangled web of power lines



The Early Days

Consolidation came in the 1920s

- Large electric power holding companies were formed
- By 1932, eight holding companies controlled 73% of U.S. investor-owned electric business

There was:

- little effective state regulation
- no federal regulation
- holding companies overcharging subsidiaries
- expenses being passed on to customers

What followed is known as “The Regulatory Compact”

- Abuses were corrected with the passage of the 1935 Federal Power Act and the Public Utility Holding Company Act (PUHCA)

Regulation of the Industry

Federal Regulators – “The FERC”



The *Federal Energy Regulatory Commission* regulates and oversees energy industries in the economic, environmental, and safety interests of the American public. FERC is the federal agency that regulates electricity transmission and wholesale electricity sales in interstate commerce. FERC implements the laws of Congress through orders and rulemakings on electricity policy.

Visit www.ferc.gov/about/about.asp for detailed information on FERC

State Regulators

Under State law, Public Service (or Utility) Commission members have the obligation to ensure the establishment and maintenance of utility services as may be required by the public convenience and necessity, and to ensure that such services are provided at rates and conditions that are just, reasonable and nondiscriminatory for all consumers.

Regulated vs. Non-regulated Activities

Parent companies/corporate structures

Regulated business

- Core electric utility
- Service area limitations

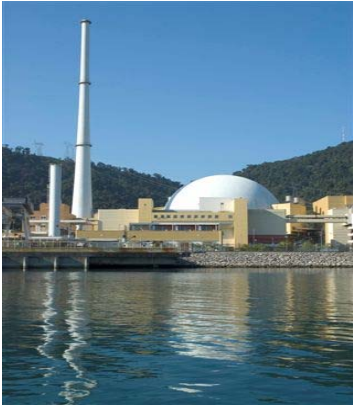
Utility Ratemaking

- Cost recovery
- Rate of return

Unregulated Subsidiaries

- Why do utilities have subsidiaries?
- What they can do and not do

Generation - *The production of electricity*



Nuclear



Coal-fired



Wind



Hydroelectric

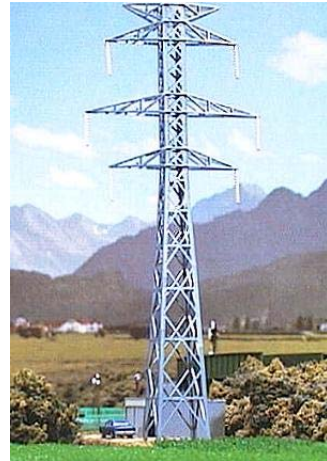


Solar Generation

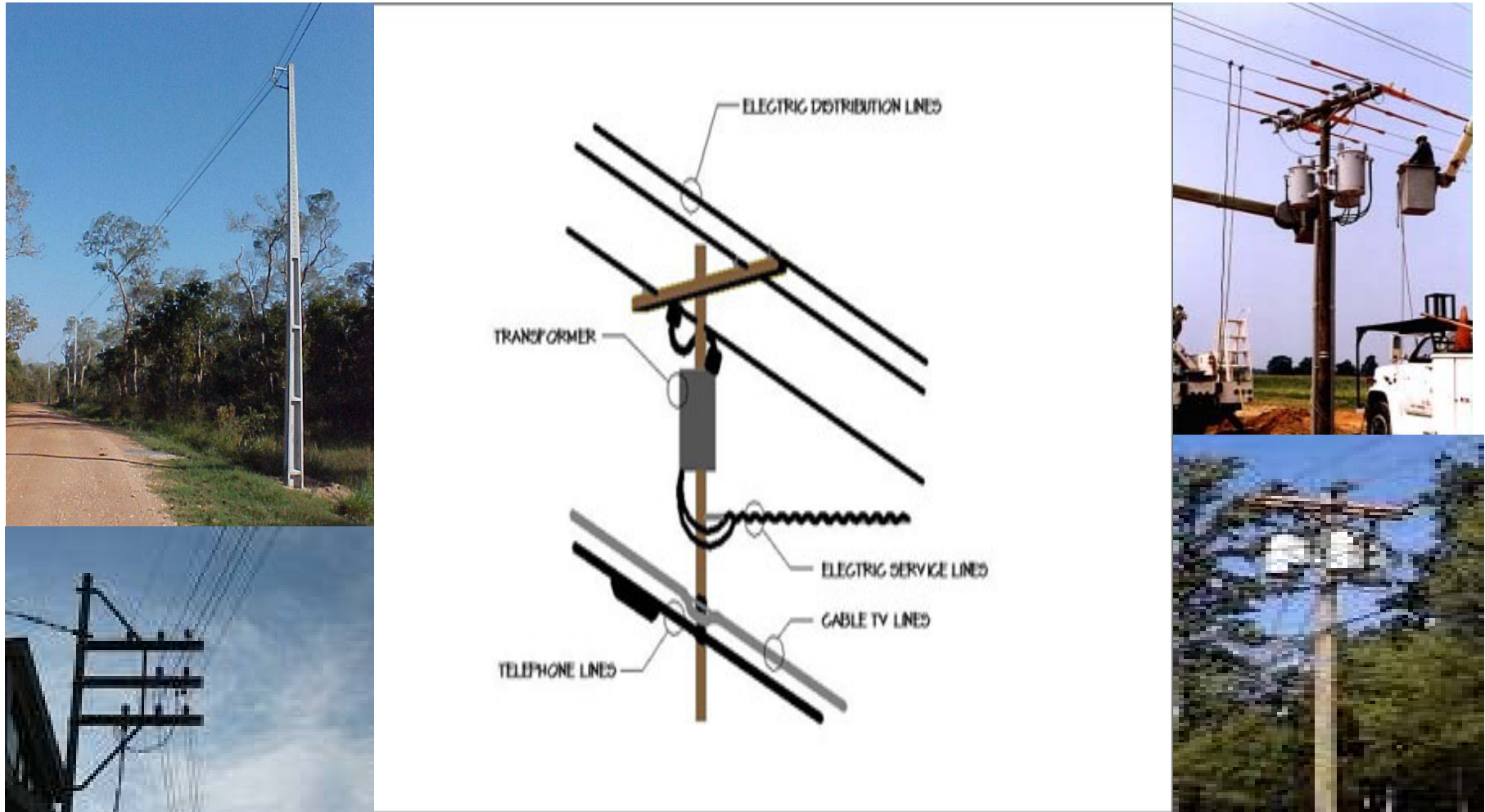


Gas combined-cycle

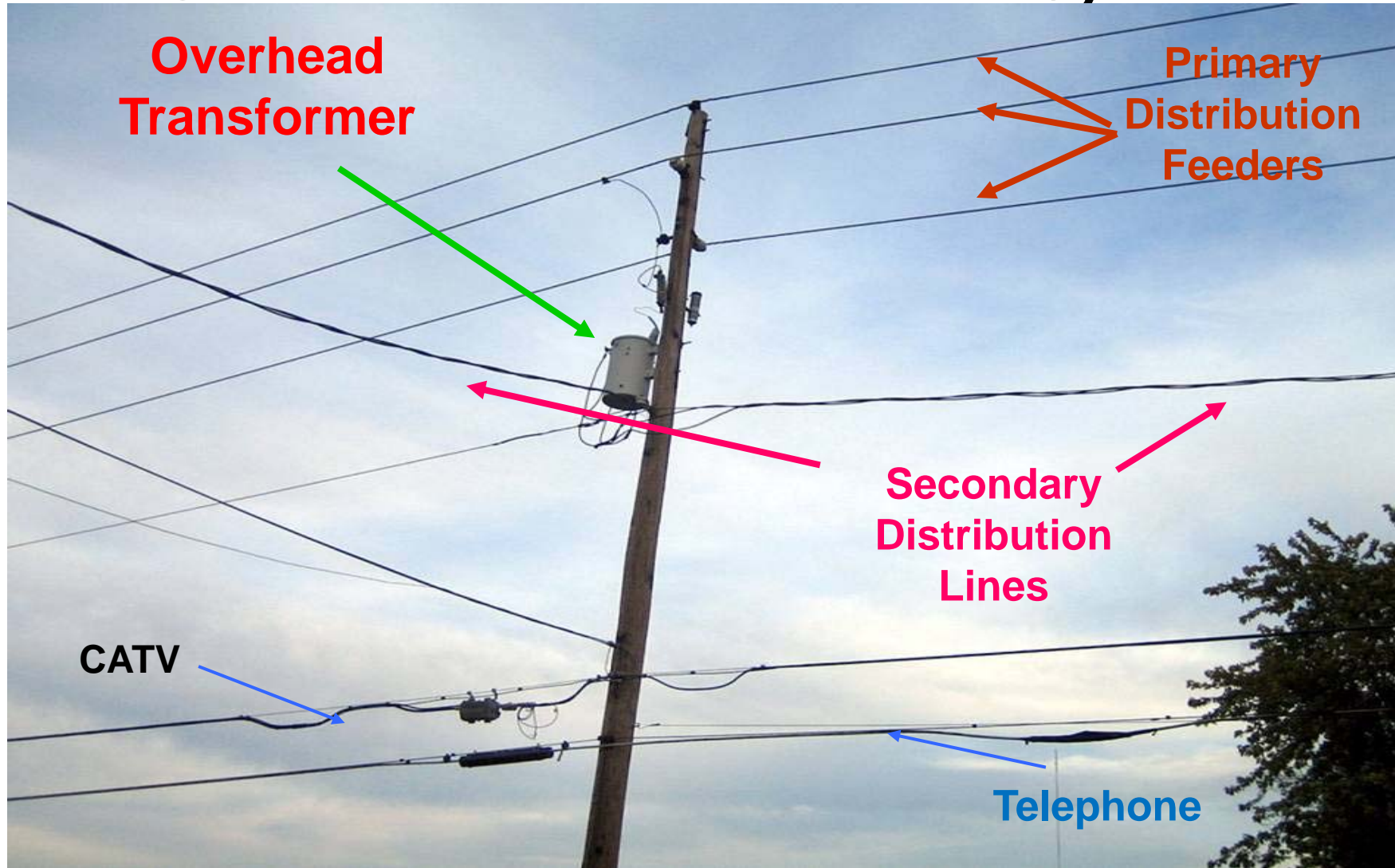
Transmission – *The bulk transfer of electricity*



Distribution – *The delivery of electricity to users*



Overhead Electric Distribution System



Important Terms

- **Firm Service** – A customer service arrangement where the utility is required to provide uninterrupted service under normal operating conditions
- **Interruptible Service** – A customer service arrangement where the utility has the ability to curtail electric service, if needed
- **Load Factor** - the ratio of actual usage to maximum potential usage, based on peak demand
- **Power Factor** - ratio of “resistive power” to “apparent power” (PF = kW/kVa)
- **Demand** - rate of peak energy consumption (kW)

Important Terms (continued)

- **Kilowatt Hour (kWh)** - energy consumed in 1 hour
- **Amp** - the number of electrons moving along a conductor path
(flow)
- **Voltage** - the 'force' at which energy flows (pressure)
- **Watt** - one AMP at a pressure of one VOLT
(Watts = Volts x Amps)
- **Kilowatt (kW)** - 1,000 Watts
- **Megawatt (MW)** - 1,000,000 Watts = **1,000 kW**

Information Needed for a Capacity Assessment and/or Rate Estimate

Basic Information Needed:

- Site Location (address, intersection or map)
- Peak Demand in Kilowatts (kW)
- Energy Consumption in Kilowatt Hours (kWh)
- Hours of Operation/Days per Week
- Needed Supply & Delivery Voltages at Site(s)

Electric Details

Information Needed for a Capacity Assessment and/or Rate Estimate (continued)

- Load Characteristics (type of operation)
- Type of Equipment to be Used (motor sizes)
- Power Quality Needs (is a dual feed required?)
- Connected Load (kilovolt amperes - kVa)
- Power Factor (PF = kW / kVa)
- Load factor kwh

Kw x days x 24

Why does the Utility need this information?

To determine the best way to serve the Customer

- **Customer service requirements, especially peak demand, are critical to determine line capacities & ability to serve**
- **Accurate anticipated load data is needed to assure that the addition of the new customer doesn't harm other customers**

To prepare energy cost estimates

- **Tariff structures and customer charges reflect load usage patterns - - how much energy is needed and when**
- **Well defined customer requirements can present opportunities to explore other service options**

Why bring the utility in on development projects?

To Manage Customer & Community Expectations

- **Review by engineers and planners**
- **Determine best way to serve the customer**
- **Determine if impending change will affect service to other customers**
- **Determine potential customer charges**

What is an “Electric-Ready” Site?

A site matching electric facilities to proposed use

- **Heavy Industrial** - Sub-transmission or transmission on-site or nearby, possible dual feed capability
- **Data Centers** - Sub-transmission or transmission on-site or nearby, redundant service capabilities, high reliability
- **Light Industrial/Distribution** – Primary or secondary voltage lines available
- **Office** - Primary or secondary lines nearby, underground often preferred

What is an “Electric-Ready” Site?

Proximity to Electric Facilities - The Closer the Better

- **Low or no Customer Charges for Line Extensions** – high charges for system improvements and/or extensions can jeopardize projects
- **Time Requirements for System Upgrades/Line Extensions** – lengthy extensions and system upgrades can require a considerable amount of time, this doesn't always meet the customer's timeframe

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