

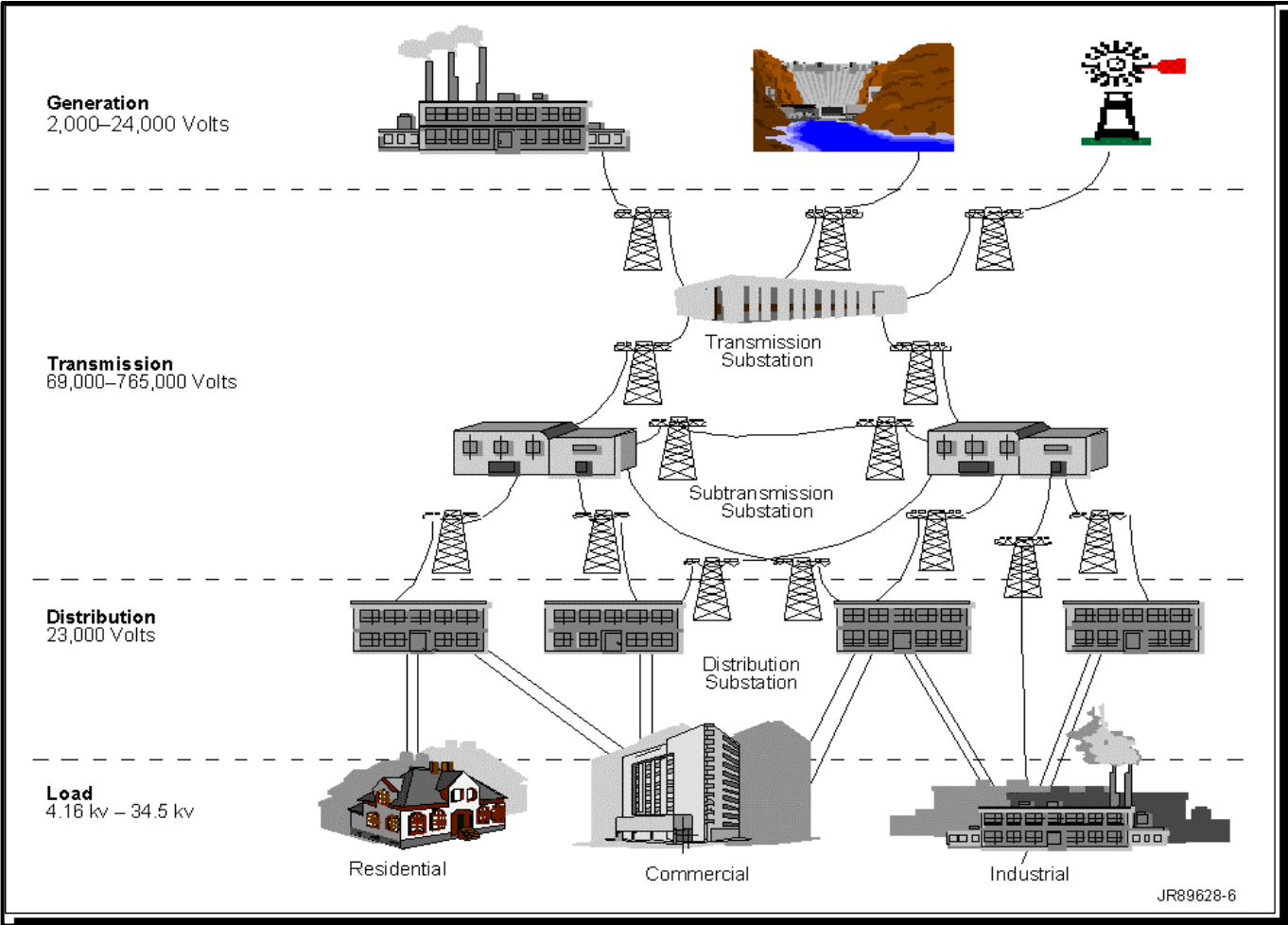
# ***Energy Markets 201***

DOE – Western Tribal Clean Energy Webinar Series  
February 24, 2016

# Agenda

- The Electric Grid
- Wholesale vs Retail
- How is the West structured?
- Organized Market vs Bi-Lateral Market

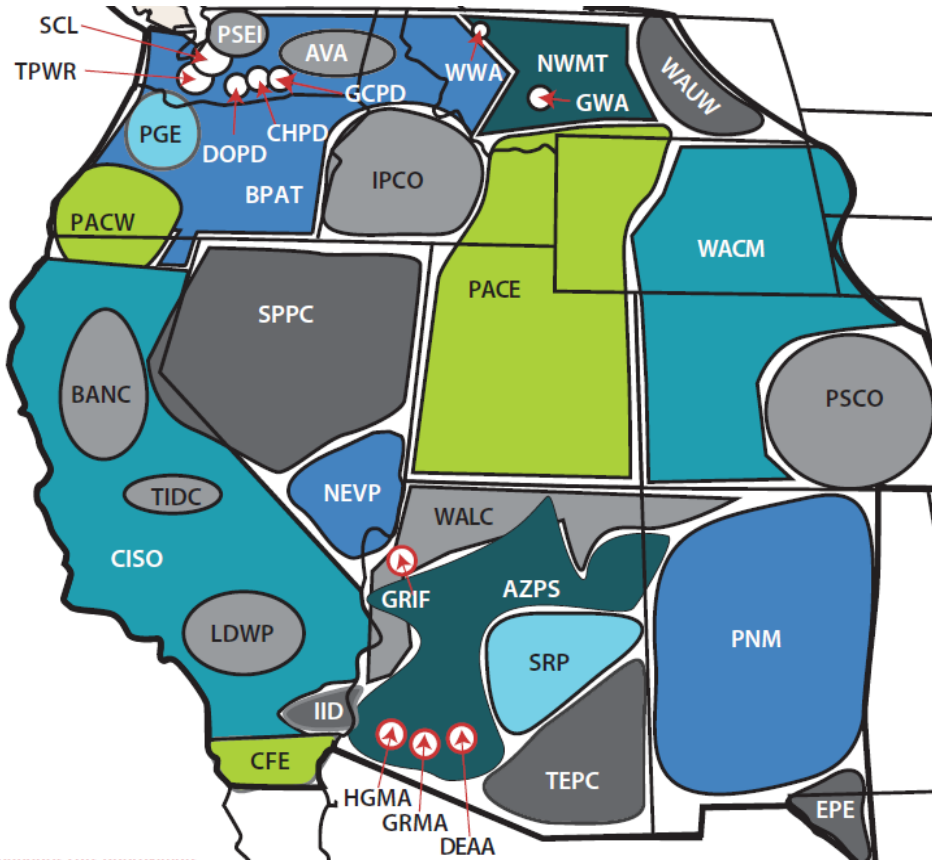
# The Electric Grid



# The Electric Grid – 2 Views

- **Reliability View (Grid Operators)**  
Balance Supply (Generation) & Demand (Load)  
Mandatory compliance standards
- **Merchant View (Providers/Consumers)**  
Sellers want to sell higher than their production costs  
Buyers want to buy lower than their own production costs

# Balancing Areas in the West



# What is a Market?

- Any time buyers & sellers get together to exchange goods or services
- Multiple energy Market time horizons (Real time - Hourly, Day Ahead, & Forward)

# Potential Suppliers (Sellers)

- Utilities
- Municipalities
- Government Agencies
- Independent Power Producers (IPP)

# Potential Consumers (Buyers)

- Anyone who has an obligation to serve load or to deliver energy (Utilities, Municipalities, etc.)

# Deal Components

- Price (\$/MWh)
- Product (Firm, Non Firm, Contingent, etc.)
- Volume (MWs/hr)
- Term (hourly, daily, monthly, quarterly, etc.)
- Trading hub (Mead230, Palo Verde, etc.)



# How are prices set?

- Market prices are determined by what people are willing to pay?
- Many drivers (supply, demand, weather, fuel costs, RPS requirements, etc.)
- Vary each hour of the day as well as seasonally
- Risk plays a big role
- The longer the horizon, the more difficult to forecast

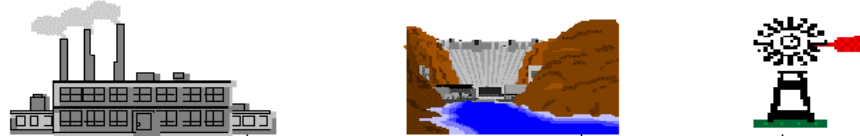
# The lifecycle of an energy deal

- Buyer/Seller communicate their intent to Buy/Sell (phone, IM, electronic platform, Broker, RFP, etc.)
- Negotiate terms (product, price, volume, hub, etc.)
- Deals are confirmed
- Energy scheduled
- Energy flows
- Settled ATF

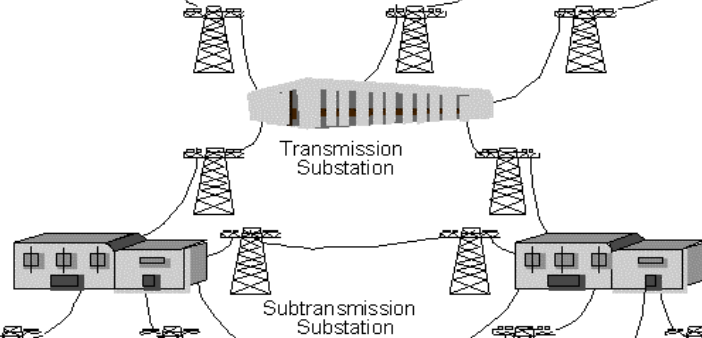
# Wholesale vs Retail

Wholesale

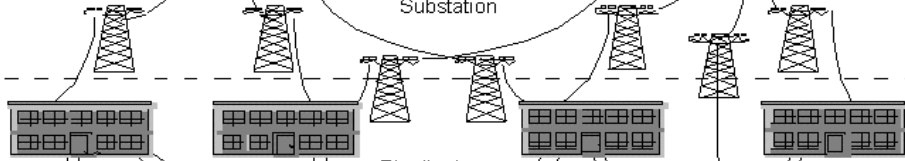
**Generation**  
2,000–24,000 Volts



**Transmission**  
69,000–765,000 Volts

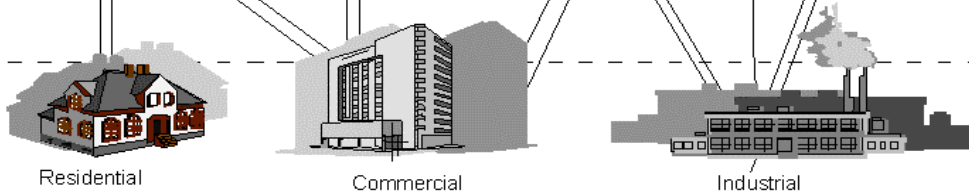


**Distribution**  
23,000 Volts



Retail

**Load**  
4.16 kv – 34.5 kv



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# Organized & Bi-Lateral Markets

- Independent Buyers & Sellers of energy products get together and transact one with another. Price and terms are agreed to by the two parties.
- An organized market is the mechanism through which energy products are bought & sold. The CAISO runs a full market (energy, capacity, ancillary services) and a Energy Imbalance Market.

# Questions??

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