Introduction to Rate Design & Cost Allocation

Chairman Kim David

OKLAHOMA Corporation Commission

Oklahoma Corporation Commission

- Established by the Oklahoma Constitution at statehood (1907)
- 3 Commissioners, elected statewide, head the agency
- About 600 employees, 2 main offices, 4 O&G field offices
- Regulatory powers over:
    - Transportation
    - Oil and Gas
    - Petroleum Storage Tanks
    - Public Utilities

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Corporation Commission Jurisdiction

(approximate totals as of 3/25/2024)

- **2,600** Oil and gas well operators
- **8** Electric utility companies
- **6** Gas utility companies
- **300** Telephone companies
- **10** Water companies
- **12** Cotton gins
- **250** Natural gas pipeline operators
- **30** Hazardous liquid pipeline operators
  - operating over **40,000** miles of pipeline
- **24** Railroads with over **3,471** public at-grade crossings
- **7,500** For-hire and private motor carriers (intrastate)
- **503** Non-consensual wrecker service operators
- **4,300** Motor fuel facilities
- **10,600** Petroleum storage tanks
- **39,000** Fuel dispensers
- **3,000** Retail fueling stations and their owners
- Transportation network companies (Uber, Lyft, etc.)
- Wind power companies

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Oklahoma Corporation Commission
Notable Historical Points

- **1907** – Commission established (Article 9, Oklahoma Constitution). Original jurisdiction was over "public service corporations" (for the most part, transportation and telegraph companies).
- 1907 – First Commission Order issued – Railroads.
- 1909 – Oil pipelines placed under Commission jurisdiction.
- 1913 and 1915 – New law for "correlative rights" regarding oil and gas and Commission's role in protecting same, and preventing "waste" of oil and natural gas.
- 1914 – Commission restricts oil drilling and production in Cushing and Healdton fields to "prevent waste," as supply exceeded pipeline capacity.
- 1917 – Commission empowered to establish an Oil and Gas Department, granted exclusive power over oil and gas conservation, drilling and operation of oil and gas wells, and construction and regulation of oil and gas pipelines.

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Notable Historical Points

- 1935 – Commission leads successful effort to form a compact with other producing states to prevent waste (today's Interstate Oil and Gas Compact Commission).
- 1945 – Commission given authority to issued forced pooling orders and oversee unitization.
- **1971** – Retail Electric Supplier Certified Territory Act – divides the State into service territories and allows utilities exclusive right to serve in their territories.
- **1993** – 17 O.S. § 158(E) – Allows electric cooperatives to "opt out" of Commission regulation as to rates and charges.
- **1997** – Electric Restructuring Act of 1997 – provides for restructuring of electric utilities in Oklahoma to allow direct access by consumers to the competitive marketplace.

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Oklahoma Corporation Commission
Notable Historical Points

- **2005** – Approval of Electric Generation Facilities – 17 O.S. § 286
  - Section "A" - Presumes costs are recoverable for transmission upgrades, approved by SPP, resulting from a federal regulatory order.
  - Section "B" - Allows Commission to approve plans to make capital expenditures for facilities necessary to comply with federal environmental regulations.
  - Section "C" - Allows electric utilities to seek pre-approval to construct a new electric generating facility, to purchase an existing electric generation facility or enter into a long-term contract for purchased power.
- **2010** – Oklahoma Wind Energy Development Act – to promote development of wind energy in Oklahoma, to address relationship between developers and mineral estate owners and to provide for decommissioning of wind facilities (modified in 2018 and 2019).
- 2011 – Shale Reservoir Development Act- long laterals in shale.
- 2017 – Oklahoma Energy Jobs Act- long laterals in formations designated by Commission and 1,280 acre spacing units.

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Oklahoma:

Top 5 in U.S. energy production

5th in Natural Gas

4th in Crude Oil

4th in Wind Generation

Source: EIA, 2023, 2022, 2023, respectively

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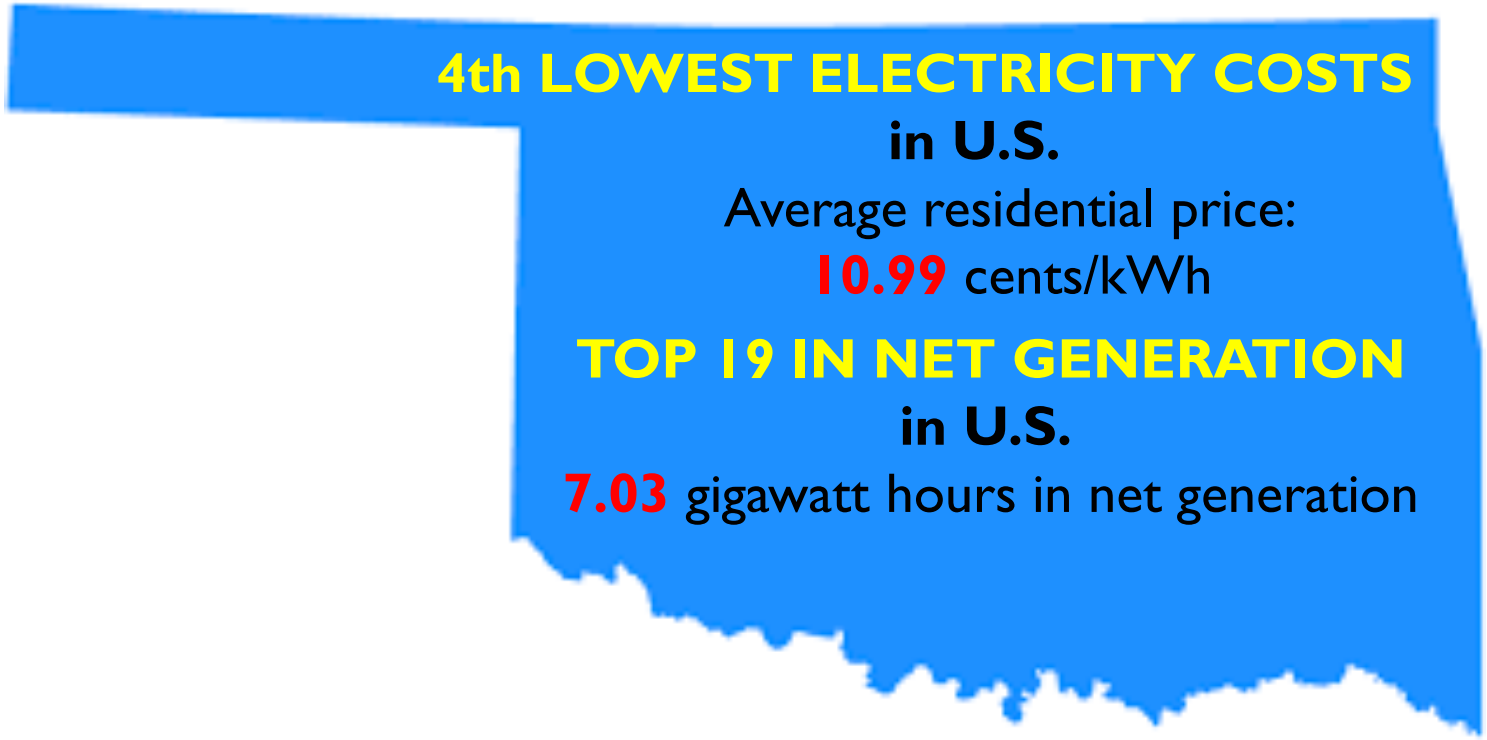
Abundant, low-cost electricity



Source: EIA state energy profile, rankings. Month of December 2023

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What is Cost Allocation & Rate Design?

- Determine the appropriate rate that each group of customer should pay to cover the costs of providing service to that specific group
  - Class/Groups: Residential, Industrial, Power and Lights, Commercial, etc.

- Goal is Fairness!
  - Avoids undue price discrimination among classes of customers
  - Creates pricing signals that encourage efficient use of system capacity

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Rate Design Terminology

Customer Charge

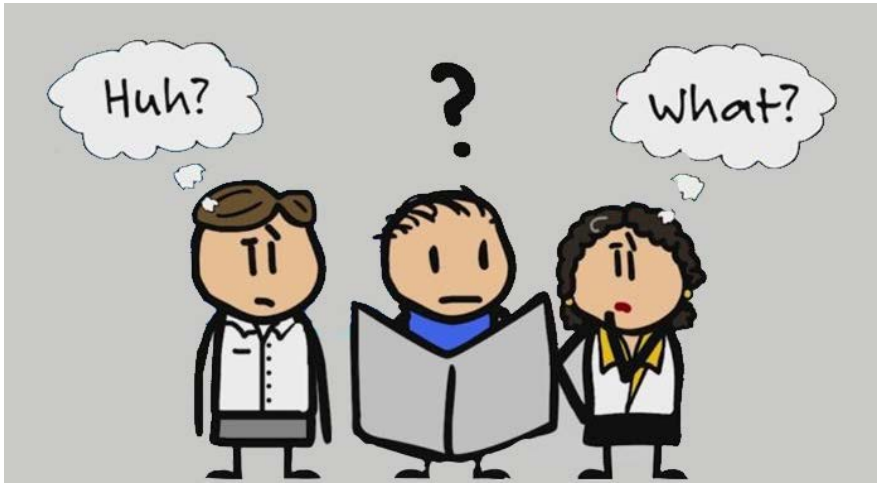
- A monthly amount that is independent of usage.
- Also called a Basic Charge, Standing Charge or Meter Charge

Energy Charges

- A price per kWh of usage; may be in more than one time period, more than one block.
- May be seasonal or time-varying.

Demand Charges

- A monthly fee based on the highest instantaneous usage rate (usually highest hour) during the month or year.
- Usually Commercial



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Cost of Service Study

- Cost of Service study is an analysis of the total costs a utility incurs to provide service.
  - Plant Investment – production, transmission, distribution & general
  - Expenses:
    - Operation and Maintenance
    - Administrative and General
    - Labor
    - Taxes

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Class Cost of Service Study

- Class Cost of Service study is an analysis of the total costs incurred by a utility and allocated to various rate classes.
- Class Cost of Service Study will:
  - Step 1: Functionalize Costs
  - Step 2: Classify Cost
  - Step 3: Allocate Costs

- At each step ask, “What caused the cost to be incurred?”

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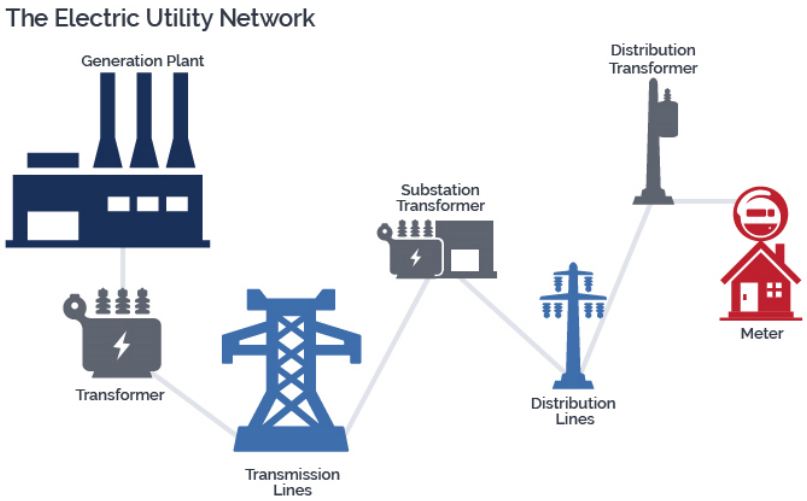
Functionalization

- Categorizing expenses by function played in the operations of the utility system.
  - Production
  - Transmission
  - Distribution
  - Customer
  - Administrative and General
    - Classified as production, transmission, distribution and customer.



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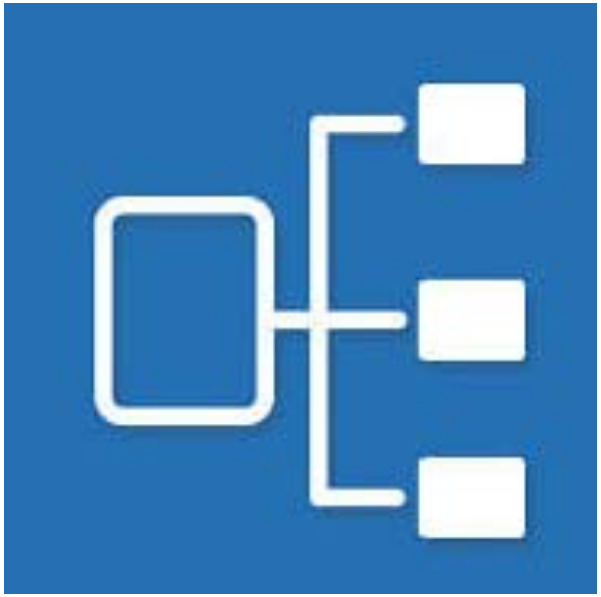
Classification

Classification is a means to divide the functionalized, cost-defining components into:

1. Customer Related Costs
   - Costs that vary with the number of customers
2. Demand Related Costs
   - Costs that vary with kW of peak demand
3. Energy Related Costs
   - Costs that vary with kWh of energy



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Allocation

- The process of assigning costs to different customer classes.
- Customer classes are based on similarities in usage levels, voltage levels at which the customer is served and other conditions of service, such as demand/smart meters.
- Customer Categories Include:
  - Industrial (Transmission, Substation, Primary and Secondary)
  - Commercial (Primary and Secondary)
  - Residential (Secondary)

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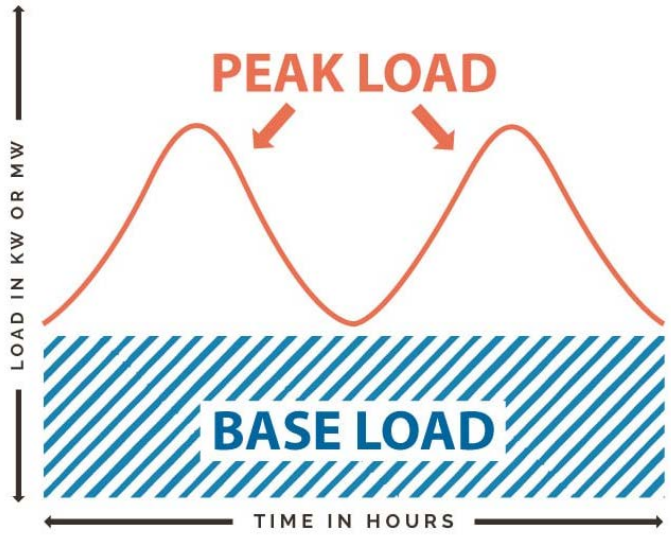
Foundation For Demand Allocators

- **Average Demand**
  - Total kWh during a cycle divided by the number of hours in the cycle.
  - 8,760 hours in a year
- **Peak Demand**
  - Maximum hourly demand (load) during the cycle (measured in kW or MW).
- **Coincident Peak Load (CP)**
  - Customer class's peak load at the time of total system peak.
- **Non-Coincident Peak Load (NCP)**
  - Customer class's peak load regardless of when it happens.
- **Customer Maximum Demands (MDD)**
  - Sum of individual customer demands within a specific class.



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Demand-Related Cost Allocation Methods

- Coincident Peak Demand (4CP, 12CP)
- Non-Coincident Peak Demand (4NCP, 12CP)
  - Customer Maximum Demands (MDD)
- Average-Excess Demand
  - This method uses a weighted average of the average-demand allocators (weight = system load factor) and the Excess-Demand Allocators (weight = one minus the system load factor).

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Methods of Allocation

- **Energy-Related Cost Allocation Methods**
  - kWh of Energy Sold or Volumes of Gas Sold
  - kWh at Meter and at Generator
  - Compared to high voltage customers, low voltage customers have higher loss factors because: (1) they are further “downstream” from the generation sources and (2) line losses are inversely related to line voltage levels.
- **Customer-Related Cost Allocation Methods**
  - Number of Customer
  - Weighted Number of Customers – weights can be based on:
    - Average meter costs
    - Average billing costs
    - Average meter-reading costs

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Customer and Demand-Related Allocation

Ex. Distribution Plant Investment in Mains

- Customer Component
  - Typical cost of main per customer multiplied by the number of customers in the class
    - Length of main directly associated with a typical customer in each class
    - The diameter of the main that would be required to serve that customer
- Demand Component
  - Estimated peak day demands of each class

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Data Requirements To Develop Allocators

Electric Utility Provides:

- Hourly load information per customer class based on load research studies
- Number of customers served in each customer class at each voltage level
- Monthly usage (kWh) and demand (kW) information for each customer class
- Customer related cost data
  - Meter and Billing costs

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Allocator Usage

- Using the methods of allocation and the data received from the utility, specific allocators are assigned to specific functions.
- A general principal to follow is: Expenses follow Plant.
  - For example, production maintenance expenses are allocated using the same methodology as production plant. Same relationship exists for transmission and distribution expenses.

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Results of Class Cost of Service (example)

- Total cost to serve a class = Expenses + Return on Investment

Functional Category	Residential	Commercial Primary	Commercial Secondary	Industrial Primary	Industrial Secondary	Industrial Substation	Industrial Trans.	Total
Production – Demand	$128,140,056	$440,413	$38,233,710	$31,571,581	$12,553,553	$10,868,441	$6,685,527	$227,973,813
Production - Energy	$40,651,586	$260,498	$19,500,782	$23,129,285	$8,855,237	$8,128,200	$4,680,467	$104,686,585
Transmission	$9,532,613	$47,252	$3,577,149	$3,344,128	$1,280,761	$1,174,899	$677,307	$19,114,641
Distribution - Substations	$4,706,569	$17,185	$1,190,944	$1,021,363	$396,497	$346,264	$0	$7,159,353
Distribution - Primary	$17,272,306	$68,760	$4,765,036	$4,086,533	$1,586,408	$0	$0	$27,259,575
Distribution - Secondary	$19,234,824	$0	$4,829,300	$0	$1,229,538	$0	$0	$24,774,193
Customer	$30,513,005	$35,199	$2,414,789	$38,870	$10,636	$5,366	$7,155	$32,505,551
Total	**$250,050,959**	**$869,307**	**$74,511,710**	**$63,191,760**	**$25,912,630**	**$20,523,170**	**$12,050,456**	**$443,473,710**