

# Ratemaking in the U.S.

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# Disclaimer

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- ▶ All opinions or factual material presented here are solely the responsibility of Dr. Bryant, and do not represent the policy position or any factual findings of the Public Utility Commission of Texas or its staff.

# Overview

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- ▶ Current state of utility regulation in Texas
- ▶ An historical perspective
- ▶ Components of a traditional rate case
  - ▶ Revenue Requirements
  - ▶ Rate Design
- ▶ Alternative forms of rate regulation

# Current state of utility regulation in Texas

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## ▶ Telecommunications

- ▶ Telecommunications is, by law, deregulated in all telephone exchanges > 30,000 lines served
- ▶ Telecommunications is, de facto, deregulated in all other exchanges

## ▶ Electric

- ▶ In most areas of the state, electric generation and retail services are deregulated
  - ▶ Exceptions are municipally-owned utilities and rural cooperatives
  - ▶ State regulatory jurisdiction in these areas is limited
- ▶ State continues to regulate rates for transmission/distribution utilities

# Current state of utility regulation in Texas

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## ▶ Telecommunications

- ▶ Beginning in the late 1980's, telecommunications transitioned from full rate-base/rate-of-return regulation to “incentive regulation”
  - ▶ Under incentive regulation, existing rates were presumed to be reasonable
  - ▶ Each year, a “productivity factor” was applied that should reflect increasing efficiency in production
  - ▶ Any increases in productivity that the telephone companies could achieve would accrue to the telephone company
- ▶ By the late-1990's, the legislature determined that competition between telephone companies in urban areas had developed to the point that rate regulation was no longer necessary

# Current state of utility regulation in Texas

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## ▶ Electric

- ▶ In 1999, legislature determined that generation and sale of electricity was not a monopoly; these segments of the industry were effectively deregulated
- ▶ Integrated electric utilities were split into three separate companies: generation, transmission, retail
- ▶ Only transmission utilities continue to be regulated as to rates
- ▶ Generation and retail companies continue to be subject to certain regulations:
  - ▶ Generation: reliability of the electric grid, market manipulation
  - ▶ Retail: Customer protection, deceptive trade practices, market manipulation

# An historical perspective

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- ▶ From the late 1800's (electric) or 1930's (telephone), both types of utilities were regarded as “natural monopolies”
  - ▶ Economies of scale were so great that competition between providers either would be unsustainable or would result in higher costs to consumers
- ▶ To prevent abuse of monopoly market power, the state was empowered to ensure that rates were “just and reasonable”
  - ▶ The state acted as a proxy for the competitive market, in an attempt to ensure that the utility recovered just enough revenue to recover reasonable operating expenses and a reasonable return on invested capital – and no more

# Components of a traditional rate case

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- ▶ Determine the “revenue requirement” (total cost of service)
  - ▶ Rate base = Total invested capital “used and useful” in the provision of service
  - ▶ Operating expenses = Expenses reasonably incurred in the provision of service
  - ▶ Cost of capital = Interest on debt incurred + Risk-adjusted return on investors’ equity
  - ▶ Operating taxes
- ▶ Establish a “rate design”
  - ▶ Set rates for each class of customer that, in total, will produce sufficient revenue to recover the revenue requirement

## Revenue Requirement – Legal standard

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- ▶ In Texas, Sec. 36.051 of the Public Utility Regulatory Act (PURA) states that:
  - ▶ “In establishing an electric utility’s rates, the regulatory authority shall establish the utility’s overall revenues at an amount that will permit the utility a reasonable opportunity to earn a reasonable return on the utility’s invested capital used and useful in providing service to the public in excess of the utility’s reasonable and necessary operating expenses.”

# Revenue Requirements – The “Test Year”

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## ▶ Identification of test year

- ▶ Historical test year – generally based on company financial data for the most current 12 months for which information is available during the preparation of the rate application
- ▶ Historical test year adjusted for known and measurable changes to develop test period
  - ▶ Example: A signed new labor contract is a known & measurable change, but simply knowing that at some point in the future the contract will change in some way is not a known and measurable change.

## Revenue Requirements – “Used and useful standard”

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- ▶ “Used and useful” concept – only plant currently providing or capable of providing utility service to customers is included in rate base
- ▶ “Prudent investment” concept – only plant prudently purchased or constructed is includable in rate base
  - ▶ Construction of nuclear generation plants in 1980s led to state commission prudence reviews of construction management and costs associated with construction of nuclear facilities
    - ▶ In some cases, these prudence reviews led to disallowance of plant costs for ratemaking purposes

# Components of Rate Base

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- ▶ **Plant in service**
  - ▶ Largest component of a company's rate base
  - ▶ Generally, one of the least controversial aspects of a rate proceeding unless the prudence of construction is an issue or excess capacity is at issue
- ▶ **Accumulated depreciation**
  - ▶ Typically not a controversial component of rate base unless the reasonableness of the depreciation rates (or a new depreciation) study is an issue in the rate proceeding
- ▶ **Construction Work in Progress (CWIP)**
  - ▶ Typically not included in rate base because it is not yet “used and useful” in providing electric service
  - ▶ In rare cases, CWIP may be included in rate base if necessary to help maintain financial strength of the utility company

# Components of rate base

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- ▶ Fuel inventories consisting of gas in storage, coal, and nuclear fuel inventories
- ▶ Materials and supplies
- ▶ Cash Working Capital—the average amount of capital provided by investors, over and above the investment in plant and other specific rate base components, to bridge the gap or lag between the time expenditures are required to provide services and the time payment is received for such services

# Rate of Return

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- ▶ **What is meant by the phrase “allowed rate of return”?**
  - ▶ In the utility industry, the phrase “allowed rate of return” is generally synonymous with “the cost of capital.” It refers to the rate of return on rate base required to recover the utility’s:
    - ▶ Cost of long-term debt
    - ▶ Cost of common stock
    - ▶ Cost of preferred stock
  - ▶ The total dollar amount of return, or earnings, is calculated by multiplying the allowed rate of return by the utility’s total dollar amount of rate base
  - ▶ The Allowed Rate of Return can be considered as the rate of return that is permitted, but not guaranteed.

# Rate of Return

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- ▶ The principles of a fair rate of return were established in two U.S. court cases, one in 1923, and one in 1944.
  - ▶ Legal criteria established by the two court cases:
    - ▶ A utility's allowed Rate of Return should be sufficient to maintain the utility's financial integrity
    - ▶ Return should enable utility to attract additional capital on reasonable terms
    - ▶ Return should be equal to that earned by other companies with comparable risks

# Revenue requirements – operating expenses

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- ▶ **Requirements for inclusion of costs in revenue requirement**
  - ▶ Costs must be just and reasonable
  - ▶ Costs must be prudently incurred
  - ▶ Cost adjustments must be known and measurable
- ▶ **O&M expense includes:**
  - ▶ Power production expenses
  - ▶ Transmission expenses
  - ▶ Distribution expenses
  - ▶ Customer accounts expenses
  - ▶ Customer service and informational expenses
  - ▶ Sales expenses
  - ▶ Administrative and general expenses

## Revenue requirements – operating expenses

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- ▶ **Non-revenue-related taxes**—taxes that are not dependent on or that do not change as a result of the utility's revenues
  - ▶ Payroll taxes
  - ▶ Property taxes
  - ▶ Franchise taxes (may be based on various elements such as payroll, cost of goods sold, capitalization, etc.)

# Revenue requirement - Summary

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(Rate Base \* Rate of Return) + Taxes  
on Equity Return = Cost of Capital

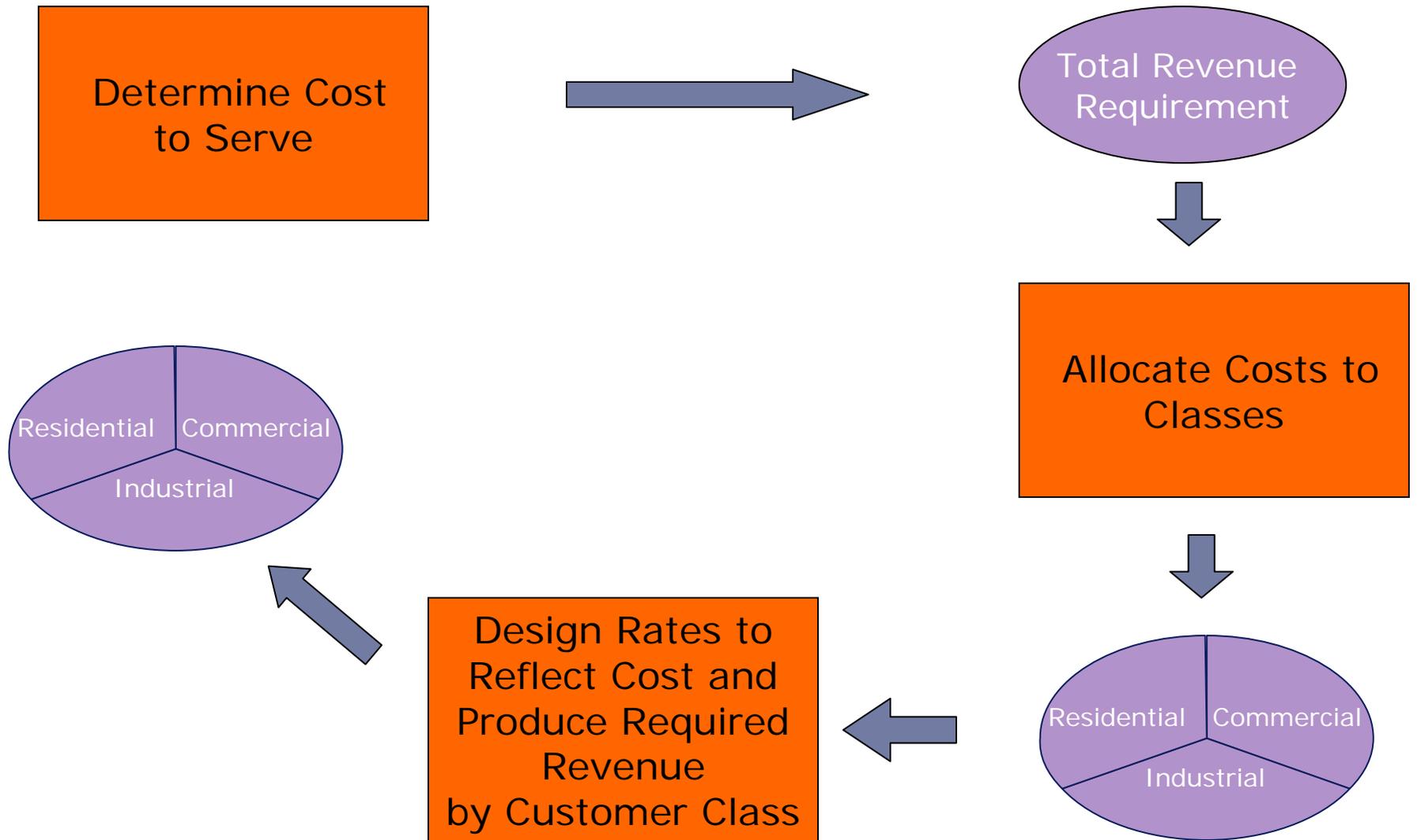
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Operating Expenses and Other Taxes

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Revenue Requirement

# Rate Design



# Rate Design – Legal Standard

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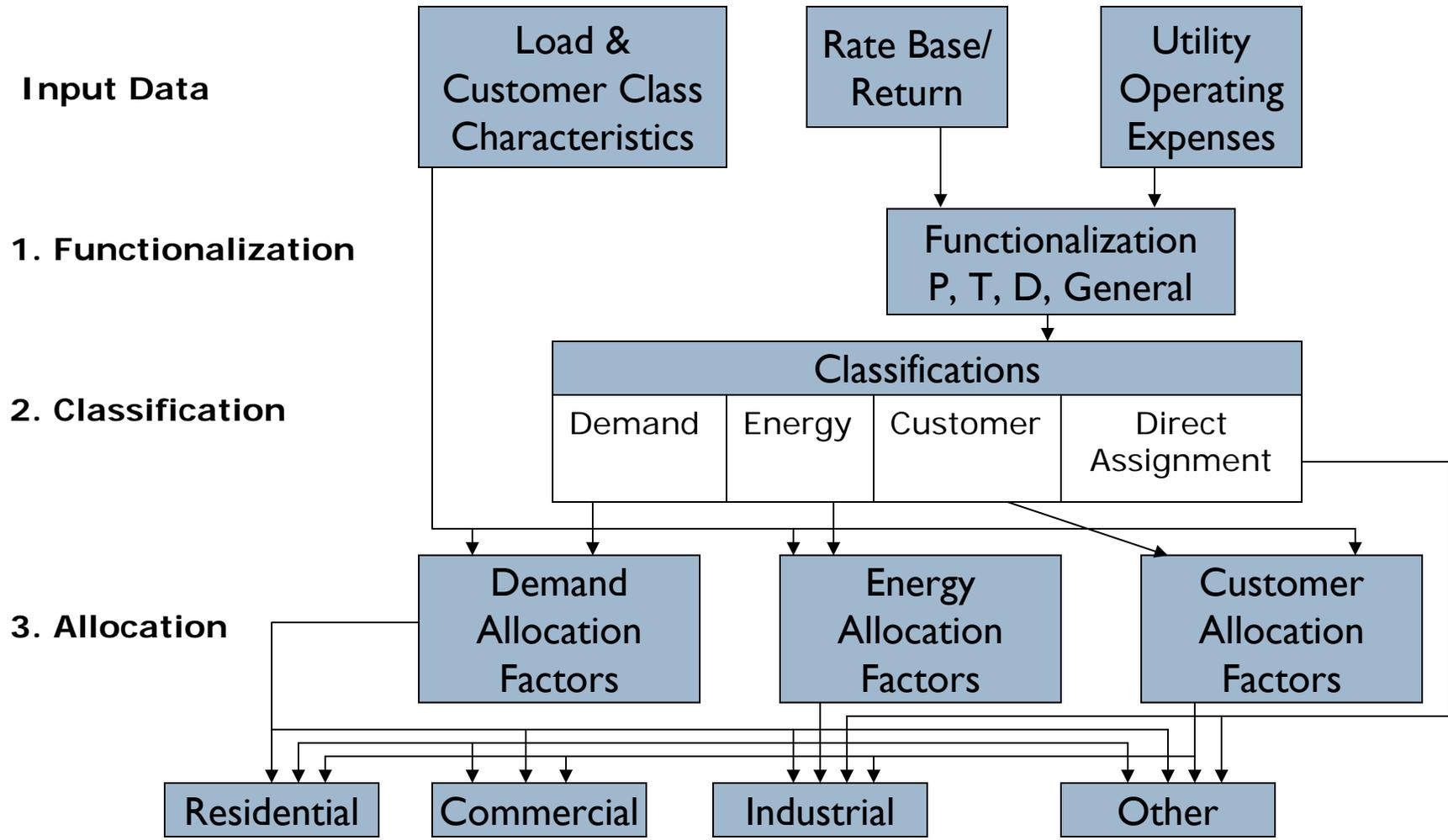
- ▶ In Texas, rates should not be:
  - ▶ Unreasonably preferential
  - ▶ Prejudicial
  - ▶ Predatory
  - ▶ Discriminatory
  - ▶ Anticompetitive
- ▶ Rates must not embody unreasonable distinctions
- ▶ Rates should be just, reasonable, sufficient, equitable, and consistent

# Rate Design

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- ▶ Rate setting is prospective
- ▶ Rates are set today to recover the future cost of service
- ▶ Development of the revenue requirement is largely a **science**, but rate design involves significant element of **art**
- ▶ Rate setting may fulfill several objectives
  - ▶ Social – ensuring that service is available and affordable to all customer classes
  - ▶ Technological – encouraging use of “green” technology as opposed to more polluting forms of energy generation
  - ▶ Competitive – where the utility faces competition in some form, preventing exercise of market power while not disadvantaging utility
- ▶ Rate regulation is an act of government exercising social policy with the objective of enhancing social welfare

# Rate Design – allocation of costs



# Rate Design - Functionalization

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- ▶ **Step 1: What purpose does the cost serve for the utility?**
  - ▶ Determine, for each item of rate base and expense, the functional use in the following categories:
    - ▶ Production (including purchased power)
    - ▶ Transmission
    - ▶ Distribution
    - ▶ General or Other
  - ▶ Accounting rules should be generally consistent with functions

# Rate Design - Classification

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- ▶ **Step 2: – What causes the cost to be incurred?**
  - ▶ Divides the costs, according to causality, into the following components:
    - ▶ Demand (Fixed costs that vary with kW demand)
    - ▶ Energy (Variable costs that vary with kWh provided)
    - ▶ Customer (Directly related to number of customers)
      - Investment in distribution plant to establish basic service
      - Metering, accounting, billing and customer service costs

# Rate Design - Classification

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- ▶ **Step 3: How much of the total cost should each customer class pay?**
  - ▶ Once costs have been functionalized and classified they are:
    - ▶ Directly assigned to a specific class if wholly attributable to a particular customer or customer class
    - ▶ Allocated to customer classes using appropriate allocation factors
  - ▶ Objectives or criteria to assess an allocation method
    - ▶ Reflects cause (cost causation)
    - ▶ Reflects usage patterns
    - ▶ Produces stable results from year to year
    - ▶ Easy to understand by both regulators and customers
    - ▶ Accepted by regulators

# Alternative Forms of Rate Regulation: Incentive Regulation

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- ▶ In the late 1980's, there was a general move in telecommunications regulation to “incentive regulation”
  - ▶ Argument: Traditional rate-base regulation provided incentives for the utility to “gold plate” facilities, led to inefficiency and higher costs
  - ▶ Proposed solution: Assume that existing rates are reasonable. Classify types of service into “buckets.” Each bucket's rates are capped at existing levels.
    - ▶ Provide a productivity “target” for each bucket; rates would be required to decline by a certain percentage each year. If the utility could beat the productivity target, it could keep the higher earnings
    - ▶ Provision was made for extraneous influences on costs (e.g., an increase in a federal tax rate would be taken into account)

# Alternative forms of rate regulation: Incremental cost studies

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- ▶ As telecommunications utilities began to face competition for certain services in the late '80's and early '90's, it was argued that rates for services that faced competition should be based on incremental cost, not fully-allocated accounting cost
- ▶ Many states adopted standards that set a “cost floor” for competitive services at the ***long-run incremental cost (LRIC)*** of the service
  - ▶ Includes both the variable cost of the service and any costs that would be avoided if the service were not offered
  - ▶ Did not include any allocation of joint and common cost
  - ▶ Typically, cost studies were performed in a “bottom up” manner, not “top down” as in a traditional rate case

# Alternative forms of rate regulation - TELRIC

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- ▶ After passage of the Telecomm Act of 1996, there was a need to estimate total cost of telecomm plant
  - ▶ To calculate levels of subsidy needed to support universal service
  - ▶ To calculate prices for unbundled network elements that would be made available to incumbent utilities' competitors
- ▶ Incumbent utilities resisted a return to the rate-base/rate-of-return method of determining cost
  - ▶ Solution was the development of complex engineering/economic models of total network costs
  - ▶ These models relied on detailed customer location data and engineering algorithms to determine the total amount and cost of plant that **theoretically** should be required to provide service
  - ▶ In economic terms, the models were designed to estimate the Total Element Long Run Incremental Cost (TELRIC) of each network function provided by the utility

# Questions?

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