

National Association of Regulatory Utility Commissioners Regulatory Partnership Program



Pennsylvania Public Utility Commission (PUC)

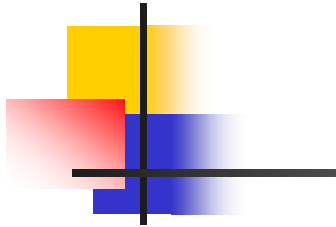
Paul Metro

**The Process and Basic Steps in Setting
Transmission Tariffs and Connection Charges**
**The Process and Basic Steps in Setting
Distribution Tariffs and Connection Charges**

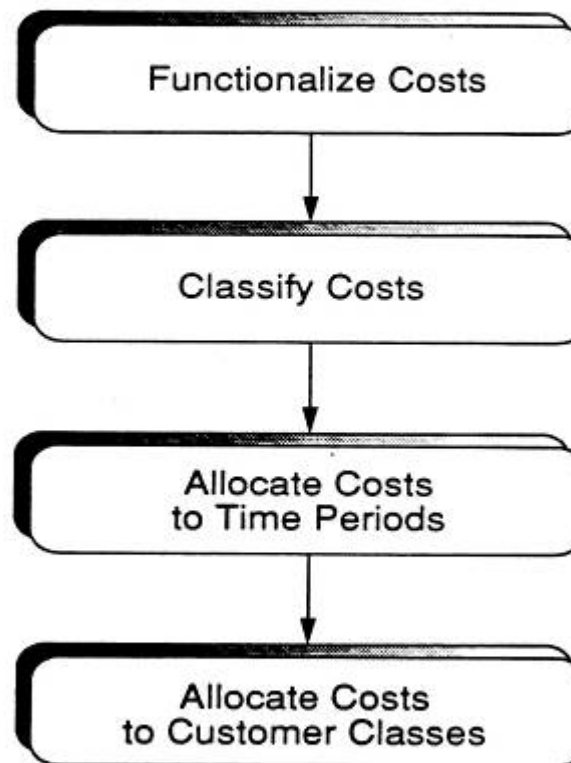


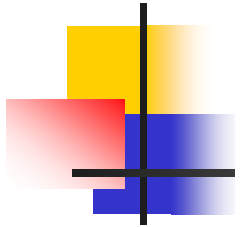
Cost of Service Study – Three Basic Steps

- Functionalization
- Classification
- Allocation



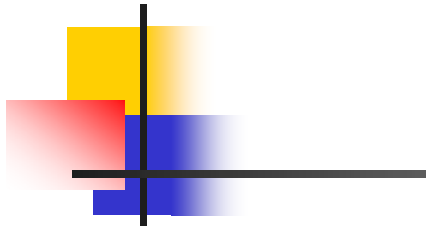
Steps in Cost Allocation



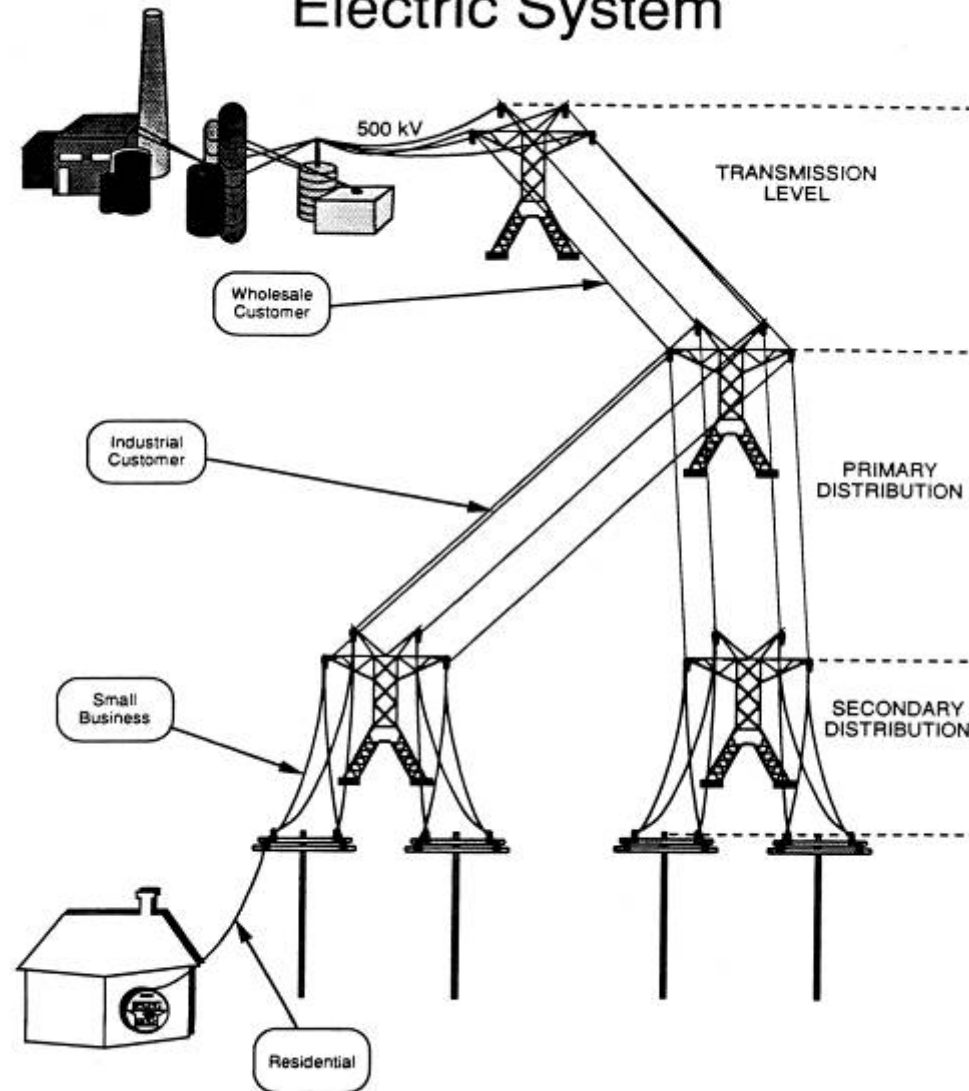


Functionalization Of Costs Electric

Production	Transmission	Distribution	General
Generating Plant	High Voltage	Distribution Lines	Plant investment
Generation O&M	Transmission Lines	Distribution Substations	or expenses not
Fuel Cost	Transmission O&M	Line Transformer	related directly
Purchased Power	Transmission Stations	Meters	to other functions
		Service	

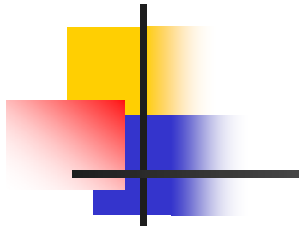


Electric System



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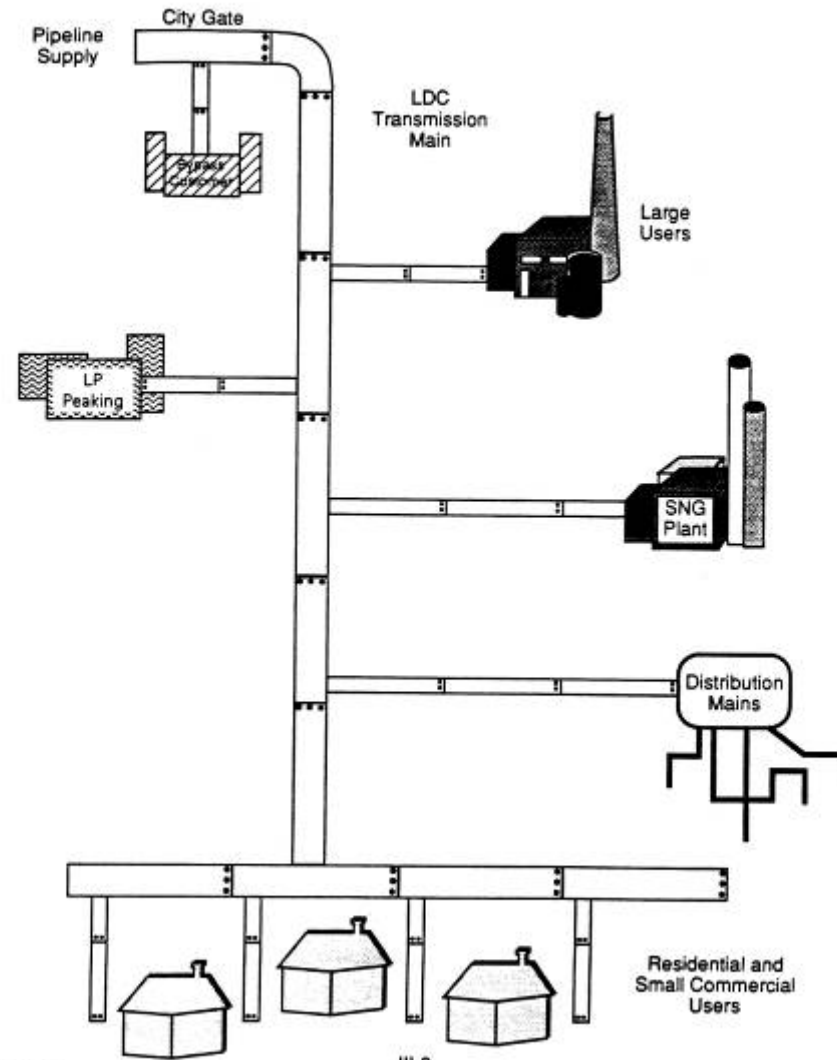
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Functionalization Of Costs Gas Systems

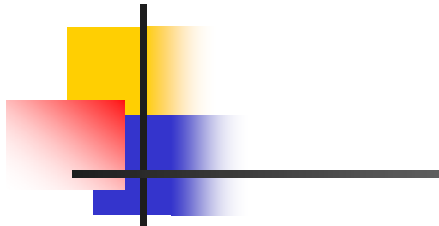
Production	Storage	Transmission	Distribution	General
Pipeline demand charges	Underground storage	High pressure long distance gas transportation	Transporting gas to ultimate customers	Plant investment or expenses not related directly to other functions
Peaking facilities	Local storage			
SNG or LNG plant				

Gas Distribution System

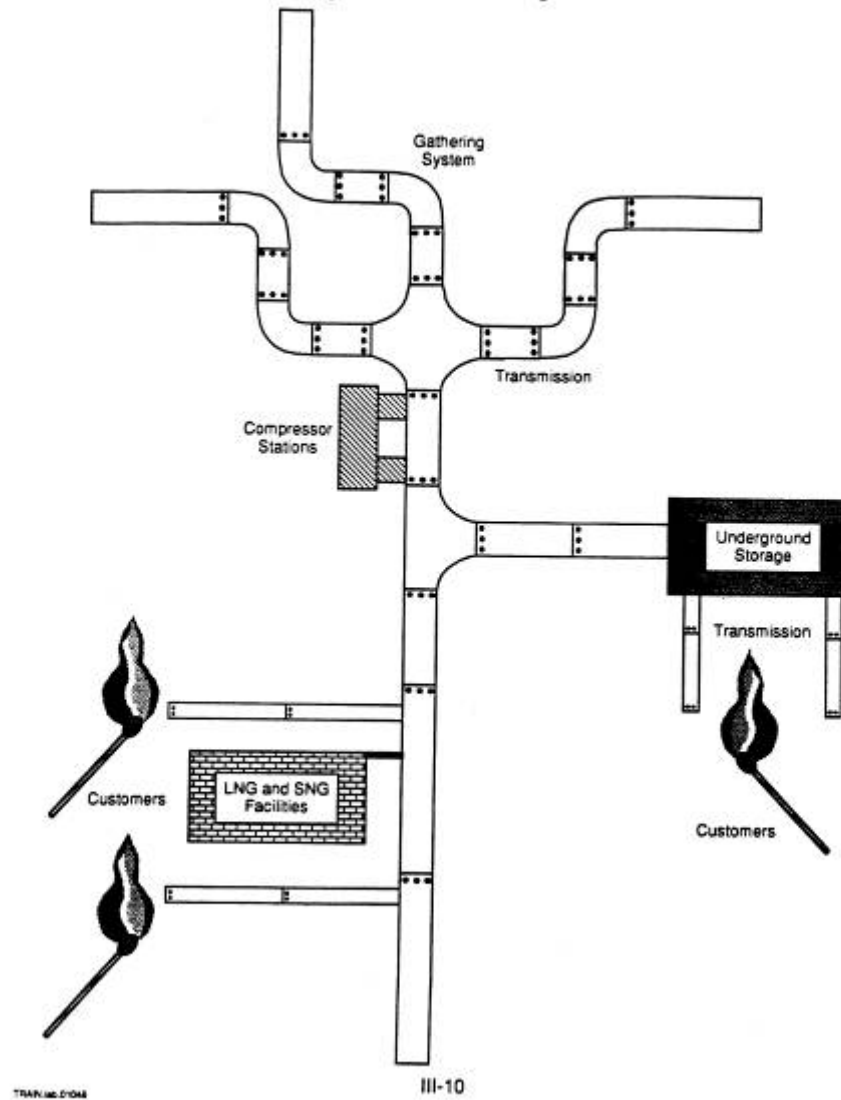


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Pipeline System





Cost of Service - Functionalization

- ❖ What is the cost function?
- ❖ Functionalization identifies the costs attributable to the provision of service, excluding non-utility or other utility service items
- ❖ Groups costs according to the particular function i.e.
Electric – Generation, Transmission, Distribution
Gas – Production, Gathering, Transmission, Distribution



Cost of Service - Functionalization

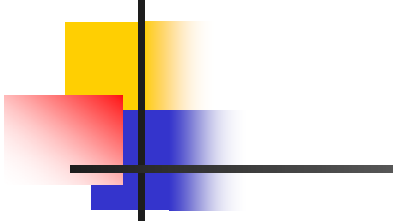
- ✓ Uniform System of Accounts classifies most cost items
- ✓ Other items such as income taxes, cost of capital, and administrative costs must be allocated within these functions



Cost of Service - Classification

- ✓ Functionalized costs are classified as being either Fixed or Variable Costs

Fixed and Variable Cost



Fixed costs relate to providing installed capacity. Generally fixed costs have been allocated based on a demand measure rather than an energy or commodity measure. This is, however, not exclusively true. Examples of deviations are:

1. Electric - Average and Excess Allocation
2. Electric - System Planning Allocation - BIP Equivalent Peaker
3. Gas Pipeline - Atlantic Seaboard - 50% Demand/50% Commodity
4. Gas Pipeline - United - 25% Demand/75% Commodity
5. Recent Gas Pipeline Policy - Minimize Commodity Charge



Cost of Service – Cost Classification

- Three types of Classified Costs
 - Demand/Capacity Costs
 - Commodity/Energy Costs
 - Customer Costs



Cost of Service – Cost Classification

- Demand/Capacity Costs are those costs which include capital and operating expenses incurred to provide sufficient capacity to meet peak demand. These costs are not affected by the number of customers or annual usage, but rather are put in place to service customers at the time of maximum usage



Cost of Service - Cost

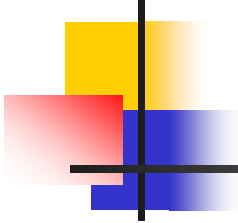
Classification – Demand Costs

- ✓ An example of demand cost classification would be transmission plant constructed to provide service to meet the peak demand...all capital and operating expenses associated with the construction and maintenance of this facility would be considered demand costs



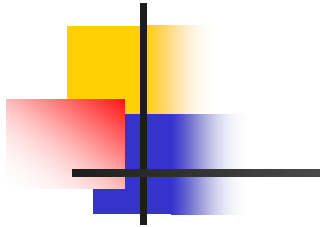
Cost of Service – Cost Classification – Commodity Costs

- ❑ Commodity/Energy Costs are those costs that vary in direct proportion to the volume of service consumed. These costs are not related to capacity or customer costs
- ❑ An example of Commodity costs are the purchased natural gas volumes transported through interstate pipelines utilizing fixed demand (capacity costs)



Cost of Service – Cost Classification – Customer Costs

- Customer Costs are those costs that are affected directly by the number of customers served regardless of usage. Such costs include meters, meter reading, billing, and some portion of the distribution system
- Normally, the customer charge recovers customer related costs



Determination of Customer Related Costs

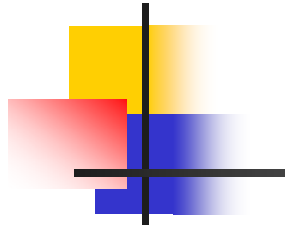
Plant

- Meters
- Service Extension
- Minimum Grid
- Zero Intercept

Expenses

- Meter Reading
- Customer Accounting
- Customer Service

Classification of Costs



		<u>Classification</u>		
		Demand	Energy	Customer
F u n c t i o n	Production	X	X	
	Transmission	X		
	Distribution	X		X
	General			X



Cost of Service - Cost Classification

- ❖ Classification of costs is largely a matter of judgment
- ❖ Parties litigating rate cases have proposed distribution mains as 50% energy related and 50% customer related –
- ❖ This type of classification reduces the distribution mains allocation to industrial customers
- ❖ OCA normally supports 50% demand related and 50% energy related
- ❖ This type of classification places more burden on the industrial customers and shifts costs away from residential customers

Table IV-A
Classification Between Energy and
Demand Related Costs

Classification of Rate Base

<u>FPC Uniform System of Account Nos.</u>	<u>Description</u>	<u>Demand Related</u>	<u>Energy Related</u>	<u>Customer Related</u>
<u>Production Plant</u>				
301-303	Intangible Plant	X	-	-
310-316	Steam Production	X	-	-
320-325	Nuclear Production	X	-	-
330-336	Hydraulic Production	X	X	-
340-346	Other Production	X	2	-
<u>Transmission Plant</u>				
350-359	All Transmission Accounts	X	-	-
<u>Distribution Plant</u>				
360	Land & Land Rights	X	-	X
361	Structures & Improvements	X	-	X
362	Station Equipment	X	-	-
363	Storage Battery Equipment	X	-	-
364	Poles, Towers & Fixtures	X	-	X
365	Overhead Conductors & Devices	X	-	X
366	Underground Conduit	X	-	X
367	Underground Conductors & Devices	X	-	X
368	Line Transformers	X	-	X
369	Services	-	-	X
370	Meters	-	-	X
371	Installations on Customer Premises	-	-	X
372	Leased Property on Customer Premises	-	-	X
373	Street Lighting & Signal Systems	-	-	-
<u>General Plant</u>				
389-399	All General Plant Accounts	X	-	X
<u>Material & Supplies</u>				
151	Fuel	X	-	-
152-174	Other	X	-	X

1. Direct assignment or "exclusive use" costs are assigned directly to the customer class or group which exclusively uses such facilities. The remaining costs are then classified to the respective cost components.

2. In some instances, a portion of hydro rate base may be classified as energy-related.

Excerpted from NARUC, Electric Utility Cost Allocation Manual, 1973.



Cost of Service – Cost Classification

- PA PUC does not have a definitive classification method
- Remember that a cost of service study is only a ratemaking guide or tool

Cost of Service – Cost Allocation



- ✓ Once the costs are functionalized and classified, the final step is to allocate the costs among the various customer classes
- ✓ Direct Allocation – known costs that are incurred on behalf of one customer or class of customers should be directly assigned to that customers or class
- ✓ For example – Uncollectible Expenses are normally incurred by residential customers



Cost of Service – Cost Allocation

- For costs that cannot be directly assigned, then customer class ratios are developed to allocate the remaining costs



Cost of Service – Cost Allocation

Example of class ratios

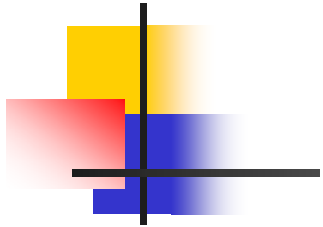
Class	#Customers	Ratio to Total
R	75	.75
C	15	.15
I	10	.10
Total	100	1.00



Cost of Service – Cost Allocation

In this example, if the costs were classified as customer related costs, then the residential customer class would be allocated 75% of all customer identified and classified costs that are not directly assigned

Cost Allocation Guidelines

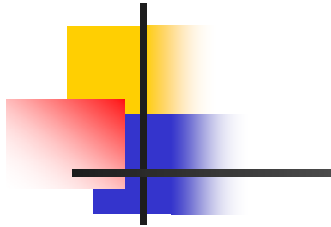


Cost causation

Why was plant installed?

Why was expense incurred?

What measure of system usage
best captures cost causation?



Allocating Costs to Customer Classes

(Commonly Used Allocation Methods)

Demand Costs

Coincident Peak Method

Twelve Month Coincident Peak

Average and Excess

Class Coincident Peak Method

Maximum Non-Coincident Demand

Energy Costs

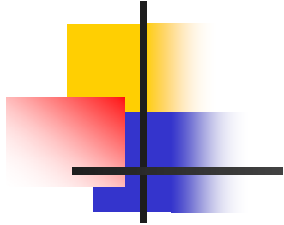
Energy Usage

Time Differentiated Energy Usage

Customer Costs

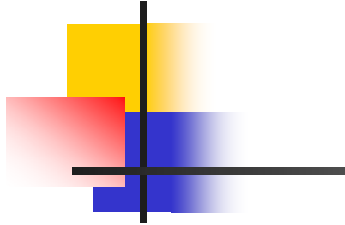
Customers

Weighted Customers



Frequently Contested And Unresolved Allocation Issues

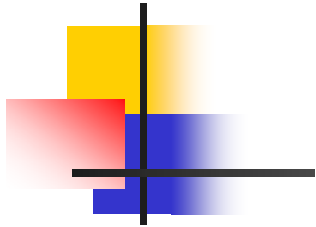
- **Allocation of Fixed Cost of Base Load Generation**
- **Determination of Customer Related Costs**
- **Allocation of Take or Pay Costs**
- **Appropriate Measure for Demand Allocation**
- **How to Apply Results**
- **Normalization**



Summary

Essential Steps in Cost Allocation

- **Define Classes**
- **Detail Investment and Expenses**
- **Decide on Appropriate Allocator for Each Investment or Expense**
- **Determine Allocator from Load Research Data**
- **Perform Calculations**



Jurisdictional Allocation

Objective is to fairly and fully allocate overall revenue requirements to jurisdictions.

Examples are:

Utilities providing service to an regulated by commissions in more than one state.

Utilities providing wholesale service which is regulated by the FERC and retail service which is regulated by states.

Rate cases are at different times.

Cost allocation is primary method of allocating revenue requirements.

Direct assignment may be appropriate.

Revenue offset used in some cases.



Cost of Service – Cost Justification

- A company's revenue allocation is cost justified when all of the customer classes are moving towards the average system rate of return
- Gradualism and rate shock are considerations when examining customer class returns