Natural Gas Pipeline / LDC Rates

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Gas Industry Structure

Producers

Pipelines

Distributors

LDC

Customers

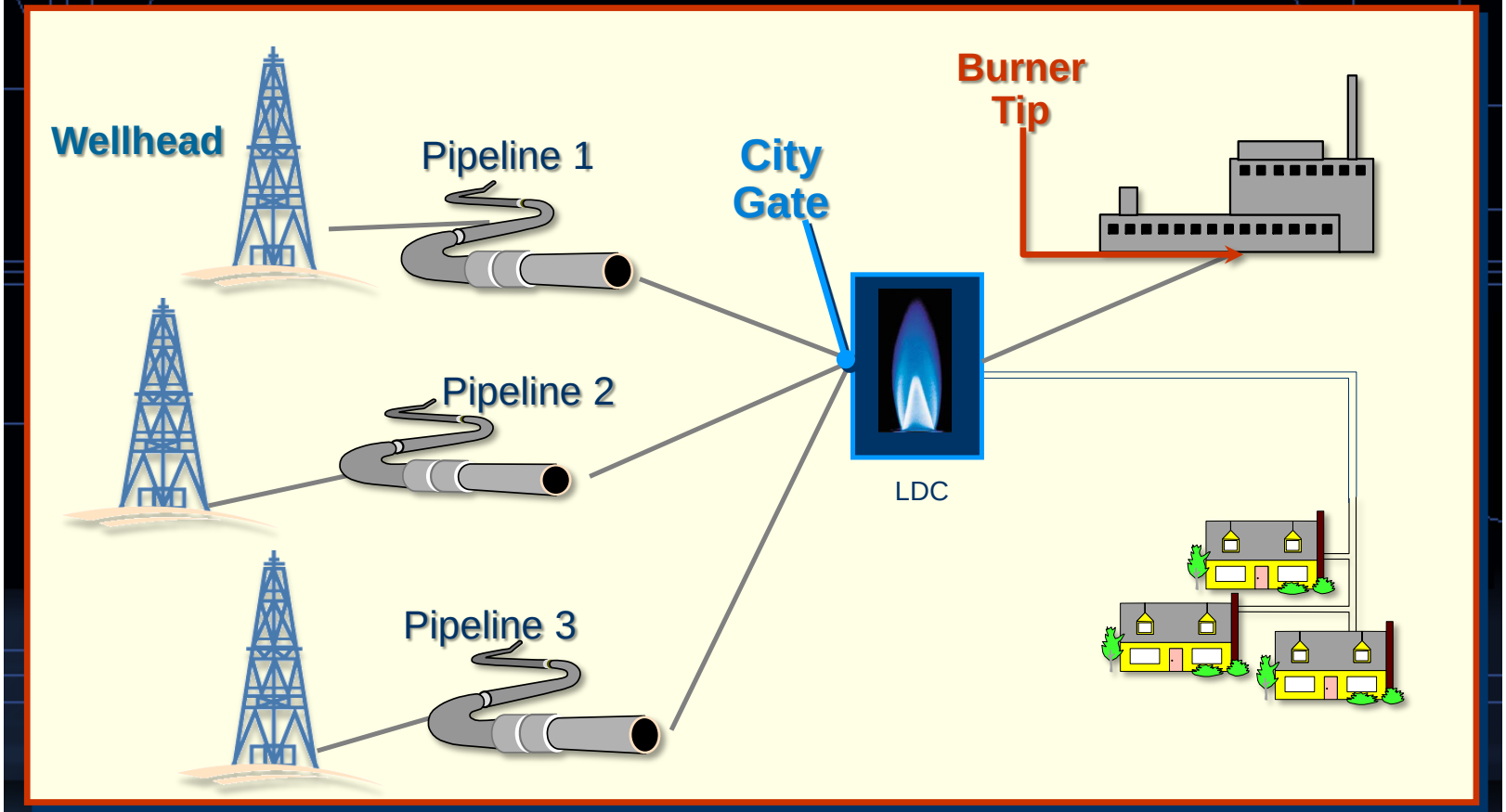
Marketers/
Brokers

Upstream

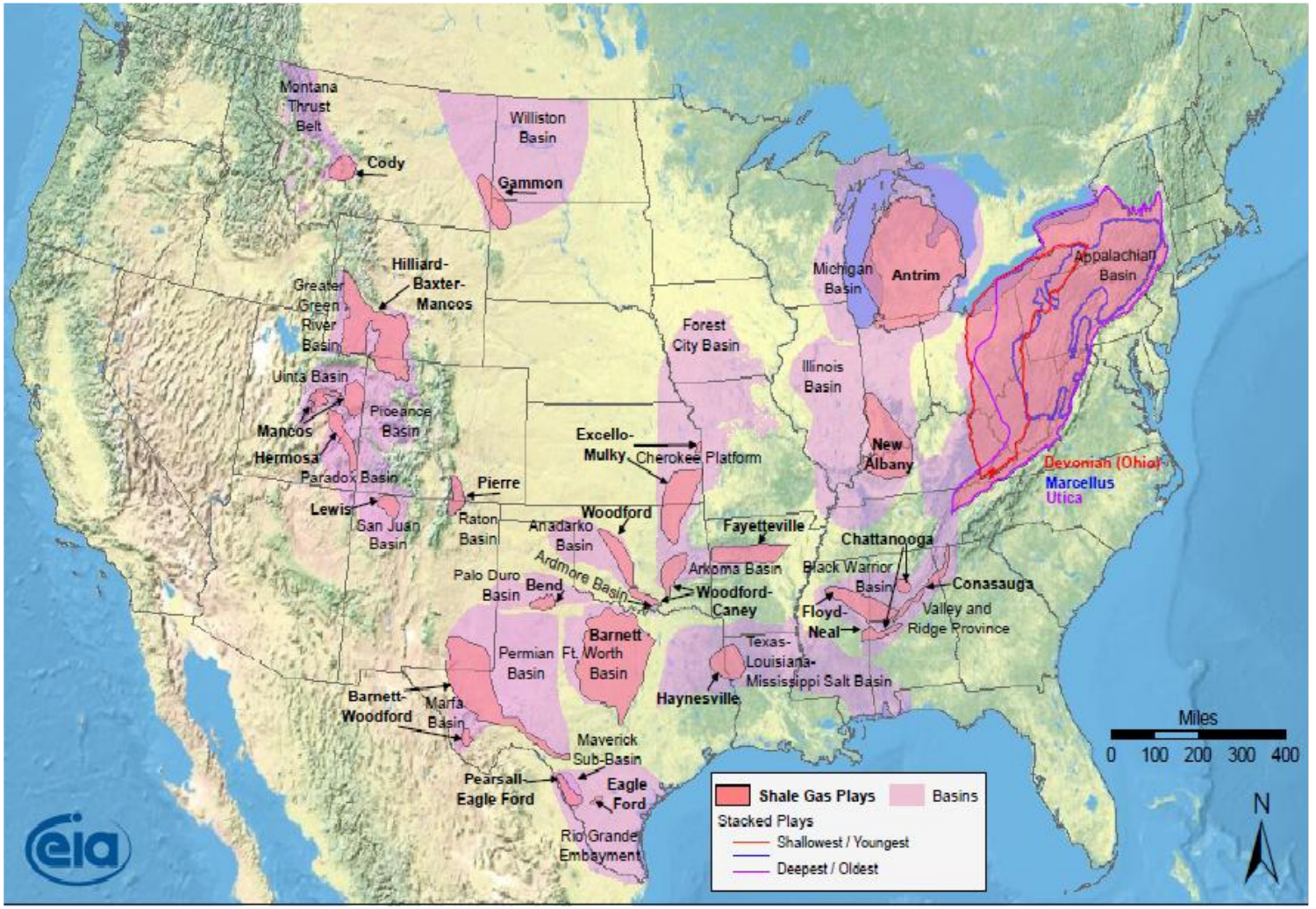
Downstream

BAI

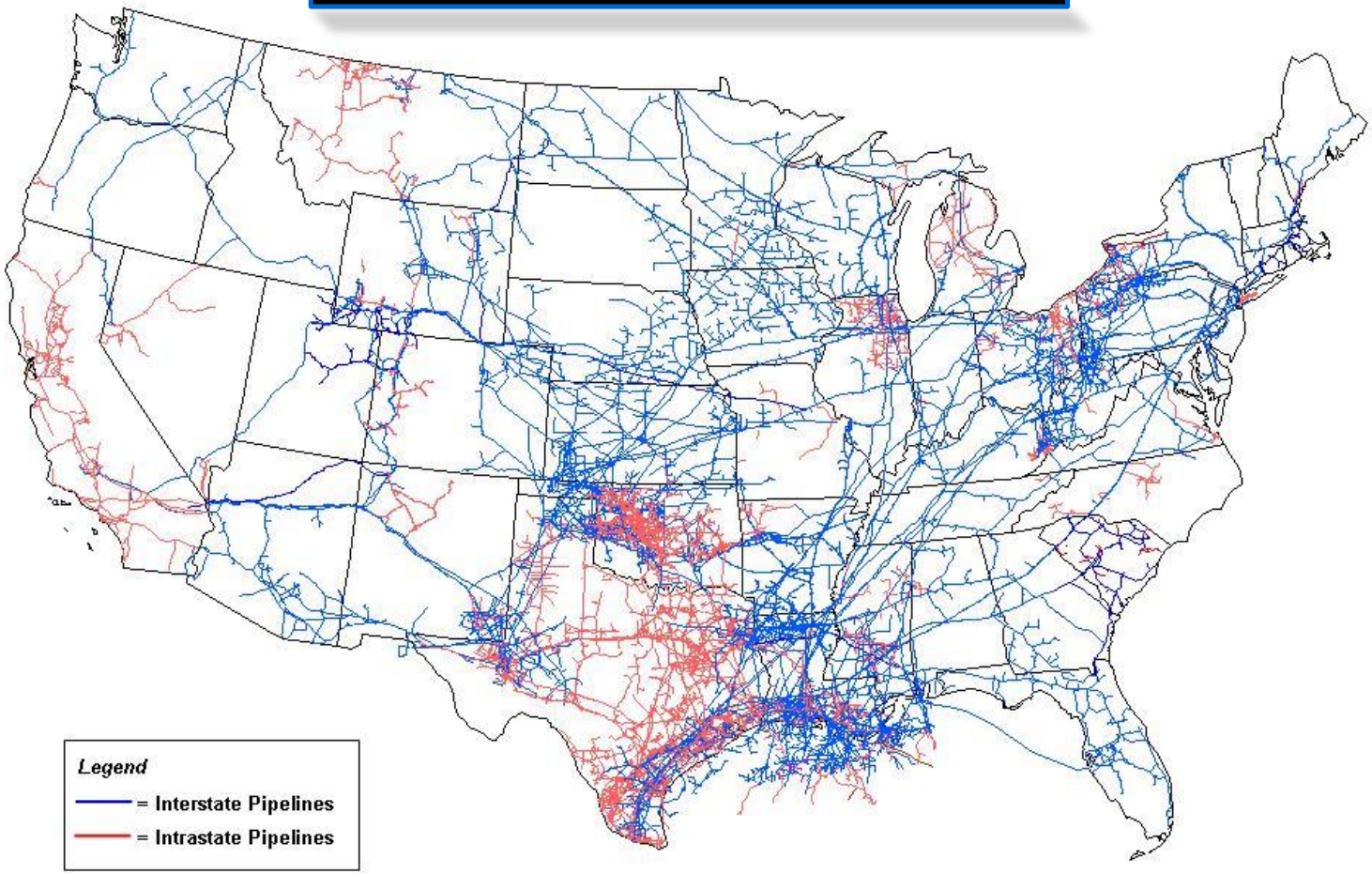
Gas Industry
Functional Structure



Shale Gas Plays, Lower 48 States

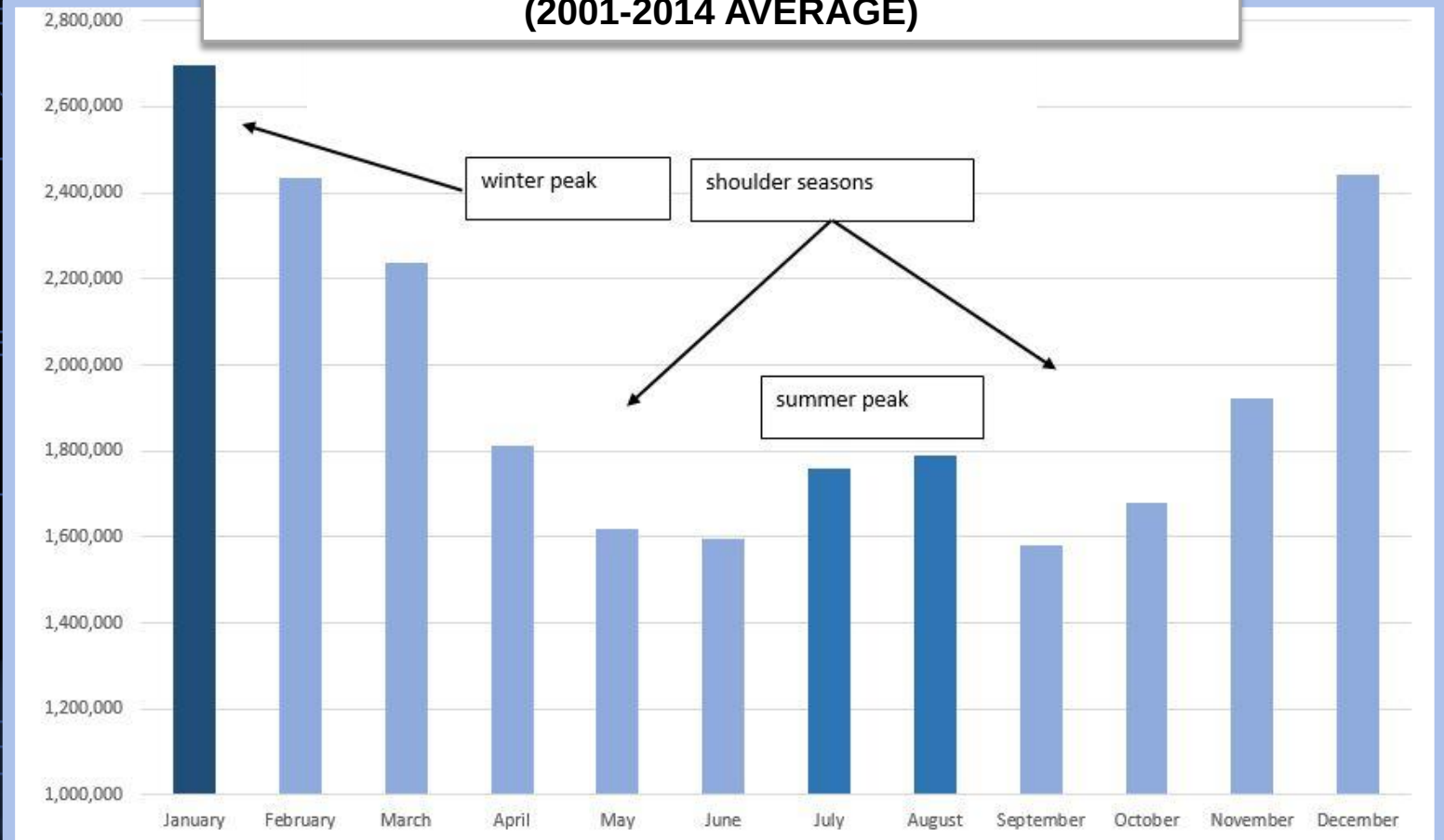


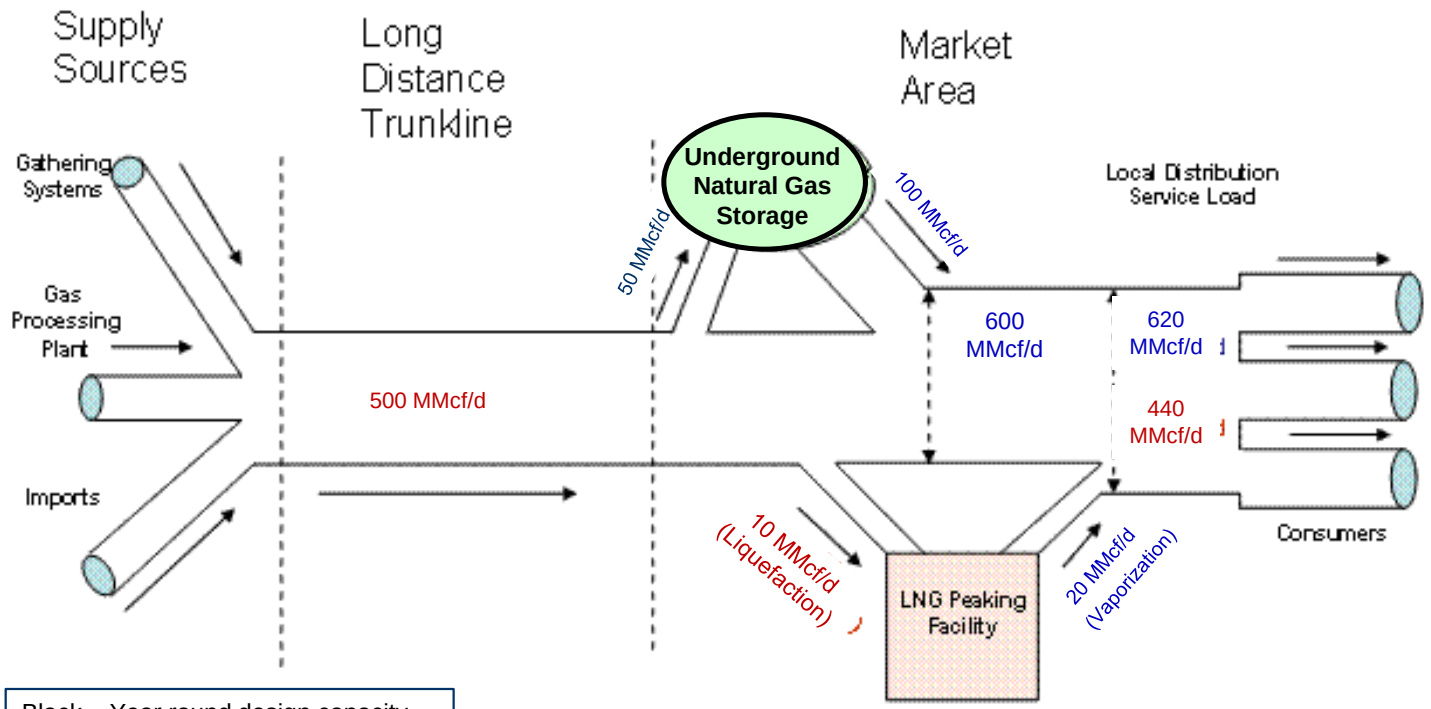
Natural Gas Pipelines



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

U.S. NATURAL GAS CONSUMPTION (MMCF) BY MONTH (2001-2014 AVERAGE)



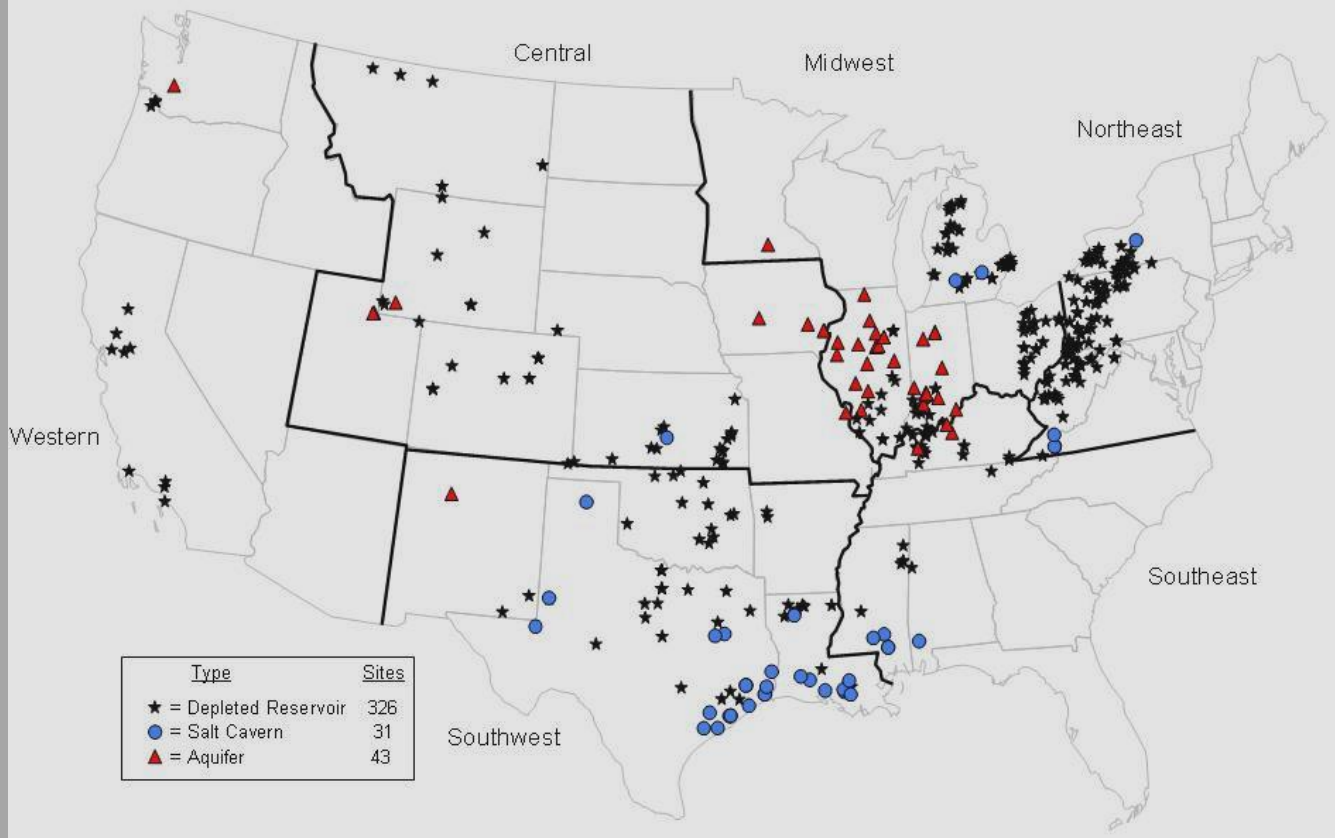


Black = Year round design capacity
Red = Non-heating season (spring-summer need)
Blue = Heating Season (winter or peak-period need)

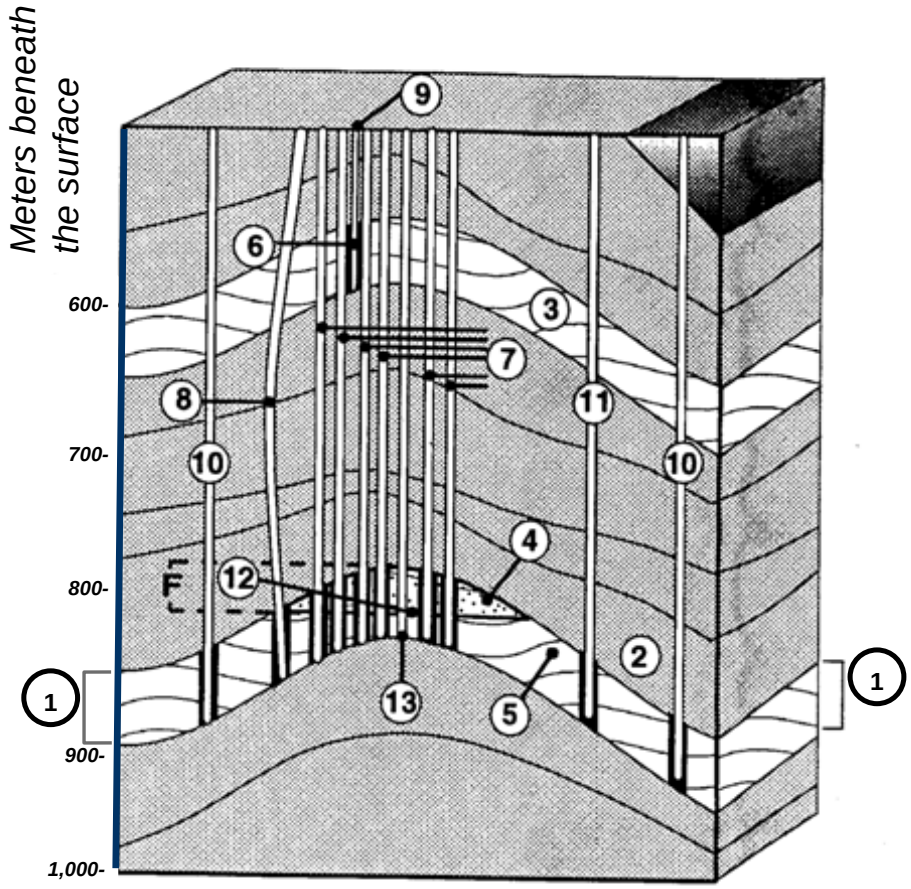
Note: MMCF/d= million cubic feet per day. Areas shown are not proportional to capacity volumes indicated. Other natural gas transmission pipelines may interconnect with and supplement the supplies of the mainline transmission or local distribution company in the market area to meet peak period demands.

Source: Energy Information Administration, Office of Oil and Gas

Gas Storage



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division Gas, Gas Transportation Information System, December 2008.

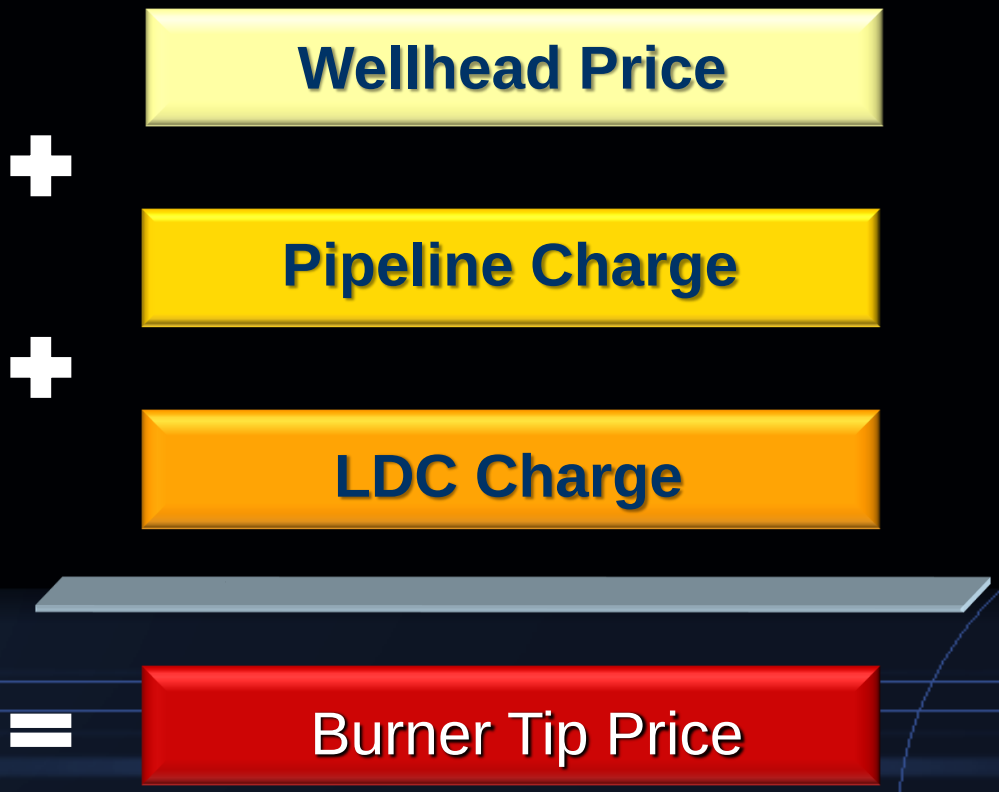


Diagrammatic cross section of an aquifer storage reservoir:

1. Aquifer. Porous, permeable layer (reservoir).
2. Impermeable cap rock.
3. Upper control aquifer.
4. Gas.
5. Water.
6. Strainers.
7. Operating well.
9. Upper aquifer observation well.
10. Peripheral observation well.
11. Water level monitoring well.
12. Water level gas/water interface.
13. Neutron logging well.
14. Closure.

Source: Gaz de France, "Underground Storages Facilities" (June 1992): Recreated by Energy Information Administration, Office of Planning, Management and Information Services.

Burner Tip Price ($/MMBtu)



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Delivery Rates

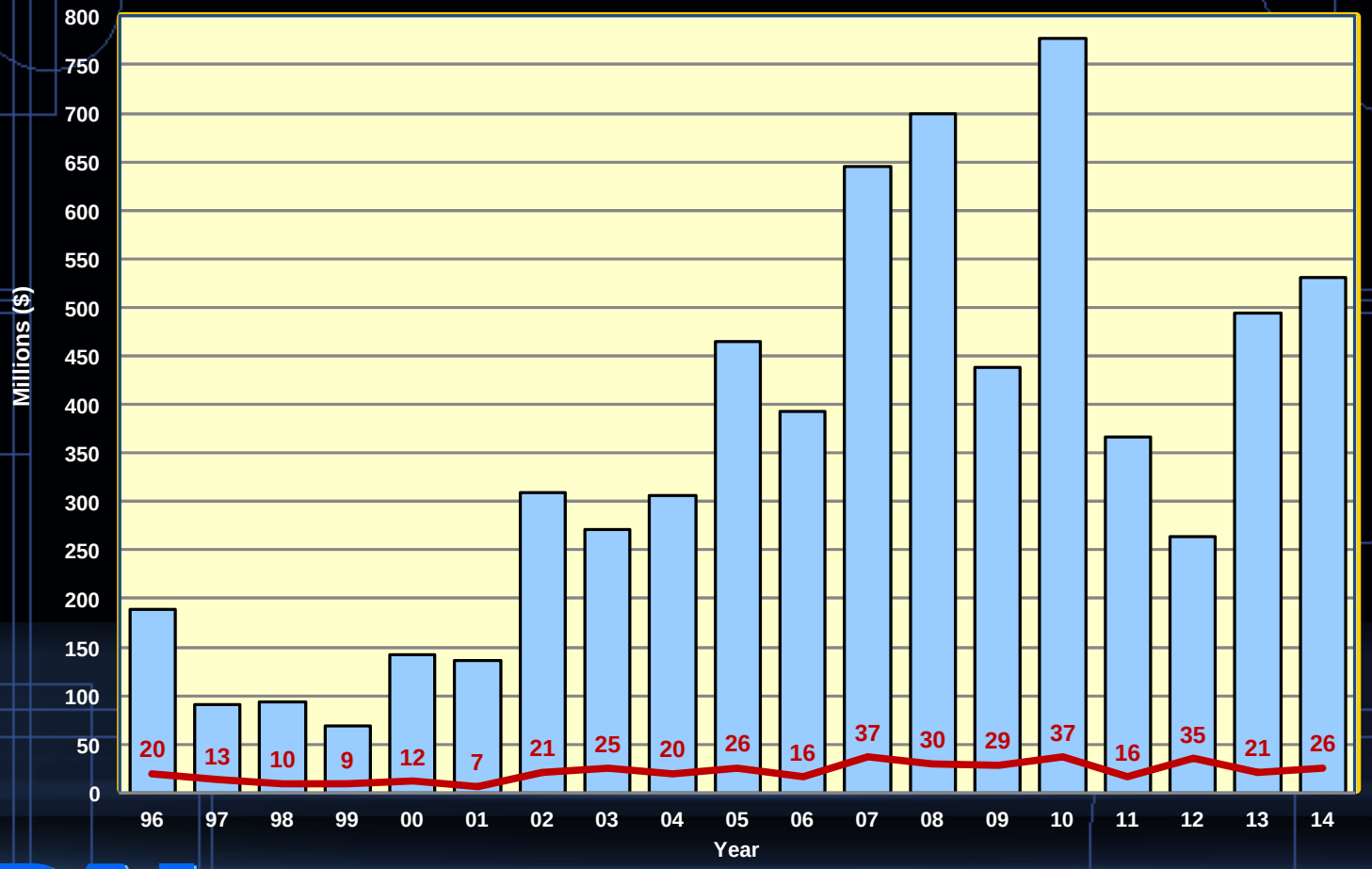
Regulated Utility Tariff Rates

	Agency
Transmission (Pipeline Charge) →	FERC
Distribution (LDC Charge) →	State/Local

LDC Rate Case

- Utility files proposed rates and supporting evidence
- Other parties challenge and offer alternatives
- Commission makes decision

Annual Gas Rate Case Decisions and Authorized Gas Revenue Increases ($M)



Main LDC Rate Case Issues

- Class Cost of Service
  - Volumetric vs. demand allocation
- Revenue Allocation
  - Spread of utility revenue requirement among rate classes

Purpose of a Cost-of-Service Study

To measure the responsibility of each class for the service provided by the utility

Typical Rate Classes in a Cost-of-Service Study

- Residential
- General Service
- Large Volume Service
- Interruptible
- Transportation

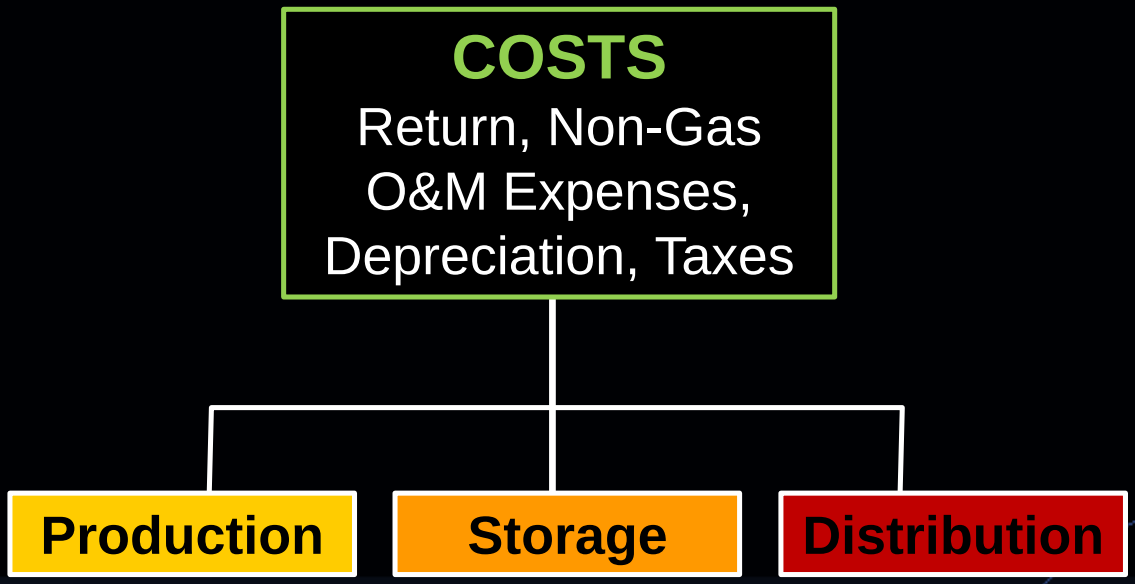
Cost Study Should Reflect:

- Many different types of cost
- Some customers do not use all of the services provided by an LDC
- Usage patterns affect cost incurrence

Procedure

1) Identify different types of cost
2) Determine causative basis for each type
3) Allocate each item among classes

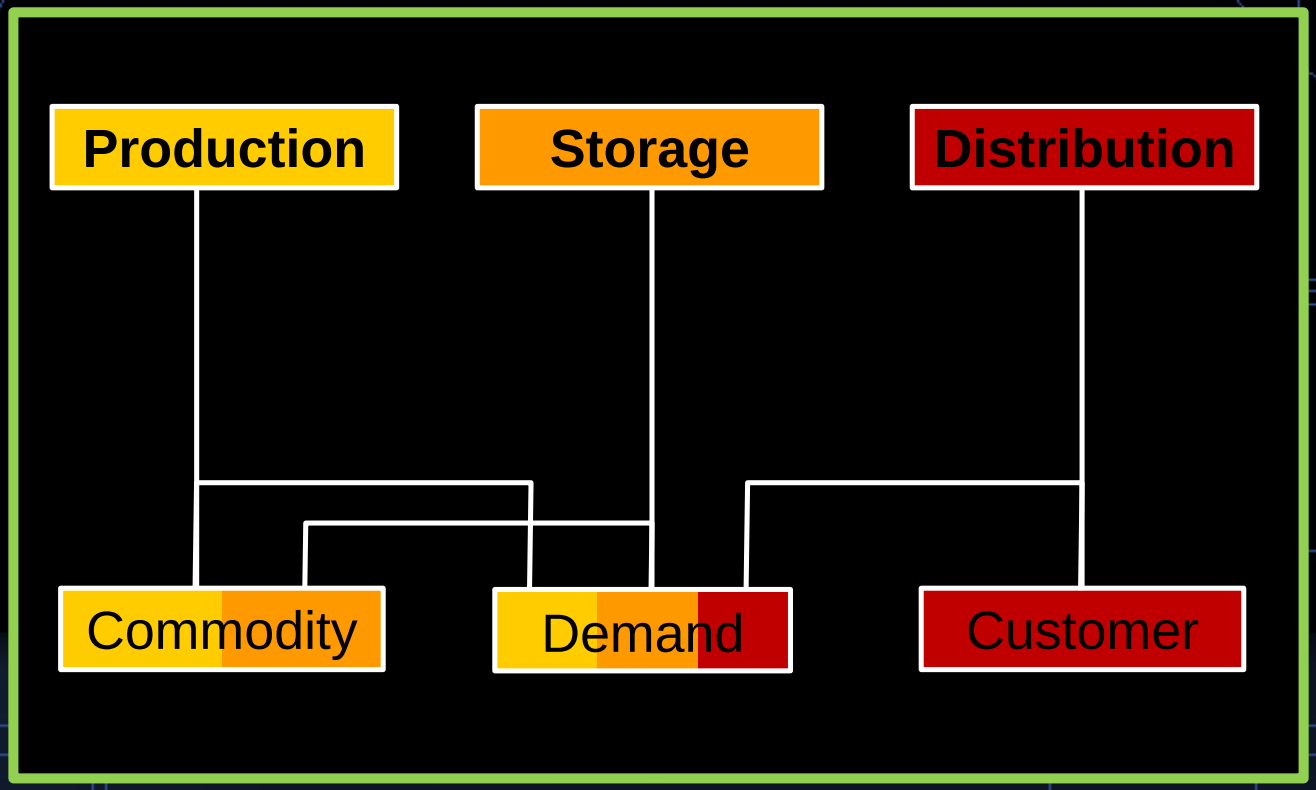
Functionalization



Classification

Determine the primary causative factor for each type of cost

Classification



Classification Categories

- Direct assignment
- Number of customers
- Commodity (Mcf or therm usage)
- Demand requirements
  (Maximum rate of usage – Mcf per day)
- Revenue related

Classification of Plant

	Customer	Demand	Commodity
Production		✓	✓
Storage		✓	✓
Distribution	✓	✓	
General	✓	✓	✓

Classification of Expense

	Customer	Demand	Commodity
Production		✓	✓
Storage		✓	✓
Distribution	✓	✓	
Customer Acct.	✓		
Admin. & Gen.	✓	✓	✓

Methods of Allocation

- Cost causation
- “Benefits”
- Social / Political Policy
- End results

Demand Allocation Methods

General Criteria

- Cost causation
- Recognize utility's load characteristics
- Choice of method can be controversial

Demand Allocation Methods

- Coincident Peak
- Non-Coincident Peak
- Average and Excess
- Average and Peak
- Average Demand

Coincident Peak Allocation Method

	Mcf	Percent
Residential	54,125	54.00%
General Serv.	32,000	31.93%
Interruptible	7,100	7.09%
Transportation	7,000	6.98%
TOTAL	100,225	100.00%

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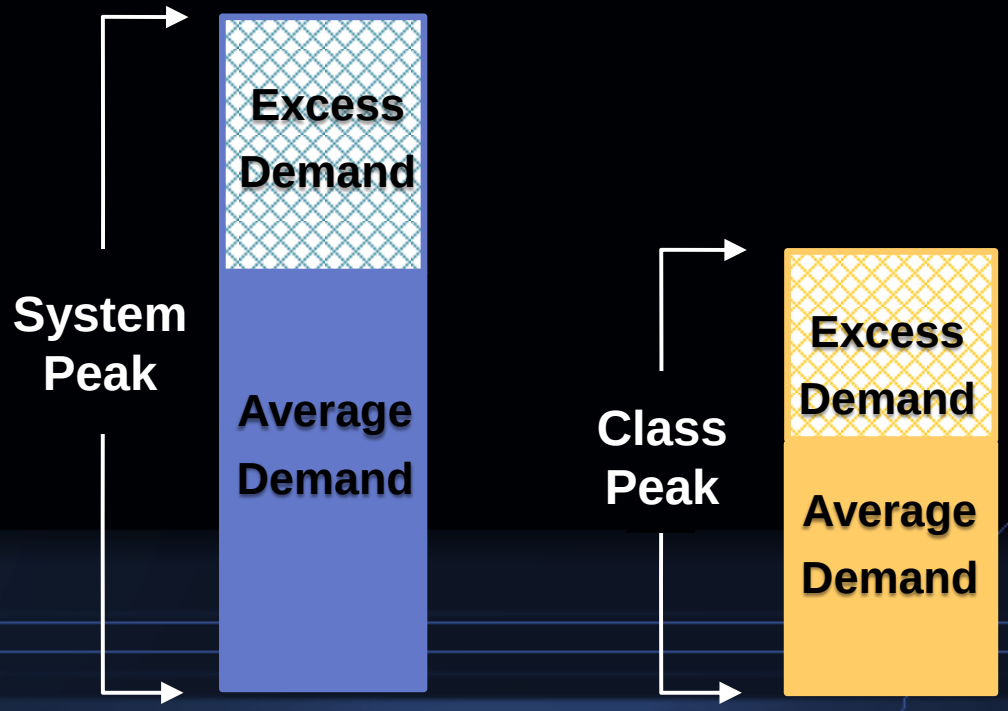
Average & Excess Method



Average & Excess Method

	Average Demand %	LF	Excess Demand %	1 - LF	AED %
Res	32.5%	37%	64.9%	63%	52.9%
GS	29.5%	37%	33.2%	63%	31.8%
IS	20.9%	37%	0.1%	63%	7.8%
Transp.	17.1%	37%	1.8%	63%	7.5%

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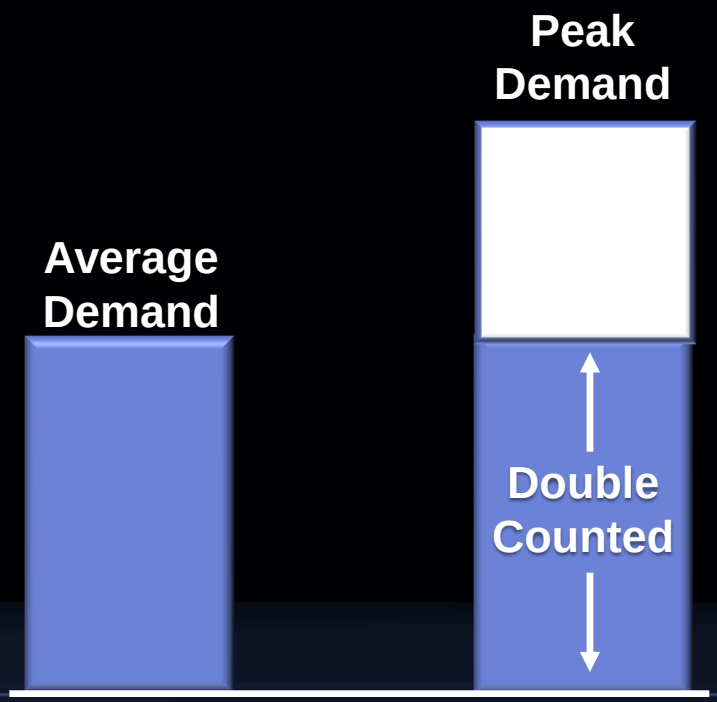
Average & Peak Method



Average & Peak Method

	Average Demand %	LF	Peak Demand %	1 - LF	AEP %
Res	32.5%	37%	58.9%	63%	49.2%
GS	29.5%	37%	33.7%	63%	32.1%
IS	20.9%	37%	0.0%	63%	7.7%
Transp.	17.1%	37%	7.4%	63%	11.0%

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Average Demand or Commodity Allocation Factors

	Annual Mcf Throughput	Percent
Residential	4,015,479	32.5%
General Serv.	3,635,714	29.5%
Interruptible	2,577,034	20.9%
Transportation	2,114,666	17.1%
TOTAL	12,342,893	100.0%

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Coincident Demand vs. Average and Peak

Distribution Mains Acct. 376 Net Plant - $1,000,000,000

Average & Peak Allocation

Rate Schedule		Amount	Peak Day CCF	Annual Volume CCF	Load Factor %		Net Plant $/CCF Peak Day	Index
Residential	$	502,789,056	10,000,000	1,100,000,000	30.1%	$	50.28	0.96
Commercial	$	370,697,833	7,000,000	900,000,000	35.2%		52.96	1.01
Transportation	$	126,513,110	2,000,000	400,000,000	54.8%		63.26	1.20
Total	$	1,000,000,000	19,000,000	2,400,000,000	34.6%	$	52.63	1.00

Coincident Demand Allocation

Rate Schedule		Amount	Peak Day CCF	Annual Volume CCF	Load Factor %		Net Plant $/CCF Peak Day	Index
Residential	$	526,315,789	10,000,000	1,100,000,000	30.1%	$	52.63	1.00
Commercial	$	368,421,053	7,000,000	900,000,000	35.2%		52.63	1.00
Transportation	$	105,263,158	2,000,000	400,000,000	54.8%		52.63	1.00
Total	$	1,000,000,000	19,000,000	2,400,000,000	34.6%	$	52.63	1.00

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Allocation of System Peak Day Capacity

Peak Day Capacity (CCF) = 18,744,947

Peak & Average Allocation

Rate Schedule	Coincident Peak Day Demand CCF	Average & Peak Allocated Peak Day Capacity CCF	Surplus/(Shortfall) in Allocated Peak Day Capacity CCF	Surplus/(Shortfall) in Allocated Peak Day Capacity %
Non-Heating Residential	78,779	87,429	8,650	11.0%
Residential	8,823,800	8,664,723	(159,077)	-1.8%
Commercial	8,229,751	8,202,764	(26,987)	-0.3%
Transportation	1,612,617	1,790,031	177,414	11.0%
Total	18,744,947	18,744,947	-	0.0%

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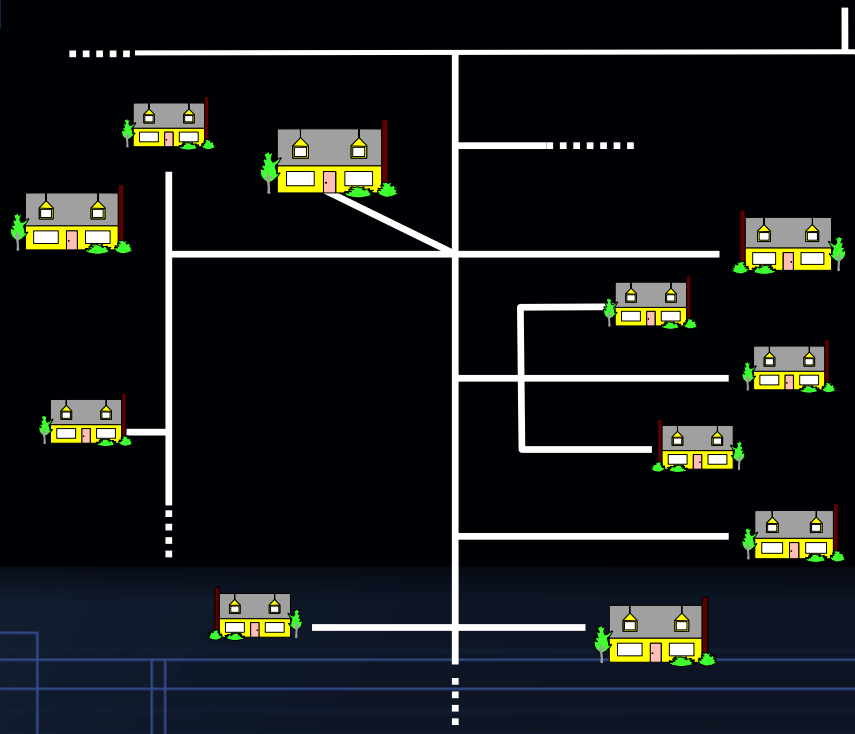
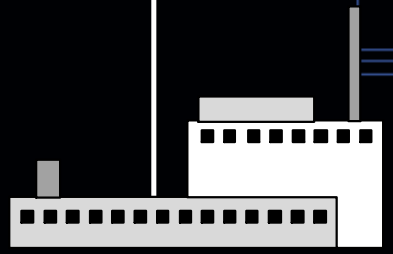
Customer Classification of Distribution Mains



Total Demand = 1,000 Mcf



Total Demand = 1,000 Mcf

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Minimum Distribution Method for Deriving Customer Related Component of Distribution Main

1)	Diameter of smallest main	1.5”
2)	Cost/foot of 1.5” main	$0.61 / ft.
3)	Total length of mains	6,385,860 ft.
4)	Cost if all mains were 1.5” diameter	$3,988,733
5)	Actual cost of mains	$19,326,453
6)	Customer portion (4) / (5)	20%

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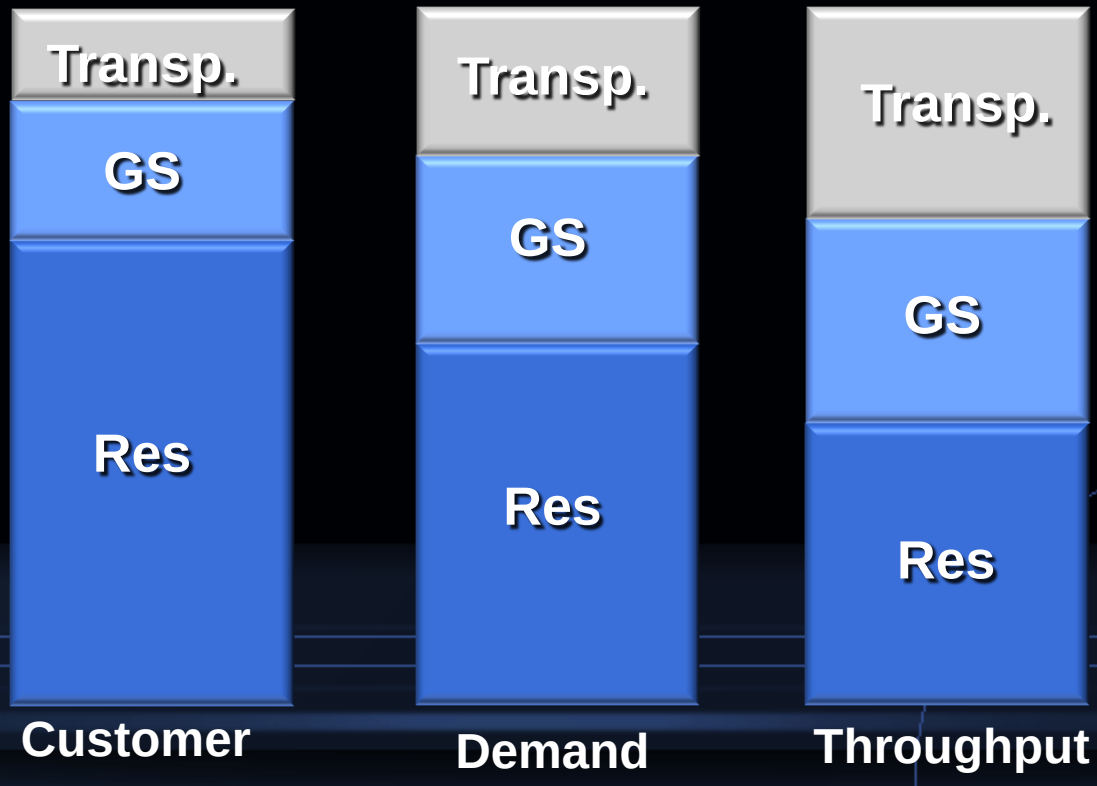
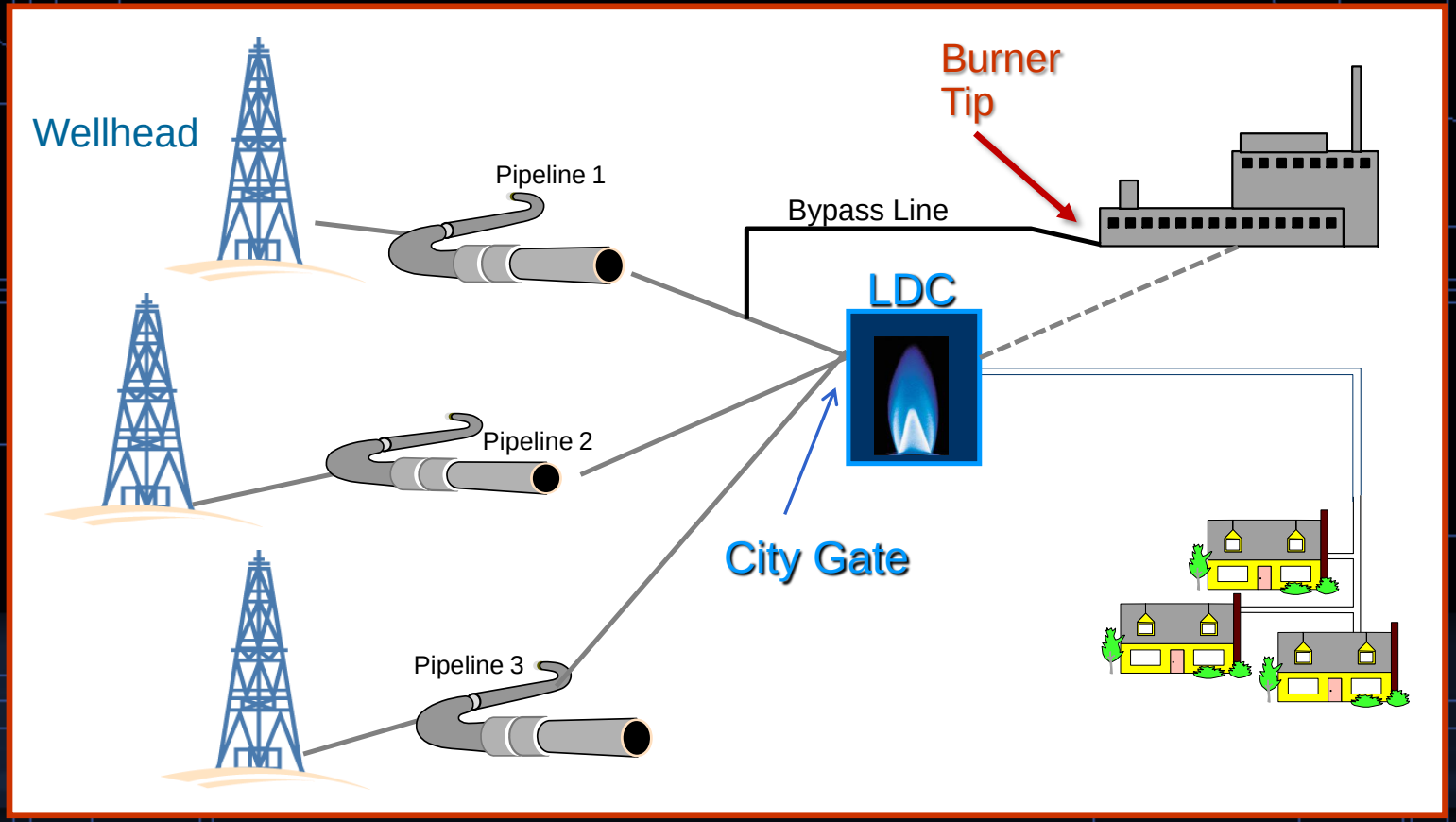
Cost-of-Service Study

Comparison of Allocation Factors



Bypass of an LDC



Potential Advantages of Bypass

- Lower price
- Deal directly with pipeline
- Decrease state regulation
- Choice of service
- Sometimes alternate pipeline supplier

Potential Disadvantages of Bypass

- Only one pipeline supplier
- No LDC backup or storage service
- LDC may have excess capacity
- LDC services eliminated

Bypass can often be prevented by cost-based rates

QUESTIONS?