Natural Gas Pipeline / LDC Rates
Gas Industry Structure

- Producers
- Pipelines
- Distributors
- Customers

Upstream

Marketers/Brokers

LDC

Downstream
Gas Industry
Functional Structure

Wellhead

Pipeline 1

City Gate

Pipeline 2

Burner Tip

Pipeline 3

LDC

houses

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Burner Tip Price ($/MMBtu)
Delivery Rates
Regulated Utility Tariff Rates

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)

Year | Total Annual Revenue Authorized ($M) | Number of ROE Cases
--- | --- | ---
96 | 20 |
97 | 13 |
98 | 10 |
99 | 9 |
00 | 12 |
01 | 7 |
02 | 21 |
03 | 25 |
04 | 20 |
05 | 26 |
06 | 16 |
07 | 37 |
08 | 30 |
09 | 29 |
10 | 37 |
11 | 16 |
12 | 35 |
13 | 21 |
14 | 26 |
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

COSTS
Return, Non-Gas
O&M Expenses,
Depreciation, Taxes

Production
Storage
Distribution
Classification

Determine the primary causative factor for each type of cost
Classification

- Production
- Storage
- Distribution

- Commodity
- Demand
- Customer
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

<table>
<thead>
<tr>
<th></th>
<th>Customer</th>
<th>Demand</th>
<th>Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Storage</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Distribution</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>General</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
# Classification of Expense

<table>
<thead>
<tr>
<th>Category</th>
<th>Customer</th>
<th>Demand</th>
<th>Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Storage</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Distribution</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Customer Acct.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Admin. &amp; Gen.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Category</th>
<th>Mcf</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>54,125</td>
<td>54.00%</td>
</tr>
<tr>
<td>General Serv.</td>
<td>32,000</td>
<td>31.93%</td>
</tr>
<tr>
<td>Interruptible</td>
<td>7,100</td>
<td>7.09%</td>
</tr>
<tr>
<td>Transportation</td>
<td>7,000</td>
<td>6.98%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100,225</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Average & Excess Method

System Peak
- Excess Demand
- Average Demand

Class Peak
- Excess Demand
- Average Demand
## Average & Excess Method

<table>
<thead>
<tr>
<th></th>
<th>Average Demand %</th>
<th>LF</th>
<th>Excess Demand %</th>
<th>1 - LF</th>
<th>AED %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Res</td>
<td>32.5%</td>
<td>37%</td>
<td>64.9%</td>
<td>63%</td>
<td>52.9%</td>
</tr>
<tr>
<td>GS</td>
<td>29.5%</td>
<td>37%</td>
<td>33.2%</td>
<td>63%</td>
<td>31.8%</td>
</tr>
<tr>
<td>IS</td>
<td>20.9%</td>
<td>37%</td>
<td>0.1%</td>
<td>63%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Transp.</td>
<td>17.1%</td>
<td>37%</td>
<td>1.8%</td>
<td>63%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>
Average & Peak Method

Average Demand

Peak Demand

Double Counted
## Average & Peak Method

### Average Demand %

<table>
<thead>
<tr>
<th>Category</th>
<th>Average Demand %</th>
<th>LF</th>
<th>Peak Demand %</th>
<th>1 - LF</th>
<th>AEP %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Res</td>
<td>32.5%</td>
<td>37%</td>
<td>58.9%</td>
<td>63%</td>
<td>49.2%</td>
</tr>
<tr>
<td>GS</td>
<td>29.5%</td>
<td>37%</td>
<td>33.7%</td>
<td>63%</td>
<td>32.1%</td>
</tr>
<tr>
<td>IS</td>
<td>20.9%</td>
<td>37%</td>
<td>0.0%</td>
<td>63%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Transp.</td>
<td>17.1%</td>
<td>37%</td>
<td>7.4%</td>
<td>63%</td>
<td>11.0%</td>
</tr>
</tbody>
</table>
## Average Demand or Commodity Allocation Factors

<table>
<thead>
<tr>
<th></th>
<th>Annual Mcf Throughput</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>4,015,479</td>
<td>32.5%</td>
</tr>
<tr>
<td>General Serv.</td>
<td>3,635,714</td>
<td>29.5%</td>
</tr>
<tr>
<td>Interruptible</td>
<td>2,577,034</td>
<td>20.9%</td>
</tr>
<tr>
<td>Transportation</td>
<td>2,114,666</td>
<td>17.1%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>12,342,893</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
### Coincident Demand vs. Average and Peak

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

#### Average & Peak Allocation

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

#### Coincident Demand Allocation

<table>
<thead>
<tr>
<th>Rate Schedule</th>
<th>Amount</th>
<th>Peak Day CCF</th>
<th>Annual Volume CCF</th>
<th>Load Factor</th>
<th>Net Plant $/CCF Peak Day</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>$526,315,789</td>
<td>10,000,000</td>
<td>1,100,000,000</td>
<td>30.1%</td>
<td>$52.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Commercial</td>
<td>$368,421,053</td>
<td>7,000,000</td>
<td>900,000,000</td>
<td>35.2%</td>
<td>$52.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>$105,263,158</td>
<td>2,000,000</td>
<td>400,000,000</td>
<td>54.8%</td>
<td>$52.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>$1,000,000,000</td>
<td>19,000,000</td>
<td>2,400,000,000</td>
<td>34.6%</td>
<td>$52.63</td>
<td>1.00</td>
</tr>
</tbody>
</table>
# Allocation of System Peak Day Capacity

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

<table>
<thead>
<tr>
<th>Rate Schedule</th>
<th>Coincident Peak Day Demand (CCF)</th>
<th>Average &amp; Peak Allocated in Allocated Peak Day Capacity (CCF)</th>
<th>Surplus/(Shortfall) in Allocated Peak Day Capacity %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Heating Residential</td>
<td>78,779</td>
<td>87,429</td>
<td>8,650</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.0%</td>
</tr>
<tr>
<td>Residential</td>
<td>8,823,800</td>
<td>8,664,723</td>
<td>(159,077)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-1.8%</td>
</tr>
<tr>
<td>Commercial</td>
<td>8,229,751</td>
<td>8,202,764</td>
<td>(26,987)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-0.3%</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,612,617</td>
<td>1,790,031</td>
<td>177,414</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.0%</td>
</tr>
<tr>
<td>Total</td>
<td>18,744,947</td>
<td>18,744,947</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0%</td>
</tr>
</tbody>
</table>
Customer Classification of Distribution Mains

Total Demand = 1,000 Mcf

Total Demand = 1,000 Mcf
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%
Cost-of-Service Study
Comparison of Allocation Factors

Customer

Demand

Throughput

Transp.

GS

Res

Transp.

GS

Res

Transp.

GS

Res

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Bypass of an LDC

Wellhead

Pipeline 1

Burner Tip

LDC

Bypass Line

City Gate

Pipeline 2

Pipeline 3

City Gate

Pipeline 3
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?