Natural Gas Pipeline / LDC Rates
Gas Industry

Functional Structure

Wellhead
Pipeline 1
City Gate
LDC
Burner Tip
Pipeline 2
Pipeline 3

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Burner Tip Price ($/MMBtu)
Delivery Rates

Regulated Utility Tariff Rates

Transmission → FERC

Distribution → State/Local

Discovery

✓ Regulatory Agency
✓ Utility Tariff Book
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

Millions ($)

Total Annual Revenue Authorized ($M)

Number of ROE Cases

Year

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800

96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14

20 13 10 9 12 7 21 25 20 26 16 37 30 29 37 16 35 21 ... 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14
Main LDC Rate Case Issues

• Class Cost of Service
  – Volumetric vs. demand allocation

• Spread among 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 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>Production</th>
<th>Demand</th>
<th>Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Distribution</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>General</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Classification of Expense

<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>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
Allocation Factors

- Externally supplied
- Internally generated – derived from prior allocations
Demand Allocation Methods

General Criteria

• Cost causation
• Recognize utility’s load characteristics
Demand Allocation Methods

• Coincident Peak
• Non-Coincident Peak
• Average and Excess
• Average and Peak
• Average Demand
# Coincident Peak Allocation Method

<table>
<thead>
<tr>
<th></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
## 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

<table>
<thead>
<tr>
<th></th>
<th>Average Demand %</th>
<th>Peak Demand %</th>
<th>1 - LF</th>
<th>AEP %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Res</td>
<td>32.5%</td>
<td>58.9%</td>
<td>63%</td>
<td>49.2%</td>
</tr>
<tr>
<td>GS</td>
<td>29.5%</td>
<td>33.7%</td>
<td>63%</td>
<td>32.1%</td>
</tr>
<tr>
<td>IS</td>
<td>20.9%</td>
<td>0.0%</td>
<td>63%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Transp.</td>
<td>17.1%</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>Service Type</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>
# 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 Volume</th>
<th>Annual Load Factor</th>
<th>Net Plant $/CCF Peak Day 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% 50.28</td>
</tr>
<tr>
<td>Commercial</td>
<td>$370,697,833</td>
<td>7,000,000</td>
<td>900,000,000</td>
<td>35.2% 52.96</td>
</tr>
<tr>
<td>Transportation</td>
<td>$126,513,110</td>
<td>2,000,000</td>
<td>400,000,000</td>
<td>54.8% 63.26</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% 52.63</td>
</tr>
</tbody>
</table>

## Coincident Demand Allocation

<table>
<thead>
<tr>
<th>Rate Schedule</th>
<th>Amount</th>
<th>Peak Day Volume</th>
<th>Annual Load Factor</th>
<th>Net Plant $/CCF Peak Day 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% 52.63</td>
</tr>
<tr>
<td>Commercial</td>
<td>$368,421,053</td>
<td>7,000,000</td>
<td>900,000,000</td>
<td>35.2% 52.63</td>
</tr>
<tr>
<td>Transportation</td>
<td>$105,263,158</td>
<td>2,000,000</td>
<td>400,000,000</td>
<td>54.8% 52.63</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% 52.63</td>
</tr>
</tbody>
</table>
# Allocation of System Peak Day Capacity

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

## Peak & Average Allocation

<table>
<thead>
<tr>
<th>Rate Schedule</th>
<th>Coincident Peak Day Demand CCF</th>
<th>Average &amp; Peak Allocated Peak Day Capacity CCF</th>
<th>Surplus/(Shortfall) 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>
<td>11.0%</td>
</tr>
<tr>
<td>Residential</td>
<td>8,823,800</td>
<td>8,664,723</td>
<td>(159,077)</td>
<td>-1.8%</td>
</tr>
<tr>
<td>Commercial</td>
<td>8,229,751</td>
<td>8,202,764</td>
<td>(26,987)</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,612,617</td>
<td>1,790,031</td>
<td>177,414</td>
<td>11.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18,744,947</strong></td>
<td><strong>18,744,947</strong></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
Bypass of an LDC

Wellhead

Pipeline 1

Bypass Line

Burner Tip

LDC

City Gate

Pipeline 2

Pipeline 3

City

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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?