**Actions of Large-Volume Customers**

Throughout the 8-week period surveyed in EIA-904, the volume of the natural gas service interruptions exceeded the amount of distillate consumption and distillate purchases in each week, because some of the large-volume customers chose to curtail or reduce their operations when their gas service was interrupted (Figure 20). Follow-up interviews with the respondents confirmed the supposition that at least some of the reduced operations for the electric power generators was due to the prevailing conditions in the market that did not warrant paying premium prices for the input fuel.

Distillate purchases and consumption were almost coincident throughout the weekly periods of the sample.

Although the large-volume customers did not necessarily replace interrupted gas consumption with distillate consumption, they did burn more fuel than they purchased. The sole exception to this finding occurred during the week ended January 22, when purchases exceeded consumption by 8 percent. However, in any week during the 8-week period, the large-volume customers replaced no more than 56 percent of the volume interrupted by consuming distillate.

Distillate inventories of the large-volume respondents remained almost constant during January and February 2000 albeit with a slight downward trend (Figure 21). Throughout the 8-week period, these companies

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**Figure 20.** Natural Gas Service Interruptions and Distillate Fuel Oil Purchases and Consumption for Large-Volume Customers in New England by Week During January and February 2000

![Graph showing natural gas service interruptions and distillate fuel oil purchases and consumption for large-volume customers in New England by week during January and February 2000.]

maintained their inventories at an average of 83 percent full within a narrow range: 90 percent full at its maximum on the week after the largest interruptions, and 79 percent full in late February.

The large-volume customers would be unable to store enough distillate fuel oil to offset an interruption that lasts more than a few days. During January and February 2000, the large-volume customers had only 3.7 days of distillate storage capacity and 3.1 days of distillate inventories with respect to the potential volume of natural gas service interrupted. However, the apparent lack of distillate fuel oil capacity may simply reflect the broader menu of options available to power producers. For example, the power producer could turn on an entirely different generator rather than use distillate fuel oil in the same dual-fuel unit, or buy electricity from elsewhere.

**Actions of Small-Volume Customers**

Among the respondents to EIA-904, the reaction of the selected smaller firms to interruptions differed from that of the large-volume customers. The small-volume customers more fully offset the interruption in gas service. Throughout the 8-week period, the small-volume customers offset over 78 percent of the interruptions with distillate purchases and a little over 100 percent of the interruptions with distillate consumption (Figure 22). This diverges from the behavior of the large customers who responded to the interruptions by curtailing operations to a greater extent throughout the period, and so consumption and purchases fell well below the level of interruptions. The large-volume customers replaced only 28 percent of the interruptions with distillate purchases and only 30 percent of the interruptions with distillate consumption.

---

*Using data from EIA-904, the number of days of storage capacity was computed by dividing capacity by the maximum average daily interruption that could be replaced. The maximum daily interruption that could be replaced is calculated by computing the 8-week average of natural gas volume delivered plus interrupted natural gas volume, and dividing by 7 days. This result was multiplied by the weighted average of the interruptible type's assessment of the maximum percentage of gas needs that can be offset with distillate fuel oil (83 percent for large-volume customers and 74 percent for small-volume customers). Likewise the days of available inventory was computed by dividing the 8-week average of inventory by the maximum daily interruption that could be replaced.*

---

The pattern of distillate purchases and consumption by the small customers also differed from that of the large customers. Through most of the period and especially in the critical third week of January, distillate consumption by small customers exceeded purchases indicating that they relied more on inventories to offset energy volumes affected by gas service interruptions. As a result, the inventories of small-volume customers declined to a greater degree than was the case for the large-volume customers over the 8-week period, although both customer categories experienced a net inventory drawdown.

The small-volume customers had considerable excess capacity: on average they maintained inventories at 69 percent of their distillate capacity with 79 percent as the high during the period and 63 percent as the low (Figure 23). This fairly narrow range of inventories is consistent with the inventory range maintained by the large-volume customers. Although somewhat more variable than the larger customers' inventories, onsite distillate storage stocks for the smaller 36 customers also followed a slightly downward trend during the sample period. It seems that both the large- and small-volume customers pursued a strategy to maintain onsite inventories at target levels. So, like the large-volume customers, the small customers offset the distillate that they consumed with purchases and maintained their inventories. However, the small-volume customers had much greater distillate storage capacity and onsite inventory relative to the potential volume of natural gas service interrupted than the larger customers who could only operate for a few days. During January and February, the small-volume customers had 14.3 days of distillate storage capacity available and 9.8 days of distillate inventories on hand.

Human needs customers (see box, p. 41) accounted for the majority of the interrupted natural gas service volumes among the small-volume customers. One reason is that some of them have their own electric cogeneration units, which they use to produce electricity for their own consumption. Thus some human needs customers have a second alternative in addition to distillate fuel oil when confronted with an interruption in natural gas service.
This possibility may mitigate both their exposure to gas service interruptions and their impact on the distillate fuel oil market.

**Summary**

The survey of gas suppliers (the LDCs and pipeline companies) indicates that while substantial volumes of gas service were interrupted, the aggregate volumes were less than a number of the early estimates that were used in the trade press and elsewhere during last winter. The investigation of customer behavior further indicates that one cannot simply equate the volumes of gas service interruptions with an increase in the aggregate demand for distillate in the entire Northeastern distillate market. Some customers relied on inventories for at least some of their fuel oil requirements, and both classes of customers generally burned less than an equivalent amount of distillate fuel oil.

The present end-use data indicate that a substantial portion of the total gas interruption during the critical third week of January simply resulted in a lower level of operations for some customers. This outcome reduced some pressure that otherwise might have been imposed on the distillate market. A key portion of the reduction in overall energy demand was on the part of electric generation operators, who made the decision based on relative prices not to pursue distillate purchases. Thus, if electric demand, and consequently prices, had been strong enough to justify those purchases of distillate fuel oil, the price pressure on the distillate market would have increased more than it did.

Although the volumes of incremental distillate fuel oil demand driven by gas service interruptions are estimated at smaller amounts than previously expected, the findings of the present analysis highlight the complexities of these energy markets and their potential influence on each other. The present analysis provides findings that indicate the causes for fuel switching include business decisions as well as gas industry performance. Customer reactions to gas service interruptions are varied, reflecting differing operational objectives and economic circumstances.
5. Conclusion

The information on the weekly distribution of interruptions indicates that the greatest level of interruptions during the 1999-2000 winter was focused on the third week of January. Seventy-six percent of all reported interruptions1 during January and February 2000 were contained in the third and fourth weeks of January. The analysis in this report shows that reductions in gas service due to reported interruptions for customers in the Northeast with distillate fuel oil as their backup were the equivalent of 78 to 84 thousand barrels per day of distillate during the peak week ended January 22. Average daily distillate consumption in the Northeast in January 2000 was 731 thousand barrels per day but probably rose above this level during the peak week. Actual distillate purchases resulting from the reported interruptions likely were less than the corresponding equivalent volume of distillate fuel oil, because some interruptible customers reportedly shut down operations temporarily while others drew down inventories slightly.

The estimated range of 78 to 84 thousand barrels per day of potential incremental distillate consumption is consistent with previously published estimates, which ranged up to 100 thousand barrels per day for distillate fuel oil for both interruptions and economic switching combined. If the larger estimates are reliable, the 78 to 84 thousand-barrel-per-day range clearly shows that more than 15 percent of the fuel shifting from gas to distillate is due to factors other than gas service interruptions.

These distinctions have important implications for further analysis or policy formulation. Understanding motivations behind customer behavior is essential to understanding gas and fuel oil markets at critical times of the year. This is particularly important for possible policy formulation to handle potential conditions leading to price spikes since the motives behind fuel switching differ greatly depending on whether they are caused by involuntary interruptions, seasonal contracts, or voluntary switching because of relative prices.

This study provides better information than previously available on the magnitude of fuel switching from gas to alternative fuels. It also contains information on customer behavior during the winter heating season, including times of intense demand when interruptible gas service is not available. As such, this study provides a framework for improved understanding of the issues.

Distillate Market Dynamics

The distillate fuel oil price depends on a number of factors affecting demand and supply. Distillate demand consists of both demand from its regular users and demand from dual-fired users that may utilize distillate fuel oil periodically. Demand by the regular distillate customers depends on general economic conditions and weather, which affects heating requirements. Incremental demand for distillate fuel oil during the heating season consists primarily of demand by regular customers for distillate fuel oil for heating purposes and fuel-switching, both of which may be relatively inelastic. Energy demand for heating tends to be relatively unresponsive to price. Distillate demand for fuel-switching customers is driven by demand for produced output, whether electricity or industrial goods, which if sufficiently strong can cause the derived demand for energy by fuel-switching customers to be inelastic within a wide range of relative prices. Additionally, energy used for industrial applications generally is not a large portion of costs, so price increases may be absorbed within the cost structure for the overall operation.

Supply of distillate fuel oil depends on the flow of current production from refineries, interregional product transfers, imports, and inventories. If distillate demand expands to the limits of current supply, the market adjusts primarily by increasing prices, and additional demand from any source can result in a disproportionately large price response. At times of the most severe temperatures, demand for distillate surges, and gas service interruptions likely peak. These changes add to the demand pressure on a market that may already be close to its limits.

Distillate fuel oil price spikes historically have depended on a combination of conditions, which are not the same in all occurrences. As abnormally cold temperatures set in, low distillate fuel oil inventories may play a role in higher prices, but low inventories alone are not able to drive up prices as indicated in the market experience in 1996. Gas service interruptions contribute some portion of incremental demand at peak, but these volumes by themselves are not responsible for distillate fuel oil price

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1 As described in Chapter 4, reported interruptions include some portion of volumes as a result of seasonal switching and economic switching in addition to interrupted gas volumes.

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Obtained and made public by the Natural Resources Defense Council, March/April 2002
spikes. Gas service interruptions typically occur
throughout the heating season, yet these events do not
automatically result in distillate fuel oil price spikes. As
discussed in Chapter 3, larger distillate fuel oil price
spikes generally coincide with a disruption of one or more
supply elements.

Customer Behavior

Customers who opt for interruptible gas service must
have a strategy to respond to a possible suspension of gas
service. A customer’s choice should reflect the relative
cost and benefits associated with each decision, which
will vary depending on characteristics such as location or
fuel-use technology for the particular application. The
responses generally are one of two: shut down or burn an
alternative fuel (although interrupted customers in a few
cases were able to arrange continued gas deliveries
through another supplier). If customers whose gas service
has been interrupted choose to burn their alternate fuel,
they face a secondary decision regarding replacement of
at least some portion of the inventory drawdown with
purchases of additional fuel.

The fuel oil purchase decision will be driven by the
customers’ perception of the adequacy of onsite
inventory and the market conditions for the alternative
fuel. The relative size of onsite inventory indicated by
days-supply, as measured by the ratio of inventory to
daily planned service, differs widely between large-
volume interruptible customers and the small-volume
users. Large-volume users had inventory equal to an
average of 3.1 days supply. Small-volume users had
capacity equal to requirements for almost 10 days.

The number of days supply reported by the large-volume
customers is larger than previously hypothesized. Some
analysts suggested that interruptible customers are
compelled to enter distillate fuel oil markets immediately
to purchase additional supplies. However, the levels held
in onsite inventories by dual-fired energy customers in
January and February 2000 represent a significant
volume. While some concerns about the "Y2K" transition
may have motivated the inventories recorded in the
survey, the Y2K factor does not explain the customers’
going interest in replenishing their stocks in late January
and early February, especially when distillate prices had
spiked. When customers began to burn supplies, they
initiated purchases to replenish their stores. So
interruptions may lead to a fairly automatic response of
purchases, but it is not because fuel is not on hand.

Instead, it is likely that customers have a standard level
that is consistent with avoiding the risk of running out.
Their aggregate behavior is such that in effect they offset
most of their consumption with incremental purchases.

The Choice of Natural Gas or
Petroleum

Fuel-switchable customers, who predominantly burn
natural gas, can be an opportunity or a problem for
operators in the alternative fuel markets. The infrequent
purchases, unless they can be met from "current"
supplies (domestic refinery production, interregional
transfers, or imports), may result in problems of
inventory management and customer relations for
petroleum suppliers.

Carrying inventory to meet customer demands imposes a
cost on petroleum suppliers. The low probability of sales
to customers with irregular and infrequent purchases
reduces expected net returns. Potential sales are uncertain
and even when they occur are apt to be only for a brief
period and typically during the heating season. The costs
of unused inventories must be either recovered as an
incremental charge from their regular customers or
absorbed by the owners. In fact, petroleum suppliers, like
many other industries, have shifted increasingly to a
"just-in-time" delivery system that attempts to minimize
the volume of inventory in serving all customers as an
approach to managing costs.2 This reaction to competition
has lowered inventories, which reduces the industry
backup to use for demand surges or disruptions in current
supply.

The net benefits from the use of interruptible gas service
depend on both the advantages of this service and the
associated costs. In a broader perspective, it has been
argued that dual-fired customers and their switching
behavior promote efficiency because they switch from a
scarce fuel (with higher prices) to one that is relatively
more abundant (with lower prices). The economy at large
benefits from the use of interruptible service by avoiding
underutilization of gas industry infrastructure during non-
peak periods and from energy at lower costs that
otherwise would be the case. Not all the consequences of
interruptible gas service are positive, however. When
substantial interruptions occur, they may coincide with

2See, for example, "For Heating-Oil Firm in Vermont, Now Is the Winter of

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already tight conditions in the petroleum product markets. The incremental demand from fuel-switching customers consumes a portion of the scarce supplies, and when petroleum prices rise it logically contributes at least some part of the price increase. The unexpected occurrence of sudden price shocks in the petroleum markets imposes an economic cost beyond the higher prices on participants in those markets. Costs resulting from gas service interruptions are a clear offset that reduces the net benefit of interruptible service. A thorough analysis of the economic merit of interruptible gas service is beyond the scope of the present study. However, the present work provides a set of data and other information that can serve as a useful basis for understanding the complexities of the interruptible gas market.

Implications for Energy Markets

Energy suppliers’ best efforts to perform well may achieve benefits to the economy but they also may establish the foundation for episodes of market price spikes. The reduced energy prices because of the increased competition facing gas or petroleum suppliers provide benefits to consumers and the economy at large, but they undermine incentives to maintain infrastructures or inventories at levels sufficient to accommodate peak customer requirements in all situations.

Although the availability of low-cost fuel supply options creates economic benefits in most years, the resulting actions also can contribute to price fluctuations during severe winter events. These price increases can be a particular difficulty for customers on fixed or low incomes who receive fuel oil deliveries during times of elevated prices. In addition, small commercial consumers who rely on petroleum products to satisfy energy requirements also may find their financial resources strained. The impact of these disruptions, as they influence fuel choice decisions and inventory planning, may offset some of the perceived benefits. However, expansion of the gas supply infrastructure to levels adequate to eliminate interruptions of gas service for all current users tends to be economically unattractive or infeasible.

Expansion of the gas delivery system would require substantial levels of new investment, the costs of which must be recovered in user fees in order to be economically justified. Additionally, seasonal demand for a significant portion of the customer base would result in unused capacity for some portion of the year. The operators of gas capacity, whether old or new, have an economic incentive to expand net revenues by increasing the total amount of service. Operators would either seek new business that could not be offered continuously throughout the year (i.e., seasonal or interruptible service) or accept the presence of a productive asset being idle and not providing any return to the company.

Clearly this area of market behavior is a complex topic. Even if interruptible contracts had a limited role in recent fuel oil price spikes, that influence may be expected to increase over time. The trend for the distillate market, especially heating oil, in the Northeast has been toward declining volumes sold. Thus, the customer base is not expanding and the associated industry infrastructure and inventories are smaller. So even without further growth, the relative impact of present levels of fuel switching will grow relative to the regional distillate supply. Meeting the needs of regular and periodic customers will be an expanding challenge for market participants.
February 4, 2000

The Honorable William Richardson  
Secretary  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

Dear Secretary Richardson:

I am writing to request an immediate investigation into the prevalence and use of interruptible natural gas contracts and their impact on heating oil supply in New England, and prompt steps to alleviate any adverse consequences. My office has recently learned of a potentially large problem resulting from these types of contracts, under which a customer benefits from lower rates by accepting a contract for natural gas delivery that may be interrupted at the discretion of the gas supplier when supplies are limited and demand is high.

I understand that the recent supply shortage of home heating oil and continuing price spike in the Northeast is now being exacerbated by demand from interruptible natural gas contract-holders. Apparently, a large number of these contract-holders were told by their gas suppliers at the beginning of last week that they temporarily would not have access to natural gas for heating their homes. As a result, many of these customers turned to home heating oil as a substitute, which, according to the heating oil delivery industry, may be increasing demand by as much as two million gallons per day.

This type of interruptible contract may have the unintended consequence of contributing to heating oil price spikes and supply shortages. It has and may continue to account for unanticipated demand for home heating oil; these additional demands have the capacity to cripple the market in times of stress. I would like to know more about the extent of, the need for, and the potential consequences of interruptible contracts. Please promptly survey the extent of interruptible gas contracts and the level of new demand they may be adding to the heating oil market in the Northeast. Specifically, I would like to know the answer to the following questions:

- At what point do natural gas contractors refuse service to interruptible gas contract-holders?
How often in the recent past have users of interruptible gas contracts created a significant unforeseen demand on home heating oil in the Northeast?

Do interruptible gas (or other fuel source) contracts threaten the stability of the home heating oil market?

What other backup fuels do interruptible contract users utilize?

If you confirm there is a significant problem, what steps will you take in cooperation with industry to promptly alleviate it?

Thank you for your continued interest in this issue.

Sincerely,

Joseph I. Lieberman
United States Senator
Appendix B
Survey Data
Appendix B

Survey Data

In February 2000, Senator Joseph Lieberman of Connecticut requested an investigation into the prevalence and use of interruptible natural gas contracts and their impact on heating oil supply in New England. Specifically, Senator Lieberman requested that the Department of Energy (DOE) "promptly survey the extent of interruptible gas contracts and the level of new demand they may be adding to the heating oil market in the Northeast."


The Energy Information Administration (EIA) coordinated the development of the forms with staff from the Federal Energy Regulatory Commission (FERC), Interstate Natural Gas Association of America (INGAA), American Gas Association (AGA), New England Gas Association (NEGA), and the New York Public Service Commission (NYPSC). These consultations did not, however, include specific discussion of the detailed questions incorporated into these questionnaires. Additional preparatory work did include discussion of the form with two potential respondents and a review of a draft questionnaire by a manufacturing trade association.

Form EIA-903

Form EIA-903 initially was sent to nine local distribution companies (LDCs) in four of the Northeast States (Connecticut, Massachusetts, New Jersey, and New York). This allowed initial testing of the questionnaire prior to full distribution. These companies were selected on the basis of the amount of interruptible natural gas deliveries and the magnitude of gas volumes delivered to industrial (including nonutility generation) and electric utility sector end users in each state. These sectors are believed to be most affected by gas-service interruptions. The EIA-903 was subsequently sent to 21 additional LDCs and four pipeline companies. Based on responses to Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," for 1998, the latest year for which interruptible delivery data were available, the 34 gas suppliers surveyed accounted for 94 percent of the natural gas deliveries to interruptible gas customers in the Northeast in 1998. The interruptible deliveries represented by surveyed gas companies in each state varied from 92 percent in New Jersey to 100 percent for three New England states. The state-level information was used to estimate the total interruptions to account for those gas service providers not included in the EIA-903 survey (Table B1).

Form EIA-903 consists of six parts:

- Part I identifies the company and requests contact information and conversion factors from volumes of gas to Btu heat content to allow the analyses of different respondent data on a uniform basis.

- Part II A asks the company to describe its interruptible gas service tariffs or contract categories. Part II B asks the company to list, for all tariffs and contract categories listed in Part II A, monthly data for December 1999, January 2000, and February 2000, and weekly data for January and February 2000. The requested data include the maximum daily quantity, total deliveries interrupted in each period, number of days interrupted, and the number of days of service with flow restrictions to customers.

- Part III asks for the company to list its customers who were interrupted during January and February 2000. Specifically, Part III asks for the customer name, volume interrupted, customer contact person, phone number or e-mail address, and the type of the alternative fuel capability for each customer that could have been used in January-February 2000 to replace the volume of gas that was interrupted.

- Part IV requests maximum daily quantity and total interruptions for firm service contracts.

- Part V asks for a list of interrupted firm service customers.

- Part VI asks for a list of customers who declined gas service after interruptions were ended, whether under a firm or interruptible contract.
Table B1. Natural Gas Interruptions in the Northeast During January and February 2000, by State

<table>
<thead>
<tr>
<th>State/Region</th>
<th>Raw Data from Form EIA-903 (MMBtu)</th>
<th>Respondents’ Share of 1998 Interruptible Gas Deliveries (Percent)</th>
<th>Estimated Natural Gas Interruptions (MMBtu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>2,507,657</td>
<td>97</td>
<td>2,565,244</td>
</tr>
<tr>
<td>Other</td>
<td>1,184,029</td>
<td>98</td>
<td>1,200,905</td>
</tr>
<tr>
<td>Total</td>
<td>3,691,716</td>
<td>97</td>
<td>3,766,149</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>2,325,640</td>
<td>94</td>
<td>2,474,085</td>
</tr>
<tr>
<td>Other</td>
<td>5,629,555</td>
<td>93</td>
<td>6,103,522</td>
</tr>
<tr>
<td>Total</td>
<td>7,955,195</td>
<td>93</td>
<td>8,577,607</td>
</tr>
<tr>
<td>Northeast</td>
<td>11,646,911</td>
<td>94</td>
<td>12,363,750</td>
</tr>
</tbody>
</table>

MMBtu = Million Btu.


To aid its analysis, EIA assigned a Standard Industrial Classification (SIC) code and description to more than 1,000 customers listed in the responses to Part III of EIA-903. The addition of the SIC codes allowed for an analysis of interruptions by business sector. The two-digit SIC codes were grouped into the following categories:

- Agricultural/Food Products: 01-16, 18-21, 51
- Textile and Paper Products/Services: 22-27
- Chemical and Asphalt Products/Services: 28-29
- General Services: 17, 40-45, 62-64, 66-69, 71-79, 83-97
- Electricity Generation: 49
- Health Services: 80
- Educational Services: 82
- Residential/Commercial Complexes, Lodging: 65, 70.

The interrupted volumes from Part III as classified by SIC code are shown by category in Table B2. Most of the interrupted volume in the Middle Atlantic region could not be classified into SIC category, whereas over 99 percent of the New England volume was assigned SIC codes. The total volume reported in Part III of Form EIA-903 of 10,577,444 MMBtu is less than the Part II total of 11,646,911 MMBtu because respondents were not asked to provide information on all interrupted customers. Part III of EIA-903 requested customer information for at least 75 percent of total gas interruptions, up to a total of 50 customers. In practice, many respondents provided information for a larger number of customers.

In most cases gas service providers reported their interrupted customers' alternative fuel on Part III of the EIA-903. EIA conducted a followup investigation with customers to identify the alternative fuel information which was not reported by the gas companies. Through this followup investigation, EIA was able to assign the proper alternative fuel to customers who represented over 50 percent of the interrupted volumes for which this information was missing. EIA was also able to allocate interrupted volumes of gas accurately among the various alternative fuels for several respondents. After the direct assignments and allocations were completed, EIA assigned the remaining interrupted volumes with unreported alternative fuels to an "unspecified" category.

In total, backup fuels were identified on the EIA-903 Part III for 99 percent of the interrupted volumes in New England and 87 percent of the interrupted volumes in the Middle Atlantic region (Table B3). At the state level, the calculation for alternative fuel resulted in completed assignments for New Jersey, Connecticut, Maine, New Hampshire, Rhode Island, and Vermont. Massachusetts was 92 percent complete, while New York was 75 percent complete and Pennsylvania 65 percent complete.
Table B2: EIA-903 Part III Interruptions and Customers by SIC Group and Region

<table>
<thead>
<tr>
<th>SIC Group</th>
<th>Northeast</th>
<th>Middle Atlantic</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume (MMBtu)</td>
<td>No. of Customers</td>
<td>Volume (MMBtu)</td>
</tr>
<tr>
<td>Chemical / Asphalt</td>
<td>480,171</td>
<td>73</td>
<td>385,943</td>
</tr>
<tr>
<td>Textile &amp; Paper</td>
<td>488,265</td>
<td>63</td>
<td>82,608</td>
</tr>
<tr>
<td>Educational Services</td>
<td>725,681</td>
<td>202</td>
<td>342,160</td>
</tr>
<tr>
<td>Agricultural / Food</td>
<td>330,352</td>
<td>50</td>
<td>145,664</td>
</tr>
<tr>
<td>Health Services</td>
<td>586,625</td>
<td>135</td>
<td>280,391</td>
</tr>
<tr>
<td>Residential/ Commercial</td>
<td>399,224</td>
<td>198</td>
<td>255,467</td>
</tr>
<tr>
<td>Misc. Product Man</td>
<td>619,644</td>
<td>114</td>
<td>141,119</td>
</tr>
<tr>
<td>Electricity Generation</td>
<td>1,428,398</td>
<td>22</td>
<td>321,200</td>
</tr>
<tr>
<td>General Services</td>
<td>553,764</td>
<td>112</td>
<td>269,368</td>
</tr>
<tr>
<td>Total SIC Group</td>
<td>5,583,403</td>
<td>1,050</td>
<td>2,220,985</td>
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<tr>
<td>Unknown</td>
<td>4,994,041</td>
<td>21</td>
<td>4,566,001</td>
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<tr>
<td>Total</td>
<td>10,577,444</td>
<td>1,080</td>
<td>7,180,786</td>
</tr>
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</table>

SIC = Standard Industrial Classification, MMBtu = Million Btu.


Table B3. Share of Natural Gas Interruptions by Alternative Fuel and State/Region for January and February 2000

<table>
<thead>
<tr>
<th>State / Region</th>
<th>No. 2</th>
<th>No. 4</th>
<th>No. 6</th>
<th>Other</th>
<th>Unspecified</th>
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<tr>
<td>New England</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>42.8</td>
<td>7.0</td>
<td>48.2</td>
<td>0.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Other</td>
<td>36.3</td>
<td>12.5</td>
<td>35.0</td>
<td>16.2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>40.7</td>
<td>8.8</td>
<td>44.8</td>
<td>5.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>53.7</td>
<td>2.0</td>
<td>9.7</td>
<td>9.1</td>
<td>25.6</td>
</tr>
<tr>
<td>Other</td>
<td>66.2</td>
<td>0.1</td>
<td>24.2</td>
<td>1.0</td>
<td>8.5</td>
</tr>
<tr>
<td>Total</td>
<td>62.8</td>
<td>0.7</td>
<td>20.9</td>
<td>3.3</td>
<td>13.4</td>
</tr>
<tr>
<td>Northeast</td>
<td>55.9</td>
<td>3.1</td>
<td>27.3</td>
<td>3.9</td>
<td>9.7</td>
</tr>
</tbody>
</table>

Note: Other includes propane, jet fuel, kerosene, electricity, coal, and shut down. Unspecified includes not specified, none specified, and no alternative fuel.

The percentages shown for alternative fuel types in Table B3 include these EIA adjustments achieved in followup contacts.

**Data Adjustments**

As discussed earlier, EIA performed a significant amount of followup work to correct and complete the responses to the EIA-903. However, additional adjustments were required before EIA could conduct an analysis of natural gas interruptions and their impact on fuel oil markets in the Northeast. These adjustments were necessary because the EIA-903 survey was not sent to every gas service provider in the Northeast region and the surveyed gas companies were not asked to provide information on all interrupted customers. EIA first estimated the total volume of interrupted gas reported on Part II of Form EIA-903 to account for those gas companies in the Northeast that were not included in the survey. As stated earlier, the 34 companies surveyed represented about 94 percent of the 1998 annual interruptible natural gas deliveries in the Northeast, with individual state coverage ranging from 92 to 100 percent. The state percentages were applied to the respective total gas interruption by state derived from Part II of EIA-903 resulting in an increase from the reported interruption (raw data) of 11,646,911 MMBtu to a total reported interruption of 12,363,756 MMBtu in the Northeast for January and February 2000 (Table B1).

Once the raw interruption data were estimated to represent the entire Northeast region, EIA separated the interruptions among the various alternative fuels to assess the potential volumetric impact that natural gas interruptions may have had on the distillate market and other alternative fuel markets. The assignment of natural gas interruption volumes to alternative fuels was accomplished using the information from Part III of EIA-903. The alternative fuel information derived from Part III (Table B3) was used to allocate the inflated gas interruption of 12.4 trillion Btu among the various alternative fuel and unspecified categories. The allocation was performed on each state’s data and summed to arrive at the regional totals of natural gas interrupted by associated alternative fuel.

This procedure provided a base line estimate for the total volume of gas interruption that could have affected the No. 2 fuel oil market in the Northeast during January and February 2000. A second or high estimate of the volume of gas interrupted with No. 2 as an alternative fuel was developed by assigning half of the unspecified volumes to the No. 2 category. Table B4 details the results of these calculations. The numbers shown in Table B4 were then used for the analyses, tables, and charts in the body of this report.

**Form EIA-904**

EIA developed a customer survey to collect specific information about customers’ alternative fuel capabilities and activities during a natural gas service interruption and to check information provided by the natural gas service providers. Form EIA-904 was a customer-oriented survey designed to collect weekly information for January and February 2000, including the volumes of gas delivered, the volumes interrupted, the days interrupted, and the alternative fuel use including volumes purchased and consumed and weekly inventory levels and storage capacity. A customer in the EIA-904 survey was a consuming site so a single company with multiple sites comprises multiple customers.

Form EIA-904 was targeted to all customers identified in the responses to Form EIA-903 that were interrupted and had distillate fuel oil as a backup fuel to natural gas. Additional customers who were reported to have an alternative fuel other than distillate were also included in the survey to cross check the responses to the EIA-903. Customers in New York, New Jersey, and Pennsylvania were not included in the EIA-904 survey because responses to the EIA-903 from gas service providers in these states were received after the mailing date for the EIA-904 survey. As a result, the EIA-904 sample was not statistically designed to collect information from the entire Northeast region. The results from the analysis of EIA-904 data are provided as illustrative, but they are not definitive for all customers in the Northeast and the results cannot be aggregated for regional totals.

Survey forms were mailed to 101 potential respondents, three of which duplicated other EIA-904 requests and one customer who was dropped because it could not be contacted by phone or mail, resulting in responses from 97 unique customers. Follow-up contact was made with every customer in the EIA-904 survey reported to have been a distillate user, to verify whether No. 2 distillate fuel oil was in fact the alternative fuel source to natural gas, and to ensure internal consistency of the reported data.
Table B4. Estimated Natural Gas Interruptions by Alternative Fuel Capability, January–February 2000  
(Million Btu)

<table>
<thead>
<tr>
<th>State / Region</th>
<th>Total</th>
<th>No 2: Low Estimate</th>
<th>No 2: High Estimate</th>
<th>No 4</th>
<th>No 6</th>
<th>Other</th>
<th>Unspecified</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>2,585,244</td>
<td>1,105,576</td>
<td>1,130,070</td>
<td>180.592</td>
<td>1,245.851</td>
<td>3.938</td>
<td>48,787</td>
</tr>
<tr>
<td>Other</td>
<td>1,200,905</td>
<td>435,466</td>
<td>435.466</td>
<td>151,568</td>
<td>419,944</td>
<td>194,127</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3,786,149</td>
<td>1,541,142</td>
<td>1,565,538</td>
<td>332,560</td>
<td>1,665,795</td>
<td>194,065</td>
<td>48,787</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>2,474,085</td>
<td>1,328,588</td>
<td>1,645,140</td>
<td>48,768</td>
<td>236,364</td>
<td>224,232</td>
<td>633,103</td>
</tr>
<tr>
<td>Other</td>
<td>8,103,522</td>
<td>4,042,875</td>
<td>4,300,528</td>
<td>8,218</td>
<td>1,478,102</td>
<td>60,711</td>
<td>515,806</td>
</tr>
<tr>
<td>Total</td>
<td>8,577,607</td>
<td>5,371,213</td>
<td>5,945,668</td>
<td>56,986</td>
<td>1,718,466</td>
<td>284,943</td>
<td>1,148,909</td>
</tr>
<tr>
<td>Northeast</td>
<td>12,363,756</td>
<td>6,912,355</td>
<td>7,511,203</td>
<td>349,348</td>
<td>3,381,391</td>
<td>483,808</td>
<td>1,197,885</td>
</tr>
</tbody>
</table>

Note: Other includes propane, jet fuel, kerosene, electricity, coal, and shut down. Unspecified includes not specific, none specified, and no alternative fuel.  

Discrepancies Between EIA-903 and EIA-904 Results

Several customers surveyed by Form EIA-904 reported data that were inconsistent with the information provided on EIA-903 by their gas supplier (Table B5). In some cases, there were differences in the backup fuels identified as being usable for a given customer. Of the 97 respondents to EIA-904, 67 were identified as having No. 2 distillate as an alternative fuel by their gas service providers on Form EIA-903, while only 50 of those customers surveyed reported having No. 2 distillate alternative fuel capability. In all cases that this discrepancy occurred, the customer information on the EIA-904 was assumed to be more reliable because they were reporting on their own operations. In addition, about 40 percent of the EIA-904 respondents claimed that no interruption of service occurred during January–February 2000, whereas their service provider reported on EIA-903 that an interruption of service did occur during the period. The EIA-904 respondents stated that either they had a seasonal contract and therefore did not expect to receive gas, that they voluntarily switched to their alternative fuel for economic reasons, or they in fact continued to receive gas throughout the reporting period.

Insights

Although responses to Form EIA-904 accounted for only a small portion of the natural gas interruptions in the Northeast (less than 10 percent of the interrupted customers and about 18 percent of the interrupted volume reported on Part III of EIA-903), EIA gained valuable insights through these data and information gathered through the follow-up investigation of EIA-903 information. EIA found a number of customers in both surveys that continued to receive gas from their original supplier or a different supplier while the gas service provider reported that the customer was interrupted. In addition, there were several instances in which the gas companies reported customers as interrupted when in fact the customers received gas under seasonal contracts which do not provide gas service during the months of January and February.

Energy Information Administration
Impact of Interruptible Natural Gas Service on the Heating Oil Market

63

DOE006-0063

2706

Obtained and made public by the Natural Resources Defense Council, March/April 2002
Another group of customers reported that they decided to consume their alternative fuel and cease gas consumption for economic reasons. Some of the largest-volume end users in the region reported that they suspended or curtailed operations instead of consuming an equivalent amount of alternative fuel to replace their interrupted supply of gas. Therefore, the total volume of gas interrupted with No. 2 as an alternative fuel may likely be an upper bound when attempting to assess the impact of natural gas interruptions on the distillate market.

### Table B5. Difference Between EIA-904 and EIA-903 Survey Information About Companies Used in the EIA-904 Sample

<table>
<thead>
<tr>
<th>Respondent Information</th>
<th>Reported on Form EIA-903</th>
<th>Reported on Form EIA-904</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Companies</td>
<td>Number of Companies</td>
</tr>
<tr>
<td></td>
<td>With Distillate Capability</td>
<td>Without Distillate Capability</td>
</tr>
<tr>
<td></td>
<td>With Distillate Capability</td>
<td>Without Distillate Capability</td>
</tr>
<tr>
<td>Intermittent and Consumed Distillate</td>
<td>62</td>
<td>-</td>
</tr>
<tr>
<td>Intermittent and Consumed Other Fuel</td>
<td>-</td>
<td>26</td>
</tr>
<tr>
<td>Not Interrupted</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Data not cleared</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>30</td>
</tr>
</tbody>
</table>

Appendix C

Survey Forms:
Form EIA-903 and Form EIA-904
Form EIA-903

Natural Gas Service Interruptions in the Northeast During December 1999, and January and February 2000
FORM EIA-903
NATURAL GAS SERVICE INTERRUPTIONS IN THE NORTHEAST DURING DECEMBER 1999, AND JANUARY AND FEBRUARY 2000

I. PURPOSE

The Form EIA-903 "Natural Gas Service Interruptions in the Northeast during December 1999, and January and February 2000" is designed to collect information concerning only those natural gas service arrangements respondent companies have with end users, i.e., those who burn or otherwise use the fuel. Any arrangements for deliveries to other natural gas service providers or distributors should be excluded. This information is being requested on a State basis for the following northeastern States: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. The Energy Information Administration (EIA) is conducting this mandatory survey under the general information gathering provisions provided under the Federal Energy Administration Act of 1974, P.L. 93-275.

II. WHO MUST REPORT

Selected local distribution companies (LDC's) and pipelines that delivered natural gas to consumers during December 1999, and January and February 2000 in the northeastern United States as listed in Part I above.

III. WHEN TO REPORT

Completed Forms EIA-903 "Natural Gas Service Interruptions in the Northeast during December 1999, and January and February 2000" are to be filed with the EIA postmarked on or before May 22, 2000.

IV. WHERE TO REPORT

Each respondent is required to submit the completed form in any of the following formats:

- an Excel spreadsheet,
- a WordPerfect file, or
- paper copy

To: Energy Information Administration: E9-44
Mall Station: BE-064 FORSTL
U.S. Department of Energy
Washington, D.C. 20585-0644
Attn: Form EIA-903
or
Fax completed form to (202) 586-4420
Attn: Form EIA-903
or
E-mail the completed form to either:
mary.carlson@eia.doe.gov or
barbara.marinervolpe@eia.doe.gov

For general information and/or assistance call either
Mary Carlson at (202) 586-4749 or Barbara Mariner-Volpe at (202) 586-5878. Ms. Carlson and Ms. Mariner-Volpe can be contacted by e-mail at the addresses listed above.

V. PROVISIONS FOR CONFIDENTIALITY OF INFORMATION

Information supplied in response to this form will be kept confidential by the Energy Information Administration as follows. The Office of Legal Counsel of the Department of Justice concluded on March 20, 1991, that the Federal Energy Administration Act requires the EIA to provide company-specific data to the Department of Justice, or to any other Federal agency when requested for official use, which may include enforcement of Federal law.

The information contained on this form may also be made available, upon request, to another component of the Department of Energy (DOE), to any Committee of Congress, the General Accounting Office or other Congressional agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order.
GENERAL DESCRIPTION OF THE FORM

The Form EIA-903 “Natural Gas Service Intermittent Service in the Northeast during December 1999, and January and February 2000” is divided into six parts. All selected respondents are required to submit the form and must complete all data items applicable to the company’s operations in the report State(s).

INSTRUCTIONS

General Instructions

If final numbers are not available for the information requested, estimated data are acceptable. Indicate with an “E” any estimated data element.

Computer files or other listings may be submitted in lieu of designated parts of the form.

The form may be copied as necessary to cover all rate schedules or contract categories. Computer files or other listings may be submitted in lieu of completing designated items. The form Part number should be written on any computer listing.

Part I. Identification and Certification

Requests the name, address, telephone number, and e-mail address of the person to be contacted with any questions regarding the submission.

The contact should be an individual who is familiar with the service arrangements of the responding company and its customers.

Part I also asks the responding company to indicate the units it will use for reporting, i.e., thousand cubic feet (Mcf) or dekatherms (Dth).

Part II. Interruptible Natural Gas Service Tariffs or Contract Categories

A. Description of Interruptible Natural Gas Service Tariffs or Contract Categories. Requests information on selected characteristics of interruptible service arrangements provided to end-use customers. This category should include any tariff or contract category that allows service to be interrupted at some time during the contract/tariff period. For example, if the annual service agreement is for 330 days of firm service and up to 35 days of a lower level of firm service or interruptible service, that type of service agreement should be categorized as interruptible for purposes of this survey.

Note: Copies of relevant parts of tariff schedules or contract categories are acceptable in lieu of the form.

B. Natural Gas Service Interruptions or Service Restrictions Under Interruptible Tariffs During the Period from December 1, 1999, to February 29, 2000.

Requests information by rate schedule or contract category listed in Part II (A) for any natural gas service that was interrupted during the period from December 1, 1999, to February 29, 2000.

Part III. Customers with Interruptible Natural Gas Service Interrupted during January and February 2000

Requests the names and contact information for customers with interruptible service agreements who were interrupted. Please list a sufficient number of companies to provide at least 75% of the total volume that was interrupted under all schedules up to a total of 50 companies in the report State. If possible, please list customers in order from largest to smallest volumes interrupted.

The customer contact listed should be an individual who is familiar with the service arrangements and the company practices regarding back-up fuel inventories and purchasing practices.

Part IV. Firm Natural Gas Service Tariffs or Contract Categories

Requests baseline monthly and weekly information for those categories of service which were interrupted during December 1999 and January and February 2000. (See definition of firm service.)

Part V. Customers with Firm Natural Gas Service Interrupted during January and February 2000

Requests the names and contact information for customers with firm service agreements who were interrupted. Please list a sufficient number of companies to provide at least 75% of the total volume that was interrupted under all schedules up to a total of 50 companies in the report State. If possible, please list customers in order from largest to smallest volumes interrupted.

Page 3

2711

DOE006-0068

Obtained and made public by the Natural Resources Defense Council, March/April 2002
The information requested in this form will be kept confidential and not disclosed to the public to the extent that it satisfies the criteria for exemption in the Freedom of Information Act (FOIA), 5 U.S.C. §552, the DOE regulations 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905.

Upon receipt of a request for this information under the FOIA, the DOE shall make a final determination whether the information is exempt from disclosure in accordance with the procedures and criteria provided in the regulations. To assist us in this determination, respondents should demonstrate to the DOE that, for example, their information contains trade secrets or commercial or financial information whose release would be likely to cause substantial harm to their company's competitive position. A letter accompanying the submission that explains (on an element-by-element basis) the reasons why the information would be likely to cause the respondent substantial competitive harm if released to the public would aid in this determination.

VI. SANCTIONS

The timely, comprehensive, and accurate submission of this form by those required to report is mandatory under §13(b) of the Federal Energy Administration Act of 1974 (FEA Act) P.L. 93-275.

VII. DEFINITIONS

Firm Service Tariffs or Contracts: Any tariff, contract, or other type of service arrangement under which the respondent agreed to provide firm continuous service without any provision for interruptions or a break in service during the contract period.

Interruptible Service Tariffs or Contract Categories: For purposes of this request, interruptible service includes any tariff, contract, or other type of service arrangement under which the responding company agreed to provide service but might discontinue the service upon some agreed upon conditions. This category would include service arrangements such as the following:
- service that is interrupted when the temperature drops to or below a specified level.
- contracts for firm service for much of the year but with a provision for being interrupted under certain conditions or during certain time periods. For example, if the service agreement is for 330 days of firm service and up to 35 days of a lower level of firm service or interruptible service, that type of service agreement should be categorized as interruptible for purposes of this survey.
- service is interrupted on a specific date or schedule.

Maximum Daily Quantity (MDQ): The maximum amount of gas the transporter is obligated to deliver during any single day and for which the customer agrees to pay a fee. An MDQ may be specified in a tariff or contract service agreement. The MDQ is sometimes referred to as maximum daily contract quantity.

Northeastern United States: For the purposes of this survey, includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.
The customer contact person should be an individual who is familiar with the service arrangements and the company practices regarding back-up fuel inventories and purchasing practices.

Part VI. Customers that Declined Service during January and February 2000

Requests the names and contact information for customers that declined natural gas service when interruptions were ended and natural gas service was offered/available in the report State. The customer contact should be an individual who is familiar with the service arrangements and company practices regarding back-up fuel inventories and purchasing practices.
U.S. DEPARTMENT OF ENERGY
Energy Information Administration
Washington, D.C. 20585

FORM EIA-903
NATURAL GAS SERVICE INTERRUPTIONS IN THE NORTHEAST
DURING DECEMBER 1999, AND JANUARY AND FEBRUARY 2000

This report is mandatory under the Federal Energy Administration Act of 1974 (Public Law 93-275). For the provisions concerning the confidentiality of information and sanctions, see Sections V and VI of the instructions.

PART I. Identification and Certification

1. Company Name: ____________________________

2. Service in (State): ____________________________

3. Address (Street, City, State, Zip Code): ____________________________

4. Contact Person: ____________________________

5. Title: ____________________________

6. Telephone Number: ____________________________

7. E-Mail Address: ____________________________

8. Fax Number: ____________________________

9. Signature: ____________________________

10. Date: ____________________________

Important: Volumetric data filed on this Form are reported in (check one): ☐ Mcf (thousand cubic feet) ☐ Dth (dekatherms)

Heat content: _____________ Btu/ft³.
**PART II. Interruptible Natural Gas Service Tariffs or Contract Categories**

**A. Description of Interruptible Natural Gas Service Tariffs or Contract Categories**

Please provide the following information for each tariff schedule that allows service to be interrupted to an end-user. Any tariff or contract that allows service to be interrupted at some time during the contract/tariff period of service should be included. For example, if the annual service agreement is for 339 days of firm service and up to 35 days of a lower level of firm service or interruptible service, that type of service agreement should be categorized as interruptible for purposes of this survey.

<table>
<thead>
<tr>
<th>Rate Schedule and Name of Interruptible Service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: For each rate schedule or contract category, your company must file information on Part II (B).</td>
<td></td>
</tr>
</tbody>
</table>

Describe the conditions under which the service is interrupted:

(A copy of the relevant portion of the tariff schedule or contract category may be attached in lieu of completing this Section. The rate schedule or contract category should be noted on the copy.)

Describe any requirements contained in the tariff or contract for fuel back-up arrangements by the customer:

(A copy of the relevant portion of the tariff schedule or contract category may be attached in lieu of completing this Section. The rate schedule or contract category should be noted on the copy.)

Please make additional copies of the form as necessary to cover each rate schedule or contract category.
### PART II. Interruptible Natural Gas Service Tariffs or Contract Categories (continued)

8. Natural Gas Service Interruptions or Service Restrictions Under Interruptible Tariffs During the Period from December 1, 1999, to February 29, 2000

Please provide the following information by tariff schedule or contract category listed in Part II (A) above for any natural gas service that was interrupted during the period from December 1, 1999, to February 29, 2000. Provide the information for the report State in which your company made deliveries. Indicate with an "E" any information which is estimated.

<table>
<thead>
<tr>
<th>Rate Schedule and Name of Interrupted Service</th>
<th>Monthly Data</th>
<th>Weekly Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative maximum daily quantity of gas to be provided under these contracts in each period. (e.g., if the maximum daily quantity (MDQ) for each day during February 2000 is 150 units, then the cumulative MDQ for February 2000 is 150 units x 29 days = 4,350 units.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total deliveries interrupted in each period. (e.g., if 100 units were interrupted for each of three days, the total interrupted deliveries would be 300 units.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of days interrupted under these contracts in each period. (If contract was interrupted for less than a day, provide the fractional day equivalency.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of days of service with few restrictions in each period. (Service was not interrupted.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please make additional copies of the form as necessary to cover each rate schedule or contract category.
PART III. Customers with Interruptible Natural Gas Service Interrupted during January and February 2000

Customer list should account for at least 75 percent of the total volume of interruptible service that was interrupted under all schedules, up to a total of 50 companies in the State specified. If possible, please list customers in order from largest to smallest volumes interrupted. The customer contact should be an individual who is familiar with the service arrangements and the company practices regarding back-up fuel inventories and purchasing practices. You may use the following format or you may attach the information using a computer file or other listing.

<table>
<thead>
<tr>
<th>Customer Name (company address, if available)</th>
<th>Volume Interrupted (total all schedules)</th>
<th>Types of Alternative Fuel Capability (if known)</th>
<th>Customer Contact Person</th>
<th>Telephone Number (include e-mail address if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please make additional copies of this form as necessary to complete the filing.
Part IV. Firm Natural Gas Service Tariffs or Contract Categories

A. During the period from December 1, 1999 through February 28, 2000, did you curtail, suspend, or restrict service to any customer(s) with firm service tariffs or contracts in the State specified? Check one: Yes  No

B. If the answer to A was "No," please provide the monthly total of the maximum daily quantities of gas to all end-use customers with firm service for the following months (e.g., if the maximum daily quantity (MDQ) for each day during February 2000 is 150 units, then the cumulative MDQ for all days from December 1, 2000 is 4,500 units/day x 30 days = 135,000 units):

<table>
<thead>
<tr>
<th></th>
<th>December 1999</th>
<th>January 2000</th>
<th>February 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. If the answer to A was "No," please turn to Part VI, and complete as appropriate.

D. If the answer to A was "Yes," provide the following information for the total of all firm natural gas service tariffs or contract categories for the report State in which you had deliveries. Indicate with an "E" any information which is estimated.

<table>
<thead>
<tr>
<th></th>
<th>Monthly Data</th>
<th>Weekly Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative maximum daily quantity of gas to be provided under these contracts in each period. (e.g., if the maximum daily quantity (MDQ) for each day during February 2000 is 150 units, then the cumulative MDQ for February 2000 is 4,500 units/day x 30 days = 135,000 units.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total deliveries interrupted in each period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of days interrupted under these contracts in each period. (If service was interrupted for less than a day, provide the fractional day equivalent.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of days of service with free restrictions to customers in each period. (Service was not interrupted.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please make additional copies of the form as necessary to complete the filing.
<table>
<thead>
<tr>
<th>Customer Name</th>
<th>Volume Interrupted (total all schedules)</th>
<th>Types of Alternative Fuel Capability (if known)</th>
<th>Customer Contact Person</th>
<th>Telephone Number (include e-mail address, if known)</th>
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Please make additional copies of the form as necessary to complete the filing.
**EIA-803**

**Part VI. Customers that Declined Service during January and February 2000**

Please provide a list of the customer name, contact person and telephone number for companies that declined natural gas service when interruptions were ended and natural gas service was offered/available in the State specified. The customer contact should be an individual who is familiar with the service arrangements and the company practices regarding back-up fuel inventories and purchasing practices. You may use the following format or you may attach the information using a computer file or other listing.

<table>
<thead>
<tr>
<th>Customer Name (company address, if available)</th>
<th>Customer Contact Person</th>
<th>Telephone Number (include e-mail address, if known)</th>
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