

**HOUSEHOLD PARTICIPATION IN
GAS CUSTOMER CHOICE PROGRAMS: SOME
FACTS, EXPLANATIONS, AND LESSONS LEARNED**

by

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EXECUTIVE SUMMARY

A key feature of energy utility industry restructuring allows residential and small commercial customers the opportunity to choose their supplier for designated unbundled services. Previously, these services were provided on a bundled basis by the local utility. The expectation is that retail customers will benefit from the competition induced by unbundling. This presumes that customers will make rational choices in selecting a third-party provider.

This report focuses on the first phase of consumer choice for small retail gas customers.¹ Enough evidence has accumulated for gas customer choice programs, most of which are pilot in nature and initiated by gas utilities, to make some general assessments about consumer interest.² These programs, several of which began in the fall of 1996, show varying results. *They suggest that most small gas customers are reluctant to relinquish bundled sales service provided by their local gas utility even when alternate service would result in bill savings.*

A major policy issue revolves around the concern of many observers that the vast majority of eligible residential customers have stayed with their current supplier of bundled sales service, namely the local utility. This behavior of customers appears rather odd in view of expected or sometimes even guaranteed bill savings. Three alternative possible explanations come to mind. First, some customers made well-

¹ The next phase, which has already begun in some states, will allow more customers to participate and offer a wider range of service options for customers. A recent overview of natural gas customer choice programs is contained in United States General Accounting Office, *Energy Deregulation: Status of Natural Gas Customer Choice Programs*, GAO/RCED-99-30 (Washington, D.C.: Government Printing Office, December 1998).

² Other program outcomes, such as required technical and administrative adjustments, fall outside the scope of this report.

informed decisions, *correctly* anticipating no net benefits from choosing an unencumbered marketer (for example, even with guaranteed savings, customers will have to incur switching costs and may perceive a marketer's service, even the local gas utility's marketing affiliate, to be inferior to the utility's). Second, some customers may be so confused and uninformed, that they decide to incur no search costs and to simply "stay put," even though there may be imputed positive net benefits. It should be noted, however, that such an information problem may only be temporary: marketers and other non-utility entities will have an incentive to overcome customer confusion and lack of customer information. Third, discriminatory actions by the local gas utility may prevent or discourage customers from switching to a marketer — onerous certification requirements, for example, may decrease the number of new marketers.

This report suggests that one or more of these explanations probably has some validity for a given program and situation. Problematic for regulators and other policymakers are explanations two and three, which justify actions improving consumer information and "leveling the playing field." Explanation one assumes a properly functioning market where well-informed consumers are making rational decisions in a marketplace where all suppliers have an equal opportunity to compete.

The evidence from various programs coincides with economic theory saying that *the savings must be adequate to offset the risks and transaction costs associated with consumers switching to a new provider*, this condition is especially relevant in a market where the local utility has been the sole provider and the only entity with name recognition. Overcoming this so-called first-mover advantage, which is not necessarily problematic, makes it more difficult for independent marketers to establish themselves and create a presence that erodes the dominance of the incumbent utility. In all markets, incumbents have an inherent advantage over new entrants; one reason derives from the positive reputation of an incumbent (if that is in fact true), which a new entrant must try to neutralize with advertising and other informational activities. Consumers, in turn, have to incur higher costs to acquire information on new entrants.

The outcomes of gas customer choice programs also seem to be influenced by the “little things” in terms of program design and implementation. *For consumers to participate, they need to be adequately informed and educated and their transaction costs need to be minimized.* Rational behavior for many if not most gas customers may involve staying with their current supplier, the local gas utility: the net benefits of switching, after adjusting for uncertainty and other relevant factors of consumer decisionmaking, may well be negative. To some observers, this outcome raises the fundamental issue of whether competition reflected by the entry of new suppliers is actually beneficial to society.

Finally, the evidence from gas customer choice programs provides lessons learned that can be extrapolated to future consumer choice programs of both natural gas and electric utilities. Although customer participation may not always be an enviable goal, it is consistent with the widely-held perception that many customers will benefit from choosing non-utility providers. Existing, as well as past, gas customer choice programs provide insights into the requisite conditions for customers to switch away from the incumbent utility provider.

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FOREWORD

The natural gas industry has recently seen the rapid growth of customer choice programs. A major objective of these programs is to measure the interest of residential and small commercial customers in choosing among competitive providers for specific gas services. As this report illustrates, customer participation varies widely across programs. This report attempts to identify the major reasons for this, along with a general discussion of factors affecting customers' willingness to acquire some of their gas services from other than the local utility.

The report should be especially timely for those state policymakers who are contemplating customer choice programs for either the natural gas or electric power sector. Most important, the lessons learned from current gas choice programs can influence the design and implementation of future programs.

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BACKGROUND

Nature of Gas Customer Choice Programs

The recent development of retail service unbundling in the natural gas industry has encompassed experimentation with what are called "customer choice programs" for the household and small commercial sectors. These programs, most of which can be classified as pilot programs,¹ are premised on the potential for service unbundling to benefit small customers, recognizing however that certain information should be acquired before proceeding on a more comprehensive scale. A major objective of pilot programs is to reduce the risk of executing a poorly designed permanent customer choice program.

Existing pilot programs can be accurately described as demonstration or feasibility projects whose major objectives include assessing the workability of a program from an administrative and technical perspective. Demonstration projects do not involve a random assignment of persons,² diminishing their ability to obtain information that can be applied to other environments and situations. Unlike scientific experiments, existing gas pilot programs are generally not intended to accumulate extrapolative information.³ For example, because of selection bias caused by the non-

¹ Non-pilot programs include those in Ontario, Canada, New York, and Georgia. The Ontario program began in 1987, the New York programs in 1996, and the Georgia program in 1998.

² Participation in gas customer choice programs is voluntary, with participants' characteristics therefore expected to differ from those of non-participants.

³ For a review of the methodological issues associated with social experimental programs, see James J. Heckman and Jeffrey A. Smith, "Assessing the Case for Social Experiments," *Journal of Economic Perspectives* 9, 2 (Spring 1995): 85-110.

random assignment of customers, it becomes difficult to estimate the effects of utility-wide or comprehensive service unbundling. Non-randomization, in the absence of statistical adjustments, means that an analyst cannot assume that program participants (i.e., those customers who decide to purchase one or more unbundled services from a third-party provider) resemble non-participants in their willingness and ability to choose another gas service provider.⁴

Notwithstanding the limitations of existing gas programs to convey certain information, the outcomes of the programs can be useful in the design and implementation of future programs. These programs encompass customer-choice actions initiated by either natural gas distributors or electric utilities.

Currently, much of the information accumulated for pilot programs has come from natural-gas customer choice programs, rather than electricity programs.⁵ Other than the pilot programs in New Hampshire, electric utilities have only recently embarked upon pilot programs.⁶ In contrast, several pilot programs by natural gas utilities, have been in operation for at least one year.⁷

⁴ If non-participants were identical to participants, an analyst could construct a counterfactual outcome for participants by measuring the outcome of the control group generated through random denial of unbundled services to persons who would have otherwise participated.

⁵ A recent survey shows existing and proposed customer choice programs in twenty-one states and the District of Columbia. (See American Gas Association, *Providing New Services to Residential Natural Gas Customers: A Summary of Customer Choice Pilot Programs and Initiatives: 1998 Update*, Issue Brief 1998-03, September 25, 1998.)

⁶ As of mid-1998, electricity pilot programs have been approved in Idaho, Illinois, Massachusetts, Missouri, New Jersey, New Mexico, New York, Oregon, Pennsylvania, and Washington. Many of the programs were approved during 1997, with little information on performance available at the time of this writing.

⁷ Gas utilities having residential customer choice programs since 1996 include Central Illinois Light Company, Columbia Gas of Maryland, Washington Gas, Bay State Gas, Columbia Gas of Pennsylvania, Wisconsin Gas, and KN Energy (See American Gas Association, *Providing New Services to Residential Natural Gas Customers: A Summary of Customer Choice Pilot Programs and Initiatives: 1998 Update*, Table 1.) The first program, conducted by MidAmerican Energy, was initiated in 1995 and since discontinued. Incidentally, the program had a participation rate of 82 percent but only 875 residential customers were eligible to participate.

Objective of Report

This report focuses on participation rates for gas customer choice programs — an outcome of great interest to both utility and regulatory decisionmakers. Specifically, the report attempts to explain why some programs have been more successful than others in eliciting residential customers to choose alternate gas suppliers. *The outcomes from existing gas pilot programs show a wide variance of consumer participation*, with some programs attracting a high percentage of eligible customers while others attract a very low percentage (see Table 1 in the next section). Ideally, analysts would hope to use statistical tools to separate out and measure the effects of individual factors. By providing scientifically sound information, a statistical analysis could help to guide decisionmakers in the design and implementation of future pilot programs by both natural gas and electric utilities.

Although the analysis presented here lacks a statistical foundation, it attempts to explain the divergence of participation rates by residential customers across gas pilot programs through a method that can be called “qualitative assessment.” Such a method includes the application of economic theory (for example, identifying general factors of consumer switching), the identification of important individual program features with respect to design and implementation, and an assessment of the views put forth by others on the major determinates of participation rates. Finally, this report summarizes all of the evidence to enumerate some of the major lessons learned.

It is hoped that this report can help decisionmakers to more successfully design and implement pilot programs in the future. In the context of this report, a more successful pilot program would have higher participation by residential customers. Higher participation translates into greater benefits from customer choice. It should be cautioned, however, that some of these benefits may not reflect social gains but instead are contrived to induce customer participation. On the other hand, *low participation may simply mean little expected benefits to customers from switching suppliers*, rather

than a troublesome outcome for decisionmakers.⁸ After all, a customer may reason to not be better off by switching to another supplier. This implies that a customer expects negative or trivial benefits from switching, which can be considered the reason for what some analysts call “consumer inertia.”⁹

CUSTOMER PARTICIPATION IN ACTUAL PROGRAMS

A conspicuous outcome of gas pilot programs is the high variability of participation by residential customers. One major objective of pilot programs is to gather information on how households would respond to the opportunity to choose their natural gas provider. For reasons given later, small customers such as households may find it more difficult and less beneficial than large customers to switch from their incumbent supplier. Gas pilot programs give small customers the occasion to switch, under specified constraints and conditions, which can influence the willingness of customers to choose another supplier.¹⁰

As mentioned above, participation rates by residential gas customers and other small customers vary widely across programs. Table 1 shows participation for the major and several of the other programs. Some programs have had low responses while others have had high responses. It is clear that important factors are at play; identifying them will be explored in this report.

⁸ This statement presumes the absence of excessively burdensome market constraints imposed on third-party suppliers and misleading customer information; each of these conditions would cause customers to uneconomically continue purchasing bundled sales service from the utility.

⁹ As discussed later in this report, consumer inertia can also reflect irrational behavior on the part of customers to stay with their current supplier.

¹⁰ These constraints and conditions are examined later in this report.

TABLE 1
CUSTOMER PARTICIPATION IN SELECTED GAS CHOICE PROGRAMS

STATE/UTILITY (STARTING DATE)	PARTICIPATION
<p><u>ILLINOIS</u> <i>Central Illinois Light</i> (October 1996)</p>	<ul style="list-style-type: none"> ◆ 3,500 out of 10,000 eligible residential customers (as of May 1998)
<p><u>IOWA</u> <i>Mid-American Energy</i> (November 1995)</p>	<ul style="list-style-type: none"> ◆ 82% of eligible residential customers (1995-1996)
<p><u>MARYLAND</u> <i>Baltimore Gas and Electric</i> (November 1997)</p> <p><i>Columbia Gas of Maryland</i> (November 1996)</p> <p><i>Washington Gas Light</i> (November 1996)</p>	<ul style="list-style-type: none"> ◆ 14,775 residential customers, with an enrollment cap of 25,000 and 530,000 eligible customers (as of March 1998) ◆ 50,000 residential customers, with an enrollment cap of 50,000 (as of September 1998) — expanded program ◆ 2,500 residential customers, with an enrollment cap of 10,000 and 27,600 eligible customers (as of September 1998) ◆ 18,132 residential customers, with an enrollment cap of 25,000 and 300,000 eligible customers (as of March 1998) ◆ 21,000 residential customers, with an enrollment cap of 100,000 and 300,000 eligible customers (as of September 1998) — expanded program
<p><u>MASSACHUSETTS</u> <i>Bay State Gas</i> (November 1996)</p>	<ul style="list-style-type: none"> ◆ 6,500 residential customers, with an enrollment cap of 10,000 and 83,000 eligible customers (as of October 1996) — <i>Customer Choice Program</i> ◆ 24,100 residential customers out of 83,000 eligible residential customers (as of March 1998) — <i>Choice Advantage Program</i>

GAS CUSTOMER CHOICE PROGRAMS

TABLE 1 — <i>continued</i>	
STATE/UTILITY (STARTING DATE)	PARTICIPATION
<p><u>MICHIGAN</u> <i>Consumers Energy</i> (April 1997)</p> <p><i>Michigan Consolidated Gas</i> (April 1997)</p>	<ul style="list-style-type: none"> ◆ 500 customers out of 40,000 eligible customers (as of March 1997) — original program ◆ 3,800 residential and commercial customers out of 47,000 eligible customers (as of March 1997) — original program
<p><u>NEBRASKA</u> <i>KN Energy</i> (June 1998)</p>	<ul style="list-style-type: none"> ◆ 68,000 customers out of 100,000 eligible customers (as of May 1998)
<p><u>NEW JERSEY</u> <i>New Jersey Natural Gas</i> (April 1997)</p> <p><i>South Jersey Gas</i> (August 1997)</p>	<ul style="list-style-type: none"> ◆ 30,000 residential customers, with an enrollment cap of 30,000 (as of September 1998) ◆ 13,000 residential customers, with an enrollment cap of 13,000 (as of July 1997)
<p><u>NEW MEXICO</u> <i>Public Service of New Mexico</i> (December 1997)</p>	<ul style="list-style-type: none"> ◆ Less than 300 residential customers out of 361,000 eligible customers (as of August 1998)
<p><u>NEW YORK</u> <i>Statewide</i> (April-November 1996)</p> <p><i>Brooklyn Union Gas</i> (May 1996)</p>	<ul style="list-style-type: none"> ◆ 10,500 residential customers out of 4,000,000 eligible customers (as of June 1998) ◆ 5,000 residential customers out of 500,000 eligible customers (as of June 1998)
<p><u>OHIO</u> <i>Cincinnati Gas and Electric</i> (November 1997)</p> <p><i>Columbia Gas of Ohio</i> (April 1997)</p> <p><i>East Ohio Gas</i> (December 1997)</p>	<ul style="list-style-type: none"> ◆ 9,500 residential customers out of 360,000 eligible customers (as of April 1998) ◆ 50,000 residential customers out of 160,000 eligible customers (as of April 1998) ◆ 35,794 customers out of 173,000 eligible customers (as of March 1998)

TABLE 1 — *continued*

STATE/UTILITY (STARTING DATE)	PARTICIPATION
<u>PENNSYLVANIA</u> <i>Columbia Gas of Pennsylvania</i> (November 1996) <i>National Fuel Gas</i> (September 1997) <i>Peoples Natural Gas</i> (April 1997)	<ul style="list-style-type: none"> ◆ 37,000 residential and small commercial customers out of 100,000 eligible customers (as of December 1997) ◆ 15,600 residential and small commercial customers out of 19,350 eligible customers (as of September 1997); remaining customers transferred to gas marketer selected as back-up supplier ◆ 98,000 residential customers out of 317,000 eligible customers (as of April 1998)
<u>Wisconsin</u> <i>Wisconsin Gas</i> (November 1996)	<ul style="list-style-type: none"> ◆ Residential and commercial customers (818 and 646) fully subscribed (as of October 1996)
<u>Wyoming</u> <i>KN Energy</i> (July 1996)	<ul style="list-style-type: none"> ◆ 5,700 residential and commercial customers out of 10,500 eligible customers (as of November 1997)

Source: American Gas Association, *Providing New Services to Residential Natural Gas Customers: A Summary of Customer Choice Pilot Programs and Initiatives: 1998 Update*.

In calculating participation rates, care should be taken in defining terms.

Mathematically, a measure of participation rate should be defined as

$$PR = PA/EC,$$

where the participation rate, PR, equals the proportion of eligible customers (EC) who are participants in a program (PA); eligible customers can include the total number of small customers in a utility's service area, or the number of small customers in a sub-area of a utility's service area that are eligible to participate in a pilot program. Some of

the existing programs have enrollment caps with customers signing up on a first come, first served basis.¹¹ In the case of a fully subscribed program, by definition the number of participating customers equals the enrollment cap. One should not, however, interpret this outcome as necessarily inferring that an open program without enrollment limits would have high participation. It is conceivable that a small percentage of customers who did not enroll in a pilot program would participate in an open program. In the Baltimore Gas and Electric program, for example, as of March 1998, less than 15,000 residential customers signed up for a program with an enrollment cap of 25,000; although the participants to enrollment cap ratio seems reasonably high (0.6) the fact that 530,000 customers were eligible to participate makes the results much less impressive.¹²

Illustrating this further, assume that a utility with 100,000 residential customers has implemented a pilot program with an enrollment cap of 15,000. Suppose that the program is fully subscribed (15,000 customers deciding to participate by switching suppliers). We do not know how many customers would have participated without the enrollment cap. It may be true that a small percentage of non-participants would have participated if given the opportunity. The only certainty is that at least 15 percent of the customers were willing to switch suppliers. How many more is unknown, unless a survey of non-participants is conducted to estimate how many of them would have participated.¹³ For those programs under-subscribed, for example 10,000 customers

¹¹ See Table 1; these programs include the Maryland programs, the Bay State Gas program, the New Jersey programs, and the Wisconsin Gas program.

¹² The same interpretation can be made for the Washington Gas Light and the Bay State Gas programs.

¹³ A survey of non-participants for some of the programs is briefly discussed in the section "Identifying Major Determinants for Actual Gas Customer Choice Programs."

participating in the above hypothetical program, one can obtain a more accurate measure of participation rate. In this example, 10,000 participants means a participation rate of 10 percent (100,000 customers were eligible to participate). One can portray the degree of participation in a more favorable light by pointing out that about 67 percent of the enrollment cap was reached. But such an interpretation would convey little if not misleading information. Using this interpretation, one could always set a low enough enrollment cap to obtain a high percentage. Since one objective of a pilot program is to gather information for predicting customers' response to a permanent, utility-wide program, the participants to enrollment cap ratio would not be the appropriate indicator. In sum, it is difficult to interpret the results of fully subscribed programs; for under-subscribed programs, especially those on a utility-wide basis, taking the number of participants and dividing by the number of eligible customers can provide a better guide to the participation rate for an open, comprehensive program.¹⁴

DETERMINANTS OF CUSTOMER PARTICIPATION

Customers' willingness to participate in a pilot program designed to give them choice of service providers depends on several factors, some obvious while others are not so obvious (for example, the "wait-and-see" factor). Participation is also determined by the availability of alternate providers who are willing to enter a specific market with the prospect for future profits. After all, "it takes two to tango:" consumer and suppliers

¹⁴ A sub-area pilot program would require the results to be "externally valid" in the sense that they can be correctly extrapolated to the entire population represented by participants in the program.

will come together in the marketplace only when each party expects to benefit from a transaction.

This section of the report will first look at customer participation from an economic-theory perspective, concentrating on general variables influencing the willingness of consumers to switch suppliers. It will then take the next step by applying the theory to identify those aspects of pilot-program design and implementation that seem likely to have the greatest influence on customer participation.

Theoretical Considerations

The fundamental nature of customer choice programs is to provide small gas customers, namely, residential and small commercial customers, the opportunity to acquire one or more gas services from entities other than the local gas utility. Prior to a choice program, customers were receiving all of their gas services from the local utility. Therefore, in choosing another entity, customers are in effect switching their preferences of supplier from the local utility to an alternate supplier.

The economics of consumer switching can be succinctly stated as the following: *consumers will switch suppliers when they expect the gains to exceed the costs.*¹⁵ Gains arise from lower prices and higher product or service quality, and costs include transaction costs plus any anticipated costs (e.g., lower reliability) from switching suppliers).¹⁶ In the jargon of economists, switching occurs — for example, from an incumbent gas utility to a marketer — only when consumer surplus is expected to rise. What this implies in most instances is that the gain to a consumer from a lower price

¹⁵ This assumes that consumers are risk-neutral; if, in fact, they are risk-averse, then even an expected positive gain may not necessarily induce them to switch.

¹⁶ For several of the programs surveyed by the author, lower prices for marketers' gas derive from a tax inequality that favors marketers over the local gas utility.

exceeds the consumer's switching cost.¹⁷ In the case where a consumer feels indifferent about switching because of no discernible gains, the consumer would tend to remain with the incumbent firm. In one sense, the term "consumer inertia" may include the situation where consumers tend to stay with the incumbent, especially during the initial periods, when the expected gains are not sufficient enough to offset the costs and risks associated with switching to a new supplier. This reflects perfectly rational behavior from the perspective of consumers but perhaps not socially acceptable if the gains, costs, or risks become distorted because of regulatory or utility action, or if the consumer is receiving confusing information. For example, if the gains are held down because of the excessive unbundled-distribution rate of the local gas utility, the observed switching rates may be unduly low and mirror an economically inefficient outcome.

Some analysts may perceive consumer inertia to also include the lack of consumer participation in new market opportunities when ample information exists that a consumer would benefit. According to this definition, consumers are irrational in staying with their current supplier. One often-used example of consumer inertia is the long distance telephone market, where the penetration of non-AT&T carriers progressed slowly and several years passed before these carriers collectively were able to increase their market share above AT&T's (see Figure 1).¹⁸

As previously mentioned, transaction costs discourage consumer switching. These costs can be high, particularly in a market where, for the first time, consumers are able to choose a supplier other than the incumbent, namely, a market where the

¹⁷ As defined here, switching costs is a general term synonymous with what economists call transaction costs; these costs include the opportunity costs to consumers from trading, excluding the price (e.g., search costs).

¹⁸ Whether long distance telephone users would have been better off if AT&T's market share eroded faster over time is not at all clear. One could argue that, in view of the threats of Sprint, MCI, and resellers, AT&T faced enough competition to *not* act like a dominant supplier.

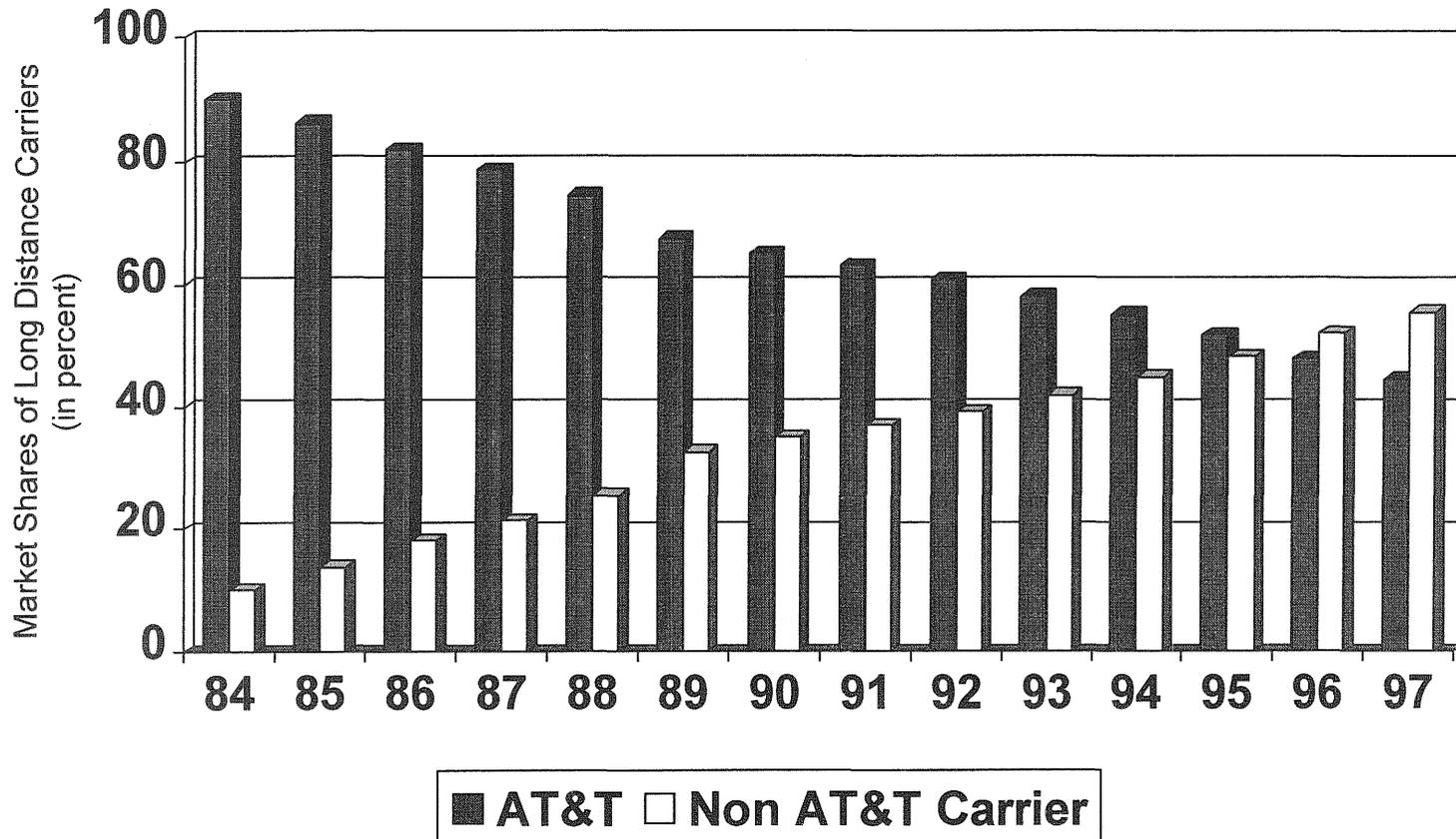


Figure 1. Market shares in long distance telephone service, 1984-1997.

Source: Federal Communications Commission, Long Distance Market Shares, Second Quarter 1998, September 1998; market shares are based on revenues.

incumbent has long served 100 percent of the customers. For example, *a customer may have to incur search costs to learn about suppliers who never before served that customer or any customer of the local gas utility.* Learning costs give the incumbent a first-mover advantage, which a new entrant must overcome if it is to gain market share. To the extent learning costs are reduced, assuming other things remain the same, consumers would be more inclined to switch. Confusion over the prices for, and the quality of, non-incumbent products or services would tend to discourage consumers from switching. In other words, confusion can easily lead to consumer inertia.¹⁹

Transaction costs associated with consumer switching generally have negative economic effects. They raise price and, by discouraging new entry, reduce competition in the marketplace. The economics literature has also shown that transaction costs reduce product or service variety available to consumers by weakening the incentives of firms to differentiate their products or services.²⁰

The costs incurred by a consumer switching to another supplier have other implications for competition among different entities. First, the incumbent firm has an advantage that could deter entry of new firms; the incumbent, in fact, could charge a

¹⁹ As discussed later, there is supporting evidence that consumer confusion is a major obstacle to switching.

²⁰ The economics of consumer switching are contained in Tore Nilssen, "Two Kinds of Consumer Switching Costs," *RAND Journal of Economics* 23, 4 (Winter 1992): 579-89; Paul Klemperer, "The Competitiveness of Markets with Switching Costs," *RAND Journal of Economics* 18, 1 (Spring 1987): 138-50; Paul Klemperer, "Competition When Consumers Have Switching Costs: An Overview with Applications to Industrial Organization, Macroeconomics, and International Trade," *Review of Economics Studies* 62 (1995): 515-39; and Paul Klemperer, "Entry Deterrence in Markets with Consumer Switching Costs," *The Economic Journal* 97 (1987): 99-117.

For empirical evidence on the importance of transaction costs in a regulated industry (i.e., interstate long distance), see Christopher R. Knittel, "Interstate Long Distance Rates: Search Costs, Switching Costs, and Market Power," *Review of Industrial Organization* 12 (1997): 519-36.

higher price and still retain customers. The simple explanation for this outcome is that the incumbent can discriminate against these customers by charging them a higher price, where switching costs make alternate suppliers less attractive.²¹ Second, a firm may invest more to increase its short-term market share, since customers taken away from another firm would be more difficult for that firm to regain in the future.²² As an example, assuming the costliness of a customer to change suppliers, once he makes the decision to go with a particular supplier, that customer would tend to stay longer with that supplier than if switching costs were lower. This implies that a firm, in attracting customers, may have the incentive to offer low or promotional prices during the initial period. This may in fact be occurring for some gas customer choice programs, where new entrants are offering low prices and other inducements to take customers away from the local gas utility. In one program, conducted by Bay State Gas, marketers offered signing bonuses, year-end rebates, and frequent-flyer miles.²³ Rebates and other promotional practices were also prevalent in the country's first natural gas pilot program, conducted by MidAmerican Energy in Rock Valley, Iowa.

Third, switching costs affect a firm's pricing strategy. Specifically, customers with higher switching costs, assuming other things hold constant, would tend to face higher prices. The explanation for this is that because these customers would find it more costly to change suppliers, the existing supplier could exploit this situation by charging

²¹ The incumbent utility, of course, may be unable to charge a higher price because of regulatory restrictions such as a gas cost recovery mechanism.

²² The marketing literature has shown that a firm has to spend significantly more money to get a customer back than to retain that customer in the first place.

²³ See James D. Simpson, "Report on Choice Advantage from Bay State Gas," presented at the Seventh Annual DOE-NARUC Natural Gas Conference, Pittsburgh, Pennsylvania, October 6, 1998.

the customers higher prices. In the parlance of economics, these customers have a lower price elasticity of demand.²⁴

In accordance with economic theory, participation rates as a variable reflecting the willingness of small retail customers to switch from their incumbent utility to a third-party marketer can be expressed as

$$PR = f(P_U / P_C, A_S, C_S, QS_P, Y)$$

where

- PR = participation (switching) rate;
- P_U / P_C = ratio of the utility's price to the marketer's price for the product or service;
- A_S = availability of different unbundled products or services;
- C_S = consumer switching costs (e.g., enrollment requirements, consumer cost of education and information);²⁵
- QS_P = perception of the service quality of a utility's competitors relative to the utility's; and
- Y = additional factors affecting participation (e.g., billing options, consumer inertia based on irrational behavior, price risk, and other risks)

²⁴ As an example, we would expect residential customers to face higher prices than industrial customers. Evidence of price discrimination caused by differences in consumer switching costs in the gasoline market is contained in Severin Borenstein, "Selling Costs and Switching Costs: Explaining Retail Gasoline Margins," *RAND Journal of Economics* 22 (1991): 354-69. The author concluded that leaded gasoline is priced higher than unleaded gasoline because fewer stations sell it; thus, buyers of leaded gasoline face higher prices of switching from one station to another.

²⁵ In Klemperer, "The Competitiveness of Markets with Switching Costs," the author segments switching costs into three components: (1) transaction costs — costs incurred every time a consumer switches a supplier, (2) learning costs — costs incurred by a consumer only when switching to a supplier who has not supplied her before, and (3) artificial switching costs — costs incurred because of pricing actions by a firm to increase the cost of a consumer to switch to another supplier (e.g., frequent flyer programs, rebates to loyal customers).

The above relationship translates into the economic principle of customers being more likely to participate in a customer choice program when they expect to receive higher net benefits. Net benefits are inversely related to the price of third-party service relative to the utility's price,²⁶ the cost of switching from the incumbent to another supplier, and the lower service quality anticipated by customers when switching to a third party.²⁷

Since "it takes two to tango" in the marketplace, *the participation rate is also affected by the willingness of third parties to enter a new market and provide services previously supplied by an incumbent utility.* This willingness, in accordance with economic theory, depends on the firm's expected future profits. By definition, profits represent the difference between a firm's revenues and costs. Revenues, in turn, are the product of price and sales.²⁸ Costs include the up-front costs of a firm entering a new market for which, historically, the incumbent firm has had 100 percent market share over several decades. A recent industry survey calculated that the cost of pursuing and signing one residential gas customer by a marketer is around \$200, while the margin for that customer would average only \$25 per year. This translates into an eight-year payback period, which would discourage most marketers from entering the residential market.²⁹ When, for example, a new entrant attempts to penetrate a new

²⁶ In a competitive-like environment, the competitor's price would be affected by the price charged by the utility.

²⁷ For example, we can expect the lowest participation rates for those programs where the local gas utility has a market-level price for its natural gas, the cost of information to consumers is high, and consumers perceive marketers to be less reliable than the local utility.

²⁸ When the local gas utility procures gas supplies at a lower cost, assuming other things remain constant, the marketer's profit margin along with potential sales would tend to be smaller.

²⁹ See "Appeal of Residential Market Uneven as Suppliers Seek New Opportunities," *Gas Utility Report*, February 27, 1998, 9. The major challenge for marketers in a mass market with low-volume customers is to spend considerable money on advertising and educating consumers and to minimize consumers' transaction costs.

market it may be willing to take a loss during initial periods.³⁰ Later, in a more mature market, it can earn profits as the market sorts itself out. Marketers unwilling to take losses may be reluctant to enter a new market because of thin profits and inadequate sales potential partly caused by customer confusion about choice.

Program Design and Implementation

The theoretical discussion in the previous section can help guide the design and implementation of pilot programs. For example, it predicts that *consumer education, by diminishing confusion and consumer uncertainty over switching, can increase the participation rate*. As another example, marketers may be discouraged from entering markets where the incumbent utility is perceived as favoring its affiliate over other marketers. Non-affiliates may view such favoritism as diminishing their potential sales and, perhaps, the price that they are able to charge customers because of cost-shifting and other possible utility-affiliate abuses.

Program structure and implementation, falling under the category “program features,” should be grounded on a sound conceptual or theoretical framework. Features can be defined here as the particular qualities of a program that have an effect on outcome or performance (for example, consumer participation rate). Table 2 lists the major features of gas consumer choice programs across the U.S. For industry observers, these program attributes represent a comprehensive list of the major determinants of consumer participation rates. A brief explanation for how each attribute can affect consumer participation rates follows.

³⁰ There is some evidence of this for the gas residential market, with one justification being the learning and “being there” value that can contribute toward a profitable outcome in the longer term.

TABLE 2
MAJOR FEATURES OF GAS CUSTOMER CHOICE PROGRAMS

- Size and geographical scope of program
- Allocation of LDC pipeline and storage capacity
- Marketer "qualification" requirements
- Consumer education
- Variety of unbundled services offered, and price and terms/conditions options
- Price level/price structure of marketer services
- Pricing of regulated unbundled services
- Perception of "fair competition" by marketers
- Standing of LDC as a gas merchant
- Customer enrollment requirements
- Billing options
- Program design and implementation process

Source: Author's review of gas customer choice programs across the U.S.

Some industry observers have argued that many of the existing gas consumer choice programs are too small to attract marketers.³¹ Their underlying presumption is that luring marketers into a particular area requires a large number of potential participants. Since the profit margin for serving small retail customers is small, marketers need to sign up enough customers to cover up-front marketing and other costs required to attract new customers.³² Pilot programs that are too small, characterized by artificial market rules, can also give unmeaningful results that may depict a distorted picture (i.e., statistically biased results).

Programs differ by whether or not marketers are required to purchase a utility's interstate pipeline capacity. In the case of mandatory capacity assignment at the full tariff rate, the net benefits to both consumers and marketers diminish.³³ Precluding a marketer from purchasing interstate pipeline capacity at the market rate, consumers see savings only in the procurement of cheaper natural gas from the marketer.³⁴ Instead, released capacity priced at the market price may produce significantly higher

³¹ See, for example, Roy Boston, "Gas Industry Unbundling: A Marketer's Top Ten List," presented at the Missouri Rate Symposium, Kansas City, Missouri, April 27, 1998; Sharon Hillman, "Competition: The Future Is Now," presented at the NARUC 1998 Winter Meetings, Washington, D.C., March 2, 1998; and Richard C. Green, Jr., "Creating a New Industry," *Hart's Energy Markets*, February 1998, 20. Green points out that most marketers, in spite of losing money, may enter new markets just to get exposure and experience.

³² The high interest by marketers in the Atlanta Gas Light's customer choice program may be attributed to the program's comprehensiveness.

³³ Utilities with mandatory capacity assignments include Columbia Gas of Maryland, East Ohio Gas, and KN Energy of Nebraska and Wyoming.

³⁴ As a general policy, mandatory capacity assignment may be acceptable, under the premise that a gas utility should be allowed to fully recover prudently incurred costs from long-term contracts with pipelines.

savings to consumers.³⁵ In addition, it allows a marketer the opportunity to profit from selling interstate pipeline capacity, thus increasing its expected gains.

Requirements for marketers to enter the market can affect their availability. Associated costs can act as a barrier to entry, discouraging entry by marketers.³⁶ Strict certification rules can be costly to marketers.³⁷ Such rules are justified on the basis that unreliable marketers can produce high costs to their customers and to the local gas utility when charged with the responsibility for providing default service.

Consumer education is especially important in a marketplace where, for the first time, consumers have choices.³⁸ In the absence of adequate education, most consumers will likely be confused and, consequently, will tend to stay with their current supplier. Confusion can surround price, the benefits and risks of a choice, the exact terms of a contract with a marketer, and consumer rights and responsibilities.³⁹

³⁵ The U.S. Department of Energy calculated that during the 1996 non-heating season and the 1996-1997 heating season, the price for released capacity was discounted, on average, close to 60 percent from the full tariff rate. (See Barbara Mariner-Volpe, "How Big Is the Decontracting/ Turnback Problem?" presented at the Gas Pipeline Capacity '97 Conference, Houston, Texas, June 18, 1997.)

³⁶ One perception of a barrier to entry attributes any cost incurred by a marketer but not by the local utility, either currently or in the past, as discouraging entry by potentially efficient providers.

³⁷ A survey by the author of "market qualification" requirements shows wide variance among the states. Some states have bare bones rules restricted to marketer creditworthiness requirements, consumer protection against deceptive or fraudulent sales practices, and penalty provisions for non-compliance. Others have detailed certification requirements that drive up the entry costs of new marketers. (A copy of the survey can be obtained from the author upon request.)

³⁸ Residential customers of Bay State Gas have achieved average bill savings of 11 percent and 7 percent during the first two years of its customer choice programs. (See Simpson, "Report Card on Choice Advantage from Bay State Gas.") Perhaps more than anything, customer participation has been assisted by the utility's intensive customer education activities in collaboration with the state regulator, consumer groups, and gas marketers.

³⁹ After two months, 10 percent of Atlanta Gas Light's customers have signed up with ten marketers. The company expects by next August that at least 33 percent of its customers will be served by alternate suppliers. One conspicuous observation is the large bill-savings differentials across the marketers, which apparently have caused some customer confusion. As of December 1998, marketers were offering savings between 1.5 percent and 27 percent, with the average at 12.5 percent. Savings were generally greater for rates that are allowed to change monthly, and the least for fixed rates locked in for one to three years. (See "Confusion Reigns As More Customers Switch Service," *The Atlanta Constitution*, December 12, 1998.)

Adequate consumer education is essential for consumers to make informed decisions,⁴⁰ still, as with other goods and services, consumer education should be limited to the level where the marginal benefit equals the marginal cost.

Consumer benefits from choice depend on the availability of different services from third parties. By expanding the scope of choice to a greater number of services, gas customers can directly gain. These services can include storage, billing, metering, and balancing. Marketers will also benefit by having greater profit opportunities in selling unbundled services. Limited to selling only natural gas, a marketer may be discouraged from participating.⁴¹ This would be especially true in a service area where the local gas utility's current gas costs are comparable to the marketer's.

A customer's willingness to switch is driven by the expected savings in gas costs. The customer compares the price of bundled sales service offered by the local utility with the sum of the prices of unbundled services. When contemplating the purchase of gas from a marketer, for example, the customer adds the price of gas to the price of distribution service (assuming that all non-gas retail services are incorporated into distribution service). When the summed price falls below the current price for bundled sales service, the customer saves money by switching to a marketer. Unknown is the discount customers apply to unbundled services in relation to bundled service. For those gas utilities with the lowest price for bundled sales service, assuming other things held constant, customers would be less inclined to switch. Given that other things do not remain constant, consumers would generally look more favorably upon an incumbent; the aggregated unbundled prices may therefore have to fall below the

⁴⁰ Although there is general agreement on this issue, it is uncertain who should have the responsibility for consumer education and what kind and level of education and information would be required for consumers to make informed decisions. Leaving the local utility to educate consumers may be problematic in that new entrants would likely benefit more than the utility, who may actually be harmed if it loses profits from a service newly available from competitors.

⁴¹ This seems to be the case for Enron which has made the decision to not participate in choice programs for both residential natural gas and residential electricity customers. Some marketers have also indicated that they will be more inclined to enter residential markets if they can offer packaged services that include electricity, telephone, cable, and Internet access.

utility's bundled price by a certain percentage before customers would choose a third-party marketer. As expressed by one marketing expert, "[b]y and large most homeowners are not going to switch just because they are going to save a few bucks." Rather, they will tend to pick suppliers "if they feel you are going to do right by them over a long period of time. Loyalty is the key."⁴²

The price structure of marketers services can also influence a customer's decision. By offering guaranteed savings or a fixed price, a marketer can lower risks to consumers. But a review of price offerings by marketers across gas customer choice programs shows that generally customers have to pay more during the initial periods for a fixed-price transaction than for a variable-price transaction that is tied to the market price of gas. Risk-averse customers may be especially attracted to such pricing options.⁴³ By having more pricing flexibility, marketers can appeal to a more diversified group of customers in terms of their risk preferences.

Tariffs for unbundled services obviously affect consumer participation in a pilot program. When the sum of these services are higher, choice looks less attractive to customers.⁴⁴ Administrative charges, imbalancing penalties, special metering charges, and above-cost charges for unbundled services all discourage customers from participating.⁴⁵ To the extent that small customers receive a subsidy under bundled sales service, calculating the costs for unbundled services and pricing these services

⁴² "Appeal of Residential Market Uneven as Suppliers Seek New Opportunities," 10.

⁴³ One observation from current gas customer choice programs is that customers tend to prefer a fixed rate for a twelve-month period over a variable rate for natural gas supplied by a marketer.

⁴⁴ One industry analyst argues that "[m]any natural gas utilities structure transportation rates for residential and commercial classes to preclude real customer choices. As such, most current rates serve as a profound impediment to the successful transformation of the retail gas industry." (Porter Bennett, "Consumer Choice in Natural Gas: A Hard Look at Savings," *Public Utilities Fortnightly*, October 1, 1998, 33.) Conversations by the author with gas distributors' personnel indicate that the local transportation rate charged to residential customers is generally the same, whether they take bundled sales service or unbundled transportation service.

⁴⁵ Recovering these costs, or a portion of them, from participating customers is appropriate to the extent that they represent incremental expenses.

on the basis of those costs may result in little or no savings to consumers from switching.

*Marketer participation depends upon their perception of whether fair competition exists in a utility's service area.*⁴⁶ Marketers would be less inclined to operate in a market environment in which the local utility or its affiliate have unfair advantages.⁴⁷ These advantages may translate into fewer potential sales, or lower profit margins, or both. Standards of conduct and affiliate-utility pricing rules may be necessary to alleviate the concerns of non-affiliated marketers.⁴⁸ One lesson learned in New Jersey was that affiliate marketing rules should be in place before the start of a customer choice program.

Some observers point to the problem of the local utility remaining in the gas merchant business.⁴⁹ Marketers may then be viewed by the utility as a competitor. Consequently, the utility would have an incentive to favor its gas supplies over marketers'. In contrast, when the local utility exits the gas merchant function, it may look more favorably upon marketers by considering them new customers or trade allies.

⁴⁶ Fair competition is a controversial term with different interpretations. See, for example, Kenneth W. Costello, "Equal Opportunities for All Competitive Electric Service Providers," in *Customer Choice*, Ahmad Faruqi and J. Robert Malko, eds. (Arlington, VA: Public Utilities Reports, forthcoming 1999).

⁴⁷ Most gas utilities with small-customer choice programs have established marketing affiliates.

⁴⁸ Gas marketers generally believe that a requisite for a properly functioning retail gas market is "fair" market affiliate rules. (See, for example, Hillman, "The Future Is Now;" Boston, "Gas Industry Unbundling: A Marketer's Top Ten List;" and Robert W. Lynn, "The Pricing of Gas Unbundled Service Elements," presented at the 29th Annual Conference of Public Utilities at Michigan State University, Williamsburg, Virginia, December 2, 1997.)

⁴⁹ This problem has been articulated by the New York Public Service Commission in a recent policy statement that mandates local natural gas utilities to exit the gas merchant function over the next three to seven years. (See "State Issues," *Foster Natural Gas Report No. 2209*, November 19, 1998, 12.) For an academic perspective of this problem, see Timothy J. Brennan, "Why Regulated Firms Should Be Kept Out of Unregulated Markets: The Divestiture of AT&T," *The Antitrust Bulletin* 32 (Fall 1997): 741-93.

As a customer, the utility's interest lies with the marketer selling more gas to the utility's transportation customers.⁵⁰

Obviously, facilitating pilot participation by consumers would encourage them to choose another supplier. Programs can differ as to sign-up verification — voice or paper— length of the sign-up period, customer eligibility, and switching-between-suppliers restrictions. Some of these rules directly affect consumers' transaction costs. For example, voice verification reduces the time and effort required of consumers to sign-up with another supplier.⁵¹ Other enrollment-participation rules impose entry requirements upon consumers. For example, some programs limit consumer enrollment to an open-season period.

Billing options can also influence customer choice decisions. Intuition would lead one to believe that most consumers would prefer to receive one "integrated" bill for unbundled services. The one bill shows the unbundled rate for both distribution and the gas purchased — for example, it is analogous to a telephone bill that separates local and long distance services. *One bill, rather than two separate bills, reduces consumers' inconvenience, thereby making consumer participation more attractive.*⁵²

The last feature, certainly not the least important, involves the process through which pilot program design and implementation are decided. At one extreme lies a collaborative process where all parties work together to ensure the success of a program. By "signing-on" to a program, a party has a vested interest in its outcome. When, at the other extreme, a utility designs a program without the input of other parties, those parties become less willing to work toward the success of the program.

⁵⁰ The question of whether a utility should exit the gas merchant business falls outside the scope of this report.

⁵¹ See Hillman, "Competition: The Future Is Now."

⁵² A two-bill option led to initial customer confusion in Maryland. In one pilot program, conducted by National Fuel Gas, the marketer bills customers for both gas supply and transportation charges.

They may be suspicious of the utility in implementing a program that serves the interests of unaffiliated marketers and consumers, rather than its own interests.

An American Gas Association (AGA) survey, responded to by thirty LDCs, reveals several features of residential gas choice programs:⁵³

1. In more than half of the programs marketers are not required to take their pipeline capacity from the LDC.
2. In all programs except one, the marketer must pay the maximum price for mandatory assigned pipeline and storage capacity.
3. For the vast majority of programs, the LDC imposes a balancing fee on marketers.
4. For most programs, the customers can choose between receiving one integrated bill from the LDC or a separate bill from the marketer.
5. Programs are evenly split between allowing customers to switch suppliers on an annual or monthly basis.
6. Utility-only education programs are most frequent, followed closely by programs initiated by both utilities and marketers and by all parties in a collaborative process.
7. About half of the programs have a formal mechanism to recover stranded costs.
8. More than twice as many programs do not recover administrative costs than do.
9. More than twice as many utilities are obligated to pay higher, rather than lower, local and state taxes than marketers.

⁵³ American Gas Association, *Providing New Services to Residential Natural Gas Customers: A Summary of Customer Choice Pilot Programs and Initiatives: 1998 Update*, 4.

10. About twice as many LDCs plan to stay in the merchant function as those that do not; in no case did a state PUC explicitly force an LDC to exit the merchant function.
11. Certification of marketers was over twice as common as non-certification requirements; in all cases, however, the marketers are required to prove their creditworthiness.
12. For the vast majority of programs, utilities have an unregulated marketing affiliate; in all but one instance, the state PUC reviews utility-affiliate transactions.
13. Over half of the programs are pilot programs confined to a specified sample of customers within the utility's service area, with the remainder conducted on a system-wide basis.

IDENTIFYING MAJOR DETERMINANTS FOR ACTUAL GAS CUSTOMER CHOICE PROGRAMS

Based on theoretical and program design/implementation considerations, the previous sections enumerated several factors affecting the willingness of small gas consumers and third-party suppliers to participate in choice programs. The next logical step in an analysis would be to measure the effects of individual factors and then to compare those effects for the purpose of distinguishing between significant and insignificant factors.

One analytical approach would entail a statistical interpretation of significance and non-significance. A major limitation in conducting such an analysis revolves around specifying the factors in a form that allows for meaningful statistical interpretation. Many of the factors would be what statisticians call "dummy variables," which are variables restricted to taking on two or more distinct variables. For example,

a program designed and implemented on the basis of a collaborative process can take on the value one while non-collaborative programs can take on the value zero.⁵⁴ Other factors that would be regarded as dummy variables include the standing of a gas utility in performing a gas merchant function, the allocation requirement for gas utility pipeline capacity, consumer enrollment requirements, billing options, and certification or non-certification requirements for markets.

Another limitation in conducting a statistical analysis is defining the participation rate. As discussed earlier, for fully subscribed programs, it would be incorrect to assign a participation rate of 100 percent and difficult to compute a participation rate. (A participation rate would equal the ratio of participants to eligible customers.) An additional problem stems from measuring participation rates on a “snapshot” basis. A general pattern of consumer choice programs is for enrollments to continuously increase over time. Changes in customer participation may be best depicted by a logistic function where during initial periods changes are small in percentage terms, with large (percentage) changes occurring after some point in time. For example, programs operating over only a few months, assuming other things remain the same, would be expected to have a lower participation rate than a program that has been operating over a longer period. This is a common pattern of actual choice programs, which may be partly explained by better consumer information over time and a wait-and-see attitude of many customers. One can adjust for this dynamic phenomenon in a causal model by inserting as an explanatory variable the length of time that a program has been operating.

⁵⁴ In a causal regression model, the coefficient of the “one” dummy variable would measure the effect of collaboration, assuming the other factors held constant, on consumer participation.

In any event, a statistical analysis of participation rates falls outside the scope of this report. Instead, a qualitative approach is conducted, combining the information for individual programs, the theoretical framework presented earlier, and the perspectives of those who are directly involved with customer choice programs.

Marketers' Perspective

Marketers represent new entrants in small-customer gas markets. They face the problem of trying to penetrate a market in which the local gas utility has been the sole provider of gas services. As with any firm trying to compete in a new retail market, especially one comprised of residential customers, marketers have to undertake large investments up-front for mass marketing, name recognition, and the hiring of skillful personnel. Some marketers may be willing to be a "loss leader," where they do not expect to profit during the initial periods; other marketers, however, may require immediate profits.

Profits for a marketer depend on its profit margins, the number of customers who sign up, and the cost of providing service. Marketers have vigorously argued for fair competition. They fear the utilities favoring themselves or their affiliates through discriminatory practices, cost-shifting, cross-subsidization, and self-dealing abuses.⁵⁵ Such behavior can adversely affect a non-affiliated marketer's profits by reducing its sales and profit margin. Marketers support standards of conduct for utility-affiliate

⁵⁵ See Laura Murrell, "Workable LDC Affiliated Marketer Standards," *Natural Gas* (December 1996): 12-15; and Kenneth W. Costello and Robert J. Granieri, "The Problem of Regulating Utility-Affiliate Interactions in a Mixed Market Environment," unpublished paper, Columbus, Ohio, The National Regulatory Research Institute, April 1997.

interactions that prohibit a utility from favoring its affiliate or, equivalently, from discriminating against non-affiliate service providers.⁵⁶

Marketers also favor the opportunity to offer various unbundled services such as storage, billing, balancing, and pooling. This allows marketers more profit potential and a greater ability to tailor their services to the demands of individual customers.

Marketers oppose what they consider unreasonable tariffs for services provided by the local gas utility.⁵⁷ For example, they have argued against high administrative fees and overcharging for distribution service. Obviously, higher tariffs for utility-provided unbundled services make bundled sales service more attractive to consumers.

A recent report by the KeySpan Energy Marketing Group cited several reasons why residential gas unbundling has not been overly successful in the Northeast in achieving high participation rates.⁵⁸ Two major reasons include high local transportation rates and cumbersome and time-consuming administrative details that drive up entry costs. The first is caused by under-calculating the avoided cost to the local utility when a customer purchases gas from a marketer.

The report goes on to attribute low participation also to the lack of adequate consumer education and continuation of gas utilities in the gas merchant business. In fact, it pointed out that “[b]ecause utilities’ residential gas-pricing remains generally subsidized, a free market might well raise residential prices initially. But it should eventually benefit residential consumers. As long as the residential gas market is bundled and subsidized, the effect of a free market on those customers cannot be

⁵⁶ Gas utility affiliates dominate some residential customer choice programs, including those conducted by Central Illinois Light, East Ohio Gas, and the Pennsylvania utilities.

⁵⁷ See, for example, Bennett, “Consumer Choice in Natural Gas: A Hard Look at Savings.”

⁵⁸ KeySpan Energy Marketing Group, *Issues and Problems in Retail Gas-Marketing in the Northeast*, white paper, October 15, 1998.

known.”⁵⁹ The report adds that marketers may be competitive in residential markets only because of local and state tax advantages over utilities.

The report argues that one problem is each gas utility designing its own rules with regard to supply coordination, billing, and metering, some of which are burdensome and difficult to manage. The report pointed out instances where marketers have opted out of residential pilot programs because of “excessive” billing costs. In addition, participation rates have been held down because of utilities’ charges to customers for switching to marketers (as high as \$50). The report argues that single billing can avoid consumer confusion — it has worked well in the telecommunications industry. Marketers have also complained that they have to make much effort in assuring that accurate and complete information is disseminated to consumers.

Overall, marketers attribute low consumer participation rates to utility and regulatory practices discriminating against them and diminishing the benefits to consumers from switching. They argue that fewer savings to consumers means fewer participants, which in turn would impede a marketer from generating sufficient revenues to cover its costs.

Evaluation Studies

An independent evaluation of the first year of the *GasAdvantage* pilot program conducted by Wisconsin Gas identified major problems of the program in addition to making several observations of the outcomes.⁶⁰ The evaluation report pointed out that the primary objective of the program was to “develop, test, and implement the processes and systems necessary to allow marketers/suppliers the ability to provide

⁵⁹ Ibid.

⁶⁰ Wisconsin Energy Conservation Corporation, *Wisconsin Gas Company GasAdvantage Pilot: Evaluation of Experience from the First Year of the Pilot*, July 1997.

supply and billing services directly to residential and small commercial customers that had traditionally only been supplied service by Wisconsin Gas.”⁶¹

The Wisconsin Gas program was fully subscribed as marketers actively solicited customers during the enrollment period.⁶² The evaluation report contained six major findings. First, residential participants tended to have above-average annual usage — not a surprising result since the pilot program was voluntary.⁶³ Second, participating customers were lured by the “guaranteed” savings and the billing and payment options offered by some marketers. Third, many non-participants indicated in a survey that they required additional information before participating in a customer choice program.⁶⁴ Fourth, because of the limited size of the pilot program, the ability to project the results for a larger market is greatly restricted.⁶⁵ Fifth, customers were inclined to participate when they perceived non-trivial bill savings and low risk from switching. In other words, participating customers saw sufficiently large net benefits, after accounting for uncertainty, in choosing a third-party marketer. Sixth, non-participants were generally satisfied with their current gas supplier, Wisconsin Gas, and saw no meaningful benefits from participating after accounting for the “hassle” factor associated with switching.⁶⁶

⁶¹ *Ibid.*, 1.

⁶² The enrollment cap represented only about 8.5 percent of the eligible residential customers.

⁶³ Self-selection would result in customers with the highest expected savings participating; of course, those are the customers who consume the most natural gas.

⁶⁴ It seems the high uncertainty surrounding the benefits and costs of switching persuaded these customers to “stay put.”

⁶⁵ This finding presumes that the sample was also not representative of the total population of Wisconsin Gas customers.

⁶⁶ Both consumers and marketers were hampered by mandatory capacity assignment, which was eliminated for year two of the program.

In a post-program survey, some marketers expressed their reluctance to participate because of the small size of the pilot and of limited opportunities for consumer savings relative to likely transaction costs.⁶⁷ They also pointed out that for customer choice to be successful in the residential market, customer information and education need to improve.

Two evaluations have been conducted for pilot programs in Ohio. The one by Columbia Gas of Ohio⁶⁸ identified key factors of its successful Toledo pilot program: (1) a major effort by the utility, the state public utility commission, and the consumer advocate office in working together to educate consumers about the program ("CHOICE"); (2) continuous enrollment; (3) the marketers' option to choose Columbia's pipeline capacity or alternate capacity; (4) the collaborative approach where all parties contributed to the development of the program and worked to ensure its success; (5) non-trivial customer savings, and (6) optional billing. A follow-up random telephone survey showed that 93 percent of the participants were satisfied with the program and nearly all of them would recommend the program to other customers. Columbia Gas recommended that an expanded program should allow a marketer to offer single billing service; and require a marketer to only provide the utility with a written or tape-recorded verification of a customer's consent to service by the marketer.

An evaluation report of the staff of the Public Utilities Commission of Ohio (PUCO) assessed the pilot programs of Cincinnati Gas and Electric, Columbia Gas of Ohio, and East Ohio Gas.⁶⁹ Although the report identified price as a principal driver of program participation, other factors were considered crucial.

⁶⁷ Holding other things constant, across gas programs in the U.S. a high correlation seems to exist between the number of participating marketers and the number of eligible customers.

⁶⁸ Columbia Gas of Ohio, *Customer CHOICE Program Report: April 1997 - March 1998*, presented to the Public Utilities Commission of Ohio, April 1998.

⁶⁹ Staff of the Public Utilities Commission of Ohio, *Staff Evaluation of Ohio's Natural Gas Customer Choice Programs: Columbia Gas of Ohio, East Ohio Gas, and Cincinnati Gas and Electric Companies*, Volume 1, May 1998.

The low participation in the Cincinnati Gas and Electric program was speculated to be the result of deficient customer information. Many of the utility's residential customers were interested in participating but they could not decide whether to remain with the utility; the hesitancy to choose another supplier, as the report pointed out, may be attributed to customers not receiving adequate information or any information at all. A survey of consumers indicated that customers were confused about price and, to a lesser degree, about the benefits and risks of the program, the terms of the contract, and customer rights and responsibilities. Almost half of the customers surveyed said they were not aware that they could choose a natural gas supplier. Overall, information was ineffective in eliminating customer confusion and in eliciting customers to make informed choices.

The East Ohio Gas program has, over time, experienced stable customer participation.⁷⁰ One identified problem in the PUCO evaluation report is that many interested customers had problems in making their choice. Insufficient information, as with the Cincinnati Gas and Electric program, may have been the major fault. A serious problem was customer confusion over pricing options or price comparisons. Most of the customers surveyed did not know enough about the program to have an opinion of whether the program should be improved. An additional obstacle to the East Ohio Gas program may have been the requirement of mandatory pipeline capacity assignment to marketers.

⁷⁰ The participation rate for the East Ohio Gas program has hovered around 20 percent over the last several years.

Piecemeal Evidence

The disappointing performance of customer choice in the New York residential gas market has been scrutinized by analysts and others.⁷¹ They offer several explanations, albeit not weighing the effect of individual factors. Factors include excessive distribution rates resulting from under-calculating the avoided gas costs, unfair gas utility access to customer information, load profiles and other information, non-standardization of unbundled-service tariffs in the state, the decision of some gas utilities to stay in the merchant business, and the cumbersome application process for marketers and enrollment process for customers. Some New York gas utilities deny that a problem exists, arguing that residential customers are not switching mainly because of the comfort factor associated with staying with their current gas supplier and the expected small savings.

A staff report of the New York Department of Public Service identified the problem of gas utilities integrating their merchant and distribution functions;⁷² it recommended separation of these functions to establish a robustly competitive market gas supply and to avoid gas utilities favoring their own gas supplies. The report concluded that “[separation] would. . . resolve ‘level playing field’ issues between LDCs and other merchants including any subsidies that are embodied in existing bundled sales services as well as tax inequities. The need to regulate LDC purchasing practices would be eliminated, substituting instead the discipline of the market to set gas prices.”⁷³

⁷¹ See, for example, Bennett, “Consumer Choice in Natural Gas: A Hard Look at Savings;” and KeySpan Energy Marketing Group, *Issues and Problems in Retail Gas-Marketing in the Northeast*.

⁷² New York Department of Public Service, *The Future of the Natural Gas Industry*, Staff Position Paper, September 1997.

⁷³ *Ibid.*, 4.

The small-customer pilot programs in Maryland can generally be regarded as successful in terms of consumer and marketer participation. Explanations for this include: (1) a collaborative process where all parties signed off on the design and implementation of the programs, (2) non-trivial customer savings, in many instances greater than 10 percent, (3) extensive media exposure where customers became readily cognizant to the programs, (4) cost-based rates for regulated unbundled services, thereby avoiding excessive rates for separate non-gas services purchased by marketers and customers, and (5) a commitment to getting the details right — details that could “make or break” a program. Most Maryland programs (e.g., Baltimore Gas and Electric) allow marketers options for purchasing pipeline capacity. The Maryland programs also prohibit a gas utility from charging customers an administrative fee for switching. Finally, Maryland has looser marketer-qualification rules than in most other states. The rules encourage parties directly involved in a transaction to work out any problems that may ensue.⁷⁴

In Michigan, the low participation rate for the original two-year Consumer Energy pilot program may be attributed to two factors: (1) little savings to customers, in part resulting from Consumer Energy’s low purchased gas costs and the program’s condition of mandatory capacity assignment,⁷⁵ and (2) the small size of the program, discouraging marketers from participating. The other pilot program in the state, conducted by Michigan Consolidated Gas, has had higher participation, presumably because of the utility’s higher purchased gas costs.

⁷⁴ This is based on the unpublished NRRI survey that was noted in footnote 37.

⁷⁵ Mandatory capacity assignment has since been eliminated, and the program has been greatly expanded.

The Price Effect

Customer switching requires that the price for third-party natural gas when added to the price for unbundled services provided by the local gas utility be less than the available price for bundled sales service. If this outcome were not true, it could be expected that customers would remain with their current service. The evidence from gas consumer choice programs shows that a necessary, but not sufficient, condition for switching is customers expecting to save on their natural gas costs. For example, it suggests that if a customer is satisfied with the service provided by the local gas utility, that customer would tend to stay with the utility unless the savings from switching to another supplier are non-trivial (e.g., 10 percent or more).

The hard question for marketers is how much of a savings do they have to offer customers to switch; for utilities, the relevant question is how can they retain customers when a competitor under-prices them. For example, customers may not switch to a lower-cost supplier if they perceive the utility's service to be more reliable or are uncertain about the risk associated with a non-utility supplier.⁷⁶ Additionally, an incumbent utility may not have to match the prices of marketers in the face of costs incurred by customers in switching to another supplier. Some marketing experts have warned utilities that competing on the basis of price only would be an ill-advised strategy. They recommend that utilities capitalize on their brand names to build a loyal customer base and to become less vulnerable to pricing wars leading to low profit margins. Consistent with this view is the importance for utilities to differentiate

⁷⁶ See, for example, Alexander Lonshteyn, "Testing Share and Load Growth in Competitive Residential Gas Markets," *Public Utilities Fortnightly* (February 15, 1998): 46-50; and Alan J. Cox and James R. Forcier, "Winning Consumers: A Strategy for Developing New Products Is the Key to Competitiveness," *Energy* (June 1998): 11-15. Somewhat surprising, Cox and Forcier found that residential customers have a strong preference for a brand other than the one associated with the incumbent utility.

themselves from their competitors by building a brand identity. Even when a product or service (e.g., commodity gas) seems homogeneous *ex ante*, irrespective of the seller, branding can cause differentiation in the minds of consumers. Such a tactic can be particularly valuable when a utility is able to offer various value-added service in a marketplace with intense competition for energy services.

Some analysts have argued that "consumer inertia," particularly in a market where the local utility starts off with high (as high as a 100 percent) market share, makes it difficult for new entrants to compete; this may justify some sort of bidding process or random process for allocating those customers who fail to select a non-utility supplier.⁷⁷ These analysts point to the cases of AT&T in the long distance telephone market, the early outcomes of retail competition in the electric power industry, and the outcomes of several gas pilot programs as evidence of consumer inertia. For example, AT&T continued to have over 50 percent of the market until 1996, a period of eleven years after its divestiture. AT&T's market share eroded at an average annual rate of 3.5 percent between 1985-1996.

The opening of the California electricity market to retail competition did not immediately lead to a large number of residential customers switching to non-utility providers.⁷⁸ During the first three months, nearly 100,000 residential customers

⁷⁷ See, for example, Kenneth Rose, "Retail Marketing Areas: Jump-Starting Competition While Short-Circuiting Market Power," *Public Utilities Fortnightly*, forthcoming 1999; Kenneth Rose, "Ohio's Proposed Retail Marketing Areas," presented before the Deregulation and Restructuring of the Electric Utility Industry Study Committee, Des Moines, Iowa, November 23, 1998; and Jaison R. Abel and Michael E. Clements, "Should Utility Incumbents Be Able to Extend Their Brand Name to Competitive Local Markets? An Economic Perspective," *The Electricity Journal* 11 (June 1998): 49-57.

⁷⁸ Obstacles to retail competition in the newly restructured California electricity market are examined in Robert McCullough, "California's Electricity Market: Are Customers Necessary?" *Public Utilities Fortnightly* (July 15, 1998): 36-41. The author argues that bill savings to consumers, after accounting for the "competitive transition charge" (CTC), may be small and less than transaction costs. He also makes the observation that marketers are in a dilemma: why should they sell energy to direct access customers at a discount off the power exchange (PX) price when they can make more profit selling into the PX at an exchange clearing price, with no discount? Overall, McCullough sees the California market as unattractive for marketers, along with few benefits to consumers from direct access.

switched to another provider. Some gas pilot programs, as discussed elsewhere in this report, have experienced poor participation rates even though customers could save on their natural gas bills by switching to another supplier.

Some evidence of the price elasticity of switching by energy consumers is contained in two studies. One study, by Green and McDaniel, developed the simple formula,⁷⁹

$$\% \text{ Switching} = S_i [(P_r - P_c)] / P_r,$$

where the percentage of customer switching is a function of the regulated price, P_r , the competitive price, P_c , and a "switching propensity" parameter, S_i ; S_i is measured as 1.25, based on the observation that roughly 25 percent of British natural gas customers have changed their supplier in response to a price reduction of 20 percent.⁸⁰

A second study by Cai, Deilami, and Train⁸¹ developed a dichotomous-choice model applying survey data for a sample of small (residential and business) electricity customers of the Sacramento Municipal Utility District. The study estimated the share of the utility's customers who would switch to a competitor under hypothetical price discounts and service attributes (e.g., reliability, customer service, the availability of

⁷⁹ Richard Green and Tanga McDaniel, "Competition in Electricity Supply: Will '1998' Be Worth It?" working paper PWP-057, University of California Energy Institute, 13.

⁸⁰ See Catherine Waddams Price, "Competition and Regulation in the U.K. Gas Industry," *Oxford Review of Economic Policy*, 13, 1 (1997): 47-63.

As shown later, S_i would not be expected to be constant across different programs and environments. When other factors favor (disfavor) consumer participation, S_i would tend to be higher (lower). As an example, for a given savings in gas costs, more consumers would be expected to switch when better informed because of mass media advertising.

⁸¹ Yongxin Cai, Iraj Deilami, and Kenneth Train, "Customer Retention in a Competitive Power Market: Analysis of a 'Double-Bounded Plus Follow-Ups' Questionnaire," *The Energy Journal* 19, 2 (1998): 191-215.

renewable power).⁸² The results reveal a pattern of customer behavior plausible for the actual and anticipated outcomes of gas pilot programs. First, when residential customers expect to receive the same service from a competitor as from the utility, the price elasticity of switching is around two; for example, 20 percent of residential customers would switch when offered a price discount of 10 percent; the price elasticity somewhat increases with larger price discounts (e.g., 70 percent of residential customers would switch with a price discount of 30 percent).⁸³

Second, switching can be seriously hampered by customer perception that a competitor's service is inferior to the utility's.⁸⁴ For example, when a customer expects more outages from a competitor's service, the customer's willingness to switch greatly decreases — a price discount of 10 percent would cause only 5 percent of the customers to switch. The study also showed that switching occurs less often when a competitor fails to offer energy conservation service and renewable power (assuming

⁸² The "double-bounded" approach involves asking a customer the upper and lower bounds on price discounts required for the customer to switch suppliers, assuming in one scenario a constant quality of electric service.

⁸³ These results are higher than the switching-propensity calculation in the Green and McDaniel study but lower than the switching propensity for some gas pilot programs. For example, in the Columbia Gas of Ohio's Toledo pilot program, the average price decline for delivered gas was roughly 10 percent, while around 30 percent of residential customers switched to a third-party marketer; that is, the switching propensity for that program was around 3; other programs with seemingly high switching propensities include those of Bay State Gas, KN Energy, East Ohio Gas, and the Pennsylvania gas utilities.

A survey conducted for Cambridge Energy Research Associates suggests a switching propensity of over 3 for household electricity customers; the survey found that 17 percent of the 1,001 surveyed customers would switch for a 5 percent discount and 36 percent would switch for a 10 percent cut in their bills. (See "New Survey Highlights Utility Brand Loyalty," *Gas Daily* (February 26, 1998), 4.

⁸⁴ This finding places importance on the ability of a utility to "brand" its service or that of an affiliate, or to convey an impression among customers that a competitor's service may be less reliable or less attractive in some other way.

that the utility offers these services). Apparently, customers would be willing to pay a premium to hold and exercise these options.⁸⁵

Third, customers satisfied with their current utility service would be less inclined to switch,⁸⁶ whereas high-usage customers and customers who have switched long distance telephone carriers would be more inclined. These results are intuitive and consistent with the expectation that consumers receive different benefits from, and have varying preferences for, leaving their traditional monopoly-utility provider.

Fourth, a utility can prevent the erosion of its market share by providing service superior to its competitors; particularly, higher service reliability can allow a utility to maintain its market share in the absence of large price discounts over its competitors.

Fifth, price discounts offered by competitors can place strong pressures on a utility to control costs; a utility can otherwise risk significant loss of market share.

Overall, the study shows that, while price significantly affects customer switching, non-price factors also play a role. The results lean toward a middle-ground position in suggesting that customers are not "inert" (i.e., non-responsive to lower price offerings) but that they are disinclined to switch quickly and in large numbers for just a small price discount.

⁸⁵ The evidence so far in the restructured California electricity market supports the argument that many residential customers are willing to pay a premium price for "green" power. As of late September 1998, about half of residential electricity customers opting for direct access chose a renewable source of energy. (See P. Gregory Conlon, "Assessment of California's Restructuring of Its Electricity Market," presented before the NARUC Committee on Accounts, Indianapolis, Indiana, September 30, 1998.)

⁸⁶ One study found a customer's age to be an important factor of switching. (See Kerry Diehl and Rich Gillman, "Why Your Customers Switch," *Public Utilities Fortnightly* [April 15, 1997]: 37-40.)

MAJOR LESSONS LEARNED

A major objective of this report is to interpret the outcomes of current and past gas customer choice programs in order to assist in the design and implementation of future natural gas as well as electric programs. The outcome of interest in this report is the participation rate of customers in programs that allow them, for the first time, to choose among different suppliers. Individual programs generally were not designed to project, on a sound scientific basis, outcomes in a different context. Collectively, however, they provide useful information reflecting expected (i.e., economically rational) and prevalent kinds of customer and marketer behavior.

First, a variety of factors affect the participation rate for an individual program.

These can be placed into the general categories *price* and *non-price*.⁸⁷ Participation depends importantly on the design and implementation of a program. Price seems to be an essential driver: if customers do not expect bill savings, they will almost certainly not switch. On the other hand, expected savings may not be sufficient, by and in itself, to elicit customer participation in view of switching costs and the risks associated with changing to a new supplier.

Second, most customers cannot be expected to quickly switch suppliers simply because they have the opportunity to do so; much effort, especially when choice is introduced for the first time, is required for customers to make informed decisions, including switching suppliers. Uninformed customers will tend to be inert by remaining

⁸⁷ As of November 1998, the estimated average bill savings for residential customers of the three Ohio gas utilities offering choice were as follows: 9.4 percent for Columbia Gas of Ohio, 4.6 percent for Cincinnati Gas and Electric, and 3.6 percent for East Ohio Gas. (See Public Utilities Commission of Ohio, *Apples To Apples Rate Plans for Residential Customers*, November 1998.) These percentages are based on the average savings across marketers offering one-year fixed-rate contracts. Somewhat surprising, through November 1998 East Ohio Gas had the highest percentage of residential customers switching, 20.5 percent, compared with 16.6 percent for Columbia Gas of Ohio, and 7.4 percent for Cincinnati Gas and Electric. (See Public Utilities Commission of Ohio, *Natural Gas Customer Choice Program Statistics through November 1998*, December 1998.) Apparently, non-price factors have influenced residential gas customers of Ohio utilities to switch suppliers.

with the incumbent supplier. Of course, some customers may quickly and with little information switch because either they are disgruntled with their local utility or they readily calculate the expected benefits to more than compensate them for the risks.⁸⁸ A successful customer choice program would be characterized by rising participation rates over time. Although initially participation may be low, as both customers and suppliers adjust to the new environment, switching should continuously occur and, ultimately, reduce the dominance of the local utility.

Third, program success cannot be measured by a tight enrollment cap along with the requirement that the program be fully subscribed on a first come, first served basis. Small pilot programs may not convey much useful information in projecting the expected service-territory-wide participation rate. It would be preferred to run a pilot program within a representative sub-area of a utility's service territory. Under this design, participation in the sub-area would provide a better projection of service-territory-wide participation.

Fourth, customer participation in some programs has been hindered by deficient incentives for marketer entry. Expected profits depend on price, costs, and demand conditions. Given the expected razor-thin profit margin in serving individual residential customers, marketers become highly sensitive to changes in these factors. Marketers are discouraged when the local utility has low purchased gas costs, imposes high rates for complementary unbundled services, and when the potential volume of business is low. Marketers would, in addition, be discouraged by excessively burdensome qualification requirements. In attracting customers, marketers may have to incur high

⁸⁸ A subset of these customers may be what the marketing literature calls "innovators" (i.e., customers who will switch suppliers as soon as they have the opportunity because they like the idea of being able to do so.)

up-front costs to inform and educate customers; these costs may take several years to recover, motivating a “no entry” decision.

Fifth, boosting customer participation rates may require the unbundling of services beyond those, namely, gas and distribution, that currently prevail. Firms are more effective in marketing their services when they can offer potential customers an array of price-service packages. Competing on both price and service would give a new entrant additional opportunities to attract customers.

Sixth, the “little things” may matter in a customer’s decisions. They include billing options, enrollment requirements, and consumer education. Successful programs tend to be customer- and marketer-friendly.⁸⁹ For example, in these programs customers do not incur excessive switching costs and they fully understand their risks, rights, and responsibilities through educational activities.

Seventh, small natural-gas customers seem to have exhibited rational behavior in current and past choice programs. Low participation reflects the less-than-compensatory benefits to customers from switching relative to the risks and switching costs; risks can include lower reliability and other adverse outcomes from choosing a new supplier. Many customers apparently feel indifferent about switching or correctly decide that they would be better off staying with the local utility. In the situation where customers stay because of inadequate information or confusion, however, a program could be better designed to prevent the loss of potential customer benefits.

Eighth, participation may also be affected by the certain advantages of the local utility over new entrants. These first-mover advantages (e.g., access to customer information, name recognition) influence customers to stay with the local utility even

⁸⁹ Such programs tend to disseminate useful consumer information, encourage entry of marketers, and minimize consumer switching costs.

when competitors offer lower prices.⁹⁰ For example, when customers perceive uncertainty over the reliability and quality of service provided by a new entrant, the entrant must charge a lower price than the local utility to lure customers away from the utility. On the other hand, the local utility may be disadvantaged by the fact that as a large firm it has more to lose than smaller firms if price falls; a price drop, for example, may be an expensive way of retaining customers. Consequently, a utility may prefer a new entrant to gain a small market share rather than engage in a potentially vicious price war.

CONCLUSION

The outcomes of choice programs for small retail customers can help guide policy decisions on the future course of competition in the energy utility industries. Observed participant rates by gas customers, for example, can reveal the degree of customer interest in choice as well as identify problems associated with “jump-starting” a new market previously dominated by a regulated, monopoly utility. The evidence from current and past gas consumer choice programs can assist in shaping similar programs in the future for both the natural gas and electric power industries.

The evidence obtained from gas consumer choice programs conveys a consistent portrayal of what to expect when small gas customers have opportunities to choose their service provider. Specifically, small customers will avail themselves of choice under the right conditions. For these programs where bill savings are meaningful (as a rough guide, 10 percent or more) and transaction costs are minimal, customers will be inclined to participate. For other programs, customers see fewer

⁹⁰ First-mover advantages could be transferred to an affiliate, who would then be able to compete more favorably with other new entrants. See, for example, Abel and Clements, “Should Utility Incumbents Be Able to Extend Their Brand Name to Competitive Local Markets?”

benefits from choice, and after taking into account risks and switching costs, may rationally decide to continue purchasing bundled sales service from the local utility.

The inception of choice for small customers inevitably requires a transition during which the immaturity of a market effectuates outcomes that should not be expected to reflect long-term customer behavior. *The fact that customer participation may be feeble over the initial years of a program should not necessarily be interpreted as disappointing.* Experiences with other sectors undergoing transformation toward competition customarily show that residential and other small customers, while not inert, require time, perhaps several years, to accept and take advantage of new market opportunities. The outcomes of gas consumer choice programs do not contradict this phenomenon. Customer participation should be expected to increase over time as transaction costs decline, customer education becomes more dispersed, and less uncertainty prevails. This assumes, of course, that early customer experiences with choice have been positive.

In many if not most instances, low participation rates for a specific program may be explained by few or no expected benefits to customers from switching, either because of negligible gas-cost savings, high transaction costs, or the confusion resulting from inadequate information. The key policy question for utilities and state public utility commissions is whether the underlying conditions in these situations are conducive to efficient or welfare-enhancing competition and, if not, how they can be changed to elicit higher customer participation. A review of existing programs shows that, in many instances, additional effort is required to attract customer interest in choosing lower-priced suppliers. Where potential benefits exist, programs should be re-designed, in part, to ensure effective customer education and reasonably-minimum customer switching costs.

