Cool Choice Study Group

Northeast C&I HVAC Initiative Process Assessment

January 15, 2001

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TABLE OF CONTENTS

1. SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

1.1 BACKGROUND

This report documents Hagler Bailly Services, Inc.'s process evaluation of the Northeast Energy Efficiency Partnerships, Inc. (NEEP) C&I HVAC Initiative, also known as 'Cool Choice.' The process assessment examined the long-term strategic objectives and the shorter-term operational or implementation aspects of the Cool Choice program to determine the value of the program and to identify any needed improvements.

In establishing the parameters for the process assessment, it is important to understand the goals and objectives for the program. The overall goal of Cool Choice "is to increase energy efficiency by establishing energy efficient packaged HVAC equipment and practices as standard products and services in the Northeast." To meet that goal, NEEP identified a three-part strategy for the packaged HVAC market:

Increase the availability and sales of energy efficient HVAC products and services, through marketing and customer rebates,

Work with contractors to increase their awareness of options, and to promote high efficiency to their customers, and

Work with other organizations to promote increased national standards.

These strategies are designed to reduce market barriers that limit the widespread adoption of energy-efficiency HVAC equipment. Based on their familiarity with the market, the implementation contractor, MaGrann Associates, indicates that "low availability of qualifying equipment" and "low customer demand for energy efficient options" are the key barriers to widespread adoption of the efficient equipment. In the process assessment, we sought to confirm those barriers and to evaluate the effectiveness of the various program components in adequately addressing those market adoption constraints. Our approach included an investigation of the points along the delivery chain for HVAC equipment to the C&I market.

1.2 METHODOLOGY

There are two facets of the process assessment. The first facet is to review and evaluate the appropriateness of the initiative's strategy or planning in terms of the overall approach. The second facet is to review and assess the effectiveness of the execution or implementation of the program in meeting the short-term and longer-term goals and objectives defined for the initiative's strategy.

The first facet, the strategy analysis, requires a thorough understanding of the program, its goals and objectives, and the target market. To achieve the key objective of market transformation, the program must address the important market barriers. The process assessment was designed to confirm those barriers as they exist across the delivery chain for C&I HVAC systems starting from production and marketing to point of purchase and installation. Another important issue is the strengths and weaknesses of using a regional approach versus individual electric utility programs.

The second facet of the process assessment, the operational review, focuses on how effective the implementation of Cool Choice has been in addressing the key market barriers in increasing the sales of energy efficient HVAC equipment. In addition, we assess the administrative and communications processes in the context of utility staff, market actors (contractors and suppliers), and end-user customer satisfaction with these processes.

Our approach included a through review of program and market research materials and interviews (in-person and telephone) across the full range of stakeholders as shown in Exhibit 1-1.

Exhibit 1-1. Overview of Data Collection Plan for Each Stage of Evaluation

GROUP	POPULATION	COMPLETED INTERVIEWS
Cool Choice Staff and Interested parties	NEEP (1) CEE (1) Sponsoring Electric Utilities (16)	1 NEEP 1 CEE 9 utilities (13 individuals)
Implementation Contractor	MaGrann Associates Staff (5)	2
Market Actors	Manufacturers (4) Mfgr. Reps/Distributors (24) HVAC Contractors (1,400)	3 11 26
Participating Customers	119 through 10/6/00	48

The data collection included personal interviews with Cool Choice program utility staff, implementation contractor (MaGrann) staff, installation contractors, manufacturers, distributors, and customers to allow us to examine Cool Choice in-depth. We also talked to the NEEP program manager and a CEE staff person involved in developing national standards.

The sample sizes by group were intended to meet the +/- 20% at a 90% confidence interval for the region as a minimum.

The final report of the process assessment is organized as follows:

- **Chapter 1: Summary of Findings and Recommendations—**In the remaining sections of this chapter, we summarize the key findings and make specific recommendations to improve the Cool Choice Program. We build a case for each recommendation by presenting the relevant key findings from the research conducted for this process assessment as discussed in the subsequent chapters of this report.
- **Chapter 2: Staff Interviews and Program Record Review—**This chapter defines the key researchable issues for the process assessment as they were identified during the review of Program record review and the staff interviews. We then present the findings from the interviews of existing and previous program managers and others involved in the planning of the Program. These findings were used to specify the key issues to be addressed during the subsequent market actor interviews and customer surveys.

- **Chapter 3: Results of Market Actor Interviews—**Next, we present the results of the interviews of market actors in terms of their impressions of the program. We identify some potential improvements to the program based on our discussions with the manufacturers, manufacturer reps and distributors, and HVAC contractors.
- **Chapter 4: Results of Customer Interviews—**Finally, the results of the interviews of participating customers are presented and interpreted in the context of our understanding of the Cool Choice Program and related findings from the market actor interviews.

1.3 KEY FINDINGS

As of October 6, 2000, a total of 1500 units were rebated through the Cool Choice program including 810 PTAC/PTHPs and 690 non-PT units. Of the non-PT units, there were 291 Tier 1 and 399 Tier 2 units. Total rebate dollars expended were $383,955 for about 6,420 total tons of air conditioning equipment to 198 unique customers working with 157 different HVAC contractors.

The key findings on the effectiveness of the regional initiative as a strategy and the program operation and marketing are highlighted in this section followed by specific recommendations for program improvement and additional research.

1.3.1 Market Transformation

There is evidence that the Cool Choice Program has been successful in influencing changes in the market within the participating region of 6 New England States and 16 utility service areas. Discussions with market actors indicated that in the early months of the program, only one manufacturer could provide equipment to meet program eligibility. By June, three other major manufacturers had either modified existing products or introduced new products that meet the Cool Choice program requirements. While the manufacturers characterized this as a "competitive response," the end result was increased availability of Cool Choice equipment.

1.3.2 The Regional Initiative as a Strategy

The regional approach is a very effective approach to addressing market transformation objectives for the energy-efficient air conditioning market. Although a number of the utilities said they joined the program due to regulatory pressures, they all agree that there are distinct advantages to implementing the program on a regional basis. The two benefits of a regional initiative that were mentioned most often include:

- ***Consistency***—The Cool Choice program has one application form, one rebate schedule, one set of criteria for qualifying equipment, and one message. The regional program eliminates the confusion that contractors and suppliers experience in dealing with multiple programs. The regional initiative benefits contractors whose businesses cut across state lines and customers with multiple facilities.
- ***Clout—***Being part of a larger program is valuable in getting the attention of manufacturers, national chains, and other major market players. The manufacturers indicated that statewide programs may still only represent 5% of their market, which does not motivate them to make major changes. HVAC contractors indicated that the regional program has more credibility with their customers.

There were a number of other benefits stated by the utilities from participating in Cool Choice, which seem to vary by utility size and experience in implementing this type of program.

Everyone was satisfied with the performance of the Cool Choice program at this point although they expect to see increasing results as the program matures. At the same time, they stated some concerns, which included difficulty in reaching consensus on some topics particularly state-specific issues, and lack of control and brand identity at the utility level.

1.3.3 Market Barriers

Lack of awareness and associated low market demand are the primary barriers to the continued success of the program. There is a general consensus among all groups on these top barriers to increasing market share of energy-efficient air conditioning equipment but the order of importance varies by group. The top 5 barriers are:

- Lack of awareness of the program among market actors
- Lack of awareness and market demand for the product by customer decision-makers
- Scheduling delays related to equipment availability
- High first cost
- Fear of paperwork needed to apply for rebates

These barriers are listed in order of importance specified by the market actors, with the top 2 being somewhat equally important and typically cited together by the respondents. Utility staff as a group most frequently cited product availability as the primary barrier with first cost and paperwork cited next most frequently. Fewer utility staff mentioned lack of awareness and understanding of the program.

The participating customers tended to support the market actors' contention that lack of awareness is the number one barrier for them. In responding to our question on suggestions for program improvement, increased marketing and promotion of the program was recommended most by the participating customers (15 of the 48) while fewer (9 of them) suggested the rebates should be increased.

1.3.4 Untapped Markets

There is strong evidence that the Cool Choice program has only penetrated a small %, about 6%, of the market for HVAC equipment in the 30-ton and under size range for commercial buildings. While there are no reliable data on HVAC sales for the region, two separate analyses indicated that the total annual sales of HVAC equipment in the eligible size categories for the six-state region is at least 20,000 units, of which 16,000 are standard efficiency. Two other individuals that were interviewed thought the goals for the Cool Choice program were set low. In addition, our interviews with nonparticipating contractors showed that there are a number of large HVAC contractors that were unaware of the program but expressed interest in finding out more about the program.

1.3.5 Product Availability

It is not apparent that product availability, particularly for Tier 1 units, is a major barrier. At the same time, we did not interview nonparticipating customers as part of this study. Again, we could not find any good sources of data on the proportion of products stocked and sold that fit in the various efficiency categories. Although we attempted to collect that type of data as part of the market actor interviews, we were not successful in obtaining reliable data. The Consortium for Energy Efficiency (CEE) reports that 40% of available equipment meets Tier 1 specifications and that 13% meet Tier 2 specifications.

1.3.6 Cost-Effectiveness

Cost-effectiveness was raised as an important issue for the sponsoring utilities but there was no agreement on an approach. As a market transformation program, the tests are different than those applied to resource acquisition programs, where the primary objective is to achieve energy and demand savings starting in the short-term at a reasonable cost. Further, key data were not available to estimate the benefits of the program to determine the cost per kWh saved. Baseline data are lacking on the efficiency of equipment that would have been installed without the program and operating data on the air conditioning systems such as typical full load hours. In the short-term, the program is not likely to be cost-effective because of the start-up costs including development of marketing and advertising materials. Based on the units rebated through October 6, 2000, the total program cost per ton is $100/ton.

1.3.7 Incentives

There was a general consensus that rebates are still needed to cover the incremental cost of the energy-efficient equipment, particularly if the program is pushing Tier 2 equipment. At the same time, there was no agreement on whether the customer or the HVAC contractor should receive the incentive. As the following table indicates, there is a slight preference for the rebate going to the customer but many of the HVAC contractors indicated that if the rebate was directed to the contractor it would be used to reduce the cost to the customer.

Table 1-1. Summary of Who Should Receive Incentives

Respondents	WHERE THE INCENTIVES SHOULD GO					
	Customers	Contractors	Suppliers	Manufacturers	A&E Firms	TOTAL
Manufacturers	1	1			1	3
Contractors	8	6	1	1		16
Suppliers	4	3	3			10
TOTAL	12	9	4	1	1	25

*Note that respondents may have given more than one answer

1.3.8 Marketing Strategy

The market actor interviews clearly indicated the need for a combined market push (supplier promotion) and market pull (customer demand) strategy. Suppliers are unwilling to stock equipment unless the HVAC contractors are ordering the equipment and the HVAC contractors will not order the equipment unless their customers show more interest in purchasing energy-efficient equipment.

The program must create greater awareness among the large HVAC businesses. In that respect, the approach used by MaGrann representatives to select and prioritize HVAC contractors and distributors for visits should be reviewed. Although we found that 23% of the units rebated were installed by distributors/contractors on MaGrann's "A" contact list—those scheduled for monthly visits—we could not draw any conclusions on the effectiveness of the contacts. A detailed analysis could not be conducted in the context of this study since most of MaGrann's contact reports are in Word format and could not be quickly analyzed for this study.

The utility staff generally supported the idea of MaGrann working with the regional headquarters of national chains but the individual utilities wanted to continue to handle the marketing of the program to customers in their service areas.

The marketing materials produced by MaGrann's contractor were high quality and useful to most of the utilities and the majority interviewed use them in marketing the program to end-users and contractors. As a result, it makes sense for the same firm to develop a consumer marketing package that may be used by the HVAC contractors and utilities to market to the end-users.

1.4 RECOMMENDATIONS

1.4.1 Recommendation: NEEP should sponsor a regional market assessment to determine the size of the target HVAC market and establish baselines for energy-efficient air conditioning.

There is a lack of good data to establish goals for the program particularly in terms of units of Tier 1 and Tier 2 equipment. In addition, baseline data on the efficiency of units being installed is needed to determine efficiency criteria for the program and estimate energy impacts. We attempted to estimate the market size using data from the New Jersey and Massachusetts HVAC baseline studies, but the validity of the data was questioned. Further, at least one utility decided to sponsor this study with the hope of getting good market data. The utilities are interested in the cost-effectiveness of the program, but estimating the baseline efficiency levels is a key missing component of determining energy and demand impacts.

The market assessment should be conducted regionally and as a separate study from the process assessment. Although we expected to gather some additional data to estimate the market size to support the goal-setting process, there was considerably difficulty in gathering sales data in conjunction with the interviews. The interviews were lengthy in addressing all aspects of the process assessment and the schedule did not allow us to conduct the number of follow-ups needed to gather reasonable data. In addition, we believe that face-to-face interviews are more effective in gathering the sales data.

The HVAC contractors and suppliers were not able to break down their sales by efficiency categories during the interviews. To gather this type of data, we recommend face-to-face meetings with the largest HVAC contractors and distributors that would focus on obtaining information on the sales and stocking of equipment by efficiency levels. In addition, we suggest that the market analysis include interviews with a sample of non-participating customers who purchased HVAC equipment to confirm the baseline efficiency. At a minimum, these interviews could be conducted with new construction projects that would be easier to identify than the HVAC purchasers for emergency replacements and planned replacements.

1.4.2 Recommendation: Expand the existing marketing activities performed by MaGrann to include more cooperative training with manufacturers and distributors and more trade shows that are likely to attract major HVAC businesses.

A major barrier to the program in increasing penetration of energy-efficient equipment is the lack of awareness among major HVAC businesses. The one-on-one marketing visits are valuable, particularly if the larger HVAC businesses are included, but MaGrann should also be allowed to allocate resources to participating in important regional and national events. Manufacturers indicated that they would like to see more involvement by Cool Choice at their training sessions. Further, MaGrann should identify and participate in some key national trade shows that may be held outside of the region.

1.4.3 Recommendation: Use the clout of the regional program to target headquarters of national chains and to provide tools to utility staff that will make them more effective in marketing the program to their customers.

We were not able to complete our interviews with national chains in time for this report. If national chains are more likely to implement energy-efficiency measures, national chains should also lead the market in moving up to the next level of efficiency. We were able to identify a list of national chains that are Fortune 500 companies and that are top employers in the region. These can be used as a starting point.

Although many of the utilities market the program to end-users, the level and quality of marketing varies. The cost of marketing an HVAC program is quite high given the difficulty of identifying those prospective purchasers. By jointly developing end-user marketing materials and sales tools through the Cool Choice program, there are some economies of scale that can help keep costs down. These materials should be developed to allow the utilities to drop their logo in to address their concerns about branding. As a regional program, Cool Choice provides increased credibility and reduces concerns that the program will go away.

1.4.4 Recommendation: Continue offering rebates to reduce the incremental first cost of the equipment while allowing the flexibility of the rebates going directly to the customer or to the HVAC contractor.

The market actors felt an incentive was needed to offset the incremental cost of the equipment. Even the participating customers who said they would install the equipment without the Cool Choice program indicated that the incentive made the decision much easier. At the same time, there were a number of contractors and suppliers who thought that the incentive should go to the HVAC contractor instead of directly to the customer. The rebate application list supplied by MaGrann and the interviews of participating contractor identified several instances where the contractor did receive the incentive. Those contractors that were interviewed said that the incentive would be used to reduce the price to the customer.

1.4.5 Recommendation: Increase the promotion of the stocking incentive program to encourage distributors to stock qualifying energy-efficient air conditioning equipment.

Although the stocking incentive program was met with very limited success, there was sufficient interest among the distributors that were interviewed for us to recommend that some type of stocking incentive be continued. The stocking incentive program should be reviewed with a group of distributors to increase its effectiveness as a motivator for the suppliers.

The interviews of participating customers indicate that the program may not be successful in reaching the emergency replacement market with very few of them indicating this type of equipment purchase. The vast majority of participating customers are new construction or planned replacements while the HVAC contractors indicated that over 25% of their business is emergency replacements. This would indicate the equipment may not be available for emergency replacements. The few participating customers who indicated the installation was for an emergency replacement said they needed the equipment in 2 weeks or less, compared to 1-2 months turnaround for a planned replacement.

In any event, the stocking incentive program is a useful marketing tool to get in the door to talk with distributors about the program. The program may be better promoted by using testimonials and case studies of the distributors that sign on to the program in marketing to other distributors.

1.4.6 Recommendation: Develop and track performance indicators for the program that reflect the objectives of the program relative to market transformation and resource acquisition.

To the extent that the Cool Choice regional initiative is a market transformation program, this is a long-term process and there should be continuing measurement on how well the program is doing in meeting that objective. In addition, these indicators may be used to establish a performance-based compensation component of MaGrann's contract.

As a market transformation initiative, the program activities are designed to reduce barriers to the adoption of energy-efficient equipment over time to create a sustainable market for the product. In that context, appropriate market effects indicators should be identified and a plan developed to measure those market effects. These market effects indicators may include the number of HVAC contractors that have submitted rebate applications, the % of HVAC contractors that are aware of the program, and the number of distributors stocking qualifying equipment.

At the same time, we recognize that there is an increasing need for reliability of supply and for accountability in using systems benefits charges or ratepayer dollars to fund these programs. These factors indicate that there is a resource acquisition component of the program that should be measured. As such, the energy and demand savings for the program should also be estimated to show the short-term resource acquisition benefits in addition to longer-term market effects. MaGrann currently tracks the number, type, and efficiency level of units rebated. Using a reasonable estimate of energy and demand savings for equipment in the various categories, the program tracking could also report estimated program savings.

1.4.7 Recommendation: The Cool Choice program should place an increasing emphasis on promoting the installation of Tier 2 units using the market assessment as the basis for changes in criteria and incentive levels for the two Tiers.

More emphasis should be placed on Tier 2 units, given that two states (Massachusetts and New Jersey) have specific goals for the higher efficiency equipment category. In Massachusetts, the adoption of ASHRAE 90.1 was expected to make Tier 1 equipment the standard for new sales in the state for units over 65,000 BTUh. In any event, Federal standards are expected to be in effect in 2003 that will make Tier 1 the standard.

At least among the participating customers, there is no indication that equipment availability was an issue and 58% of the non-PT equipment rebate applications through October 6, 2000 are for Tier 2 equipment. The market assessment that we recommend would be used to establish the incentive paid to Tier 1 and Tier 2 to reflect the current market standards.

1.4.8 Recommendation: Review the approach used by MaGrann to determine priorities for and frequency of HVAC contractor and distributor marketing contacts.

Since the program has limited resources, both in terms of time and personnel, it would be more effective to pre-screen the list of potential contractors prior to actually introducing them to the program. In addition, since cost-effectiveness is a concern, more effective targeting for marketing visits could increase the rebated units (benefits) relative to the total cost of the program.

The first step should be to identify the largest HVAC businesses that operate in the Northeast based on annual sales. Although the % of commercial business by these large contractors is relatively small, the dollar volume of the business should be considered. Annual sales information is available on the Dun & Bradstreet list provided by MaGrann. Given limited resources, it may also make sense to target those contractors and suppliers for program participation that specialize in equipment installations of unitary/split systems and PTAC systems, while putting less emphasis on contractors handling other product types.

1.4.9 Recommendation: Conduct a review of the sales contact, application processing, and tracking system procedures to determine where electronic systems can be developed or purchased to streamline the process.

We recognize that significant resources are being expended to develop quality marketing materials and that the utility members are concerned about the cost-effectiveness of the program. However, if the program is to expand in terms of utility members and applications processed, it may be cost-effective to implement electronic systems for completing applications, for managing HVAC contractor contacts, and for providing ongoing tracking of the program performance. There are tools already available for sales contact management that may be easily adaptable to this program. In addition, an electronic version of the application form that can be submitted through the Web-site can reduce the review and follow-up that is now required with the handwritten forms. Further, the electronic forms can be tied into a tracking system that will reduce the work required now to enter data into spreadsheets and produce reports.

2. STAFF INTERVIEWS AND DOCUMENT REVIEW

2.1 INTRODUCTION

This chapter provides the key findings from the interviews with individuals involved in the planning, implementation, and management of the Northeast Energy Efficiency Partnerships, Inc. (NEEP) C&I HVAC program, also known as “Cool Choice” (or the Program). The findings also reflect the results of Hagler Bailly’s review of Program documents. These documents include status reports provided by MaGrann Associates (MaGrann), the implementation contractor for Cool Choice, and commercial HVAC studies completed by RLW Analytics, Inc. for Massachusetts and New Jersey.

The document review together with the interviews of program staff examined the organization and impetus for the regional initiative and offered some insight on the operational effectiveness of the program. In that context, the interviews explored issues related to the program goals and objectives, planning process, benefits and costs, marketing tactics, and strengths and weaknesses. The outcome of that information gathering was a summary of the value propositions for the regional initiative, Cool Choice’s approach to reducing key market barriers, and the key researchable issues for the completion of the study. At the same time, the utility program staff interviews were useful in identifying some emerging issues at the individual utility and state level that could influence the future design of the regional initiative.

2.2 KEY FINDINGS

In this chapter, we summarize the key findings in this section, before discussing the approach and presenting more detailed results by topic area.

2.2.1 Regional Initiative

The staff interviews indicated that there is a general consensus that the program, in meeting market transformation objectives, is best implemented on a regional basis. A number of benefits were cited by staff but those mentioned almost unanimously by the group were “clout” and “consistency” provided by the regional effort. The clout of a regional program is important in getting the attention of manufacturers and major suppliers and HVAC contractors. Consistency helps remove barriers to HVAC contractors in participating by eliminating the need to deal with entities, paperwork, and incentive strategies.

Some disadvantages of a regional program that were cited included:

- Difficulty in reaching a consensus on some issues, particularly issues that are driven by regulatory requirements that are specific to the state
- A lack of brand identity and control by the utility

Cost-effectiveness was also raised as a concern by some of the utilities but it was clear that most, if not all, of the staff that were interviewed felt there were significant benefits to the regional approach.

2.2.2 Barriers

Those utility and program staff felt that the three most important barriers in order of importance were availability, first cost, and paperwork. Lack of awareness and understanding of the program was also cited by some. These are the same barriers as those cited by the market actors but the order of importance differs in that the market actors mentioned awareness and market demand as the key barriers.

2.2.3 Cost-Effectiveness

The working group indicated that cost-effectiveness is an important issue but there was no agreement on an approach to determining the economics of the program. Indeed, the longer-term market transformation objectives make it difficult to apply the same tests used for resource acquisition programs whose overriding mission is to achieve short-term energy and demand savings. In estimating the cost per kWh saved, baseline data are needed on the efficiency levels of equipment installed without the program and operating data on the air conditioning systems such as typical full load hours. We then could apply a simple engineering algorithm to each of the rebated units to estimate total energy savings. In the absence of that data, we calculated the program costs per ton rebated to be $100/ton. This number includes the up-front costs of developing an advertising concept and marketing materials, which inflates the cost in the short-term. Also the figure does not consider the units that will be rebated in the remaining three months of the program. We also explored the equity issue by comparing the % of total program costs allocated to each utility with the % of total tons rebated through October 6, 2000 but that data must be considered with other resources being contributed to the program by individual utilities.

2.2.4 Marketing Strategy

At least half of those interviewed felt the marketing materials produced by MaGrann's contractor were high quality and useful and 5 of the 9 of utilities interviewed use them for their own mailings. Most were in favor of developing a consumer marketing package but the utilities did not want to give up the role of marketing to their customers. At the same time, about half of the utilities felt MaGrann could work with the regional headquarters of national chains but they wanted their own account representatives to be kept in the loop on these activities.

There were questions raised by a few as to whether the approach used by MaGrann representatives to select and prioritize HVAC contractors and distributors for visits was effective in influencing sales of efficient HVAC equipment. Some of the concern may be due to the differences in sales contact reports in terms of the level of detail provided by one representative versus another.

In addressing this issue, we attempted to collect and analyze the sales contact data relative to the rebated units to identify any trends that would indicate to what extent the visits were resulting in sales of efficient units. A quick analysis of the rebate application data indicated that 23% of the total non-PT units rebated are for customers that were on MaGrann's "A" contact list—those scheduled for visits at least once a month. Although interesting, we could not draw any conclusions without entering and analyzing all of the contacts. Since most of the contact lists were in Word format, that analysis could not be completed within the scope of this project.

2.2.5 Operational Effectiveness

The consensus is that MaGrann is performing satisfactorily but a number of utilities mentioned that they expect that the goals and objectives for the program will continue to be raised as the program matures. In general, all those interviewed were pleased with the level of communication among the utilities, MaGrann staff, and NEEP staff.

2.2.6 Key Researchable Issues

In reviewing the records and talking to the various stakeholders, we identified some areas that were particularly important to address in the remaining research activities. These issues are presented here but are discussed in more detail in the context of supporting research in Chapters 3 and 4.

- ***Goals and objectives—***There is some evidence that the goals and objectives for the program are set too low. The analysis of baseline studies indicated that the program may be tapping about 5% of the market. At the same time, we recognize that a key objective for the first year of the program was to get a consistent, high-quality program operating in the region. We attempted to gather additional data during the contractor interviews to estimate the market size to support the goal-setting process but there was considerably difficulty in obtaining reliable sales data in conjunction with the interviews under the tight time frame.

- ***Cost-effectiveness—***Several utilities questioned whether the program is costing them more money than if they had implemented it on their own. In particular, those utilities with significant internal resources allocated to the program questioned the economics of the regional effort. Having said that, they agreed that a regional effort has several important benefits for market transformation that could not be achieved through independent utility programs. These other benefits were also explored with the market actors and participating customers.

- ***Qualifying efficiencies—***The activities going on in various states could make it difficult to maintain the current Tier 1 rebates for some of the members. Regulatory policies for various states are expected to be the key driver in whether or not Tier 1 rebates are continued. As of October 6, 2000, 58% of the non-PT units rebated were Tier 2 units. In addition, CEE data indicates that since 1993, the percent of available equipment meeting Tier 1 levels has risen from 14% to 40% in 1999. The market actor and customer interviews attempted to identify the existing levels of availability and sales of Tier 1 and Tier 2 equipment without great success. These issues are discussed in Chapters 3 and 4.

- ***Incentives—***The staff interviews raised this as an important issue and the market actor and participating customer interviews provided feedback on the use of incentives including rebates to customers and distributor stocking incentives. Our intent was to determine what types of incentive programs may increase participation by HVAC contractors and suppliers and increase the availability and sale of qualifying equipment.

- ***Barriers—***The barriers and possible solutions were explored with the market actors for different types of installations including new construction, planned replacement, and emergency replacement. We found that the same barriers were identified by the market actors but with slightly different emphasis by the two groups.

- ***Marketing strategy—***The staff interviews indicated that MaGrann should be targeting other groups of market actors and key influencers including manufacturers and distributors, and national chain account regional headquarters. Our data collection activities were to address these groups to assess how much of MaGrann's marketing resources should be allocated to each activity. In addition, we discuss the approaches that make the most sense in reaching those audiences and how effective the marketing activities and materials have been in creating awareness of the Program.

- ***Operational effectiveness—***The interviews with market actors also addressed the effectiveness of the design and operation of the program including rebate application and processing, program information dissemination, and MaGrann's contact approach.

- ***Other market influences—***In particular, the ASHRAE 90.1 and proposed federal standards must be addressed in the context of future qualifying equipment criteria. Interviews with contractors, suppliers, and customers were somewhat open-ended to ensure other factors that could influence the success of the program are identified.

2.3 APPROACH

The work plan called for Hagler Bailly to complete 15-20 interviews with utility program staff and other interested parties. The week following the project initiation meeting, we developed and submitted a utility staff interview guide and proposed schedule of interviews that included a combination of in-person and telephone interviews. Then, we completed interviews with 17 individuals representing 9 different utilities, the Consortium for Energy Efficiency (CEE), NEEP, and MaGrann staff as follows:

- Jim Cinelli (Contectiv)—completed in-person on 8/1/00
- Irv Hurd and Joe McCullough (MaGrann)—completed in-person on 8/1/00
- Dick Hoernlein (PSE&G)—completed in-person on 8/2/00
- Colin Odell, Dick Schondelmeier, and Kate Evans (Northeast Utilities)—completed in person on 8/3/00
- Denise Rouleau (CEE)—conducted by telephone on 8/3/00
- Ed McGlynn and Augie Pimentel (NSTAR)—conducted in-person on 8/4/00
- Mike Roddy (GPU)—completed in-person on 8/7/00
- Siraj Shaikh (GPU)—conducted by telephone on 8/8/00
- Ron Manganiello (Burlington Electric)—conducted by telephone on 8/8/00
- Ann Clarke and Ted Cecchini (KeySpan)—conducted by telephone on 8/11/00
- Kathy Yetman (National Grid)—conducted by telephone on 8/29/00
- Jon Linn (NEEP)—conducted by telephone on 9/11/00

The length of the interviews ranged from 45 minutes up to 2 hours, the length of time varied by the person's role in the program. The following section discusses the results of those interviews.

2.4 RESULTS OF STAFF INTERVIEWS AND PROGRAM DOCUMENT REVIEW

This section of the report summarizes the findings from the document review including the key issues and implications for the design of the remaining data collection and analysis tasks.

2.4.1 Organizational Structure

The interviews with the nine utilities indicated no significant differences in the way the utilities are organized to manage their utility's involvement in the Cool Choice program. Each utility typically has a program manager who has responsibility for multiple energy efficiency programs that include Cool Choice. In many cases, the program manager reviews the Cool Choice rebate applications before passing them on for payment. Major responsibilities include coordinating with the implementation contractor on marketing activities and participating in the Cool Choice advisory or working groups. Five of the nine utilities' program managers have played an active role in the Cool Choice group since the early planning stages of the Program.

In most cases, the rebates are processed internally by utility staff but one utility uses a contractor to issue rebate checks. Account representatives often market Cool Choice to assigned customers along with a package of other energy efficiency programs.

Four of the nine utilities have one or two of their own staff dedicated to visiting end-users, HVAC contractors, and distributors to market the Cool Choice Program. One of these utilities is not a full member but is active in the Cool Choice Initiative working group.

2.4.2 Program Goals and Objectives

The overall goal for Cool Choice in 2000 is 1,000 units. As of October 6, 2000, a total of 1,500 rebates had been processed (as shown in Table 2-1) so MaGrann has already met this year's goal. Last year, Cool Choice did not start until mid-year and had an annual goal of 500, which MaGrann exceeded with 720 installations.

Massachusetts and New Jersey utilities have individual goals for Tier 2 units in 2000 that are tracked in the MaGrann reports. The statewide goal for Massachusetts is 225 Tier 2 units and they have rebated 170. In New Jersey, Tier 2 goals are reported by utility with Conectiv at 13 and PSE&G at 60. In their interview, GPU indicated they have a Tier 2 goal of 70 units for 2000. Connectiv and PSE&G have met or exceeded their goals.

Some utilities indicated that they had energy savings (kWh) goals for umbrella programs that encompassed Cool Choice but it was uncommon to have separate kWh targets for Cool Choice.

Table 2-1. Rebate Applications Processed as of October 6, 2000

State	# Units Rebated	# Participating Customers
MA	**332**	**74**
Boston Edison	65	17
Commonwealth El.	51	6
Eastern Edison	27	7
Mass. Electric	127	39
Western Mass.	62	5
NJ	**483**	**55**
Conectiv	223	15
PSE&G	237	33
GPU	23	7
CT	**413**	**51**
CL&P	325	40
United Illuminating	88	11
RI (NECo)	**265**	**15**
VT (All Utilities)	**7**	**3**
NH	**0**	**0**
Total	**1,500**	**198**

2.4.3 Market Size

It is not clear how the regional program goal of 1,000 units was established. At least two of the staff that were interviewed mentioned that they thought the goal was very conservative. For some states and utilities, the goals were developed as a result of negotiation with a collaborative group. In reviewing the appropriateness of the total goal of 1,000 units, we estimated that at least 20,000 units are sold each year in the size and equipment type targeted by the Cool Choice program. Approximately 80% of the annual sales, or 16,000 units are standard efficiency according to a study conducted by RLW Analytics. The 1,000-unit goal for 2000 for the Cool Choice program represents 6% of the estimated annual sales of standard efficiency units targeted by the program.

PA Consulting Group developed estimates of annual sales, using data from a study completed by RLW Analytics for Massachusetts. Our annual sales estimates were confirmed in an analysis conducted independently by one of the utilities using ARI data. Both analyses estimate the share of national sales of targeted HVAC equipment for the six-state region using DOE EIA data on the region's percentage of U.S. commercial electricity consumption. For 1997, the six states were estimated to account for 7.28% of the U.S. total electricity consumption.

2.4.4 Integration with Other Utility Programs

Only one utility had not offered some type of rebate program for energy efficient commercial HVAC prior to their involvement in Cool Choice. Typically, Cool Choice is treated as one component of an umbrella energy efficiency program that targets the commercial sector. With one exception, the utilities have commercial new construction programs that allow Cool Choice rebates. Typically, the utility also targets the commercial sector with custom measure programs that may include some design assistance.

Cool Choice is not typically treated as a stand-alone program but is used as a mechanism to offer rebates for qualifying equipment. As one utility staff person indicated, "we do not market programs, we market conservation" but "customers are steered to Cool Choice" when appropriate.

2.4.5 Value Propositions and Limitations of a Regional Approach

The utilities that were interviewed indicated there were no major barriers to participating in regional programs. Indeed, most of them were also participating in other regional programs including NEEP's Motor-Up program.

When asked why they decided to participate in the regional program instead of implementing a program on their own, several cited regulatory pressures as a key influence. At the same time, utility staff quickly responded with several benefits when asked about advantages to participation in the regional program. The benefits that were mentioned most often include:

- ***Consistency***—Everyone that was interviewed mentioned consistency as a benefit. The Cool Choice program has one application form, one rebate schedule, one set of criteria for qualifying equipment, and one message. The regional program eliminates the confusion that contractors and suppliers experience in dealing with multiple programs. Several mentioned that a consistent program makes it easier for the HVAC contractors whose business cut across state lines in addition to those whose customers are served by different utilities. Others indicated that consistency across the region benefits customers who have multiple facilities.

- ***Clout—***Most of those interviewed also indicated that being part of a larger program was valuable in getting the attention of manufacturers, national chains, and other major market players. One individual commented that "as a market transformation program—independently we wouldn't have the time to make it happen or have the same impact."

There were other benefits that were mentioned by one or two people and these benefits were somewhat related to the size and experience of the utility with energy efficiency programs. These benefits include:

- Economies of scale
- Sharing market information that is non-threatening
- Sharing resources—don't have to start from scratch
- Good smart people—learn from each other, networking opportunities
- Get better marketing collateral
- Dedicated staff to calling on dealers
- Single point of contact for the HVAC contractors

Although one individual indicated there were no negatives to a regional program, others were just as quick to cite a few problems. The disadvantages that were mentioned most frequently included:

- ***State-specific issues—***Most mentioned differences in the regulatory environment and in the commercial HVAC market that could make it difficult to reach consensus on program design in the future. In particular, the staff interviewed felt that the adoption of ASHRAE 90.1 as the standard in Massachusetts would make Tier 1 units the baseline while other states felt their markets were not at that level of efficiency. Other differences related to the number of full load hours for cooling and variations in equipment prices by state that influence the effectiveness of the rebates in covering incremental costs and the life-cycle costs and benefits.

- ***Difficult to reach consensus***—Most of the utilities lamented "the slow moving machine" that gave them little flexibility to respond quickly to avoid lost opportunities. Each member has one vote and there must be unanimous approval for program changes. Reaching consensus on some issues has been difficult.

- ***No brand identity—***Half of the utilities raised this as an issue. One commented that Cool Choice was meaningless as a brand unless you could associate it with a utility offering. Another wondered if using ratepayers dollars to pay for advertising that did not enhance the utility's image could be a problem.

- ***Loss of control—***Several indicated that not being able to dictate to the contractor is a disadvantage. One thought that the contractor "seemed to concentrate more in some areas."

Other comments related to the cost of the program and are addressed under cost-effectiveness issues.

2.4.6 Cost-Effectiveness

There was an indication from the utility staff that the program is more likely to help the smaller utilities that were getting a turn-key program at a relatively small cost. One individual commented that "it would cost four times as much to set up the same program."

Larger utilities that already have resources in place to implement these programs were more likely to feel that the cost-saving were minimal. At least two of the utilities felt that the regional program was actually more expensive than if the utility ran the program. One utility would not join as a full member because they thought the fee would more than cover a full-time employee of the utility that could be dedicated to marketing the program to HVAC contractors.

When asked about possible areas of cost savings, some indicated there is likely some administrative cost savings in not having to screen the application forms. Others indicated that they check the forms anyway and still have to resolve problems. One utility stated that "some contractors don't like to send the forms to New Jersey." In contrast, another utility said they need no administrative assistant to answer phones and no one to verify the rebate application forms—"once MaGrann is satisfied all we have to do is cut the check."

A number of utilities mentioned that there were some savings in the fixed cost of producing the marketing materials since all the utilities were sharing the design and development costs.

Several utilities use the materials produced by MaGrann's subcontractor to send mailings to customers and one said all they have to do is "drop in the logo."

In terms of additional costs, most felt that the time spent in attending the Cool Choice meetings was not incremental to what they would be spending on other tasks if the program were implemented as an individual utility effort.

The Cool Choice working group was interested in an analysis of the cost effectiveness of the program as a regional initiative. Hagler Bailly and the working group members discussed the need for this type of analysis but there was no consensus on the approach. One approach that was suggested was to calculate a cost per kWh saved but it would be necessary to have a reasonable baseline efficiency against which to estimate the energy savings. In addition, the savings will vary by equipment operation, which would dictate applying an engineering algorithm to each of the units that were rebated. This is not a complex process but not doable within the timeframe and budget for the project.

We were able to calculate a cost per ton of equipment rebated. There were 6,422 tons of equipment rebated through October 6, 2000. The total rebates were $383,955 according to MaGrann's spreadsheet, which indicates an average rebate cost of just slightly less than $60/ton. If we apply the total program costs of $650,000, the total cost per ton is close to $100/ton. It is important to note that the $100/ton includes about $200,000 of advertising concept and materials development needed for program startup that will likely be lower in future years. These costs per ton rebated could be applied to past programs by the utilities to promote energy-efficient HVAC equipment of the same size range to commercial customers.

We analyzed the tons rebated compared to the 2000 allocation of program costs by utility to determine if there was an equity issue as indicated by several utilities. The Cool Choice program costs and tons rebated do not include GPU (318 tons rebated) who entered in the middle of this year and separately funded an additional MaGrann field representative. The objective in this analysis is to examine if the allocation was reasonable given the program benefits to the utility. The following table shows the results, which might indicate that one utility is paying relatively more than they receive in benefits. At the same time, the analysis does not consider other staff and information resources that other utilities may have provided to the program to benefit the program as a whole.

Table 2-2. Tons Rebated as of October 6, 2000 Compared to Cost Allocation

Utility	Tons Rebated	% of Tons Rebated	% of Program Cost Allocation
Northeast Utilities	1507.8	24.6%	17.68%
National Grid	1456.3	23.7%	20.42%
NSTAR	1310.0	21.3%	15.21%
PSE&G	864.2	14.1%	29.86%
Conectiv	487.0	7.9%	5.82%
United Illuminating	426.0	6.9%	4.66%
Vermont Utilities	90.1	1.5%	4.83%
Fitchburg Electric	00.0	0%	1.52%
Total	**6141.4**	**100%**	**100%**

2.4.7 Barriers

The success of a market transformation program such as Cool Choice is dependent on the Program's effectiveness in reducing and eliminating barriers to the purchase and installation of energy efficient equipment. In that context, we used the interviews to help identify those barriers from the perspectives of the contractor and the customer. At the same time, we talked about the effectiveness of the Cool Choice program in removing those barriers.

The key barriers for contractors include:

- ***Availability*—**Most of those interviewed mentioned availability as a major barrier. Only one said they had no problems in availability. In particular, those interviewed felt that availability was a major problem with emergency replacements. As one individual explained, they are hit with a carrying charge for keeping inventory so there must be customer demand for the product. To help remove that barrier, Cool Choice tried to offer a stocking incentive to distributors with limited success. In addition to the distributors' reluctance to change inventory practices, several felt that the stocking incentive was not large enough. One referenced a quote from a distributor that "the utilities will get tired of it while we're in for the long haul."

- ***First cost*—**Although a key barrier for the customer, most felt that higher first cost is also a barrier for the contractor in that this is a competitive business and they often are often bidding a system that meets existing specifications. Based on utility experience, it is difficult to get past the specifiers in new construction. As one person indicated "architects want money to beautify the building while engineers want to do the best job but they must go with the least cost." There was no consensus on how effective the rebate was in covering the incremental cost of the energy efficient equipment but this issue is being addressed in an analysis led by Northeast Utilities.

- ***Paperwork*—**Several mentioned that filling out the paperwork to get the rebate for the customer is a barrier. In that context, they raised the issue of paying incentives to dealers or sales staff to compensate them and motivate them to sell energy-efficient HVAC equipment. The motors program does pay an incentive and some utilities offer incentives to get paperwork turned in. One commented "why do we have customer rebates—pay to sales person—that's a no-brainer." Another felt just as strongly that incentives should not be paid to trade allies. In any event, those that supported the incentive raised issues about the incentives going to the right person and determining what type of incentive would be most attractive. A utility that had offered dealer incentives said they "spent more time filling out 1099s."

Other barriers that were mentioned by a few related to lack of awareness and understanding of the program, and technological constraints associated with the "curb modifier." In addition, many mentioned the importance of building customer awareness and demand.

The barriers cited most often by the staff for customers were awareness of the program and understanding of the economic benefits. In particular, those interviewed felt that these barriers needed to be addressed with the customers' key decision-makers.

2.4.8 Marketing

About half of those interviewed commented that the marketing materials developed by MaGrann's subcontractor were high quality and useful in marketing to contractors. Five of the nine utilities use the materials for direct mailings. Others indicated that they do not use them because they are targeted to the trade allies and not end-users. One utility staff person felt that the application form itself was a very effective marketing piece in that all the program requirements are included on the form.

Only one utility indicated that the "pieces are expensive—especially to blindly mail them" to reach prospective HVAC system purchasers. At the same time, they commented that the pieces were educational.

In addition to the value of the marketing materials, the interviews covered the marketing approach used by Cool Choice. About half of the utilities were strong proponents of having MaGrann spend more time contacting the regional headquarters of national chains, however one utility commented, "we did not get total agreement from utilities on targeting them." Several utilities cautioned that MaGrann should work with their own major accounts managers if they are to target this group. Only one utility staff person felt that targeting national chains was a waste of time—"we would be paying them to do more of what they do anyway."

Most were in favor of developing a consumer-marketing package, but it was not clear that they wanted MaGrann to put more emphasis on end-users. Since most of the utilities market the Cool Choice rebates to end-users, the consumer-marketing package would provide a tool for them. At the same time, one mentioned that the plan was to have MaGrann roll out the consumer package to the contractors so that they were aware of the marketing activities.

Two of the utilities felt very strongly that more emphasis needed to be placed by MaGrann on the manufacturers and distributors. One mentioned some targeting property managers and customers with multiple sites while another indicated that MaGrann should be contacting the entire group of engineers, architects, and installation contractors.

One utility questioned the effectiveness of the sales visits and several thought this should be an issue for the contractor interviews. MaGrann indicated that the representatives organize their sales visits into four lists (A, B, C, and D), that relate to the frequency in which the contractor is contacted. Those on the A list are visited once a month and are those "most likely to support the program." We were able to compare the rebate applications that were processed by state and determine what number of those units were for firms on the "A" list of the MaGrann representatives. The "A" list companies resulted in 182 of the 1,500 units rebated as shown in the following table. Most of the non-PT units rebated for the "A" list companies (78%) were Tier 2 units, compared to 58% that were Tier 2 units for all non-PT rebates. This indicates that the HVAC contractors visited most frequently tend to install a higher % of Tier 2 units that qualify for rebates.

In Massachusetts, about one-third of the rebate applications processed that were non-PT units were for "A" list companies. Although there were only a few non-PT units rebated in Rhode Island and Vermont, the "A" list companies accounted for 71% of those units in both states. These results imply that the "A" list contacts may be somewhat less effective for New Jersey and for Connecticut where the % of non-PT units rebated for these states was 6% and 17% respectively. At the same time, the importance of PTAC/PTHP installations must be considered in determining an effective marketing strategy for the HVAC contractors and suppliers in those and other states.

Table 2-3. Rebate Applications as of October 6, 2000 for Each State by Tier Level

STATE	TOTAL REBATES FOR STATE	TOTAL UNITS ON "A" LIST	PTAC/ PTHPS REBATED	PTAC/ PTHPS ON "A" LIST	NON-PT UNITS REBATED		NON-PT UNITS ON "A" LIST	
			All	All	Tier 1	Tier 2	Tier 1	Tier 2
NJ	483	34	275	21	51	157	1	12
MA	331	83	79	0	110	142	30	53
CT	413	33	228	0	118	67	1	32
RI	266	27	228	0	10	28	7	20
VT	7	5	0	0	2	5	0	5
TOTAL	**1,500**	**182**	**810**	**21**	**292**	**401**	**39**	**122**

2.4.9 Reporting and Communication

All of the utilities made very favorable comments about the communication processes. They felt that both the NEEP program manager and the MaGrann staff did an exceptional job of keeping them informed on the program and the progress of the rebate applications.

The only negative comments had to do with the quality of reporting customer contact information by one of the MaGrann representatives. In addition, a few mentioned that the Cool Choice group meetings might be varied in terms of location to cut down on some of the travel for members.

MaGrann's reports on Cool Choice Applications Processed and the D&B Contractors List were both very useful to Hagler Bailly in developing the HVAC contractor sampling plan. For future evaluations, however, it would be helpful to include the customers' telephone numbers in the electronic spreadsheet. MaGrann's addition of target goals to the reporting process for some states and utilities for Tier 2 units is helpful. It would also be helpful to add target unit goals for all utilities (Tier 1 and Tier 2), recognizing that data may not be available.

It would also be helpful to provide statistics for tons of air conditioning rebated, given the differences in size for PTAC/PTHPs and the differences by state in the proportion of PTAC/PTHPs rebated. Further, the

2.4.10 Effectiveness and Satisfaction

Despite a few utilities questioning the cost-effectiveness of the program, most were satisfied with MaGrann's performance. A few expressed a "wait and see" attitude in that the program was meeting goals and objectives but they expected to continue to step up to higher levels.

There were a few who expressed concerns with the coverage and effectiveness of the MaGrann representatives. These concerns may relate to the size of the geographic area that must be covered and how well the representative is reporting contact results. In any event, the HVAC contractor interviews should provide an unbiased indication of the operational and marketing effectiveness of the implementation contractor and the Program.

3. MARKET ACTOR INTERVIEWS

3.1 INTRODUCTION

This chapter documents the research conducted with the manufacturers, distributors, contractors, and other market actors on the Cool Choice Program, as obtained through interviews during September and October of 2000.

The objectives of the market actor interviews were to obtain their perspective on the key issues for the program including the most important market barriers and the most effective approaches to reducing those barriers. Also, these interviews provided an opportunity to review the decision-making process for various types of projects including new construction and retrofit for different segments of the market. The interviews with contractors were also designed to identify other factors, including codes and standards that could influence the success of the program.

The chapter first summarizes the key issues and related findings with possible solutions. After describing the methodology used for the interviews, the detailed findings are presented.

3.2 KEY FINDINGS

The program is typically well accepted by those market actors who are currently participating in the initiative. Those that are familiar with the program would like to see it expanded regionally and most feel that greater awareness is needed among the contractors and the end-users.

There is evidence that the Cool Choice Program has been successful in influencing changes in the market within the New England States it targeted. Discussions with market actors indicated that in the early months of the program, only one manufacturer could provide equipment to meet program eligibility. By June, three other major manufacturers had either modified existing products or introduced new products that meet the Cool Choice program requirements. While the manufacturers characterized this as a “competitive response,” the end result was increased availability of Cool Choice equipment.

The market actor interviews addressed several of the researchable issues identified during the staff interviews and program record review. These findings from the market actor interviews on the researchable issues, along with the feedback from program staff and customers, form the basis for the final conclusions and recommendations on the Cool Choice Program.

3.2.1 Cool Choice Goals and Objectives

Although we feel the unit goals may be too low, a regional market analysis is needed to estimate the size of the untapped market for Cool Choice to determine goals are appropriate. We believe that the 1,000 units rebated should be increased for next year and that the targets should specify PT (PTACs/PTHPs) and non-PT equipment by state.

The market actor interviews and sales information indicate that there may be a significant untapped market for the Cool Choice Program that should be considered in establishing annual goals for Cool Choice. Approximately 157 different HVAC contractors are participating in the Cool Choice program based on applications process through October 6, 2000. The list of HVAC contractors and distributors provided by MaGrann included over 1,400 HVAC businesses located in the Northeast region. In speaking with 14 of the largest nonparticipating contractors, 3 of them (21%) expressed interest in participating in the program.

The 14 nonparticipating contractors represented an estimated total annual HVAC sales of $239 million, of which an estimated $36 million included unitary and split system equipment in the size range targeted by the program. Although we made every attempt to screen out residential sales, it is possible that some of these sales included residential. At the same time, if all equipment sales in the less than 5.4 ton category were eliminated, estimated sales are still $27 million for these 14 large nonparticipating contractors.

3.2.2 Minimum Qualifying Efficiencies

A regional market analysis is also needed to establish the current baseline efficiency in deciding whether to move to Tier 2 as the minimum qualifying level. The baseline would identify the current sales of Tier 1 and Tier 2 equipment for the region while addressing any individual state differences. The interviewer attempted to gather more detailed information from the HVAC contractors and suppliers on sales by efficiency (standard, Tier 1, and Tier 2), but most of them were not able to provide that type of data. We believe that this information is very important but must be gathered through a separate regional baseline study that focuses strictly on collecting sales data.

Availability of Tier 2 equipment does not seem to be a major problem for some states. The majority of unitary, split systems, and heat pumps being rebated through the program are Tier 2 equipment. As of October 6, 2000, 58% of the 690 rebate applications processed for non-PT equipment have been Tier 2 units. These include 75% of the units installed under the Cool Choice program for non-PT equipment in New Jersey. The utilities in New Jersey have specific goals for Tier 2 units that have been met by two of the three utilities.

In Massachusetts, 56% of the non-PT rebate applications are Tier 2 units. Through October 6, 2000, Massachusetts has met 75% of a statewide target for Tier 2 units under Cool Choice. The state is adopting ASHRAE 90.1 as the voluntary standard in 2001, which was expected to make Tier 1 units the standard efficiency for units sold next year. However, a utility staff person indicated that ASHRAE 90.1 stopped short of specifying Tier 1 for the units targeted by the program due to impending federal standards. Although only 38 non-PT units have been rebated for Rhode Island, 28 (or 74%) are Tier 2 units.

Fifteen of the market actors interviewed believe that the current program standards are sufficient to lead to increased installations of high efficiency equipment. However, manufacturers acknowledge that increased energy prices could make high efficiency equipment, like those targeted in the Cool Choice Program, even more attractive during the next few months.

Manufacturers are also wondering what the long-term effect will be on the general trend toward adopting ASHRAE 90.1 standards. While it may require re-tooling among manufacturers, their bigger concern is creating a demand for this premium-efficiency equipment.

3.2.3 Incentives

The market actor interviews suggest that the rebates should be continued to help defray the incremental first cost of more efficient HVAC equipment, particularly in light of an increased emphasis on Tier 2 equipment. At the same time, there should be flexibility in whether the rebate is provided to the HVAC contractor or directly to the customer.

The majority of market actors believe the customer should receive the incentive but many feel that the contractor should be the recipient, recognizing that some if not all of the savings should be passed on to the customer in the form of a reduced price for the equipment.

The Cool Choice Program should continue its stocking program aimed at suppliers or distributors, and perhaps use "supplier testimonials" of the value of the stocking incentive as a way to encourage those suppliers that are currently undecided about program participation. By demonstrating that this is a successful sales program, more suppliers may be encouraged to participate, thus expanding the program's overall reach and effectiveness.

Although the stocking incentive, which was rolled out this year, met with limited success, there is sufficient interest among those that were interviewed to continue the offering. The surveys indicated that the stocking incentive payment was close enough to justify the increased carrying cost. Moreover, several suppliers who are planning to participate in the program are developing their own internal sales programs to push the high-efficiency Cool Choice equipment to contractors. Since none of the contractors interviewed keep equipment in stock, this may be a critical link to increasing installations of high efficiency equipment.

3.2.4 Barriers to Participation

Awareness and lack of market demand were cited most frequently as barriers to participation by the market actors who indicated that a market push/pull strategy is needed to increase market demand and interest among all market players. In other words, marketing and education on the benefits of energy efficient HVAC must be directed to both the customers and the contractors/distributors to influence the market. Scheduling and equipment availability issues cited next most frequently as a barrier would also be alleviated by a greater demand for the product.

Despite reaching overall installation goals, program awareness still remains relatively low among both participating and nonparticipating contractors and suppliers. Three nonparticipating contractors, who had never heard of the program, wanted to receive more information and indicated an interest in participating. In addition, participating contractors' staff who were the initial point of contact when calling these HVAC businesses were unsure about the program, its operation, or the right contact point. We found general lack of awareness among key gatekeepers, such as contractor staff, receptionists, or sales and marketing personnel.

3.2.5 Marketing Strategy

A separate analysis is needed to ensure that the most effective use is made of the MaGrann resources to broaden awareness of the program. In particular, the analysis should examine the marketing contact approach being used by MaGrann representatives.

Since the program has limited resources, both in terms of time and personnel, it may be more effective to pre-screen the list of potential contractors prior to actually introducing them to the program. The first step should be to identify the largest HVAC businesses that operate in the Northeast based on annual sales. Annual sales information is available on the Dun & Bradstreet list provided by MaGrann. Given limited resources, it may also make sense to target those contractors and suppliers for program participation that specialize in equipment installations of unitary/split systems and PTAC systems, while putting less emphasis on contractors handling other product types.

We found that the initial point of contact at the business could usually answer some key questions. These questions would help identify the best candidates among potential contractors, those most likely to sell equipment targeted by the program. The screening questions may include:

- Do you install unitary, split system, or packaged terminal (PTAC) air conditioning equipment in the 30 ton and under size category in commercial buildings?
- What % of your business falls into that group?

The % of business should be considered in the context of the total dollar volume since we are emphasizing the largest businesses. Again, this approach should not totally ignore the smaller businesses but the majority of contacts should be to the larger businesses that should result in more installations per contact.

The clout of the regional Cool Choice program should be used to create awareness and market demand among customer decision-makers that have multiple facilities located throughout the region. These include national chains and other major customers, whose facilities cut across utility service areas and states.

3.2.6 Operational Effectiveness

The market actors were typically very satisfied with all aspects of the Cool Choice program and wanted to see greater awareness and use of the program. Participating contractors gave high ratings (4 and above on a scale of 1 to 5 with 5 being “very effective.”) to the rebate application process, communication with MaGrann representatives, and program information. Other aspects such as rebates and level of customer support received average ratings of at least 3.8.

The Cool Choice application is one of the program’s “best kept secrets.” Those contractors that use the application praise the form. They say the form is extremely simple to use, and according to one contractor, “the best application he’s ever seen.” The MaGrann reps should ensure that the simplicity of the rebate form is promoted as a positive aspect of the program to those HVAC contractors that are being introduced to the program.

3.2.7 Regional Initiatives

The Cool Choice Program should build on its current momentum to expand to include utilities in nearby states. This move would increase the program’s overall reach and would be welcomed by manufacturers, suppliers, and contractors. In fact, the three manufacturers and two regional suppliers would like the Cool Choice program to expand into new states to include utilities in Pennsylvania, Maryland and Virginia.

The Cool Choice program simplifies the program application/enrollment process for contractors. It also lends credibility to contractors that can point out multiple utility participation- not just a local utility "gimmick."

The participating contractors also said that the regional program makes it easier to conduct business. Since nearly all the contractors interviewed (19 out of 22) conduct business across utility service territories, regional initiatives like Cool Choice makes it easier for them to participate and promote the program to their customers.

Manufacturers view this program as a "compliment" to their own marketing and sales activities, and are more likely to deploy their resources in areas that will be creating a demand for their products.

3.3 APPROACH

Katherine Johnson from KJ Consulting, a consultant to Hagler Bailly, completed a total of 40 interviews with manufacturers, distributors, and HVAC contractors. In general, the sampling strategy was designed to emphasize those suppliers with the largest share of the HVAC market in the Northeast. At the same time, adjustments were made to include a sample of those HVAC contractors that are most active in the Cool Choice Program and to obtain some coverage of each of the six states currently participating in the Program.

3.3.1 Sample Disposition

Table 3-1 summarizes our original sampling plan and the completed interviews. As anticipated, the nonparticipating HVAC contractors are the most difficult to reach in agreeing to be interviewed.

Table 3-1. Sampling Plan for Market Actor Interviews

Market Actor Group	Target # of Completes	Sample	# Interviews Completed	% Target Completed	Sampling Strategy
Participating Contractors	12	27	12	100%	2 from each of the 6 states
Nonparticipating Contractors	18	47	14	78%	Largest from all states
Manufacturers	4	4	3	75%	1 from each major manufacturer
cturers' Representatives/ Distributors	17	24	11	65%	Largest from sample list
TOTAL	**51**	**102**	**40**	**78%**	

Our interviewer contacted a total of 98 respondents to complete 40 interviews, as documented in Table 3-2. Each respondent was contacted a minimum of five times, and more frequently if it was a matter of returning telephone calls or messages to schedule interview times.

Table 3-2. Sample Disposition for the Market Actor Survey

Sample Disposition	Number	% of Sample
Completed	40	38%
Refused	20	20%
Bad/Outdated Contact	19	19%
Unsuccessful Attempts	18	20%
Terminated	1	1%
Duplicate Listings from Same Firms (Distributors)	4	3%
TOTAL	102	100%

3.3.2 Protocols and Sample List

The interviews were conducted either in-person or via the telephone by an experienced market researcher from mid-September through early-October. In a few cases, the individual on the sample list asked that an interview form be faxed to them to be completed in writing and returned. The telephone interviews lasted approximately 15 minutes, while the in-person interviews lasted between 15 and 30 minutes, depending upon the information provided by the respondent. A copy of the Market Actors Interview Guide is provided in separate appendices to this report.

In developing the sample list, MaGrann provided Hagler Bailly with a contact list of 1,488 HVAC contractors and suppliers. The contact list was developed from a Dun & Bradstreet list obtained by MaGrann when the Cool Choice Program was initiated. The list provided company and contact names and addresses of information as well as data on annual sales and number of employees. Annual sales data were used to identify the largest suppliers and contractors.

MaGrann also provided lists of manufacturers representatives and wholesale distributors that had been contacted for participation in the Cool Choice Program. Lastly, MaGrann provided contact names for two of the four leading manufacturers of HVAC equipment targeted by the Program.

3.3.3 Participating Contractors

We decided to target two of the largest participating contractors from each state for the process evaluation interviews. In selecting the largest participating contractors, we matched participating contractors to annual sales data.

McGrann provided a spreadsheet listing all customer rebates from their report of Cool Choice Applications Processed as of 7/28/00 that was used to develop the participating customer sample. This spreadsheet included information on the number of units installed, the size of the equipment, rebates received, and contractor contact information. In developing the initial sample, the data were sorted by number of installations to reveal the contractors that had been most active in the program. The participating contractors were then matched to the Dun & Bradstreet data provided by MaGrann to identify those most active with the highest annual sales.

More recently, MaGrann provided an updated list of Cool Choice Applications Processed As of 10/6/00, which is used for the statistics provided in this report. The following table shows that there are over 150 contractors whose customers received Cool Choice rebates through 10/6/00. These contractors are summarized according to the state in which their business is located. A total of 1,500 rebates were issued, of which 810 were PTACs or PTHPs. There were 198 unique customers that received rebates or an average of 1.26 customers per contractor. Over 90% of the contractors were located in three states—New Jersey, Massachusetts, and Connecticut. Without PTAC/PTHPs, approximately the same percentage (90%) of the units rebated were for customers in those three states.

Table 3-3. Applications, Customers Rebated, and Participating Contractors by State

State	# Units Rebated	% Total Units Rebated	# Units Rebated w/o PTACs	% Units Rebated w/o PTACs	# Customers Rebated	% Customers	# Participating Contractors	% Participating Contractors
NJ	483	32%	208	30%	55	28%	48	31%
MA	331	22%	252	37%	74	37%	52	33%
CT	413	28%	185	27%	51	26%	43	27%
RI	266	18%	38	6%	15	8%	12	8%
VT	7	1%	7	1%	3	2%	2	1%
NH	0	0%	0	0%	0	0%	0	0%
Total	**1,500**	**100%**	**690**	**100%**	**198**	**100%**	**157**	**100%**

3.3.4 Nonparticipating Contractors

The nonparticipating sample included the largest plumbing, heating, and air conditioning contractors, operating in the major geographic locations targeted in this program. The sample was designed to approximate the proportion of HVAC businesses by state. At the same time, we focused on the largest businesses.

Drawing the nonparticipating contractor sample was relatively straightforward. McGrann provided a list of all contractors currently providing plumbing, heating, and cooling services in the New England Region (including MA, PA, VT, NH, CT, RI, DE, MD, NJ). The list was originally obtained from Dun & Bradstreet. This listing provided detailed contractor information, including annual sales, number of employees, and contact information.

First, the list was sorted by geographic region. Then the HVAC businesses were ranked, within each geographic region, from largest to smallest based on annual sales information. Lastly, the list was cross-checked against participating contractors. Any duplicates were immediately deleted from the final sort.

The following table shows the number of nonparticipant HVAC businesses (14 contractors and 6 distributors), that were on the D&B list, by state in which they are located. These figures are compared to the proportion of rebates by state, recognizing that contractor businesses do cut across state lines. Almost, half of the HVAC businesses listed on the D&B report were located in New Jersey.

Table 3-4. HVAC Businesses, Rebates, and Nonparticipant Interviews by State

State	# on D&B List	% D&B List	# Units Rebated	% Total Units Rebated	# Units Rebated w/o PTACs	# Units Rebated w/o PTACs	# Nonpartic. Interviews	% Nonpartic. Interviews
NJ	705	48%	483	32%	208	30%	6	30%
MA	342	23%	331	22%	252	37%	6	30%
CT	242	17%	413	28%	185	27%	2	10%
RI	62	4%	266	18%	38	6%	2	10%
VT	34	2%	7	1%	7	1%	2	10%
NH	72	5%	0	0%	0	0%	2	10%
Total	**1,457**	**100%**	**1,500**	**100%**	**690**	**100%**	**20**	**100%**

3.3.5 Manufacturers, Manufacturers' Representatives and Distributors

MaGrann supplied contact names for two of the four major manufacturers that include Carrier, York, Trane, and Lennox. They also provided activity reports for distributors that we used to develop our sample for the interviews.

Eleven *different* distributors were interviewed, representing a total of 15 distributors from MaGrann's list. Several wholesale distributors/manufacturer representatives interviewed for this study worked at branch locations of national or regional firms, such as Torrice Supply, R.E. Michel, and Grainger. These interviews addressed both the stocking practices at the individual locations as well as the corporate policy. The list provided by MaGrann included *multiple* contacts or locations for these distributorships and attempts were made to contact multiple locations on the list. Once an interview was completed with one member of the distribution chain, additional interviews were conducted only for clarification purposes with members from the same distributor group, since they followed the same stocking practices.

Of these eleven distributors, 5 said they were participating or involved in the program while 6 were not participating.

3.4 DETAILED SURVEY FINDINGS

3.4.1 Business Locations

Since the Cool Choice Program targets a number of New England states, the respondents provided information regarding each state in which they conduct business. Within the Cool Choice region, the contractors, on average, do business in 2.6 states, while the distributors average 2.3 states. Of interest, 7 respondents, including 3 manufacturers, conduct business outside of the current Cool Choice Program geographic locations, including Pennsylvania, Maine, and Maryland. Two respondents have operations nationwide. One respondent, in particular, expressed a desire for the Cool Choice Program to extend into Pennsylvania.

"We need more utilities involved in the Philadelphia area. Connectiv does business in Pennsylvania, but (Cool Choice) does not include other Pennsylvania utilities, and that makes it difficult for us." (Participating Manufacturer.)

Table 3-5 displays the states in which the contractors and distributors/manufacturers' representatives interviewed in this survey conduct business. Of note, the "Other" locations included in this table include operations in Maine, Pennsylvania and Maryland.

Table 3-5. States in Which Contractors and Distributors Conduct Business

State	Number of Contractors Doing Business (n=26)	Number of Distributors Doing Business (n=11)
MA	13	5
CT	11	2
NJ	9	3
NY	9	2
RI	8	2
NH	8	4
VT	5	2
DE	3	0
Other	3	2
Nationwide	1	1
TOTAL	**70**	**23**

*Respondents may give more than one answer.

3.4.2 Size of Operations

Nonparticipants were typically larger than the participants. On average, all respondents employed 148 workers. Participants reported an average of 112 employees, while nonparticipants reported an average of more than 180 employees.

The respondents also estimated their annual sales during 2000. On average, total revenues for participants were $16.4 million compared to $18.6 million for nonparticipants. Each respondent was asked to provide annual revenues, which were used as the basis for and analysis of the proportion of qualifying equipment, however, not all complied. In those cases, annual revenues were estimated, some using the Dun & Bradstreet information. However, four respondents, one contractor and three wholesale distributors, did not provide sales estimates and were not included in Dun & Bradstreet's database. In these cases, annual sales were estimated using the midpoint of the sales range provided by InfoUSA's Internet database. These estimates were consistent with sales revenues provided by other companies of a similar size and business scope.

3.4.3 Percent of Business in Commercial 30 Tons or Less

Since the Cool Choice Program targets HVAC equipment sized 30 tons or less, the respondents were asked what % of their business was for equipment in that size range. The information in Table 3-6 excludes manufacturers, since their operations encompass a broad range of equipment types and sizes.

More than half (25 of the 38) respondents indicated that at least 50 percent of their business included equipment in the 30 tons or less range. Sixteen participants (75%) reported that 50 percent of their business focused on the sales or installations of equipment that is 30 tons or less, with 4 participants saying that 100 percent of their business focuses on equipment in this category. A smaller percentage of nonparticipants (9 of 18 or 50%) said that 50% or more of their business focused on equipment targeted by Cool Choice. At the same time, the total dollar volume of business for nonparticipants is larger on average compared to participants, so the target equipment sales are significant.

Table 3-6. Percentage of Business Targeting HVAC Equipment of 30 Tons or Less

Percentage of Business	Number of Respondents	% of Respondents	Participants (n=20)	Nonparticipants (n=18)
100%	6	15%	4	2
90% - 99%	7	18%	6	1
75%-89%	5	13%	3	2
60-74%	2	5%	1	1
50-59%	5	13%	2	3
25-49%	8	20%	3	5
20% or Less	5	13%	1	4
Total	**38**	**100%**	**20**	**18**

All three manufacturers indicated that the equipment targeted in the Cool Choice Program complimented their existing product lines. One said that this equipment comprised about 30 percent of their overall business. Another manufacturer added that the equipment qualifying for the Cool Choice Program represented “an excellent chunk of our product line. (The program) is a nice fit with our product line.”

> *“The product line pretty much matches the (program) guidelines. Some (equipment) falls underneath it and some are above that, but it is a fair level.” (Participating Manufacturer)*

However, several contractors said that some manufacturers “have had holes in their product line” meaning that they did not make equipment that qualified for the program. In fact, according to one manufacturer, initially only Carrier offered packaged HVAC equipment that met the Cool Choice guidelines. So, Trane, York, and Lennox all reconfigured the equipment, changing out components to meet the higher SEER efficiency rating.

> *“We changed the product to meet the program specifications, but the reason was more a competitive reaction to competition like Carrier.”(Participating Manufacturer)*

"Before the …… (new product line) our SEER units couldn't meet guidelines." (Participating Manufacturer)

3.4.4 Distribution Channels

Contractors and distributors answered a series of questions designed to identify if the Cool Choice Program affected their stocking and purchase practices.

Most of the contractors and distributors (23 of 35) reported purchasing some, if not all, their (30 ton or less) commercial equipment directly from the manufacturers. A few, 2 of them, mentioned purchasing from HVAC contractors.

Table 3-7. Where Respondents Purchase Equipment

Equipment Purchased From	Number Mentioning (n=35)	% Reporting (n=35)
Manufacturers	23	46%
Manufacturers Representatives	10	20%
Distributors	9	18%
HVAC Contractors	2	4%
Other (General Contractors)	1	2%
Didn't Know/Refused/NA	5	10%

*Some mentioned more than one source

Nearly all the contractors sold their equipment to the end users, while all the distributors sold equipment to contractors. Therefore, the distribution channel for the Cool Choice Program appears to be distributors purchasing equipment from manufacturers and then in turn reselling the equipment to the contractors.

Three respondents did not follow that general trend, citing that they sometimes were the "middlemen" between the distributor and the end user. One participating contractor reported that 50 percent of his HVAC equipment is sold directly to the general contractor or project owner, while the remaining 50 percent is sold to the end user.

Two nonparticipating contractors said they provide HVAC equipment to the general contractor rather than the end user. Another nonparticipating contactor said he sells about 60 percent of his HVAC equipment to other contractors and 40 percent directly to the end user.

Most distributors and contractors that were interviewed stocked multiple manufacturer brands. The top four brands were Carrier, York, Trane, and Lennox as shown in the following table. Of note, all participants indicated stocking the equipment brands that had units that qualify for the Cool Choice Program.

Table 3-8. Types of Brands Stocked/Sold*

Equipment Type	Number Mentioning (n=34)	% Reporting (n=34)
Carrier	21	25%
York	20	24%
Trane	18	21%
Lennox	12	14%
American Standard	5	6%
Other	9	11%
Didn't Know/Refused/NA	6	--

*Some mentioned more than one brand

Some of the other brands mentioned by these respondents include Mitshibushi, Amana, and General Electric, Armstrong, Ducane, McQuay, Rheem, and Hill-Coleman; brands that did not have equipment that qualified for the Cool Choice Program.

3.4.5 Program Awareness

Twenty-seven (27) of the 40 respondents, including the 3 manufacturers, were aware of the program while 13 were not aware of the program. Most respondents that were aware of the program learned about the program directly from a Cool Choice representative; this was especially true among program participants. Eleven participants and five non-participants heard about the program from a Cool Choice representative. The majority (70%) found out about Cool Choice from a MaGrann representative visit or presentation. Table 3-9 summarizes the ways that the respondents first learned about the program.

Table 3-9. Ways Respondents First Heard About the Cool Choice Program

Type of Contact	Information Source (n=27)		
	Utility (n=8)	Cool Choice/ MaGrann Rep (n=17)	Other (4)
Telephone Contact	2 (25%)	4 (24%)	
In-person visit/talk	1 (14%)	12 (70%)	
Letter	2 (28%)	1 (3%)	
Other	3 (43%)		Advertisement (1) Former utility employee (1) From a customer (2)

One manufacturer reported learning about the program indirectly, through a mailing they received from a utility. However, all manufacturers indicated that they were aware of the program and had been involved in it for several years. Two manufacturers said they were disappointed that the awareness level was not higher among customers and contractors.

> *"I haven't heard any feedback from dealers regarding Cool Choice and I thought I would." (Cool Choice Manufacturer).*

> *"It is a good program, but people are not using it. I don't know if it is because they are (not aware) of the program, or don't care about it. I'm not sure." (Cool Choice Manufacturer)*

3.4.6 Future Participation

When asked if they planned on participating in the future, 17 respondents indicated they would participate in the future, while 13 said they would not and 8 were not sure. Two respondents did not answer this question. Among those who indicated a willingness to participate in this program in the future, 14 were participants and 3 were nonparticipants. However, 4 current participants indicated they would not continue with the program, as well as 10 nonparticipants who were not planning to participate. The main reason given for dropping out of the program was that it did not fit with their current business profile, i.e., the majority of their business was in smaller residential or larger commercial and industrial equipment.

3.4.7 Participation in Other Programs

Nineteen respondents of the 37 or about half of the contractors and distributors said they have participated in previous utility programs while 14 have not. Two respondents, relatively new to their companies, did not know if their company had previously participated. The three manufacturers were excluded from this analysis and two respondents did not answer this question.

Of those who had been involved in previous utility programs, one respondent liked the utility programs that promoted maintenance and service programs. Another respondent had participated in other utility programs, but not ones that targeted HVAC equipment. Of those who had participated in previous programs, most had favorable impressions about those utility programs.

Twelve of the 18 Cool Choice participants (contractors and distributors) had participated in previous utility programs. Seven of the 19 nonparticipants had participated in previous utility programs.

3.4.8 Equipment Stocking Trends

The majority of contractors do not stock HVAC equipment. Twenty-three (of the 26) contractors did not stock **any** HVAC equipment prior to the sale.

Among distributors, the stocking levels were higher among participating distributors compared to nonparticipating distributors. Five participating distributors said they stocked HVAC equipment either all or most of the time, compared to three nonparticipating distributors. Furthermore, one nonparticipating distributor only stocked a few units of qualifying equipment, preferring instead to stock replacement parts rather than entire units.

Although several distributors indicated they were receiving stocking incentives, according to MaGrann records, only one distributor actually received an incentive during the program evaluation period.

After conducting additional follow up interviews with these distributors, we confirmed that these distributors were *planning to participate* in the Cool Choice program. Their plans included developing company-specific promotional programs to promote high efficiency HVAC equipment, and increasing their current inventories of premium efficiency equipment.

> *" It has been a process rather than a quick bang. We had to create a program that encourages people to buy (high efficiency equipment). We wanted a strong program that will drive the high efficiency program and (that is) Cool Choice. (Participating Distributor)*

The distributor currently receiving the stocking incentive said the incentive has led to an increase in sales of high efficiency equipment. This distributor added that the stocking incentive from Cool Choice provided him with a competitive advantage in the New England market

> *"…the incentives are a plus for us, and we have inventory that we have been able to move (because of the program). The stocking incentive has increased the amount we have bought in inventory, and because of it we are carrying another $300,000 in inventory (of high efficiency equipment.)"*

A nonparticipating distributor said that his company was hesitant to load up on high efficiency equipment and then worry that there would not be a market for that equipment. He commented that:

> *"The way a distributor makes money is by inventory turns, and there maybe needs to be more of a market place out there (for high efficiency equipment) to create a demand…The equipment needed to qualify for the program is not available, and to move it, the pricing is not attractive… (distributors) don't want to special order high efficiency equipment and then have it tied up in inventory."*

3.4.9 Incentive Payments

When asked if some type of incentive should be paid to contractors, suppliers, or customers to encourage the availability of high efficiency equipment, 14 respondents said that there should be some sort of incentive payment. These 14 included one manufacturer, 3 wholesale distributors, and 10 contractors. Five disagreed saying the market should drive the process while the remaining either were not sure or did not know how to answer this question since they had never considered it before.

As of group, most of those who responded to the question felt the incentives should go to the customers. However, as the following table indicates, a number of the contractors thought contractors should also receive incentives while the distributors were split in terms of incentives going to customers, contractors, or distributors.

Table 3-10. Summary of Who Should Receive Incentives

Respondents	WHERE THE INCENTIVES SHOULD GO					
	Customers	**Contractors**	**Suppliers**	**Manufacturers**	**A&E Firms**	**TOTAL**
Manufacturers	1	1			1	3
Contractors	8	6	1	1		16
Suppliers	4	3	3			10
TOTAL	12	9	4	1	1	25

*Note that respondents may have given more than one answer

Pro-Customer Incentive Payments

Twelve respondents felt the incentives should go to the customer. Six respondents indicated they viewed the incentive payments as a way for the utilities to create market demand for the higher efficiency HVAC products. These comments reflect the sentiment expressed by contractors, distributors, and manufacturers.

> *“Don’t load channel – create the demand and then sell it… create a demand…the distributor makes money is by inventory turns….the contractor should get something (incentive) and so should the end user.” (Nonparticipating Distributor)*

> *“Incentives have to be given back to the customer. It has to be driving the market.” (Participating Manufacturer)*

> *“I don’t think it really matters where the utilities pay the customers, give it back to the customer or the contractor can keep it.” (Participating Contractor).*

> *“Pay the end user, not the contractors.”(Participating Contractor)*

Pro-Contractor Incentive Payments

Nine respondents said the contractors should receive some type of incentive as part of this program. At the same time, they wanted to decide the amount of the incentive paid to the customers, rather than having it pre-determined by the utility. The following comments reflect their reasoning:

> *“…90% of the time when the rebate goes to the customer, they don’t even want it. They want us to take the check” (Participating Contractor)*

> *“Typically the incentives should go to the contractors… there is an advantage to (giving) it to the contractor. The contractor can reduce the price of the end user.”(Participating Contractor)*

> *"The incentive should go to the contractor. It absorbs the costs to process the application, and then pass the rest onto the customer…That eliminates the processing cost issue, still have a rebate program…"(Participating Contractor)*

> *"Pay the contractors…they help generate the market." (Participating Manufacturer)*

> *"…the contractors and consumers need to be incentivized. There is no need for the suppliers to be incentivized..they will sell what the market requires.(Participating Distributor)*

> *"It would be easier if the contractor got the rebate. That way, he doesn't have to worry about customer paying him for the job…he can just deduct the rebate from the customer's bill and pass the discount onto the customer." (Nonparticipating Contractor*)

Pro-Supplier Incentives

Three distributors and two contractors favored paying some type of incentive to distributors to encourage stocking of energy efficient equipment. As one participating distributor commented:

> *"A stocking incentive makes it easier to justify carrying the higher efficiency equipment." (Participating Distributor)*

The distributor that is currently participating in the Cool Choice stocking incentive program also indicated that the incentive he receives barely covers the increased costs associated with carrying additional inventory.

> *"We get an additional 8 percent in the stocking incentive, but we have to pay 7 percent in overhead, so we are basically breaking even. The only reason that I can support (the program) is because I can get away with it (because the corporate offices let him). We are in a unique corporate position." (Participating Distributor)*

A nonparticipating distributor expressed a different opinion regarding the role of stocking incentives and their willingness to participate in this program. This distributor reported that he stocks about 50 percent of his inventory to meet contractor needs, and the rest is special ordered.

> *"We have a relationship with large property managers and so we buy our equipment direct when the customer needs it. We are not stocking specifically high efficiency equipment…what the program offered was limited for a period of time and that wasn't going to fly. There was not enough incentive."*

Others Who Should Receive Incentives

Several respondents also suggested paying incentives to other market actors such as architects and engineers, in exchange for specifying qualifying equipment or manufacturers to increase the efficiency levels of their equipment.

3.4.10 Reasons for Equipment Purchase

Since most HVAC equipment sales fall into three categories: planned equipment replacement, new equipment purchases for new buildings, and failed/emergency replacement, the contractors were asked to provide an estimate of the percentage of their overall business that is in each category.

These figures are averages of the percentages supplied by the contractors but more of the nonparticipating contractors seem to be involved in emergency replacements.

Table 3-11. Percentage Breakdown of HVAC Installations for Qualifying Equipment

Reason for Purchase	Average Percentage of Installations of Less Than 30 Tons (n=23)	Average Percentage for Participating Contractors (n=11)	Average Percentage for Nonparticipating Contractors (n=12)
Planned Equipment Replacement	43%	45%	40%
New Equipment Purchase (for new buildings)	52%	47%	58%
Failed/Emergency Replacement	29%	18%	39%

The contractors also reported the percentage of their overall business involving design/build services. Participants reported a higher average percentage (64%) devoted to this type of business compared to nonparticipants (38%). One participating and one nonparticipating contractor did not answer this question.

Table 3-12. Percentage Breakdown of Projects Involving Design/Build

Percentage of Business In Design/Build	Percentage for All Contractors (n=24)	Percentage for Participating Contractors (n=11)	Average Percentage for Nonparticipating Contractors (n=13)
Average	47%	60%	36%

3.4.11 Energy-Efficient Equipment Sales and Installations

An essential element of this program evaluation is to determine if there has been an increase in the sales and installations of qualifying energy-efficient equipment. Two separate analyses were conducted to answer this question: one was an analysis of the program records on equipment installations that qualified for rebates and the second relied on respondent estimates of sales.

MaGrann provided us with a database of 1,500 program rebate applications processed through October 6, 2000. This database specified equipment type, efficiency level, and manufacturer.

The 1,500 rebate applications that were processed included 810 PTAC/PTHPs while the remaining 690 were unitary, split systems, and heat pumps.

Since PTAC/PTHPs were not identified by Tier 1 or Tier 2, our analysis of these efficiency levels exclude that type of equipment. Excluding PTAC/PTHPs, Unitary/split systems were the most commonly installed equipment, accounting for 463 of the 690 (81%) compared to 19% heat pumps of all installations. Forty-two percent of those 690 units were in the Tier 1 category while 58 percent were in Tier 2.

Table 3-13. Total Program Installations by Equipment Type

TYPE OF EQUIPMENT	TIER 1	TIER2	PTAC/ PTHP	TOTAL
Heat Pumps	65	64		129
PTAC/PTHPs			810	810
Split Systems	56	42		98
Unitary Systems	170	293		463
Total	291	399	810	1,500

In looking at the split of equipment by state, there are some distinct differences. The majority (86%) of Rhode Island's rebate applications are for PTAC/PTHPs. Connecticut and New Jersey also have over 50% of their rebate applications for PTAC/PTHPs.

The % of Tier 2 units are much higher for New Jersey, with 75%, of the non-PT equipment. Rhode Island with a much smaller number of non-PT equipment (38 units) has 74% that are Tier 2 equipment. Massachusetts is at 56% and Connecticut is at 36% for Tier 2 units as a percentage of non-PT units.

Table 3-14. Rebate Applications as of October 6, 2000 for Each State by Tier Level

STATE	PTAC/ PTHPS	HEAT PUMPS		UNITARY INSTALLATIONS		SPLIT SYSTEMS		TOTAL ACROSS STATE
	All	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2	
NJ	275	5	61	22	73	24	23	483
MA	79	5	3	82	123	23	16	331
CT	228	55	0	56	65	7	2	413
RI	228	0	0	10	27	0	1	266
VT	0	0	0	0	5	2	0	7
TOTAL	**810**	**65**	**64**	**170**	**293**	**56**	**42**	**1,500**

Contractor Sales Estimates

Perhaps the most challenging part of the market actor interviews was to have contractors and distributors provide estimates of equipment sales in the categories targeted in the Cool Choice Program. Each respondent provided an estimate of total sales in each equipment category. However, all had difficulty distinguishing between Tier 1 and Tier 2 qualifying units, even when the SEERs and EERs were provided, so the analysis was dropped because of having so few data points.

The tables in this section provide an approximation of the equipment sales by size category for unitary and split systems, the equipment type which comprises the majority of sales. Ten of the 12 participating contractors and 13 of the 14 nonparticipating contractors provided data for these estimates. However, not all the respondents were equally confident in their estimates and so these findings should be used only for informational purposes in examining differences in rebate applications, sales of participating contractors, and sales of nonparticipating contractors.

The figures in each table were derived using the following steps for each category.

1. The annual overall sales figures reported in Column Two of each table were either provided by the respondents themselves, obtained from Dun & Bradstreet reports, or confirmed through an Internet search and used as the basis for this analysis.
2. The percentage of business dedicated to HVAC equipment of 30 tons or less in Column Three was provided by the respondents. This percentage was multiplied by the annual HVAC sales (Column Two) to estimate dollar volume of equipment sales in the 30 ton or less category as reported in Column Four. These data are reported by respondent, but, to protect the respondents' confidentiality, each contractor is only identified by a number.
3. The respondent was also asked for the % of the HVAC equipment of 30 tons or less that was unitary and split systems as reported in Column Five. The % was multiplied by estimated equipment sales of 30 tons or less (Column Four) and reported in the last column of the table.
4. Sales of the specific equipment type (size or efficiency level) were derived by asking each contractor to provide a breakdown of sales in each category type in terms of a percentage

of total equipment sales of 30 tons or less for split systems and unitary. For example, a respondent indicated that his overall sales of unitary/split systems (in the 30 ton or less category) was 90% of his total business, of which 40% were for equipment 5.4 tons or less, and so on. These percentages were then multiplied by total HVAC sales of 30 tons or less to compute total dollar sales estimates.

The following tables summarize the contractors' estimates of sales of unitary AC/split systems by equipment size for participating contractors and then for nonparticipating contractors.

Table 3-15. Total Installations Unitary/Split Systems among Participating Contractors

Contractor	Annual Sales	% of Total Sales	Estimated Equipment Sales of 30 Tons or Less	Estimated % of Sales of Unitary/ Split Systems	All Unitary/Split Systems			Estimated Total Sales of U/S Systems
					<5.4	5.4-11.5	11.5-30	
1	$17,300,000	20%	$3,460,000	75%	$865,000	$865,000	$865,000	$2,595,000
2	$2,000,000	100%	$2,000,000	95%	$0	$1,900,000	$0	$1,900,000
3	$15,000,000	35%	$5,250,000	100%	$0	4,987,500	262,500	$5,250,000
4	$3,100,000	65%	$2,015,000	100%	$0	$201,500	$1,813,500	$2,015,000
5	$1,900,000	95%	$1,805,000	98%	$884,450	$707,560	$176,890	$1,768,900
6	$7,500,000	100%	$6,750,000	90%	DK	DK	DK	$6,075,000
7	$3,500,000	80%	$2,800,000	100%	$280,000	$280,000	$2,240,000	$2,800,000
8	$2,200,000	90%	$1,980,000	89%	$704,880	$704,880	$352,440	$1,762,200
9	$7,500,000	50%	$3,750,000	70%	$1,312,500	$1,312,500	$0	$2,625,000
10	$3,600,000	90%	$3,240,000	12%	$194,400	$194,400	$0	$388,800
Total	**$63,600,000**	**52%**	**$33,050,000**	**82%**	**$4,241,230**	**$11,153,340**	**$5,710,330**	**$27,179,900**

The following table summarizes the nonparticipating contractors estimates of unitary/split system equipment sales. Thirteen (13) of the 14 nonparticipating contractors were able to provide estimates of their equipment sales. As with the participating contractors, unitary/split system equipment accounted for the majority of their overall sales of HVAC equipment of 30 tons or less.

Although only 22% of the sales of the 13 nonparticipating contractors were in the qualifying size categories for Cool Choice, these qualifying size sales represent an overage of over $4 million per contractor. This figure compares to a $3.3 million average for 30 tons and less equipment for participating contractors reporting sales data.

It is also important to note that 74% of the unitary and split system equipment sales for nonparticipating contractors fall in the 5.4 to 30 ton range, which helps confirm that the majority of their sales were likely not to be residential sales.

Table 3-16. Installations of Unitary/Split Systems among Nonparticipating Contractors

Contractor	Annual Sales	% of Total Sales in < 30 Tons	Estimated Equipment Sales of 30 Tons or Less	Estimated % of Sales of Unitary/ Split Systems	All Unitary/Split Systems			Estimated Total Sales of U/S Systems
					<5.4 Tons	5.4-11.5	11.5-30	
1	$20,000,000	37%	$7,400,000	60%	$3,108,000	$444,000	$888,000	$4,440,000
2	$70,000,000	0.50%	$350,000	49%	$50,000	$75,000	$45,000	$170,000
3	$11,700,000	95%	$11,115,000	45%	$1,700,595	$1,650,578	$1,650,578	$5,001,750
4	$19,000,000	2%	$380,000	10%	$0	$38,000	$0	$38,000
5	$18,000,000	17%	$3,000,000	95%	$940,500	$969,000	$940,500	$2,850,000
6	$15,000,000	20%	$3,000,000	100%	$300,000	$300,000	$2,400,000	$3,000,000
7	$14,800,000	25%	$3,700,000	100%	$0	$3,330,000	$370,000	$3,700,000
8	$15,800,000	25%	$3,950,000	75%	$296,250	$1,185,000	$1,481,250	$2,962,500
9	$15,400,000	50%	$7,700,000	50%	$770,000	$770,000	$2,310,000	$3,850,000
10	$8,700,000	5%	$435,000	100%	$348,000	$87,000	$0	$435,000
11	$4,800,000	55%	$2,640,000	75%	$653,400	$653,400	$673,200	$1,980,000
12	$3,500,000	70%	$2,450,000	65%	$637,000	$318,500	$637,000	$1,592,500
13	$22,500,000	30%	$6,750,000	98%	$661,500	$2,646,000	$3,307,500	$6,615,000
Total	**$239,200,000**	**22%**	**$52,870,000**	**69%**	**$9,465,245**	**$12,466,478**	**$14,703,028**	**$36,634,750**

Only one participating contractor indicated they sold air-to-air heat pumps. This contractor estimated that annual sales of air-to-air heat pumps were approximately $173,000. Three contractors said that air-to-air heat pumps were not commonly installed in the commercial equipment installations in the Northeast. Of note, a few respondents wondered if water source heat pumps included geothermal systems (ground source heat pumps). If it did, then some indicated installing a few units, however, none were recorded in the Cool Choice Program records.

PTACs and PTHPs represented a significant number of installations among selected contractors. Only six of the contractors interviewed (3 participating and 3 nonparticipating) installed these units but for at least one contractor, these units represented the majority of sales.

3.4.12 Barriers to Participation

The most frequently mentioned reason for not participating in the program was the lack of awareness and market demand for the energy efficient equipment. Scheduling and equipment availability was cited as a barrier next ahead of paperwork and cost issues. These key barriers as mentioned by the market actors are summarized in the following table and discussed in more detail in this section.

Table 3-17. Summary of Barriers to Program Participation

Major Barriers	Number Mentioning Barrier By Respondent Group			
	Manufacturers (n=3)	Contractors (n=26)	Suppliers (n=11)	TOTAL
Lack of Awareness/Mkt Demand	2	15	3	20
Scheduling/Equipment Availability	3	6	7	16
Fear of Paperwork		7	2	9
First Cost/Higher Cost Concerns	2	7		9
TOTAL	7	35	12	53

*Respondents gave more than one answer.

Lack of Awareness/Demand of the Product

Half of the respondents (20 of the 40) mentioned a lack of awareness of the program or understanding about the benefits of energy efficiency as the primary reasons for not participating in the program. These included both participants and nonparticipants for distributors and contractors. The following comments are representative of the concerns voiced by these respondents regarding this barrier.

Nonparticipating distributors commented:

> *“I haven’t gotten any requests for equipment. I’m not sure if there is awareness of the program. I don’t sell a lot of high efficiency equipment.” (Nonparticipating Distributor)*

> *“It is, hard to have sales to justify stocking the inventory and turn the inventory. There is not much of a market for this equipment.” (Nonparticipating Distributor)*

HVAC contractors had similar opinions about the need to stimulate the market. One contractor that had installed qualifying equipment for a national fast food restaurant chain summed up the lack of demand this way.

> *“Most people don’t get involved with it (energy equipment decisions). In most retail space, the tenants are not paying the electric bills and the property managers don’t care.” (Participating Contractor)*

Thirteen respondents were not aware of the Cool Choice Program. But even among the 27 respondents that were familiar with the program, 10 indicated that either the customer was not aware of or did not care about the cost-savings associated with energy efficient equipment.

Nine respondents, excluding manufacturers, believed that the Cool Choice Program needed to expand its marketing to include other types of contractors, end-users, and developers. Some of the comments included:

> *“Sales are geared more to contractors rather than end customers.”(Participating Contractor)*

> *"The owners' don't know about the program…how is the average developer (going to know) about the program, and ask about it?" (Nonparticipating Contractor)*

Scheduling/Equipment Availability

Sixteen of the 40 respondents mentioned scheduling issues and equipment availability as barriers to participation. Four respondents described the current Cool Choice program as having "holes in the rebate," meaning that certain equipment types or manufacturers are excluded from the program. There were comments from both participants and nonparticipants regarding "holes in the rebate."

> *"There are too many holes in the rebate…the equipment doesn't fall into the rebate criteria…It needs to be a broader program, with more equipment and more rebates. Only 50% of the lines I carry qualify for the Cool Choice Program. (Participating Distributor)*

> *"Some manufacturers have some holes in their line (and they) can't make the high efficiency equipment that qualifies for a rebate." (Nonparticipating Distributor)*

Four respondents mentioned that the fast-turnaround nature of many HVAC jobs did not leave much flexibility in promoting energy efficient equipment. In general, these respondents indicated that most of their jobs do not specify "high efficiency equipment." Unless the equipment is specified at the outset, these contractors admitted that given competitive pressures and tight timelines, they are hesitant to promote equipment that could either delay the project or increase costs significantly.

> *"I don't have enough time to make changes, so program is not conducive to that. These jobs are fast turnaround, it is not time to give a lot of options (to customers.)" (Nonparticipating Contractor)*

> *"The equipment needed to qualify for the program is not available, and to move it, the pricing is not attractive…I don't want to special order high efficiency equipment and then have it tied up in inventory (Nonparticipating Distributor).*

> *"The mechanical contractor calls the sales engineer and asks for pricing for 5 rooftop units, but not any alternates. The (decision) is made on price and how fast (the contractor) can get them installed. That is what drives a lot of contractors…In filling orders, it is hard to drive the market." (Participating Manufacturer)*

Fear of Paperwork

Nine respondents, both participating and nonparticipating alike, expressed concern about having to fill out extensive paperwork in order to receive rebates. At the same time, there appears to be a natural bias against filling out rebate forms based on past experience with other programs. Several indicated they were turned off by the paperwork required to participate in previous utility programs. Even more telling, one participating contractor complained about the utility paperwork requirements before commenting that the Cool Choice application was the best he had ever seen.

Four contractors mentioned that filling out the paperwork was an added cost that could not be easily passed on to the customer. Of particular interest, the respondents who complained the most about paperwork requirements were either not participating (3) or not in charge of completing the Cool Choice applications (2). Selected comments included:

> *"Many of the small contractors are afraid of the paperwork… and staying on top of it. Most of the small contractors don't want to be bothered it."(Participating Contractor)*

> *"A lot of contractors don't want to offer it don't want to get involved with the paperwork. Utilities have made it more and more difficult to process the paperwork and we're not getting a dime." (Nonparticipating Contractor)*

First Cost/Higher Cost Concerns

Nine respondents indicated that cost concerns were a barrier to participation. They expressed concerns regarding the amount given in the rebates to reduce the incremental cost associated with purchasing and installing high efficiency equipment. These respondents pointed out that for many of their customers, calculating equipment paybacks of 3 to 5 years is still too long. The following comments summarize these concerns.

> *"It is always tougher on selling this equipment to our consumer - so much focus on first cost, incremental cost is always a tough sell. Most of these installations are for more of an emergency situation and the contractor is just looking at getting the job done." (Participating Manufacturer)*

> *"…Dollars and cents…that's the biggest barrier I have now…most mechanical contractors work with general contractors are looking for the cheap buck, and not looking to resell the product…have to educate the owners." (Nonparticipating Contractor)*

However, one manufacturer and one contractor did not see the value of rebates in moving the market.

> *"Rebates are not significant to anyone that has done a lifecycle cost analysis to demonstrate savings." (Participating Manufacturer)*

> *"…90% of the time it is an equipment replacement job, and the customers want like-for-like replacement…A lot of times the customers think it's a hassle to get rebates."(Nonparticipating Contractor)*

3.4.13 Operational Effectiveness

Typically, the participants were quite satisfied with the key components of the Program. Participating contractors rated several components of the Cool Choice Program on a five-point scale, where a "1" means " Not At All Effective," and a "5" means "Very Effective." The following table displays the average score each component received.

Table 3-18. Average Scores of Operational Effectiveness

Program Element	Average Score (n=10)	Number Rating this Component a "5"
Rebate Application Process	4.5	6
Communication with MaGrann Rep	4.0	6
Program Information	4.0	5
Rebates to Customers	3.9	4
Level of Program Support	3.8	4

Only the 12 participating contractors were asked to provide ratings, and two indicated they were not familiar enough with the program to provide meaningful answers. Therefore, the scores above reflect the answers from 10 participating contractors.

Of note, the participating contractors awarded the highest number of "5's" on the five-point scale to two components, "Rebate Application Process," and "Communication with MaGrann Representative." Other items scoring fairly high among some respondents included the "Level of Program Support" with 40% of the respondents rating it a "5." A total of 38 percent respondents rated "Program Information" a "5" on this five-point scale.

3.4.14 Regional Initiative

The respondents also indicated if they believe that a regional initiative like the Cool Choice Program was effective. Overall, most respondents viewed the multi-utility partnership as beneficial, citing such advantages as simplified paperwork and administration, and the ability to gain credibility with customers.

> *"It is easier for the contractors and it is a miracle that the utilities can work together." (Participating Contractor)*

> *"It eliminates a lot of paperwork (required) for each utility," (Participating Contractor)*

The manufacturers were especially pleased to see a regional program, since it gave them added clout in the marketplace.

> *"There are definite advantages from a manufacturing standpoint….it is a compliment to what we are doing… and helps us reach the broader regional areas and encompass larger market…it makes it easier to justify participation in the program. It helps us tremendously that there is cooperation among utilities." (Participating Manufacturer)*

However, a few respondents were wary about the motives of these utilities working together. A couple mentioned that these partnerships could seem like a "big conspiracy." Another contractor was reluctant to participate in any program that benefited utilities, since he viewed them as a competitor.

3.4.15 Future Plans/Influences

Three manufacturers and three other respondents addressed their concerns regarding changes that could affect the Cool Choice Program in the future. These respondents identified two major concerns that would affect the Cool Choice Program: rising energy prices and changes in the current equipment standards or requirements.

One manufacturer indicated that increased energy prices would make customers more willing to invest in more efficient equipment.

> *"If energy costs continue to go up, there will be a lot more awareness of energy in the U.S., especially if we are running into brownouts and power outage. Some customers are really concerned about the utility consolidation…and if the price goes up, customers start thinking about energy costs." (Participating Manufacturer)*

However, the manufacturers were more concerned about the possible impacts that new, mandatory codes would have on their equipment lines. Their biggest fear is that they would be required to manufacture equipment to an efficiency level that is not supported in the general marketplace. The manufacturers also wondered how the new standards would be initiated and enforced.

> *"I am worried about how (new standards) will get enforced. If the state or federal market resets the floor on efficiency levels and it now becomes a national standard, what do you do with your original 'high efficiency product?'… We are looking at what the utility is doing…." (Participating Manufacturer)*

> *"A new efficiency standard creates a level playing field.. but now you're guessing on how much the customer is willing to pay for the new, higher efficiency equipment." (Participating Manufacturer)*

> *"If one town changes its (efficiency) standards, it's not to get any attention. The manufacturer is not going to change production mixes. But if the whole Northeast moves to ASHRAE 90.1 requirements, then the manufacturer will start stocking high efficient units." (Participating Manufacturer)*

The manufactures are also worried about the implications of new equipment standards on their current product lines. As these manufactures point out, the current ASHRAE 90.1 standards really only affect one part of the country, and the manufacturer then has to wonder if it makes sense to "tweak" his product line to meet standards for only 7 percent of the market.

> *"It takes a long time to redevelop the line; redesign some of our equipment." (Participating Manufacturer)*

Another manufacturer observed that higher standards may eliminate some of the weaker market players, effectively moving the market to a higher efficiency level.

> *"(Higher standards) may knock off the minor players that only sell on price…A national program would be good to have higher efficiency unit as long as they are not well above the threshold offered now." (Participating Manufacturer)*

4. CUSTOMER INTERVIEWS

4.1 INTRODUCTION

Although the Cool Choice program focuses on establishing relationships with the HVAC contractors and suppliers, we felt it was important to obtain customer decision-makers' perspective on the program. In particular, the process assessment considers feedback from the participating customers, those who installed qualifying equipment that was rebated through the Cool Choice program.

Hagler Bailly contracted with SAIC to conduct telephone interviews of the participating customers in New England Energy Efficiency Partnership's (NEEP) Cool Choice program. Our plans were to conduct interviews with 79 customer decision-makers, which include a combination of participating customers (from the first seven months of 2000) and staff from regional headquarters of national chains. [1]

Summaries of the interview process and survey results for the 48 interviews completed with participating customers are presented in this chapter.

4.2 KEY FINDINGS

Customer response to the program was very favorable. Respondents found program participation to be easy and mentioned that very little paperwork as a positive aspect of the program. Many participants were very aware of the benefits of installing energy efficient equipment and indicated a strong probability that they would install efficient equipment without an added incentive. At the same time, the HVAC contractors and the rebates were both cited by at least one-third of the respondents as being "very influential" in the decision-making process.

The participants are probably not representative of the population of HVAC purchasers in that only 4 of the 48 were emergency replacements while 37% were renovations or new construction and 52% were planned replacements. In contrast, the HVAC contractors that were interviewed for this study indicated that, on average, over 25% of their business are failed equipment or emergency replacements. Also, the HVAC contractors typically indicated a larger percentage of their business was for new construction.

The participating customer interviews addressed several of the key researchable issues identified during the staff interviews and program record review. Specifically, the interviews examined the following topics:

4.2.1 Qualifying Efficiencies

There is no indication that obtaining Tier 2 equipment was an issue for the participating customers, which does not mean that those purchasers who did not participate could obtain Tier 2 equipment very easily. Given that caveat, the majority of equipment installed (excluding PTACs and PTHPs) were Tier 2 and there were only 5 cases (about 10%) in which the

[1] Despite repeated calls, we were unable to complete the interviews with national chain accounts for this report.

customer indicated the equipment was not available to meet their desired schedule. Of those customers whose installations were delayed by product availability, none reported a delay of any significant period of time. Tier 2 units were installed in 3 of the 5 cases where the equipment was delayed.

Of the 98 non-PT units, 72 (or 66% of these units) were Tier 2 efficiency. Since the sample was drawn from the rebates processed through 7/28/00, this % of Tier 2 units is close to the population at that time where 68% of the units rebated were Tier 2.

1.1.1 Incentives

The high incidence of participating customers who said they would have installed the same energy-efficient equipment in the absence of the program suggests that increased rebate levels are not necessary to encourage participation. About 70% of the customers (34 of 48) said there was a 70% likelihood that they would install the same energy-efficient equipment if there were no cool choice program. If we consider that their primary interaction with the Cool Choice program was in the rebate application process, this 70% seems consistent with 27% indicating that the rebate had no influence on their purchase decision. At the same time, 9 of those 34 customers who said they would have installed the equipment on their own suggested that the rebates needed to be increased to get greater participation in the program.

Customers who did not receive a rebate directly from the utility typically refused to complete the interview, so it is difficult to comment on the effectiveness of providing incentives to the HVAC contractors alone. At the same time, the participating customer interviews indicate that the contractors are important in creating awareness of the program and in promoting energy-efficient equipment. Over half (58%) of the respondents found out about the program from the contractor or supplier and in 33 of the 48 cases, the contractor or supplier recommended considering the energy-efficient equipment.

1.1.2 Barriers to Participation

The participating customer interviews do not indicate that first cost or equipment availability were major barriers for them. However, the majority of those who suggested improvements to the program to increase participation (15 of the 28 with suggestions) indicated the need for greater awareness and promotion of the program. This finding is consistent with the market actor surveys who indicated that lack of awareness is the primary barrier to program participation.

4.2.2 Marketing Strategy

The Cool Choice regional initiative currently focuses on the HVAC trade. Clearly this targeting has been effective, but there is a need to increase promotional activities among the end-use customers. Indeed, among this group of purchasers, the customers said they were the primary decision-maker in most cases. This finding is consistent with the results of the market actor interviews, which suggested that the marketing approach must use a push-pull marketing strategy to create customer demand while continuing to increase awareness and support among the HVAC contractors and suppliers.

However, discussions with the customers do not suggest that utility brochures or bill stuffers would be effective in promoting the program. Respondents suggested that broader advertising activities (e.g., trade magazines, newspapers, posters, etc.) are needed.

There is no indication from the participating customers that promotion among architects, engineers, and other sectors of the building trades would be effective for this program. However, the survey showed a very low incidence of purchases made because of new construction. Because design trades are not likely to be involved in decisions regarding equipment replacement, it is not surprising that they have not been a factor for these participants.

4.2.3 Operational Effectiveness

The participating customers were quite satisfied with their participation in the program and few had suggestions or comments on any operating issues. Since the participating customers had little direct involvement with the Cool Choice regional program, it was difficult for them to rate the effectiveness of the marketing materials and the Cool Choice representative. On a scale of 1 to 5 with 5 indicating the program component was "very influential" in their decision to purchase energy-efficient air condition equipment, the HVAC representative received a rating of 3.47 and the Cool Choice rebates received a rating of 3.06.

4.3 APPROACH

Hagler Bailly asked MaGrann to supply customer contacts from the Cool Choice Applications. MaGrann supplied a list of 175 participating customer contacts that were matched to the spreadsheet of Cool Choice Applications Processed as of 7/28/00. The spreadsheet listed 121 distinct participating companies including incentives paid and installed equipment information. In some cases, the contacts were contractors instead of customer decision-makers and they were removed from the list of 175.

SAIC's task was to telephone those customer contacts whose companies appeared on both lists (a total of 110 companies) and to survey at least 44 program participants, while meeting state- and utility-specific quotas (see Table 4-1) as specified by Hagler Bailly's sampling plan. In total, SAIC called 99 participating companies between September 18, 2000 and September 28, 2000 with the following results:

Completed interviews	48
Terminated interviews	8
Refused	6
Bad/outdated contact	8
Unsuccessful attempts	29
TOTAL	99

SAIC succeeded in interviewing 48 out of 110 participants (44 percent) from the matched list. Fourteen of those customers that were contacted either terminated the interview because of lack of time or information, or refused to participate in the interview. A count of the completed surveys by state and utility is provided in Table 4-1. In the case of the Vermont utilities and

Western Mass Electric, the number of available companies was lower than the targeted number.

Table 4-1. Tabulation of Completed Surveys

State and Utility	# Units	# Participants	# Available Interviews	Target # Interviews	Total Complete	% Complete
MA	**215**	**45**	**39**	**16**	**19**	**119%**
Boston Edison	50	11	9	3	6	200%
Commonwealth El.	24	4	4	2	2	100%
Eastern Edison	14	5	4	2	2	100%
Mass. Electric	126	24	22	8	9	113%
Western Mass.*	1	1	0	1	0	0%
NJ	**331**	**33**	**33**	**12**	**14**	**117%**
Conectiv	201	8	8	3	3	100%
PSE&G	130	25	25	9	11	122%
CT	**130**	**31**	**33**	**11**	**11**	**100%**
CL&P	85	23	23	8	8	100%
United Illuminating	45	8	10	3	3	100%
RI (NECo)	**19**	**8**	**4**	**3**	**3**	**100%**
VT (All Utilities)	**5**	**2**	**1**	**2**	**1**	**50%**
NH	**0**	**0**	**0**	**0**	**0**	**N/A**
Total	**700**	**119**	**110**	**44**	**48**	**109%**

4.4 SURVEY RESULTS

SAIC provided Hagler Bailly with the survey results, divided by question, with the responses given as both the percentage of the total number of survey responses (48) and the number of responses for each question. These results were further analyzed to address the key researchable issues as presented in this section by topic.

4.4.1 Types of Installations

All respondents reported that units installed as described by the interviewer from MaGrann's records were correct. Some participants noted that they have since installed additional units through the program.

One of the important issues was to determine whether there are major differences in response to or participation in the program due to timing issues for emergency versus planned replacements. In addressing that issue, it is important to remember that these are participating customers that do not represent the population of purchasers. As participants, they were able to obtain qualifying equipment that generally met their schedule.

Slightly more than half of the respondents (52%) said they replaced their existing air conditioning equipment because it was very old and inefficient. Some respondents noted that the units being replaced were 20 to 30 years old. Seventeen of the 48 individual customer decision-makers (35%) installed air conditioning systems in a newly constructed or renovated building.

Only 4 of the 48 participating customers indicated the air conditioning was installed as an emergency replacement. At the same time, 6 of the 25 planned replacements said they wanted the equipment installed "immediately" when asked about timing issues, which could be considered a quasi-emergency situation. Of those responding "Other," one respondent stated that he was using window units but thought that converting to a rooftop unit would be more efficient. Another stated that the space was not previously air-conditioned.

Three of the planned replacement customers installed a total of 99 PTAC/PTHP units. Those program participants not installing PTAC/PTHP units as planned replacements were only slightly more likely to install Tier 2 units than the new construction /renovation group—28% versus 26%.

Table 4-2. Reason for Purchase of Air Conditioning

Reason	% Customers	# Customers	Tier 1 Units	Tier 2 Units	PTACs/ PTHPs
Installation of an AC in a new building	4%	2*	2	8	
Installation as part of a renovation of an existing building	33%	16*	9	24	
Emergency replacement of a unit that failed	8%	4	2	4	
Planned replacement of an existing AC that was not operating satisfactorily	52%	25	13	33	99
Other	4%	2		3	
TOTAL	**101%**	**49**	**26**	**72**	**99**

*One customer installed units in a new building and in a renovation

4.4.2 Source of Program Awareness

The largest segment (58 percent) of participants first heard about Cool Choice from their equipment supplier. In only one case did a respondent state that his supplier did not know about the program. In that instance, the customer switched to a different supplier. Twenty-four percent of respondents first heard about the program from their utility. A few respondents specifically stated that they have frequent communications with their utility representatives. Others stated that they have no contact at all with their utility.

Table 4-2. Ways Participating Customers First Heard About the Cool Choice Program

Type of Contact	Information Source		
	Utility	Cool Choice/ MaGrann Rep	Trade/Other
Telephone Contact	1	1	
In-person visit/talk	2	1	
Letter/Brochure/Mailing	5		
Architect			1
Distributor			2
HVAC Contractor			26
Business Affiliate			1
Other	4	1	8
Don't Know/Refused			2
TOTAL	12	3	40

Respondents who cited "Other" stated that they heard about the program from other company members, customers, or friends. One participant stated that he actively follows utility programs while another stated that he specifically called his utility to ask about programs because he had missed out on incentives in the past.

The sources of information were analyzed to determine if there were differences by type of project. As shown in the following table, those customers that had planned replacements were much more likely to hear about the program from the HVAC contractor (19 out of 25). In new construction/renovation projects, however, the participating customers were just as likely to hear about the program from the utility as from the HVAC contractor.

Only one participant heard about the program from an architect and the customer said they heard about it jointly from the architect and the HVAC contractor. Two of the planned replacements also identified the utility and the HVAC contractor as both being the initial sources of program awareness. Again, this may indicate that those projects with architects involved are less likely to participate in the program.

Table 4-3. Source of Program Awareness by Type of Project

Source	**Type of Project**		
	New Building/ Renovation (n=17)	**Planned Replacement (n=25)**	**Emergency Replacement/Other (n=6)**
HVAC Distributor/Contractor	7	19	3
Architect	1		
Utility	7	8	
MaGrann Rep/Cool Choice Rep	1		1
Business Contact/Friend	1		1
In-Company			1
Don't Know/Refused	1		
TOTAL	18	27	6

4.4.3 Decision-Making Process

In trying to understand the decision-making process, the interviewers asked the customers a series of questions that include:

- At what point in the equipment specification process did your company first become aware of the Cool Choice program?
- Were the initial equipment specifications modified to include the energy-efficient air conditioning equipment that was installed?
- Who, if anyone, recommended that you consider purchasing the energy-efficient air conditioning equipment that was installed?
- Who made the final decision to install the energy-efficient air conditioning equipment?

The majority (65 percent) of the respondents learned of the program at some point during the equipment specification process. Because more than half of the respondents first learned about the program from their HVAC supplier or contractor and were often presented with an eligible model as the recommended piece of equipment, you would expect that many of the participants had little active involvement in the selection process. According to the customer, they had considerable influence on the decision as discussed later in this chapter.

Table 4-4.
Point in the Purchase Process that Company First Became Aware of the Program

Program Awareness Point	% Customers	# Customers
Before the decision was made to purchase a new AC system	25%	12
During the equipment specification process	65%	31
After the equipment was installed	8%	4
TOTAL	98%	47

Slightly more than one-fourth (27%) of the participating customers indicated that their initial equipment specifications were modified to include the energy-efficient air conditioning equipment that was installed. A significant number did not answer the question (27%). These results may indicate that many of the installations were handled without formal design specifications.

The interviewer also asked if the initial equipment specifications included equipment that was more efficient or less efficient than what was installed. Only one respondent indicated that the equipment was more efficient in the initial specifications. At the same time, this customer had installed Tier 2 units under the program, which is already at the highest tier of efficiency.

Table 4-5. Equipment Specifications in Terms of Efficiency

Were the initial equipment specifications modified to include the energy-efficient air conditioning equipment that was installed?	**% Customers**	**# Customers**
Yes	27%	13
No	33%	16
Don’t Know	13%	6
TOTAL THAT ANSWERED QUESTION	**73%**	**35**
Did the initial equipment specifications include equipment that was more efficient or less efficient than what was installed?	**% Customers**	**# Customers**
More efficient	2%	1
Less efficient	27%	13
Don’t Know	6%	3
TOTAL THAT ANSWERED QUESTION	**35%**	**17**

According to the customer, the end-users were the major decision-makers in determining whether energy-efficient equipment would be installed. They indicated that the HVAC contractors recommended eligible equipment in 69 percent of the cases but that in almost all of the cases the customer made the final decision to install the energy-efficient equipment. Because the person categorized as “Yourself,” was generally the owner or manager, nearly all of the final decisions regarding installation of equipment fell to management, not engineers, architects, or other staff.

The respondents cited that in 9 cases the building/owner developer made the final decision but in all but two of these situations, the customer was the building owner. Those interviewed indicated that 77% of these participating customers owned the building in which the energy-efficient air conditioning equipment was installed. Further, 96% of them said they pay the electric bill for the facility in which the energy-efficient air conditioning equipment was installed.

In the case of larger companies, churches or municipalities, the respondent participated in a group that made the final decision. In one case, the building owner was a very good friend of the HVAC contractor and left the entire decision-making process up to the contractor.

Table 4-6. Major Influencers in the Decision-Making Process

Influencer	Recommended Energy Efficient Equipment be Considered	Made Final Decision to Install Energy-Efficient Equipment
Supplier/HVAC Contractor	33	1
Yourself/Within Company	9	34
Company headquarters/Management Person	0	7
Relative/Customer	3	0
Building owner/developer	0	9 (2 not the customer)
Architect	1	0
Engineer	1	0
ESCo	1	0
Utility Rep/Cool Choice Rep	1	0
TOTAL	49	51

4.4.4 Cool Choice Program Influence

The respondents were asked the following question: “Using a scale of 0% to 100%, what is the likelihood that your company would have installed air conditioning equipment that was at least as energy efficient if there were no Cool Choice program?”

A majority, 70 percent of the respondents, stated that there was at least a 70 percent chance that they would install energy efficient equipment without the Cool Choice program. Many of those respondents also stated that the incentive made the decision easier. This response could imply that there is a high free ridership on the Cool Choice program. At the same time, without the Cool Choice program, it is possible that these customers would not understand the benefits of energy-efficient equipment and would not have energy-efficient equipment readily available for purchase.

In any event, our role was not to estimate free ridership, which requires a sophisticated questioning process and analysis to provide a reasonable determination of net program impacts.

All who responded there was less than a 50 percent probability of installing high-efficiency equipment indicated that cost was the deciding factor.

Table 4-7. Likelihood Customers Would Have Installed AC That Was as Efficient

Likelihood	% Customers	# Customers
0-9%	8%	4
10-29%	10%	5
30-49%	0%	0
50-69%	8%	4
70-89%	14%	7
90-100%	56%	27
Don’t Know	2%	1
TOTAL	100%	48

4.4.5 Participation in Other Energy Efficiency Programs

The majority of participating customers have experience with other utility programs. The customers were asked if they participated in any other programs that promote energy-efficient equipment to commercial customers. Over half (56% or 27 customers), said “yes” while 40% (19 customers) said “no.” The remaining 4% (2 customers) did not know if they had participated in other programs.

The majority of respondents who have participated in other programs cited utility lighting rebate programs. A small portion have participated in other utility programs that offer incentives for HVAC, motors, VSD, EMS, etc.

4.4.6 Timing and Equipment Availability

Equipment availability was not a problem for most of the participating customrs. Out of the 48 participating customers, there were only 5 cases (about 10%) in which the customer indicated the equipment was not available to meet their desired schedule. Of those customers whose installations were delayed by product availability, none reported a delay of any significant period of time.

Three of the five that indicated equipment availability problems were planned replacements in which the customer wanted the equipment immediately after identifying a need for the air conditioning purchase. In those three planned replacements, all installed Tier 2 equipment and the installation was delayed in two of these cases due to the equipment availability. One of these three customers cited seasonal (summer) demand as the reason for the equipment not being readily available.

The fourth case (in which the equipment was not available) involved a new construction/renovation project that installed a Tier 1 unit. The customer wanted the equipment within 2 to 6 months. The planned installation date was delayed because the wrong model was delivered. Finally, the last case was for an emergency replacement in which a Tier 1 was finally installed. The customer needed it immediately but the installation was delayed two weeks because of equipment availability, Most of the participating customers indicated they wanted the equipment installed within 2 months (52%) while 19% wanted the equipment immediately. For new buildings and renovations, the timeframe was longer with 8 of 16 wanting the equipment installed in the 2 to 6 months timeframe. Installation of all of the 4 emergency replacements were wanted within 2 months while one (1) was wanted immediately.

The planned replacement customers indicated that almost one-quarter (6 of the 25) the equipment was wanted for installation immediately. The summary of these timing requirements is shown in the following table.

Table 4-8. Schedule for Installation

At the time that you company first identified the need for air conditioning equipment, how quickly did you want the equipment installed?	Type of Project			
	All (n=48)	**New Building/ Renovation (n=17)**	**Planned Replacement (n=25)**	**Emergency Replacement/ Other (n=6)**
Immediately	9	1	6	2
Within 2 weeks after decision	2	0	1	1
Between 2-4 weeks after decision	4	1	2	1
Between 1-2 months after decision	10	4	6	1
Between 2-6 months after decision	11	8	3	
Between 6 months to 1 year after	9	3	5	1
Between 1-2 years after decision	1	0	1	
More than 2 years after decision	1	0	1	
Median	**1-2 mos.**	**2-6 months**	**1-2 mos.**	**Within 2 weeks**

4.4.7 Effectiveness of Program

The participating customers were asked to rate various aspects of the program in terms of influence on their decision to install energy-efficient air conditioning equipment. The rating is based on a scale of 1 to 5, where “5” is “Very Influential,” and “1”is “Not At All Influential”.

The program component that had the greatest influence was the discussions on Cool Choice with the Equipment Supplier/HVAC contractor. Over a third (40%) rated it a “5” or “very influential.” Those respondents who stated that discussions with their HVAC contractor were not influential in making their decision had, in general, already decided to select energy-efficient equipment.

One-third of the participating customers rated the Cool Choice Rebates as very influential in their decision to purchase energy-efficient equipment while 27% said the rebates were not at all influential.

Since the program targets the HVAC contractors and suppliers, it is not surprising that Cool Choice materials and discussions with the Cool Choice or the utility rep were less influential that the HVAC contractor and the rebates. Those who stated that the utility or program was not influential generally had no contact with the utility representative or exposure to the program itself prior to selecting their equipment. Likewise, many of the participating customers may not have seen the Cool Choice materials, which are provided to the HVAC contractors for their customers.

Table 4-9. Rating of Various Components of Cool Choice Program

Factor	Avg. Rating	5 Very Influential	4	3	2	1 Not at All Influential
Discussions on Cool Choice with Equipment Supplier/ HVAC Contractor	3.47	40% (19)	13% (6)	17% (8)	13% (6)	17% (8)
Cool Choice Rebates	3.06	33% (16)	8% (4)	15% (7)	15% (7)	27% (13)
Cool Choice Materials Describing the Benefits of Energy Efficient Air Conditioning Equipment	2.28	13% (6)	10% (5)	15% (7)	8% (4)	52% (25)
Discussions on Cool Choice with Utility Rep/MaGrann Rep	2.23	19% (9)	6% (3)	10% (5)	6% (3)	56% (27)

4.4.8 Regional Initiative

Respondents typically cited greater participation, providing greater benefits to the utility grid and cost-effectiveness as the largest benefits of a regional program. One customer who operates a multi-state chain liked the administrative ease of having a unified program. Most respondents, however, did not identify benefits that directly affect the participant.

Most respondents saw no disadvantages to a regional program. A few stated that it would only be a disadvantage if the programs got so large that they became very bureaucratic or complicated.

4.4.9 Satisfaction/Recommendations

All 48 of the participating customers said they were satisfied with their company's experience in participating in the Cool Choice program. Over one-third (20) had no suggestions for program improvement when asked how to ensure more businesses install energy-efficient air conditioning equipment. The remaining had these suggestions:

- 15 suggested increased marketing and promotion of the program
- 9 thought the rebates should be increased
- 2 thought someone needed to be involved earlier in the decision-making process
- 1 wanted large units covered
- 1 mentioned the equipment list should be kept updated

It is interesting to note that of the 9 that thought the rebates needed to be increased, 7 of them were in the group that indicated they were at least 70% likely to install the same energy-efficient equipment without the Cool Choice program. Only one said there was a zero probability they would install the equipment without the program. The remaining customer in the group of 9 was in the 50-59% likelihood group.

4.5 NATIONAL CHAIN ACCOUNT INTERVIEWS

In reviewing the Cool Choice program marketing strategy, we wanted to examine the role of the headquarters for national chain accounts in specifying air conditioning equipment in their stores or businesses.

There were some visits by MaGrann to regional headquarters of national chains but there was no regional list of national chain account representatives to use in the sampling plan. Hagler Bailly staff developed a list to target with interviews using this approach:

1. We searched the state Web-sites for the six participating states and found useful lists on three of the state sites that included:
   - The Top 100 Companies Headquartered in Connecticut
   - 1998 Top 100 Employers in New Jersey
   - Rhode Island' Top 50 Employers in 2000
2. We identified the Fortune 500 Companies on the list that were likely to have multiple facilities using the Fortune 500 Companies' Web-site.
3. We obtained telephone numbers from the Fortune 500 Companies' Web-site for the headquarters of selected companies.

Using this process we identified 20 Fortune 500 companies with notable presence in the region in terms of employment in three states.

Table 4-10. Sample List of Fortune 500 Companies' National Chains

Company/Headquarters	Type of Business	Contact
Ames Dept Stores, CT	retail	facilities manager
Automatic Data Processing, NJ	service	
Bed Bath & Beyond, NJ	retail	director of facilities
Burlington Coat Factory Warehouse, NJ	retail	
CVS Corporation, RI	retail	purchasing agent
Federated Dept Stores, OH	retail	store planning dept, construction group
First Union Corp, NC	financial	
Grand Union Co, NJ	supermarket	
Home Depot, GA	retail	
JC Penney, TX	retail	
K-Mart, MI	retail	
Landstar Systems, CT	trucking	
Liz Clairborne, NY	retail	
Marriott International, MD	lodging	
Merrill Lynch, NY	financial	operations/procurement services
Pitney Bowes, CT	office machines	facilities operations dept
Sears Roebuck, IL	retail	
Summit Bancorp, NJ	financial	facilities dept
Toys R Us, NJ	retail	
WalMart Stores, AR	retail	

Hagler Bailly staff have attempted to contact all of these companies but have not been very successful in reaching the appropriate person to conduct an interview.