



**National Residential Home Appliance
Market Transformation
Strategic Plan**

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Appliance Committee**

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Table Of Contents

| | | |
|---------------------------|---|-----------|
| <u>1</u> | <u>Introduction</u> | 1 |
| 1.1 | <u>Purpose of Document</u> | 1 |
| 1.2 | <u>Rationale for Continued Support</u> | 2 |
| <u>2</u> | <u>Background</u> | 2 |
| 2.1 | <u>Appliance MT History</u> | 3 |
| 2.2 | <u>Energy Star Branding</u> | 4 |
| 2.3 | <u>Market Success</u> | 4 |
| 2.4 | <u>Market Description</u> | 5 |
| 2.5 | <u>MT Program Considerations</u> | 5 |
| <u>3</u> | <u>Methodology</u> | 5 |
| <u>4</u> | <u>National Appliance Strategic Plan Outline</u> | 7 |
| <u>5</u> | <u>Overarching Market Goals</u> | 8 |
| <u>6</u> | <u>Overarching Strategy</u> | 9 |
| <u>7</u> | <u>Refrigerator Market Plan</u> | 14 |
| 7.1 | <u>Background</u> | 14 |
| 7.2 | <u>Refrigerator Strategy</u> | 14 |
| <u>8</u> | <u>Clothes Washer Market Plan</u> | 17 |
| 8.1 | <u>Background</u> | 17 |
| 8.2 | <u>Clothes Washer Strategy</u> | 17 |
| <u>9</u> | <u>Dishwasher Market Plan</u> | 20 |
| 9.1 | <u>Background</u> | 20 |
| 9.2 | <u>Dishwasher Strategy</u> | 20 |
| <u>10</u> | <u>Room Air Conditioner Market Plan</u> | 23 |
| 10.1 | <u>Background</u> | 23 |
| 10.2 | <u>Room Air Conditioner Strategy</u> | 23 |
| <u>11</u> | <u>Strategic Plan Summary</u> | 25 |
| <u>Appendix A:</u> | <u>Market Profile</u> | 27 |

| | | |
|-----------------|--|-----------|
| <u>A</u> | <u>Market Characterization</u> | 27 |
| A.1 | <u>General Market Trends</u> | 27 |
| A.2 | <u>Manufacturing and Product Trends</u> | 28 |
| A.3 | <u>Motivation for New Appliance Purchase</u> | 28 |
| A.4 | <u>Energy-Efficient Appliance Purchase Reasons</u> | 28 |
| A.5 | <u>Existing Market Size and Stock</u> | 29 |
| A.6 | <u>Sales and Trends</u> | 29 |
| A.7 | <u>Manufacturer Market Share</u> | 30 |
| A.8 | <u>Appliance Manufacturers</u> | 31 |
| | <u>Appendix B: Distribution Chain Analysis</u> | 33 |
| <u>B</u> | <u>Distribution Chain</u> | 34 |
| B.1 | <u>Major Manufacturers</u> | 35 |
| B.2 | <u>Niche Manufacturers</u> | 35 |
| B.3 | <u>National Retailers</u> | 35 |
| B.4 | <u>Independent Retailers</u> | 35 |
| B.5 | <u>Single Family Builders</u> | 36 |
| B.6 | <u>Multi-Family Builders, Developers and Property Managers</u> | 36 |
| B.7 | <u>Manufactured Homes Manufacturers</u> | 36 |
| B.8 | <u>Remodeling Contractors</u> | 37 |
| B.9 | <u>Public Housing Authorities</u> | 38 |
| B.10 | <u>E-Commerce</u> | 38 |

1 Introduction

The market for energy efficient home appliances has increased significantly over the past few years largely due to the strong commitment from the market transformation (MT) community (defined as electric and gas utilities, public benefit administrators, advocacy groups, and federal government agencies that are interested in energy-efficient markets). Educational efforts, financial incentives and market support have been effective in demonstrating to manufacturers that consumers desire energy-efficient features. This market movement has paved the way for increased federal minimum standards and the corresponding increase in ENERGY STAR levels. While these developments are indicative of our success, they present new challenges for further influencing this market as per unit savings decline. Therefore a well-defined national strategic plan is crucial for continued market influence.

The appliance market will undergo a transition over the next few years that will impact the approach to promoting energy efficient appliances. Recently, federal minimum standards for room air-conditioners increased (October 2000). Refrigerator minimum standards will increase in July 2001. According to the current Notice of Proposed Rulemaking, clothes washer standards are scheduled to increase in 2004, but any number of legislative issues could stall that implementation date. The test procedure used to measure dishwasher performance is expected to be completely revised in 2001, which may necessitate revised standards. Corresponding to the known and anticipated federally mandated changes are increased ENERGY STAR performance qualifications. As minimum standards increase and the economically justified technical potential is approached, the energy savings margin diminishes. As a result, establishing cost effectiveness of MT activities will become more challenging.

Aside from the MT cost effectiveness impact, the changing appliance market landscape has implications to all stakeholders. Manufacturers will be making substantial capital investments to design new product lines and even new production platforms. This will directly affect product availability and costs. Anticipating and planning for these changes is paramount to continue to condition the energy efficient appliance market. This National Residential Home Appliance Market Transformation Strategic Plan (Appliance Strategic Plan) provides a comprehensive guide for the MT community to approach the appliance market over the next three to five years.

1.1 Purpose of Document

This document is intended to provide a common focus and direction for the MT community's involvement in the appliance market. The focus is primarily long-term (three to five year horizon) with clear implications for the short-term (one to two year horizon). It is intended to be a dynamic document that offers a foundation for individual program planning and implementation and serve as a guide for those currently promoting home appliances or plan to in the future. The Appliance Strategic Plan is intended to be comprehensive, current, flexible and applicable to all stakeholders in the MT community.

At present, it addresses four ENERGY STAR product areas: clothes washers, refrigerators, dishwashers and room air-conditioners (room A/C). That does not preclude emphasis on other

appliances as technologies develop. CEE, ENERGY STAR and advocacy groups will continue to monitor new product opportunities and incorporate them into long-term planning as appropriate.

1.2 Rationale for Continued Support

Even though the performance threshold between federal minimum standards and ENERGY STAR levels is narrowing, continued effort in the appliance market is still necessary and beneficial for many reasons as stated below:

1. *Support for the ENERGY STAR Program.* ENERGY STAR is the primary tool used to generate awareness and as more products are labeled, more exposure is received, and more opportunities to cross-promote are available. By maintaining a market presence, the MT community can support ENERGY STAR appliances and influence other areas such as lighting and consumer electronics.
2. *Help prevent delays in standards implementation dates.* Manufacturers have the ability to petition the DOE to delay the implementation dates of federal minimum standards if they foresee a technological difficulty in compliance. The implementation date for the most recent refrigerator rulemaking was delayed by this process in 1995 when a small group of manufacturers expressed concern due to uncertainty about the cost of the required insulation. Their actions effectively delayed energy savings for three years, from 1998 to 2001, and may have stalled R&D investments as well as future standards proceedings. Consistent market support will decrease the likelihood of delays in the implementation of the clothes washers standards.
3. *Promote further product development for higher efficiency.* There is still opportunity for energy performance improvements in all product categories. Promoting top performing products will continue to encourage manufacturers to push the energy performance envelope.
4. *Influence on other appliances in the future.* Backing out of the home appliance market could jeopardize the support for other appliance categories with potentially significant energy savings in the future such as dryers and freezers. Re-establishing a presence in the market is a costly and time-intensive impediment to future activities in the residential home appliance sector.

2 Background

Home appliances represent a significant portion of household energy consumption. The 1997 Residential Energy Consumption Survey showed that over 26% of residential energy use could be attributed to home appliances¹. That represents 2.7 quadrillion BTUs or 2.9% of the nation's annual energy load. Considering that residential appliances remain in service for an average of 9 to 15 years with efficiency declining with age, the MT community has targeted home appliances as a tremendous opportunity for energy and environmental savings.

¹ This estimate includes the energy use of refrigerators, freezers, lights, televisions, personal computers, washing machines and most small appliances. It does not include the energy use of room air conditioners or water heating.

The energy-efficiency community has had a long history with the home appliance market. There is a strong commitment to reducing consumers' energy consumption and encouraging the manufacture of energy- and super-efficient home appliances. To effectively chart the future direction, a review of past accomplishments, current market conditions and resource constraints is provided.

2.1 Appliance MT History

Up until the early 1990's, utilities engaged in demand-side management (DSM) or resource acquisition as a means to control electricity demand. There was no attempt to "intervene" or become a part of the market. A shift in thinking caused by the need to become more cost-effective prompted the conservation community to evaluate how to instill a lasting, sustainable change in consumer behavior. DSM funding shifted between 1992-1994 from traditional rebate programs to regional and statewide MT efforts.

The first effort under the new MT paradigm occurred in 1991, when the Consortium for Energy Efficiency (CEE) was formed to administer the Super-Efficient Refrigerator Program (SERP). SERP pooled incentive dollars from multiple utilities nationwide to support the development of a higher-efficiency refrigerator. It demonstrated that higher efficiency levels were possible and cost-effective, and set the stage for the raising of minimum federal standards by 25-30%. SERP was the first step towards approaching energy efficiency from a market perspective.

The MT community has been most active in the clothes washer market. In 1992, utilities from California, Oregon, Washington, Idaho, and Utah joined to aggregate their influence on the clothes washer market and formed the Western Utility Consortium (WUC). The WUC was developed with the purpose of defining consistent efficiency levels for clothes washers. Building upon the work by the WUC, CEE launched its High-Efficiency Residential Clothes Washer Initiative (RCWI) in 1993. The RCWI included a tiered performance specification based on energy and water consumption. With the addition of home appliances to the ENERGY STAR program in 1997, market share and consumer acceptance soared. In 1999, national market share was up to 8.5% and as high as 17% in some areas with programming.

The ENERGY STAR program, a voluntary partnership between the U.S. DOE and the U.S. EPA, local utilities, and industry continues to be a major contributor to the success of MT. In 1997, ENERGY STAR expanded to include clothes washers, dishwashers, refrigerators, and room A/Cs. This provided the consistent platform and message that helped the MT community to work more effectively together. Consistent performance specifications and brand equity have allowed statewide and regional programs to modify programs to fit their needs while still sending a unified message to the market.

Shortly after ENERGY STAR expanded to home appliances, CEE launched the Super-Efficient Home Appliances Initiative (SEHA) in response to concerns for more stringent performance levels. The Initiative aims to increase the sale and market share of "super-efficient" appliances, while contributing to the increased sale and market share of ENERGY STAR appliances. This Initiative established a three-tiered performance specification. The ENERGY STAR levels represent the first tier. The second tier is set beyond ENERGY STAR such that there is at least a

modest amount of available product. The third tier, if appropriate, represents the maximum technical potential with product availability not a criterion. These tiers provided a target for the next generation of ENERGY STAR products.

2.2 Energy Star Branding

The U.S. EPA introduced the ENERGY STAR program in 1992 with computers, monitors and printers. In 1996, DOE agreed to work jointly with EPA and introduced ENERGY STAR labels for home appliances. As of August 2000, the ENERGY STAR label covered 31 consumer product categories, and is planning to add several more in 2001.

ENERGY STAR is an information and branding campaign designed to facilitate consumer's identification and purchase of energy efficient products. The mission of the program is to achieve significant reductions in environmental emissions and energy consumption by permanently transforming markets toward energy-efficient products. The ultimate goal of ENERGY STAR is to have widespread brand recognition associated with the concepts of environmental protection and energy bill savings.

EPA and DOE recently conducted a brand audit to develop a strategy to increase the ENERGY STAR brand effectiveness. Market research indicated that 30% of consumers were aware of the ENERGY STAR brand, but they had a poor understanding about the brand's message. The audit also indicated a low awareness among the media. From the audit results, EPA and DOE are revising their brand strategy to accomplish consistency in the brand message from all parties, a standard graphical display of the ENERGY STAR logo, and an increase in consumer awareness of the logo by 10 percentage points by the end of 2001. This should help accomplish the long-term goal to achieve a unified brand campaign in all markets among all partners.

In the coming years, ENERGY STAR will focus on a systems approach similar to the existing ENERGY STAR Homes Program. By targeting the new construction, new occupant, and remodeling markets, the ENERGY STAR program can help consumers realize the great savings that exist. The ENERGY STAR Home Improvement Program was launched in October 2000 and provides consumers in the remodel market a variety of tools. In addition, national coordination with MT groups and new collaboration on current and proposed program design and evaluation will be stressed.

2.3 Market Success

Indicators of market success include the increasing number of energy-efficient appliances on the market and increasing sales of ENERGY STAR-qualified products. In 1999, the number of ENERGY STAR-qualified products rose for all four appliances. The largest increase was for refrigerators, where the number of qualifying models increased from 173 in January to 257 in December. National market share for ENERGY STAR-qualified appliances ranged from 8.5% for clothes washers to 24.4% for refrigerators.

The increasing number of manufacturers participating in voluntary programs demonstrated to DOE that higher efficiency levels were technologically feasible without the associated high

incremental costs. In 1997, DOE published the final rule for new refrigerator and room A/C minimum efficiency standards. Room A/C minimum efficiency increased by 3-17% (depending upon performance category) effective October 1, 2000. Increased refrigerator standards will take effect on July 1, 2001, and raise the minimum required efficiency generally by 30%. And recently, DOE released a Notice of Proposed Rulemaking for clothes washer standards proposing to raise the minimum efficiency by 21% in 2004 and by 35% in 2007.

Since these increased federal minimum standards exceed ENERGY STAR and even SEHA tiers in some cases, in 2000 the ENERGY STAR program announced increased ENERGY STAR performance levels for all labeled home appliances. There still remains some potential to push the performance bar higher by continuing to establish SEHA tiers above ENERGY STAR, but should be evaluated based upon the products economical and technological feasibility.

2.4 Market Description

Compiling and analyzing the home appliance market data provides the foundation for the Appliance Strategic Plan. Understanding current and projected conditions help formulate a realistic approach further increasing our effectiveness. A detailed market characterization including trends and sales is provided in Appendix A. Appendix B presents a distribution chain analysis.

2.5 MT Program Considerations

The Appliance Strategic Plan is intended for the MT community. Each MT group operates under certain constraints that need to be factored into all efforts. The constraints to consider are listed below.

- Program budgets are often tight and uncertain from year to year.
- Due to system reliability issues, utilities are increasing their emphasis on peak-load reduction and demand-side resource management.
- There is general uncertainty in the utility market due to restructuring, mergers and legislation issues.
- All MT efforts require quantifiable goals that are usually tied to cost-effectiveness or kWh reduction.

3 Methodology

The general approach used to develop this Appliance Strategic Plan was top-down, starting with a focus on the entire appliance market and narrowing down to product-specific issues. The specific steps taken are listed below.

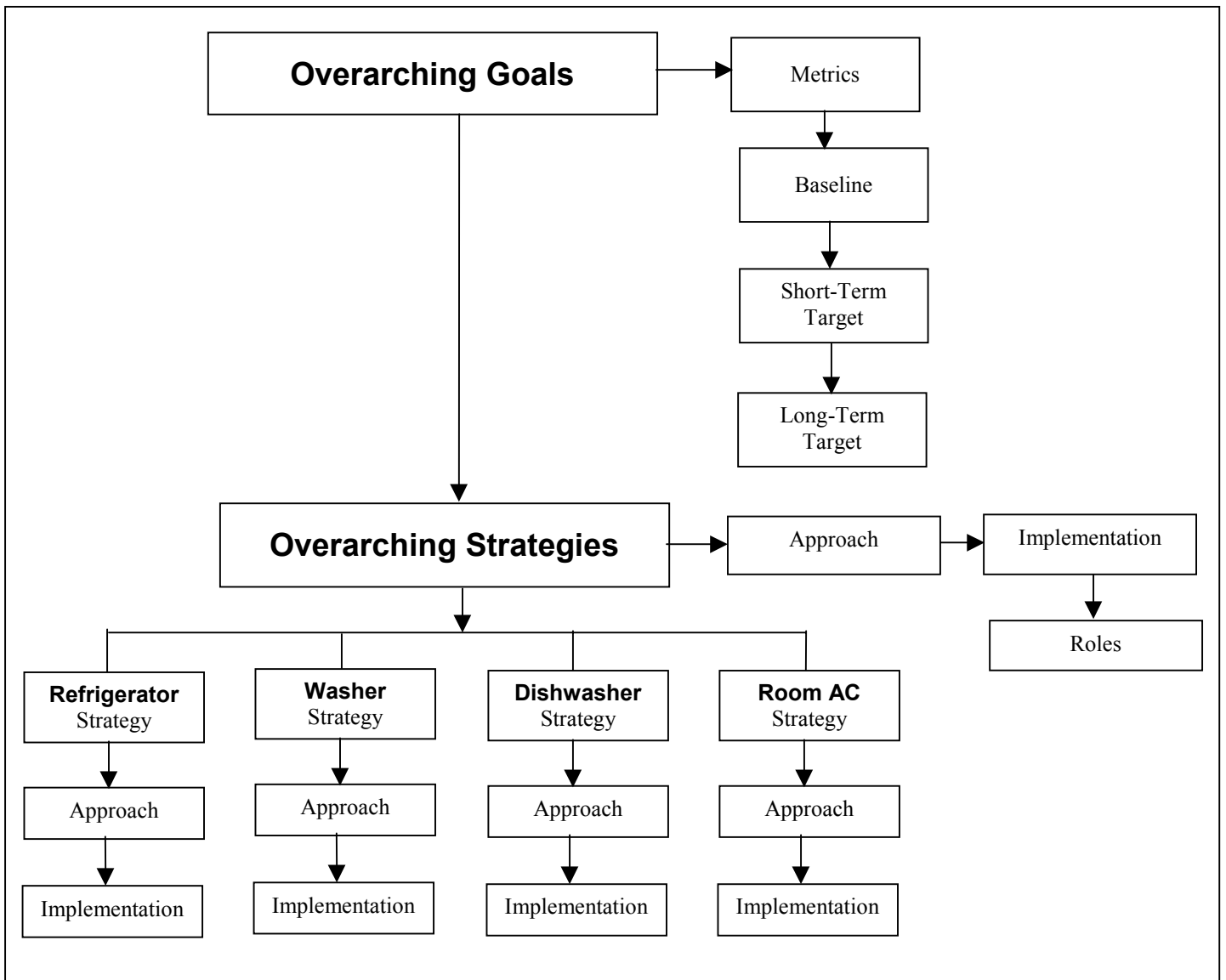
1. Reach consensus on the need for a national strategic plan among the CEE Appliance Committee members.
2. Gather all known inputs including the existing knowledge of the market, ENERGY STAR goals and future directions, and known MT community constraints.

3. Establish overarching appliance market goals with corresponding metrics.
4. Consistent with the overarching goals and incorporating the known inputs, develop a comprehensive overarching market strategy including the rationale, approach and implementation methods.
5. Develop product-specific strategies including the rationale, approach and implementation methods.
6. Identify potential roles for CEE and other MT groups.
7. Reach consensus on the final Appliance Strategic Plan.
8. Promote Appliance Strategic Plan to the MT community and identify appropriate ways to support.
9. Depending upon changing market conditions, monitor the goals, strategies, implementation methods, and roles, then revise as necessary.

4 National Appliance Strategic Plan Outline

The Appliance Strategic Plan is the result of the hard work and dedication of the CEE Appliance Committee. Much effort was devoted to ensure this strategic plan is comprehensive and applicable to all interested organizations. This was accomplished by taking a top-down approach starting with general, overarching market goals moving down to product-specific strategies that ultimately support the overarching goals. The following chart presents an outline of this Appliance Strategic Plan that results in a comprehensive plan that accommodates all interested MT parties regardless of the level of programming.

Chart 4.1: Appliance Strategic Plan Outline



5 Overarching Market Goals

The overarching market goals are the cornerstone of the Appliance Strategic Plan with all related activities and efforts designed to support these goals. They are consistent with the MT community's constraints and the ENERGY STAR goals, thus providing a consistent direction. The following goals are intentionally general and qualitative to avoid an inaccurate sense of accomplishment or lack thereof due to uncontrollable market, economic, or legislative factors. The identified metrics could form the basis for qualitatively establishing targets and tracking progress over time.

1. *Consumers understand and value the benefits from energy-efficient features.*

Metric

- Willingness to pay for energy efficient feature.
- General recognition and understanding of the ENERGY STAR label.
- ENERGY STAR sales.

2. *Retail sales force is knowledgeable about ENERGY STAR and considers it a meaningful distinction for making a sale.*

Metric

- Corporate commitment to ENERGY STAR reflected by incorporating ENERGY STAR into sales training and in-store marketing.
- Prominent display of ENERGY STAR ads and promotions at retail.
- Consumer intercept and salesperson surveys.
- ENERGY STAR sales.

3. *Manufacturers market and promote energy-efficient products and/or features.*

Metric

- ENERGY STAR labeling on products, EnergyGuide label and/or product literature.
- Promotion of ENERGY STAR in manufacturer-sponsored advertising campaigns.
- Incorporation of ENERGY STAR messages into retail training materials.

4. *Energy efficiency, defined as ENERGY STAR performance levels, becomes a standard feature or is available across all manufacturers product lines.*

Metric

- Range of ENERGY STAR model availability in price and features as compared to all models.

5. *ENERGY STAR represents the most energy efficient quality products available.*

Metric

- Performance specification set at appropriate level relative to federal minimum standards.
- Manufacturers utilizing the most technically feasible technology.

6 Overarching Strategy

The overarching market strategy incorporates known market characteristics and identifies objectives that support the overarching goals. The rationale for the stated objective is included followed by an approach, implementation methods and recommended roles.

1. *Continue to support and promote ENERGY STAR.*

Rationale

ENERGY STAR is the primary vehicle to deliver the energy-efficiency message through the brand awareness campaign and national marketing platform. The logo will continue to proliferate increasing exposure and ultimate understanding of the message. It is clearly the most cost effective, leveraged strategy to utilize.

Approach

ENERGY STAR support can be achieved by product labeling, advertising, increasing partner participation, encouraging model availability, national promotions and coordination.

Implementation Methods

- Conduct in-store labeling in program area.
- Encourage manufacturers to permanently affix label on qualified product.
- Maintain ENERGY STAR marketing platform and incorporate newly revised brand strategies.
- Coordinate nationally when possible, with regional implementation.

2. *Monitor technological advances and the potential impact on appliance energy consumption.*

Rationale

The revised ENERGY STAR performance levels are approaching the economically justified technical potential for most home appliances. It is still important to monitor emerging technologies that could positively impact the energy consumption. Sensors are a good example of a technology that could have applications for all appliances.

Approach

Maintain manufacturer relations to monitor product developments. Monitor DOE's national labs, such as LBNL, PNNL and ORNL, for applicable R & D.

Implementation Methods

- Conduct regular meetings with individual manufacturers.
- Maintain regular contact with the national labs to stay abreast of developments.
- Continue to include manufacturers in program planning and coordination.

3. *Target consumers making near-term buying decisions during major renovation, remodel or new home purchase.*

Rationale

Since appliances have a long lifetime (9-15 years) and the majority of consumers purchase upon product failure, targeting consumers pre-disposed to purchase an appliance will increase our effectiveness. Consumers engaging in a home remodel, renovation, or new home purchase are very likely to purchase multiple appliances providing an excellent opportunity to reinforce the ENERGY STAR message and potentially cross-promote with other ENERGY STAR products. This concentrated effort should result in a sales spike, which will signal to the manufacturers an increase in demand.

Approach

For the remodel and renovation markets, the consumer is the primary decision maker. Therefore support at the retail end remains to be crucial. The newly launched ENERGY STAR Home Improvement Program (HIP) will be instrumental since it is designed to support this market and provides a multitude of tools. One such tool is the ENERGY STAR in Your Kitchen concept.

The new construction market requires additional investigation to determine the most effective approach. The research indicates that consumers are still the primary decision maker, but there lacks hard data to indicate the influence of the builder. An initial approach is to work with the ENERGY STAR Homes program since this represents builders and consumers pre-disposed towards energy efficiency.

Encourage manufacturers to offer ENERGY STAR suite to builders and remodelers. Include appliances (some facet) into the ENERGY STAR Homes program.

Implementation Methods

- Participate in the ENERGY STAR in Your Kitchen promotion.
- Promote the ENERGY STAR Home Improvement Program.
- Research the new construction market channel to better understand motivations and effective tactics.

4. *Enlist buyer as promoter.*

Rationale

When a consumer has a positive experience with a product, they often tell a friend. They want to share their experiences and be perceived as a savvy buyer. This “word of mouth” form of advertising is far more effective than any paid campaign.

Approach

First, we need to ensure the consumer has a positive experience with an ENERGY STAR product. Therefore ENERGY STAR products must represent quality products that provide perceptible energy and monetary savings. Second, the consumer must become aware of those benefits. This can be done through product labeling and education.

Implementation Methods

- Label products.
- Conduct direct-mail campaign to previous purchasers.
- Gear messaging to address consumers “one-upmanship.”

5. *Target the regionally significant independent retailers and distributors.*

Rationale

The national ENERGY STAR program will continue to strengthen and expand the relationship with national retailers. The national retailers find it inefficient to participate at the regional or local level. The independent retailers, representing 45% of all sales, can react quicker to program changes and are often looking for a competitive advantage. Targeting the regionally significant independents can fill the gap between the nationals and the small mom-and-pop stores since there is enough uniformity to apply general tactics.

Approach

After identifying the regionally significant independent retailers, determine what tools could be developed to help them promote ENERGY STAR (training modules, kiosks, promotions, etc.). Look for opportunities to coordinate the development of these tools.

The majority (85%) of the independent retailers procure products through a buyers group. Since there are only a few buyers groups, establishing a relationship should be relatively easy. These groups can be enlisted to promote ENERGY STAR to the target retailers as well as all independents.

In the multi-family, remodel, and new home markets, distributors sell directly to the customer (generally the builder). Each sale is generally for multiple appliances. Distributors know very little about ENERGY STAR and would be more receptive to sales training than large retailers due to less turn over among employees.

Implementation Methods

- Identify regionally significant independent retailers in active MT program areas.
- Query the retailers to determine desired tools.
- Develop prototypes (if necessary) and pre-test tactics.
- Develop methods that can be easily replicated or customized.

6. *Tap into and build alliances with organizations that have a common interest in supporting the appliance market.*

Rationale

Collaborating with organizations that have similar goals can provide highly leveraged opportunities. These organizations have greater resources to expend than regional or even the national ENERGY STAR program.

Approach

Organizations to target include manufacturers, AHAM, AWWA, AVB, NARDA, ARCA, NAHB, BIA (Building Industry Association), and remodeler associations. Building and/or maintaining relationships through on-going and open communication will increase the likelihood of collaboration.

Implementation Methods

- Identify all potential organizations.
- Identify their motivations and potential resource-sharing opportunities.
- Develop targeted approaches.

7. *Gain a better understanding of consumers, their motivations and receptivity to energy efficiency messaging.*

Rationale

According to the manufacturers, all products and messages are designed to respond to consumer preferences. This is determined through on-going, comprehensive consumer research. This explains the reason that energy-efficient features are not more prevalent since they are of low importance to most consumers. Although this research is expensive and often cost-prohibitive for the MT community, every effort should be made to better understand the consumers we are trying to influence.

Approach

The limited amount of consumer research conducted within the MT community can serve as a starting point. Additional research to conduct can then be identified. Manufacturers or other allies might also be willing to share information in a limited capacity.

Implementation Methods

- Compile and catalogue existing consumer research.
- Develop a research agenda.
- Identify gaps in that agenda and determine the most cost effective manner to fill the gaps.

7 Refrigerator Market Plan

7.1 Background

Refrigerators are reaching 100% saturation with the number of households owning a second refrigerator at 15%. Of that existing stock, the average refrigerator still uses over 1140 kWh/yr and with over 116 million units in service, there remains significant opportunity for energy savings. With flat sales projected and 100% saturation, the industry intends to influence discretionary purchases during a kitchen remodel or new home purchase. They will also encourage consumers to upgrade to obtain the latest features.

Refrigerators technology is approaching an economically justified threshold with the new federal minimum standard and corresponding ENERGY STAR level. Savings on a per unit basis will be minimal, but the savings from replacing a pre-1993 unit are substantial.

The revised ENERGY STAR levels will become effective January 1, 2001, six months prior to the standards implementation date of July 1, 2001. This will seriously affect model availability throughout 2001.

7.2 Refrigerator Strategy

1. *Target the remodel market.*

Rationale

The rationale behind a focus on the remodel market is that it is consistent with the overarching strategy to target near-term buyers. Refrigerators are a common replacement item in a kitchen remodel. The remodeling market presents a large opportunity for savings; 83% of total annual refrigerator shipments, over 7.1 million units, are used in the replacement/remodeling market.

Approach

- Participate in and support the ENERGY STAR Home Improvement Program.

2. *Target replacement of pre-1993 units.*

Rationale

- Pre-1993 units use at a minimum 821 kWh/year, but due to the significant number of older models in use, the average refrigerator still uses over 1,140 kWh/year. Replacing these with new ENERGY STAR units would provide significant energy savings, and would be a cost-effective program.
- Savings from replacement of pre-1993 units is only cost-effective if the old refrigerators are retired and not re-used. If the older units continue to be used, especially as second refrigerators, any energy savings can be quickly eroded.

Approach

- Publicize the huge savings opportunity to consumers for replacing an older refrigerator after the new ENERGY STAR levels become effective in January 2001. Consider tiered incentive programs for retirement and early-replacement of older models.
- Work with ARCA and other recycling agencies are necessary to remove refrigerants and ensure savings.

3. *Investigate the compact refrigerator market (<= 12 cf.) to determine potential energy savings.*

Rationale

- Compact refrigerator energy use ranges from 327-419 kWh/year for models with automatic defrost. For units with manual defrost, annual energy use ranges from 256-405 kWh/year.
- Technical improvements such as enhanced condenser HT surface, enhanced evaporator HT surface, and reduced gasket heat leak were estimated to reduce annual kWh consumption by 6% with a manufacturer cost of only three dollars. MT community discussions with industry reveal that the technical potential to reduce consumption by up to 30% exists, but at a greater cost to manufacturers.
- Compact refrigerator annual shipments were projected to grow 5.0% between 1999 and 2000 from 1.51 million to 1.59 million, and are expected to reach over 1.7 million by 2005. (Source: Appliance magazine, January 2000). They are prevalent in hotels, dormitories, and offices.
- Compact refrigerators were treated as separate product classes in the 1997 rulemaking on increased minimum efficiency standards for refrigerators; minimum standards increase only by 2-3%.

Approach

- Explore ENERGY STAR label for compact refrigerators, possibly as an extension of the current specification.
- Work with industry to motivate the manufacture more efficient units.

4. *Support the retailers and manufacturers throughout the revised ENERGY STAR and standards implementation transition.*

Rationale

There are currently concerns among the MT community about ENERGY STAR refrigerator availability when the new levels take effect in January 2001. Without support from the MT community, manufacturers will focus on just meeting the new standard and not producing ENERGY STAR-compliant models.

Approach

- Communicate our support to manufacturers by offering programming at the new levels and encourage them to produce ENERGY STAR-qualified products.
- Encourage substantial rebates for the super efficient units (15-20%) above the new standard. ENERGY STAR will be at 10%. ENERGY STAR should be readily available so it doesn't need incentives. SEHA incentives will encourage manufacturers to introduce to market laying the groundwork for future ENERGY STAR levels. ENERGY STAR ramps up to 15% in 2004. Cost should be low initially since there is limited product.
- Need to investigate what percentage increase in efficiency the manufacturers can create using their current platforms.

5. Identify key players for the new construction segment.

Rationale

- Consumers are very likely to purchase a new refrigerator with a new home purchase. Appliance shipments to new homes are approximately 1.3 million units annually according to the Department of Commerce.
- New homebuyers are the most receptive to information and influence, since they are usually planning to make a purchase at a retail outlet. This is the opportune time to impact their decision-making process.

Approach

- Major methods of communicating with potential buyers of refrigerators in the new construction market include in-store promotions and salesperson influence.
- When appliances such as refrigerators are included in an appliance package sold with the home, the opportunity for influence lies with the builder. More research is needed on how to affect this market and influence their purchasing decisions.

8 Clothes Washer Market Plan

8.1 Background

ENERGY STAR sales remain strong nationally at 8.5% market share with spikes coincident to MT programs areas. There has been a steady increase in product availability, manufacturers offering products, features and price range. ENERGY STAR qualified products still require a fundamental technology leap over the standard-efficient models keeping them on the upper-end of the price range.

Clothes washers are found in 77% of the households. There is a strong correlation with income, housing sector and housing type. Clothes washers are mostly found in single-family homes (92% of them) followed by 79% of manufactured homes. In the multi-family sector, the stock has declined from 48% to 40% from 1993 to 1997 respectively.

An agreement among DOE and industry was reached to establish new federal minimum standards that are expected to phase in starting in 2004 with full implementation in 2007. The 2007 performance level is 35% more stringent than the current standard. While the CEE highest performance target is x%. It should be noted the agreement has not resulted in a final rule and contention is still a possibility.

The measure for ENERGY STAR performance will change from energy factor (EF) to a modified energy factor (MEF) starting January 1, 2001. The MEF accounts for the amount of dryer energy used to remove the remaining moisture in the clothes. The MEF will be the performance measure required for the revised federal minimum standard in 2004.

8.2 Clothes Washer Strategy

1. *Continue to promote higher performance, or super-efficient, products.*

Rationale

- Continued promotion of super-efficient clothes washers is critical. The final rule is only a 35% increase in efficiency, which leaves room for improvement, even with current technologies and existing platforms.

Approach

- We need to keep the bar raised for manufacturers by focusing our efforts on ENERGY STAR-qualified or higher-efficiency clothes washers.

2. *Continue to maintain the CEE specification that includes water factor and RMC.*

Rationale

- In anticipation of changing to MEF in 2004, CEE needs to revise its tiers and maintain WF portion of specification to ensure water savings and participation among water utilities.

Approach

- A number of modifications to the CEE specification are necessary, including: revision of the current tiers to MEF and the monitoring of WF and its correlation to energy performance.

3. *Strengthen partnership with the water and wastewater industry.*

Rationale

- Water continues to be a large part of the success of clothes washer efficiency due to the fact that water savings are more tangible than energy and water shortages are a real problem in many parts of the country.
- Increased participation among water utilities presents an opportunity to share resources.

Approach

- Need to research how ENERGY STAR can be utilized by water and wastewater utilities and present a common message to the consumer.
- Maintain connection with AWWA by monitoring industry developments and proceedings at national conferences.

4. *Monitor federal standards process and respond as necessary to ensure forward movement.*

Rationale

- The proposed rule will take effect in 2004, barring any other developments. The refrigerator standards were delayed by 2 years due to industry problems and that is a possibility for this standard as well. Due to the fact that the clothes washer standard is a tiered process (2004, 2007), any delay will have a large effect on savings from the standards.

Approach

- Monitor the standards process and be ready to motivate members to act and influence DOE decision-making process through a letter-writing campaign.

5. *Look for opportunities to cross-promote with other ENERGY STAR products.*

Rationale

- Focusing efforts on the remodeling market can be an inexpensive way to promote clothes washers to consumers who are purchasing other appliances and open to influence on their decision-making process.

Approach

- Support the ENERGY STAR in Your Kitchen campaign and similar efforts to bundle appliances (and lighting) and promote the energy savings of large-scale replacements.

9 Dishwasher Market Plan

9.1 Background

Dishwasher sales have increased dramatically (59%) over the past 10 years, but are expected to taper off with only a 4% increase anticipated over the next five years. The national existing stock is at 50%. This penetration rate is not expected to increase since dishwashers are inherently a “luxury” item and there are often space limitations to their installation. Dishwashers are predominately found in single-family homes (56%) followed by 40% in the 5-8 unit multi-family dwellings. Not surprisingly, ownership correlates with income with 78% of households making in excess of \$50,000 per year owning one.

Dishwashers are one of the primary appliances replaced or added during a single-family remodel. If a dishwasher is installed in a multi-family unit, it is usually during construction or upon failure and the purchaser (owner) is extremely first-cost focused.

ENERGY STAR sales have remained strong, but that will be affected by the revised performance levels that take effect January 1, 2001. Due to an increase in the number of qualified models as compared to total model availability, ENERGY STAR is raising the bar to reinforce the integrity of the label. There still should be an adequate amount of ENERGY STAR qualified product since 151 of the current field of 259 qualified models will still qualify.

Revised federal minimum standards remain a low priority for DOE, but the test procedure is a top priority due to the recent proliferation of units using sensor technology. The current procedure does not accurately represent the energy consumption from models with soil-sensing technology since all tests are conducted with clean dishes. The manufacturing industry and AHAM plan to collaborate on a revised method to present to DOE for consideration. A new procedure is anticipated to be finalized in late 2001 with implementation a few years later.

9.2 Dishwasher Strategy

1. *Support the industry during the test procedure revision process.*

Rationale

- The dishwasher test procedure is used to measure performance, compare products, and qualify models for the ENERGY STAR rating. Revising the test procedure is a priority for manufacturers and DOE and may lead to changes in the minimum standards.

Approach

- We need to monitor the revision process, keep our members informed of any developments, and have opportunity to comment.

2. *Support the market and manufacturers during the ENERGY STAR transition.*

Rationale

- ENERGY STAR levels change on January 1, 2001, and manufacturers will be phasing in/out their products accordingly. This creates a greater savings opportunity because federal minimum standards are not changing.

Approach

- Develop an incentive structure that supports the new ENERGY STAR levels while also encouraging manufacturers to produce machines at even higher efficiencies to take advantage of the savings opportunity.

3. *Strengthen partnership with the water and wastewater industry.*

Rationale

- Dishwashers are not as widely promoted among water utilities as clothes washers, but the opportunity exists to share resources. As water programs become more market based, this opportunity will grow.

Approach

- Develop a strategy to engage water industry into supporting dishwasher promotion and MT activities such as ENERGY STAR.

4. *Target remodel market.*

Rationale

- Dishwashers are one of the key appliances replaced in a kitchen remodel. 85% of annual shipments of dishwashers are used in the replacement/remodeling market, over 4.2 million units.
- ENERGY STAR dishwashers offer many advantages other than energy efficiency, including quiet operation, quicker cycles and soil sensing technology.

Approach

- Participate in and support the ENERGY STAR Home Improvement Program.

5. *Target the new construction market.*

Rationale

- Consumers are very likely to purchase a new dishwasher with a new home purchase. Appliance shipments to new homes are approximately 1.3 million units annually according to the Department of Commerce.

- New homebuyers are the most receptive to information and influence, since they are usually planning to make a purchase at a retail outlet. This is the opportune time to impact their decision-making process.

Approach

- Major methods of communicating with potential buyers of refrigerators in the new construction market include in-store promotions and salesperson influence.
- When appliances such as refrigerators are included in an appliance package sold with the home, the opportunity for influence lies with the builder. More research is needed on how to affect this market and influence their purchasing decisions.

10 Room Air Conditioner Market Plan

10.1 Background

In 1997, 25.2 million households had at least one room air conditioner; 14.9 million households had one room air conditioner, while 7.2 million had two units. Three million households were estimated to have 3 or more units.

Saturation differs by region. In the Northeast census region, 7.8 million households had a room air conditioner. In the Midwest, 12.3 million had a room air conditioner. In the South Census region, 8.3 million households had a room air conditioner. In the West, 2.8 million households did.

Tend to be concentrated in single-family homes in the lower income groups. Of the 25.2 million households with a room air conditioner, 67.8% were in single-family homes. The largest number of households with a room A/C are 8.4 million, were in the \$25,000-49,000 income range.

Average room air conditioner efficiency use has increased steadily since 1980 when the average room air conditioner consumed 1,134 kWh/year. Average consumption of a similarly sized unit in 1996 was 820 kWh/year, with an energy-efficiency ratio (EER) of 9.08.

The efficiency distribution of models on the market is heavily weighted towards the low end with only 8.7 million performing above the 1990 minimum. (1997 RECS)

Unlike other appliance markets, the market share for room air conditioners has changed significantly in the past five years. Fedders and Whirlpool have each gained approximately 15%, and Electrolux has lost 11% market share since 1994.

ENERGY STAR sales jumped from 12% to 16% from the second to the third quarter in 1999, but will likely decrease in summer 2001 due to increased minimum standards that became effective in October 2000. The national average for 1999 was 13.3%.

10.2 Room Air Conditioner Strategy

1. *Encourage proper sizing of room air conditioner units.*

Rationale

- Consumers who overestimate their cooling needs often purchase air conditioners that use more energy than is necessary to cool a room. This type of overestimation results in excess energy use not just at times when a certain setting is used (e.g. high or extra cold), but whenever the unit is on.

Approach

- Educate consumers on their cooling needs and work with manufacturers to develop more efficient models in every product category.

2. *Encourage early replacement with recycling of older units.*

Rationale

- Older room AC units can consume much more energy than today's energy-efficient models. The average room air conditioner from 1980 consumed more than 1,100 kWh/year, while an average model from 1996 consumes 300 kWh/year less.
- With peak demand reductions increasing in importance in the efficiency community, room air conditioner savings will play a large part in preventing brownouts and blackouts in upcoming summers. Older units consume much more energy than necessary and their replacement can help to prevent reliability problems.

Approach

- Encourage early replacement of older models and focus on benefits of newer models such as less energy use, quieter operation, and more effective cooling.

3. Monitor Industry developments to ensure higher efficiency levels in the future.

Rationale

- Increased minimum standards became effective in October 2000, and manufacturers will likely focus on meeting the increased minimum standard and not exceeding the standard or the corresponding increased ENERGY STAR levels.

Approach

- Investigate the appropriateness of revised SEHA tiers for room AC.
- Determine technical potential and economic feasibility of SEHA tiers beyond the current and future ENERGY STAR levels.

11 Strategic Plan Summary

Overarching Goals

1. Consumers understand and value the benefits from energy efficient features.
2. Retail sales force is knowledgeable about ENERGY STAR and considers it a meaningful distinction for making a sale.
3. Manufacturers market and promote energy efficient products and/or features.
4. Energy efficiency, defined as ENERGY STAR performance levels, becomes a standard feature or is available across all manufacturers product lines.
5. ENERGY STAR represents the most energy efficient quality products available.

Overarching Strategies

1. Continue to support and promote ENERGY STAR.
2. Monitor technological advances and the potential impact on appliance energy consumption.
3. Target consumers making near-term buying decisions during major renovation, remodel, or new home purchase.
4. Enlist buyer as promoter.
5. Target the regionally significant independent retailers and distributors.
6. Tap into and build alliances with organizations that have a common interest in supporting the appliance market.
7. Gain a better understanding of consumers, their motivations and receptivity to energy efficiency messaging.

Refrigerator

1. Target the remodel market.
2. Target replacement of units manufactured before 1993.
3. Investigate the compact refrigerator market (≤ 12 cf.) to determine potential energy savings.
4. Support the retailers and manufacturers throughout the revised ENERGY STAR and standards implementation transition.
5. Identify key players for the new construction segment.

Clothes Washers

1. Continue to promote higher performance, or super-efficient, products.
2. Continue to maintain the CEE specification that includes water factor and RMC.
3. Strengthen partnership with the water and wastewater industry.
4. Monitor federal standards process and respond as necessary to ensure forward movement.
5. Look for opportunities to cross-promote with other ENERGY STAR products.

Dishwashers

1. Support the industry during the test procedure revision process.
2. Support the market and manufacturers during the ENERGY STAR transition.
3. Strengthen partnership with the water and wastewater industry.
4. Target remodel market.
5. Target the new construction market.

Room Air Conditioners

1. Encourage proper sizing of room air conditioner units.
2. Encourage early replacement with recycling of older units.
3. Monitor Industry developments to ensure higher efficiency levels in the future.

Appendix A: Market Profile

A Market Characterization

The data presented in this section, unless cited, is from a recent study funded by the Northwest Energy Efficiency Alliance titled “Opportunities for New Appliance Market Transformation Programs in the Pacific Northwest” and can be downloaded from www.nwalliance.org. Although the study focused on the Northwest, much of the information is applicable on a national basis.

A.1 General Market Trends

The following general trends in the retail and manufacturing industry provide an insight into the production, stocking and marketing plans of the industry.

1. Appliances are no longer considered “commodities.” Due to the fact that consumers are now willing to pay a premium price for value-added products, manufacturers are responding through product innovations. Superior performance, time flexibility, and high-end features are becoming more important to consumers. This trend is particularly noticeable in the remodeling market, where these products are likely to be the prime profit drivers for manufacturers over the next several years.
2. Consumer’s awareness of energy and environmental issues is growing but is not a major sales driver. Due to recent increases in fuel prices and the political unrest in the Mid-East, consumers are thinking about their energy usage, but are not necessarily connecting fuel prices to home energy use and efficient appliances.
3. Consumer awareness of the ENERGY STAR label is growing. However, it is still in its early stages of development and will only be sustained by multi-year outreach efforts along with regional and national coordination.
4. Economic benefits have less impact on consumer purchases, as appliances become more efficient and federal minimum standard levels increase. The second price tag is getting smaller and the payback longer.
5. Appliance marketing has become increasingly national in scope. National retailers and manufacturers develop national advertising and marketing campaigns that do not respond easily to regional efforts.
6. Approaches to product introduction differ based on sector. Manufacturers introduce new products to early adopters and then seek to expand to a broader audience. Public benefit programs tend to take the “bottom-up” approach.
7. Major retail players are forced to redefine their niche due to changes in the distribution chain. The entrance of home improvement centers such as Lowe’s and Home Depot is dramatically changing the national competition.
8. The internet will change the way appliances are marketed even if it does not emerge as a major sales channel.

A.2 Manufacturing and Product Trends

Over the past few years, consumers have begun to demand product features that address their hectic lifestyles, with less emphasis on the first cost. Manufacturers are responding to consumer desires by offering products that:

- provide superior performance,
- increase time efficiency through reduced cycle times and ease of use,
- allow for flexibility with “smart” features,
- are larger in capacity, and are
- considered high-end and are aesthetically unique.

A.3 Motivation for New Appliance Purchase

The primary motivator for the purchase of a new appliance has remained consistent with the replacement of an existing unit, presumably due to failure, representing 70-75% of sales. The remaining 25-30% are due to remodeling, discretionary purchases, new homes, multi-family, and government sales. Although the non-replacement sales are a smaller portion, it should not be discounted since the innovators and early adopters tend to be concentrated in this category. Manufacturers and retailers pay close attention to this group since they are the first group to accept or try out a new product and their experiences help to shape the technology.

Within the multi-family and government sectors, the overwhelming majority of appliance purchases are due to product failure with very few discretionary purchases. There is also a very small percentage of new construction activity in these sectors.

A.4 Energy-Efficient Appliance Purchase Reasons

According to manufacturers and retailers, consumers *choose* to purchase energy-efficient appliances for a number of reasons as listed below.

1. Economic/savings considerations if the payback is sufficient and immediate.
2. Environmental considerations with a stronger emphasis on water versus energy.
3. Better or advanced technology since this is often bundled with energy-efficient features.
4. Presence of rebates if significant enough to attract attention.

Also according to manufacturers and retailers, consumers choose to *forgo* the purchase of energy-efficient appliances for a number of reasons as listed below. In addition to those reasons, there remains the lack of knowledge of product benefits on the part of manufacturers, distributors, retailers and builders.

1. Higher purchase price.
2. Lack of confidence in energy and cost savings estimates.

3. Lack of rebates.
4. Unfamiliar technologies as in the case of horizontal-axis washers.
5. Lack of model or feature choices.

A.5 Existing Market Size and Stock

Table A.1 lists the appliance household saturation and resulting existing stock. The saturation percentages are not expected to change dramatically over the next few years. There still are a significant number of older existing appliances that are consuming far more energy than the current mandated levels.

Table A.1: Home Appliance Existing Stock

| Appliance | Saturation (% of households) | Existing Stock (Units) |
|--------------------------------------|---|-----------------------------------|
| Refrigerators-Households w/ 1 unit | 99.8% | 100,815,964 |
| Refrigerators-Households w/ 2+ units | 15.2% | 15,354,736 |
| Refrigerators-TOTAL | | 116,170,700 |
| Clothes Washers | 77.4% | 78,187,932 |
| Dishwashers | 50.2% | 50,711,036 |
| Room AC | 32.0% | 32,325,760 |

Source for the Room Air Conditioner Data: Appliance Magazine, September 1998.

A.6 Sales and Trends

Sales over the past 10 years have increase significantly as noted in Table A.2. This is probably in response to a healthy economy and increase in number of households. AHAM is projecting moderate growth in sales over the next five years, but there still are over 27 million units projected in 2005.

Table A.2: Home Appliance Shipments and Forecast

| | 1989 Actual (Shipments) | 1999 Actual (Shipments) | 2005 Forecast (Shipments) | % Change (1989-1999) | % Change (Forecast) |
|-----------------|------------------------------------|------------------------------------|--------------------------------------|---------------------------------|--------------------------------|
| Refrigerators | 6,253,000 | 9,099,000 | 9,550,000 | 45.5% | 5.0% |
| Clothes Washers | 5,610,000 | 7,313,000 | 7,760,000 | 30.4% | 6.1% |
| Dishwashers | 3,588,000 | 5,712,000 | 5,950,000 | 59.2% | 4.2% |
| Room AC | 4,678,000 | 6,114,000 | 4,550,000 | 30.7% | 3.0-4.0%* |
| TOTAL | 20,129,000 | 28,238,000 | 27,810,000 | | |

*Appliance Magazine January 2000, page 50.

Table A.3 presents ENERGY STAR sales from 1999, which are fairly significant considering the short duration of the program. Even with such strong progress, ENERGY STAR sales are still a fraction of the total unit shipments. The 2001 sales numbers for refrigerators, dishwashers and room A/C are expected to decline in response to revised federal standards and ENERGY STAR levels.

Table A.3: ENERGY STAR Home Appliance Sales

| | 1999 Sales | 1999 Shipments | 2000 2 nd Qtr. Sales |
|-----------------|------------|------------------|---------------------------------|
| Refrigerators | 24.4% | 2,220,156 | 33% |
| Clothes Washers | 8.5% | 621,605 | 10% |
| Dishwashers | 12.4% | 708,288 | 12% |
| Room AC | 13.3% | 813,162 | 29% |
| TOTAL | | 4,363,211 | |

Source: ENERGY STAR Draft 1999 Sales Data Report (www.energystar.gov/opie)
2000 2nd Qtr. Sales data from D&R International.

A.7 Manufacturer Market Share

The white goods appliance market is dominated by the “Top 5” manufacturers listed in Table A.4 and has remained fairly consistent over the past few years. Over all, Whirlpool has the highest share, but that varies depending upon the appliance category.

Table A.4: White Goods Manufacturer Market Share

| | Whirlpool | GEA | Maytag | Electrolux | Goodman |
|------------------|-----------|-----|--------|------------|---------|
| All White Goods* | 35% | 28% | 21% | 12% | 4% |
| Refrigerators | 30% | 33% | 16% | 17% | 4% |
| Clothes Washers | 48% | 13% | 26% | 12% | 0% |
| Dishwashers | 39% | 35% | 19% | 7% | 0% |

*Dishwashers, dryers, ranges, refrigerators, washers.

Source: Appliance Manufacturer (www.ammagazine.com)

Room A/C market share is spread between nine manufacturers as listed in Table A.5.

Table A.5: Room A/C Manufacturer Market Share

| Manufacturer | Market Share |
|---------------------|--------------|
| Fedders | 25% |
| Electrolux | 19% |
| LG Electronics | 15% |
| Whirlpool | 15% |
| Goodman | 12% |
| Friedrich | 4% |
| Sharp | 4% |
| Matsushita | 3% |
| United Technologies | 2% |

Source: Appliance Manufacturer (www.ammagazine.com)

A.8 Appliance Manufacturers

Although the major domestic manufacturers capture the majority of market share, there are a large number of other manufacturers that produce appliances. All known appliance manufacturers, with the respective brand names in parentheses, are listed below by product category.

Refrigerators (includes some freezer manufacturers):

Absocold
Amana Refrigeration, Inc.
Appliances International
Avanti Products
Danby Products
Elmira Stove Works
Frigidaire Company (*Frigidaire, Gibson, Kelvinator, Tappan, White-Westinghouse*)
Frigo Design
GE Appliances (*GE Monogram, GE Profile, GE, Hotpoint, RCA*)
Haier Group Company
Heartland Appliances
Inglis Limited
Klondike Refrigerator Company
Marvel Industries
Maytag Appliances (*Admiral, Jenn-Air, Magic Chef, Maytag, Norge*)
Samsung Electronics America, Inc.
Sanyo Fisher Corporation
Summit Appliance Division of Felix Storch, Inc.
Tadiran Electronics Industries, Inc.
U-Line Corporation
Viking Range Corporation
W.C. Wood Company Limited
Whirlpool Corporation (*Whirlpool, KitchenAid, Roper, Estate*)

Clothes Washers and Dryers:

Amana
Appliances International
Asko, Inc.
Avanti Products
Bosch Home Appliances
Creda
Equator Corporation
Fisher & Paykel
Frigidaire Company (*Frigidaire, Gibson, Kelvinator, Tappan, White-Westinghouse*)
GE Appliances (*GE Monogram, GE Profile, GE, Hotpoint, RCA*)
Haier Group Company
Inglis Limited
Maytag Appliances (*Admiral, Jenn-Air, Magic Chef, Maytag, Norge*)
Miele, Inc.

Sanyo
Sharp Plaza
Staber Industries, Inc.
Whirlpool Corporation (Whirlpool, KitchenAid, Roper, Estate)

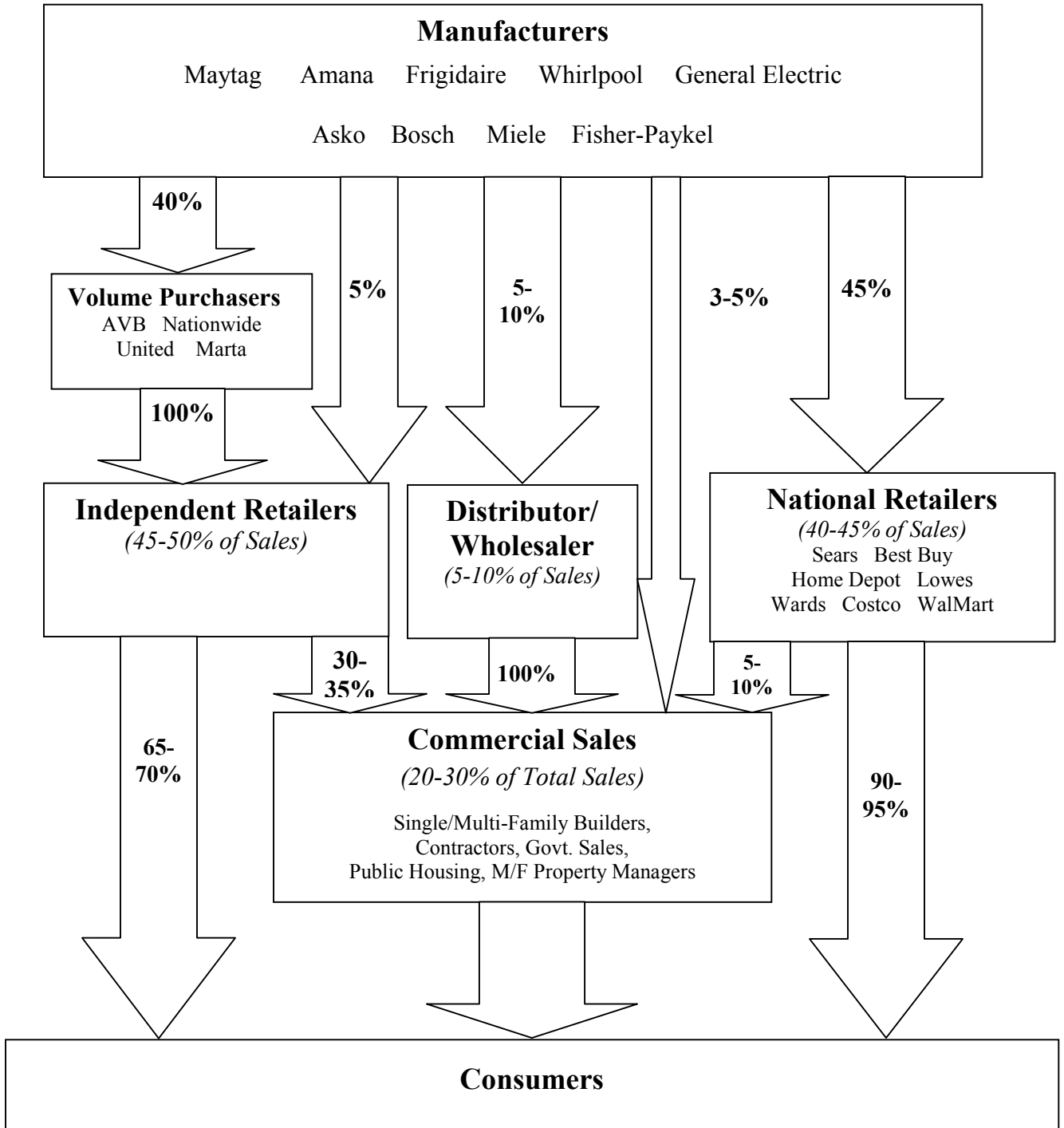
Dishwashers:

Amana
Appliance Corporation of America (Welbilt)
Appliances International
Asko, Inc.
Bosch Home Appliances
Carocelle Industries, Inc.
Elmira Stove Works
Equator Corporation
Fisher & Paykel
Frigidaire Company (Frigidaire, Gibson, Kelvinator, Tappan, White-Westinghouse)
Frigo Design
Gaggenau
GE Appliances (GE Monogram, GE Profile, GE, Hotpoint, RCA)
Inglis Limited
Maytag Appliances (Admiral, Jenn-Air, Magic Chef, Maytag)
Miele, Inc.
Regency VSA Appliances, Ltd.
Viking Range Corporation
Whirlpool Corporation (Whirlpool, KitchenAid, Roper, Estate)

Appendix B: Distribution Chain Analysis

The following analysis was conducted specific to the white goods market (refrigerators, clothes washers, clothes dryers, dishwashers and freezers). The following flow chart presents a graphical distribution chain analysis listing the major market actors and relative sales by channel. This is followed by a summary of the key issues to consider for each actor in the distribution chain. Some overlap exists with the room A/C market. Details specific to room A/C are presented in Section 10 of this document.

B Distribution Chain



B.1 Major Manufacturers

Market share for the “Top 5” major manufacturers remains tight and consistent. With fairly flat projected sales, it is expected they will target discretionary purchases due to new construction and remodeling. Early replacement of existing units will also be a focus. Product innovations will be another means to distinguish market presence.

B.2 Niche Manufacturers

The niche manufacturers do not represent a significant market share, but will be working hard to sustain what they have. The primary distribution channel is through the independent retailers via national buyers group. They produce mostly higher-end, more expensive products distinguishing them from the standard major manufacturers. They also often display in showrooms making them a good target for the remodeling and new construction markets.

B.3 National Retailers

The national retailers represent approximately 45% of all appliance sales. These national retailers have a lot of influence over manufacturers production and design plans since they often buy directly from the manufacturer or have exclusive private-label agreements. Recently, there have been new players entering the retail market specifically the home improvement centers (HICs). This has caused a shift in sales causing the national retailers to take notice. The HICs are worth watching since their consumers are more likely to be in the remodel market and they often have design centers with complimentary design assistance.

B.4 Independent Retailers

The independent retailers represent approximately 45% of all appliance sales; an even split with the national retailers. Approximately 85 % of independent retailers purchase their appliances through a national buyers group. Imported models, typically from niche manufacturers, are usually procured directly from the manufacturer due to the low sales volumes. Many independent retailers differentiate themselves from their large competitors by going the “extra mile” for their consumers and are therefore more receptive to incorporating the benefits of energy efficient appliances into their sales discussions.

As noted in the Market Characterization section, approximately 70% of national sales result from replacement needs versus a discretionary purchase. This breakdown is slightly different for the independent retailers. According to a recent survey of independent retailers, only 47% of sales result from appliance failure, 17% due to remodeling, 15% for a first time purchase, 12% are upgrading for additional features and 11% due to moving. Also, independents have a significant amount of commercial sales

with 13% of sales to single family builders and 11% to remodeler contractors and 62% sales to individual consumers. Regardless of the breakdown, both manufacturers and independent retailers have noted a trend toward increased discretionary purchases in the past few years.

B.5 Single Family Builders

Single-family builders typically install only dishwashers and ranges in the homes they build. Dishwashers are typically built into the unit and the builder makes the purchase decision. Many builders offer upgrade packages that include additional appliances and are often made available directly from manufacturers, retailers or wholesalers who specialize in builder sales. It is observed that consumers often forego the appliance upgrades because they usually have a better selection and more competitive costs directly from a retailer. The consumers that do choose the upgrades usually do so as a way to include the appliances in their home financing.

In production homes, builders are extremely cost conscious in selecting their appliances. Performance is of little concern as they will typically select the least expensive unit. Custom builders on the other hand are more likely to choose equipment based on consumer specifications, often with a trend towards higher-end appliances.

B.6 Multi-Family Builders, Developers and Property Managers

Multi-family builders and developers typically install refrigerators, dishwashers, and ranges in the units. The appliances are usually purchased by the contractor based on the specifications and the budget provided by the developer. It is estimated that 75% of appliance replacements are driven by failure of the existing appliance and 25% are initiated by a remodel. The best approach to influencing the appliances purchased by a multi-family builder or property manager is through the manufacturers, retailers, and wholesale distributors.

B.7 Manufactured Homes Manufacturers

Manufactured homes are an important market for the MT community to watch. Many of the appliances used in the home are installed by the manufacturer. Dishwashers and stoves are currently installed in almost 100% of manufactured homes. Refrigerators are included in 93% of homes, and clothes washers in approximately 2%.

Retailers estimate that 4% of their sales come from the manufactured housing sector, and saturation in this market is high. Sixteen percent of manufactured housing units had a second refrigerator, above the national average, and over 60 percent of refrigerators in manufactured housing were over five years old.. For clothes washers, manufactured housing penetration levels were surprisingly strong at 78.4 percent of total stock. For dishwashers, the penetration levels in manufactured housing showed strong growth between 1993 and 1997, increasing from 18 percent to 27 percent during that period.

Manufactured homes are built by relatively few companies compared to the site-built industry. Therefore, a large number of homes can be influenced by working with a small number of builders. Appliance manufacturers often have sales departments dedicated to supporting the manufactured home market. These customers buy large volumes of appliances and represent a unique market for appliance makers. Appliance manufacturers typically produce appliance models – generally lower-end, low-cost models sometimes referred to as "builder specials" – specifically for this market. Upgrades are available, but most have limited features.

Manufactured homes manufacturers typically buy from just one manufacturer of appliances, and have a national accounts representative who deals with their purchases. Since manufactured home producers generally do not like to add or switch appliance suppliers, getting a commitment from appliance manufacturers to offer ENERGY STAR appliances to their manufactured home producers is very important.

B.8 Remodeling Contractors

The remodeling market is a growing driver of appliance sales. The appliances most often involved are the refrigerator and dishwasher, as kitchen remodels are common. The consumer almost always drives the purchase decision so the remodeling contractor has minimal influence over the efficiency of the appliances. In most cases, the consumer purchases the appliance from a retailer. Contractors occasionally purchase appliances through the manufacturer and retailer commercial sales divisions or wholesale distributors.

Approximately 50 percent of home improvement work is performed by remodeling contractors. The vast majority of the large remodeling or addition work is performed by general contracting firms. The industry is highly decentralized and contains very few large actors.

There has been a significant increase in the number of remodeling contractors offering financing to their customers. The share of firms that do so still remains small—only about 30 percent of the larger firms and 10 percent of the smaller remodeling firms offered financing in 1998.

The remodeling market will likely increase by approximately \$5-6 billion per year between 2000 and 2010. The trend will continue toward high-end, professionally installed improvements and major upgrades. It is likely that manufacturers and retailers will build alliances with sophisticated regional remodeling contractors as a way of focusing consumer attention and driving demand.

B.9 Public Housing Authorities

Public Housing Authorities commonly install refrigerators and sometimes clothes washers and dryers. State procurement policies and a cost-effective payback are the primary drivers that influence appliance purchase decisions. The potential is not large, but would be worth pursuing low cost and less time intensive strategies such as educating housing authority representatives on the ENERGY STAR models available.

B.10 E-Commerce

Internet sales are not yet substantial and probably won't be in the future. Most retailers are refusing to provide consumer purchasing functions on their web site out of fear of damaging their existing relationships with their retail distributors. There may be a middle ground for manufacturers by encouraging consumers to go to the retail outlets to complete purchases, and cross marketing key retail partners on the web site. Consumers use the Internet as a research tool prior to visiting a retailer to make the purchase.