Executive Summary

America is in the midst of an obesity epidemic: 65% of adults are overweight or obese. In addition, nearly 1/3 of children are overweight (18.2%) or obese (16.4%). As of 2010, over 65.5% of Mecklenburg County Residents are overweight or obese, and 17% of Mecklenburg children and adolescents are overweight and 18.6% are obese. A recent audit of vending machines of 15 County facilities revealed that 78% of the food items offered were unhealthy. This is not in alignment for a County whose professed mission is “To serve Mecklenburg County residents by helping improve their lives and community.”

Obesity has a multitude of detrimental effects on health and is linked to more than 20 diseases and health conditions such as: type 2 diabetes, cancer, and heart disease. Currently, obesity related diseases are the second leading cause of preventable deaths in the US. The economic cost of obesity is extensive, with more than $150 billion spent annually on related health care expenditures. Additionally, U.S. employers absorb $73 billion annually in lost productivity.

We currently live in an obesogenic society that promotes unhealthy eating and discourages physical activity, both of which play a major role in the obesity epidemic that the U.S. is facing. Highly processed foods of little to no nutritional value, are now readily available everywhere we go. Their larger portion sizes and relatively lower prices combine to set a sociocultural norm that discourages healthy eating.

Cold beverages generated the most sales in 2010 at $5.967 billion, with the candy/snacks/confections group generating $4.04 billion. Together accounting for 52% of all vending machine sales. The majority of foods and beverages offered in vending machines tend to be high in calories, fat, sugar, and salt. The negative health effects of these items range from food addiction, excessive caloric intake, and weight gain, which may lead to overweight and obesity and its related diseases.

California leads the way in the development and implementation of policies to address healthy food access via vending machines. Currently, eight counties and twelve cities have such policies. Additional identified locations that have implemented community based vending machine policies include: the city of Seattle, Cameron County, Texas, Delaware state parks, Chicago’s park and recreation department, and the state of Alabama. Within North Carolina, there are presently two cities, one county, one County health department, and two Counties whose parks and recreation departments have adopted healthy vending machine policies.

Based on existing evidence, it’s been recommend that the following strategies be employed in a single healthy vending machine policy to maximize effectiveness: limiting package sizes to one serving; increasing the availability of healthy items to 100% in facilities that primarily serve children and at least 50% in facilities that primarily serve adults; utilizing price incentives to increase the price of unhealthy items and decrease the price of healthy items; restrict front of vending machine marketing to products that meet the specified nutrition standards; utilize point of purchase labeling by healthy item designation and posters; and restricting products placed at eye level to those that meet the specified nutrition standards.

Collectively, these strategies increase the availability and visibility of healthy items and influence the purchasing behaviors of consumers toward selection of healthier options. Inducing this positive behavior change can only occur in a supportive environment that promotes accessible and affordable healthy choices. When united, these recommendations ensure that the healthy choice is also the easy choice.
The Issue in Mecklenburg County

As of 2010, over 65.5% of Mecklenburg County residents are overweight or obese, an increase of 7.8% over the past 15 years, making it higher than the national average. Additionally, 17% of Mecklenburg children and adolescents are overweight with 18.6% being obese. The higher than average prevalence of racial and ethnic minorities in Mecklenburg County, is of concern due to the fact that obesity rates are significantly higher in racial and ethnic minorities. While there are many factors at play in the obesity epidemic, the food environment has been proven highly influential. In the past 30 years, total consumption of foods outside the home has increased from 18% to 32% of daily intake. Since vending machines are by nature “outside the home” their fare constitutes a portion of the rise in this statistic.

While vending machines are not solely to blame for the obesity epidemic, they are prevalent in County facilities, providing ready access to food and beverages of minimal nutritional value. A recent audit of vending machines of 15 County owned or leased facilities revealed that 78% of food items offered are unhealthy, contradicting the County’s stated mission “To serve Mecklenburg County residents by helping improve their lives and community.” The percentage of people patronizing vending machines, and the related daily caloric intake represented by their sales, is unknown. However, in the Mecklenburg County facilities audited, vending machines are often the only source of food and beverages available. This fact profoundly influences the County's 4,906 employees and its 913,639 residents.

Background

Obesity:

The prevalence of overweight and obesity in the United States has reached epidemic proportions, in the past 30 years, with 65% of adults in the US being overweight or obese. In addition, nearly 1/3 of children in the US are either overweight (18.2%) or obese (16.4%). Although recent studies have shown that the prevalence of obesity in children may have leveled off since 1999, the rates remain high. The prevailing obesity epidemic is disproportionate, with racial and ethnic minorities, and people of lower socioeconomic status representing the highest overall obesity rates.

While there are many factors that have contributed to the obesity epidemic, the primary cause is an imbalance created by consumption of too many calories combined with a lack of physical activity. Obesity has numerous detrimental effects on health, and is linked to more than 20 diseases and health conditions such as: type 2 diabetes, cancer, kidney disease, stroke, heart disease, liver disease, arthritis, infertility, and depression. Obesity related diseases are the second leading cause of preventable deaths in the US. As a result, it’s reported that the current generation of children may be the first in our history to have a shorter life expectancy than their parents.
economic cost of obesity is enormous with more than $150 billion being spent annually on health care related to obesity.\textsuperscript{1} In addition, U.S. employers annually absorb $73 billion in lost productivity.\textsuperscript{1}

The Obesogenic Food Environment

The food environment is shaped by the physical settings within communities, which influence what foods are available to eat, thereby either preventing or facilitating healthy eating.\textsuperscript{9} Physical factors, such as the availability of fruits and vegetables, contribute to one’s ability to either maintain a healthy weight or to become overweight or obese.\textsuperscript{8}

An “obesogenic” environment is defined as one supporting a high energy intake and a sedentary lifestyle, thus supporting individuals and populations to become obese. We currently live in an obesogenic society that promotes unhealthful eating and discourages physical activity, which in turn plays a major role in the obesity epidemic being experienced in the U.S. Highly processed, energy dense foods, with little redeeming nutritional value, are now readily available in larger portion sizes at relatively low prices are ubiquitous in our society. Regrettably, this has set a sociocultural norm that discourages healthy eating.

**Portion Sizes**

In the 1950’s, soft drinks were marketed in 6.5oz single serving bottles. In 2000, the 20oz bottle was the typical serving size, an increase of 250% and 150 calories. Following suit with soft drinks, candy bars and potato chips also increased from 1 oz packages to 2-3oz packages.\textsuperscript{5} Research shows that when packages are doubled in size, total consumption of the product generally increases by 30% to 45% for many snack related foods.\textsuperscript{10}

The sizes of packages suggest a quantity of food that is acceptable to consume, thus representing consumption norms. Larger packages may implicitly suggest it is appropriate to eat more than that suggested by smaller packages. In addition to subtly intimating consumption norms, larger package sizes have been shown to cause people to underestimate their consumption by at least 20%.\textsuperscript{11} In support of smaller packages, research has shown that people offered food in smaller packages consume less by providing discrete stopping points where one can consider whether or not to continue eating.

What is Being Offered in Vending Machines?

Nationally, vending is a $19.25 billion industry with office buildings being the primary location of machines at 28.5%.\textsuperscript{12} Cold beverages generated the most sales in 2010 at $5.967 billion, with the candy/snacks/ confections group accounting for $4.04 billion in sales.\textsuperscript{12} In tandem, they comprise 52% of all vending machine sales.\textsuperscript{12} In 2010 the top five snacks in sales were Snickers, Peanut
M&M’s, Twix, Ruffles Cheddar and Sour Cream chips, and Doritos Nacho Cheesier Big Grab. The top 20 encompass various types and brands of chips, cookies, chocolate, candy, and Poptarts, all of which include little to no nutritional value. The overwhelming majority of foods and beverages offered in vending machines tend to be high in calories, fat, sugar, and salt.

**Health Effects of Unhealthy Vending Machine Offerings**

In addition to weight gain, consumption of typical vending machine fare that is high in calories, fat, sugar, and salt has myriad detrimental effects.

*Soft drinks:*

Soft drink consumption in the U.S. has increased significantly since the 1970’s, now averaging 50 gallons per person per year. Soft drinks are highly popular in the American diet due to their inexpensive price, ready abundance, heavy marketing, and because they satisfy our national addiction to sugar. This increase in consumption of soft drinks strongly correlates to the increase in the prevalence of overweight and obesity in the U.S. Soft drinks provide calories, but no nutritional value, leading to increased energy intake, and weight gain, which may lead to overweight and obesity and its related diseases. In addition, soft drink consumption has been linked to lower intake of fruit, fiber, and decreased overall healthy eating. Bone health is also at risk due to the fact that soft drinks have been shown to displace the intake of healthy beverages such as milk and dairy products, especially in children. Soft drink consumption has an economic impact as well, as it’s estimated that soft drink consumption costs $1.4 billion dollars in health care costs annually.

*Food Addiction:*

Vending machine options qualify as food options that are high in fat, sugar, and salt. Food addiction related to the consumption of these foods is controversial, but recent studies have shown that these foods may have neural affects similar to those of addictive drugs, such as tobacco. Termed “hyperpalatable”, these potentially addictive options include but are not limited to: sugar sweetened beverages, fast food, sugar sweetened cereals, chocolate, and candy bars. These items are more likely to be abused than fruits and vegetables. Ingesting these items may lead to increased cravings, prolonged consumption of unhealthy food choices despite their negative consequences, and diminished control over healthy versus unhealthy consumption choices. Food addiction caused by chronic consumption of these unhealthy foods can lead to overeating, increased calorie consumption, overweight, obesity, and obesity related diseases. Of increased concern is that these potentially addictive items are highly marketed and readily available at a relatively low price.

**Current Policies**

**Within the United States**

At present, there is no single organization that collects or retains comprehensive information on cities, counties, or states that have implemented healthy vending machine policies. The following information was collected upon completion of an extensive review for healthy vending machine policies at the state, city, and county levels.

California leads the way in the development and implementation of policies that address food accessed via vending machines. Currently, eight counties and twelve cities have such policies. One
of the first counties to implement a healthy vending machine policy was Contra Costa County, California. In 2004, the county implemented its policy in which 100% of beverage and snacks were required to meet specified nutrition standards affecting all vending machines located in areas of buildings where county programs operate. In addition, promotional advertisements for vending machines are limited to promoting only those items that meet the stated nutritional standards. Although it was the first community based vending machine policy, it remains one of the strongest healthy vending machine policies in the country.

In 2004, Marin County, California subsequently followed suit implementing its policy in all department of health and human services buildings. Their procedure requires that 100% of beverages and 50% of snacks meet specified nutrition standards. A point of purchase strategy has also been employed, emphasizing both healthy item designations and vending posters.

In 2005, Santa Clara County, California adopted the same policy requiring 100% of beverages and 50% of snacks offered in all vending machines located in county buildings to meet the specified nutrition standards. Many cities and counties have since taken on this same policy including: the city of San Jose, California in 2006, the Parks and Recreation Department of the county of San Diego in 2006, Monterey County, California in 2009, and both the city and county of San Francisco, California in 2010.

Chula Vista County and Los Angeles County, both in California, led the way in fortifying healthy vending machine policies in 2006 by requiring 100% of beverages and snacks offered in County vending machines to meet specified nutrition standards. The cities of Berkeley and Baldwin Park, California acquiesced in 2007. In 2011, the cities of Bells Garden, South El Monte, Huntington Park, La Puente, Pasadena, and Bells Garden, California followed suit.

Outside of California, other large cities have initiated healthy vending machine policies as well. In 2011, the city of Boston began requiring that 100% of beverages offered in city vending machines, as well as any graphics on the front of the machine, meet specified nutrition standards. Chicago joined the effort in 2011 by passing a policy requiring 100% of all beverages in vending machines in city parks to meet certain standards. Other locations that have adopted healthy vending machine policies include: the city of Seattle, Washington, Cameron County, Texas, Delaware state parks, and the state of Alabama. As of the publication of this report, there is no published information available regarding the effectiveness of any of the previously mentioned policies.

In all of the above mentioned policies, similar nutrition standards were specified, limiting snack items to no more than 200 calories per package, fat to no more than 35%, saturated fat to no more than 10%, sugar to 35%, sodium to 360 mg per package, and prohibiting trans fats. Beverages were limited to water, reduced or fat free milk, 100% fruit juice, 100% vegetable juice, 50% juice with no added caloric sweeteners, sports drinks with no more than 100 calories, and no or low calories beverages with no more than 10 calories per 8 fluid ounce serving. In addition, containers were restricted to 12 fluid ounces per container, with exception to water.

See appendix for further description of common specified nutrition standards.

**Within North Carolina**

Within North Carolina, there are presently two cities (Asheboro and Belmont), one county (Montgomery), one County health department (Pender), and two County's park and recreation department (Mecklenburg and Dare) that have adopted healthy vending machine policies. Not all locations were available for contact by the publication of this report. Outlined below are the specifics of the locations policies, which were available.
The policy established by the city of Asheboro in 2008, is enforced in just two city owned facilities. This policy requires that the two rows of selections at adult eye level only contain the predetermined healthy items. The company through which the vending contract is executed has its own healthy item designation system in place, which is concurrently employed.

In 2009, Montgomery County worked with its vendor to implement healthy vending, although there is no formal written policy that specifically applies to vending machines. This informal agreement with vendors requires that a minimum of five items meet specified nutrition standards, and point of purchase labeling, which affects two vending machines in County owned facilities. The County Health Department has reported no disparity in revenue as a result of these changes.

Recently, in 2010 the Mecklenburg County park and recreation department instituted changes to its vending machines by prohibiting machines that sold snacks and only allowing non-carbonated water and sports drinks in beverage machines. The Department reports a 48% decrease in revenue, which may in part be due to the decreased number of machines. Despite this, the Department maintains the policy citing “it is worth it.” With a department budget totaling $4 million, the decrease in revenue is negligible.

At the organizational level, 95 hospitals have partnered with NC Prevention Partners in committing to ensure that healthy food choices are available at all times using standard nutrition criteria. This policy, which includes vending machines, has been in place since 2008. In addition to increasing the availability of healthy food, these hospitals are required to utilize pricing incentives in conjunction with an educational campaign to promote healthy foods, including point of purchase labeling.

Policy Options:

Several strategies have been researched and employed within vending machine policies to encourage and promote healthy eating. The most current strategies are outlined below:

Limiting Package Size

The package size of foods that people consume influences how much they eat. Larger packages have been shown to lead to increased consumption, which can lead to weight gain. While evidence specific to vending machines is lacking, the science behind this theory likely holds true, regardless of where food is purchased. This strategy has been employed as part of multiple vending machine policies that limit packages to one serving size. There is relatively no cost involved to implement this strategy.

Increase Availability of Healthy Items

Increasing the availability of healthy foods focuses on the number or types of healthy foods offered. Increasing the availability of healthy foods is a critical component of interventions designed to encourage healthy eating. Research has shown that dietary intake has been positively influenced by increasing the availability and variety of healthful food options. This is due in part to the fact that there is less room for unhealthy items, and that availability stimulates the actual consumption of healthier items. This strategy has been tested in both the school and workplace setting, resulting in a general rise in average sales of the healthy items. Of importance to note is the fact that revenue from sales were not reduced as a result of the increased selection of healthier items. Despite this detail, it’s worth noting that some healthier items may have a shorter shelf life than their unhealthy
counterparts. This strategy has been employed in all of the vending machine policies outlined above and is relatively inexpensive to implement.

**Pricing Incentives and Disincentives**

One dimension related to food choice is perceived value, which consist of price and portion size. The cost of food is ranked as the second most important factor affecting food decisions, behind taste. Overall, the price elasticity for food is relatively inelastic, however certain foods have been shown to be more responsive to price changes than others. Among these are foods consumed away from home, soft drinks, juice, and fruit. Since vending machines foods are assumed to be eaten away from home and soft drinks constitute the largest component of the vending industry, raising the price of these items would theoretically decrease the number of such items purchased. Conversely, decreasing the price of fruit would then theoretically increase the amount of its purchase.

Several studies have tested price reductions to incentivize the purchase of healthy vending machine offerings. This modification does in fact lead to a significant increase in the sales of healthier snacks in both worksites and secondary schools. In turn, when the sale of healthy vending machine items does increase, it has proven to positively influence dietary intake.

Price disincentives can be instituted through either taxes or a simple profit to the company. How prices are increased is not within the scope of this brief, only the impact that they have on purchasing behaviors regardless of the underlying method. Research conducted on pricing disincentives via price increase in vending machines is limited. However, price increases have been shown to be effective in other public health issues such as reducing tobacco use, although this was accomplished through taxation. Increasing the price of unhealthy items may partially compensate for any potential losses in revenue that may occur due to decreasing the price of healthy items. Overall, this strategy suggests that pricing interventions may modify dietary intakes and is relatively inexpensive to implement.

**Limit Product Marketing of Unhealthy Items**

Although multiple factors influence dietary behaviors, one particularly potent force is marketing, which influence is especially forceful in children. Vending machines, especially beverage machines, tend to have illuminated signage than spans the front of the machine, and highlights a specific item or brand. While the impact that these signs have on sales is unknown, it does present another opportunity for intervention. Some facilities have required that these signs featured on the front of vending machines meet specified nutrition standards, thus increasing promotion of healthier items, which has shown to be an effective strategy in increasing healthy eating at little to no cost. This strategy is endorsed by the Institute of Medicine and has been employed in some of the vending machine policies currently in place. There is a small cost associated with this strategy in replacement of existing signs that do not meet the specified nutrition standards.

**Point of Purchase Labeling**

Point of purchasing labeling for healthy eating is designed to improve food choices by identifying items that meet a specified set of nutrition standards through the use of a logo featured on the shelf below where the product is placed.

Overall, point of purchase labeling has been shown to be an important influence in positively affecting consumer choice with regard to healthy eating. In addition to labeling, studies found more effectiveness when signs outlining the nutrition criteria were placed on or around the
In vending machines specifically, point of purchase labeling has not been exclusively tested, but has been analyzed in conjunction with price incentives. Results of this study found that the combined use of point of purchase labeling and price incentives generated greater sales of healthy items versus the sole use of price incentives given a community setting.

Point of purchase labeling requires both vendor training, and compliance of labeling of items to ensure that they meet the specified nutrition requirements, which may prove difficult. Compliance of correct item designation is critical to the effectiveness of this strategy. This strategy is not as commonly employed in state, city, or county vending machine policies. It is more prevalent in school and worksite vending machine policies.

**Restriction of Product Placements in Machines**

The evidence base for product placements and purchasing behaviors advance from the extensive research that has gone into designing supermarkets. Research reports that selections placed at eye level, where they are easily seen by adults, have the highest number of sales. Simply put, products that have the highest visibility will sell the best. This strategic placement approach has not been tested in vending machines, but it is likely that the science behind it can be extrapolated, translated and applied to vending machines. Applying the same train of thought, if unhealthy items are not positioned at eye level, the likelihood of impulsive unhealthy choices would decrease.

In the case of supermarkets, high profit items are intentionally placed at eye level. Food companies frequently pay slotting fees to secure high visibility, eye level placement for their products. It is unclear whether or not these slotting fees also exist in the vending industry. If so, requiring that less profitable items be placed at eye level may not generate as much revenue. This strategy has been undertaken in a few existing vending machine policies and is of little cost to implement. However, it does require training on behalf of the vendor.

**Policy Recommendation and Justification**

**Why a Policy?**

As with other major public health issues, such as smoking reduction, success in diminishing the rate of obesity in our current population will not occur until environmental influences are identified and modified. While both individual and environmental approaches are important when dealing with this issue, there are some advantages to broader application of environmental approaches. Because they are incorporated into structures, systems, policies and sociocultural norms, environmental changes are often more cost-effective and have a more sustained effect on behavior change when compared to the individual approach.

**Why a Community Based Policy?**

As reported in the Surgeon General’s Call to Action to Prevent and Decrease Overweight and Obesity and again in the 2011 National Prevention Strategy, organizations must work collectively to reshape the community and the built environment. Communities can set a powerful example to other local and national institutions, encouraging other communities, agencies, businesses, etc to make healthy food more accessible. Local governments must provide the leadership that is critical to reducing and preventing obesity. In a combined report by the Robert Wood Johnson Foundation and the Institute of Medicine, it is recommended that local governments implement policies and
practices that promote healthy foods and beverages. Such actions should be designed to reduce or eliminate the availability of calorie-dense, nutrient-poor foods by mandating and implementing strong nutrition standards in all government agencies and programs. All governments, states, cities, and counties, should ideally present itself as model for such programs. These entities are often the largest employer in a state, city, or county and many constituents regularly access government owned facilities for personal business and recreational purposes. Government can capitalize on the opportunity to affect positive change in sociocultural norms related to food by making healthy foods and beverages available to both employees and residents. Every government strives to promote good health for their constituents; and contents of vending machines should not contradict this objective.

**Why Vending Machines?**

While the impact that vending machines have on the obesity epidemic is unknown, they are clearly part of our obesogenic food environment. Found in nearly all office buildings and schools, vending machines are notorious for containing a large majority of unhealthy food and beverages. If governments proactively act to change this sociocultural norm, they would be doing their part to help create a healthier food environment. While vending machine intervention would not be the sole silver bullet needed to reverse the obesity epidemic, every little bit helps. Intervening in vending machines presents itself as a relatively inexpensive opportunity to encourage healthy eating due to the fact that the array and price of items are controlled by the vendor and can easily be manipulated. Its effectiveness in encouraging healthy eating is best exemplified by the CHIPS study conducted in 2001. In this study, vending machines in worksites and schools found that by employing point of purchase labeling, restriction of product placement, increasing the availability of lower fat items, and price incentives of 25% and 50% on lower fat options, vending machine items increased sales by 39% and 93% respectively.5

**Recommended Strategies**

Studies have shown that using a combination of strategies may ultimately be more effective in increasing the purchase and consumption of healthy foods. Taking this into account, it's been recommended that the following strategies be employed in a single vending machine policy which strives to create the most effective vending machine policy in promoting healthy food purchasing and consumption.

*Limiting Package Size*

It is recommended that package sizes are limited to one serving per package, with no more than 200 calories. Reducing the size of the package thus provides a discretionary stopping point and avoids the option of over consumption. In addition, nuts and seeds should be restricted to one ounce packages due to their high energy density. In the case of beverages, due to the detrimental health effects that they may have, it is recommended that their volume be restricted to 12 fluid ounces with the exception of water. Due to the healthy nature of water, no volume restrictions would be applicable. This strategy is inexpensive and has been employed in previously identified policies.

*Increasing the Availability of Healthy Options*

Extensive research has gone into testing the effectiveness of this strategy, which has shown to positively influence healthy eating behaviors. All of the current vending machine policies previously mentioned necessitate that a certain percentage of vending machine items meet specified nutrition standards. Due to the impressionability of children, it is recommended that
facilities primarily serving children require that 100% of vending machine options meet specified nutrition standards. In the case of facilities that chiefly serve adults, it is proposed that 100% of items meet specified nutrition standards. In reality, experience has show that few places have had success in attempting such a transition. In accordance with the identified established policies and to ensure the potency of the policy, it is advised that at least 50% of items meet specified nutrition standards. Examples of healthy items include: graham crackers, nuts, seeds, fruit leather, baked potato chips, oatmeal, low fat popcorn, granola bars, pretzels, trail mix, string cheese, and fruit cups. In addition, for vending machines whose fare contains snacks, it’s recommended that at least one selection is whole grain with at least 2 grams of fiber; and at least one item is fruit. For vending machines selling beverages, it is proposed that there should be a minimum of one option that is low fat or fat free dairy.

See appendix for recommended nutrition standards

**Price Incentives and Disincentives**

It has been proven that price plays a significant role in purchasing behavior when it comes to foods, especially snack foods and soft drinks. It is therefore believed that initiating a price increase for unhealthy items would disincentivize their purchase. The same psychology would serve to incentivize selection of healthy items through a price decrease. In the case of price disincentives, there is currently no evidence that supports a specific percentage of price increase, to maximize effectiveness without being regressive. However, in the case of tobacco, the current price increase through the form of taxes is 36.93%. 

Previous research has shown that the higher the percentage price reduction, the more influential it is. Based on these studies, and in order to maximize effectiveness of incentivizing the purchase of healthier items, a price reduction between 25% and 50% is suggested. This strategy is relatively inexpensive to employ, has been used frequently in vending machine policies, and has been shown not to impact revenue. As price has been cited as a barrier to healthy eating, particularly in low income populations, reducing the price of healthier items would essentially remove this barrier.

**Limiting Product Marketing**

While the full effect of marketing of unhealthy items on the front of vending machines is unknown, one could assume that the item visually advertised would persuade people to purchase the item highlighted. We could then reason that restricting those items advertised to options that meet the specified nutrition standards would encourage healthy purchasing selections. Since this marketing tool is most prevalently used in beverage vending machines, examples of products that would be allowed to be marketed on the front of the machines include: water, 100% fruit or vegetable juice, reduced or fat free milk, diet soft drinks, and reduced sugar sports drinks. Although this is a newly emerging strategy in vending machine policies, it proven to be relatively inexpensive.

**Point of Purchase Labeling**

While increasing the availability of healthy items in vending machines has proven to be a sound strategy, consumers also must be able to easily identify and select the healthier food items. When used in conjunction with price incentives and increasing the availability of healthy items, exhaustive testing has proven highly successful. As a result, many vending machine policies employ this practice. Core elements of this strategy require that a consistent, readily identifiable logo be placed on the shelf underneath each designated healthy item accompanied by signage located on or near the vending machine. When these tactics are utilized in conjunction with detailed nutritional
criteria, they greatly increase the likelihood that healthier items are purchased. Even though this strategy requires someone to identify items that meet the specified nutrition standards and training on behalf of the vendor to properly label items, it is relatively inexpensive.

Restriction of Product Placements in Machines

While the evidence from this strategy is based on supermarkets, the effects can be extrapolated to vending machines. This strategy is also a newly emerging tactic being used in vending machine policies. Increasing the visibility of healthy items ensures they are more likely to be purchased. One pointed downside to increasing the availability of healthier items is that they tend to have a shorter shelf life. To counter this issue, placing these items at adult eye level (60 inches from floor\textsuperscript{18}), where they are more visible, will increase the likelihood that they will be purchased. While the evidence for use in vending machines is lacking, it holds promise and is relatively inexpensive to employ.

Policy Implementation

Policy implementation is crucial, so that strategies are executed in accordance with their design and allowing maximum effectiveness. Upon drafting of a policy it is important to consult with the agency’s legal and budget departments for input. In addition, best practices call for all vending machines within the agency to be under the contract of one vendor, secured through a competitive bid process.

Effective communication with the vendor and customers is critical for successfully implementing a healthy vending policy. A written contract with the vendor should be executed to ensure policy compliance. Additionally, vendor education and training is essential if the policy is to be effective. As part of this education, the vendor should be presented with a list of food and beverage items that meet the nutrition standards specified. A designated policy representative should be made readily available to answer questions that vendors may have and collaborate with the vendor to identify a timeline for implementation.

Consumer input should also be included in this process. Surveys and taste tests serve the dual purpose of educating customers on healthier vending choices, and provide feedback on the selection of healthy options.

Evaluation

Evaluation of the efficacy of the policy is critical. Vendors play the major role in executing the specifics of vending machine policies. Therefore, regular unannounced audits of the vending machines are recommended. Audits should be conducted by the regulating organization to ensure correct product placement, correct point of purchase labeling, correct pricing, correct package sizes, correct marketing, and also that the contents of items meet the specified percentage of healthy items. A written contract with the vendor, combined with regular unannounced audits, provides accountability on behalf of the vendor in executing specifics of the policy. If the requirements specified in the written contract are not met, corrective action should be taken to properly enforce the policy. Even though a policy may be very strong, it is ineffective without enforcement.

Evaluation of the success of the policy is important as well to determine if the outcomes are worth the time, money, and effort invested. In order to evaluate the effectiveness of the policy, sales of both healthy and unhealthy items, as well as revenues, should be tracked.

Summary
The epidemic of overweight and obesity in its population costs North Carolina $12.1 billion annually, with Mecklenburg County alone contributing $1.3 billion. This statistic will be perilous if ignored. Combined, these strategies would increase the availability and visibility of healthy items along with influencing purchasing behaviors of consumers toward the selection of healthier options. Individual behavior change to make healthy food choices can only occur in a supportive environment with accessible and affordable healthy choices. As a result, these recommendations help to make the healthy choice the easy choice.
Appendix

Definition of Healthy:

The definition of healthy foods and beverages varies depending on a multitude of factors. For the purposes of assessing foods and beverages available in vending machines the following criteria were used to categorize food items as healthy:

Snacks:

- Less than 200 calories per package
- Not more than 35% of calories from fat, excluding nuts, seeds, and trail mix
- Not more than 7% of calories from saturated fat
- Contains less than 0.5 grams of trans fat
- Not more than 35% of total weight from sugar and caloric sweeteners with exception to fruits and vegetables that have not been processed with added sweeteners or fat
- Not more than 360mg of sodium per package

Beverages:

- Water, plain
- Coffee or tea with no added caloric sweeteners, including diet tea and coffee
- 100% fruit juices
- 100% vegetable juices
- All other non-caloric beverages including diet soft drinks, flavored water, etc
- Reduced fat or fat free milk
- Reduced calorie sports drinks

*For rationale see Recommended Nutrition Standards for Healthy Vending
Recommended Nutrition Standards for Healthy Vending

Nearly all of the current vending machine policies for community settings employ the following evidenced based, recommended nutrition standards:

**Snacks:**
- Do not exceed 200 calories per portion as packaged\(^1\)
- No more than 35 percent of total calories from fat with exception of nuts and seed\(^1\)
- Less than 10 percent of total calories from saturated fat\(^1\)
- Zero grams of trans fat (> 0.5 g per serving)\(^1\)
- Not more than 35% total weight from sugar and caloric sweeteners with the exception of fruits and vegetables that have not been processed with added sweeteners or fats\(^1\)
- No more than 360mg of sodium per package\(^2\)

**Beverages:**
- Water without flavoring or additives\(^1\)
- Reduced fat and fat free milk\(^1\)
  - Including soy and lactose-free beverages\(^1\)
  - Flavored milk not containing more than 150 calories per 8 ounces\(^4\)
- 100% fruit juice in 8 oz portions\(^1\)
- 100% vegetable juice in 8 oz portions\(^1\)
- Fruit based drinks containing at least 50% juice and no added caloric sweeteners\(^3\)
- Sports drinks containing less than 100 calories per 12 oz serving\(^4\)
- No or low calorie beverages with fewer than 10 calories per 8 oz serving\(^4\)
  - Includes: unsweetened tea, unsweetened coffee, diet soft drinks, flavored water, diet tea, etc

**Other Requirements: Evidenced Based**
- Beverages to be limited to a portion size no greater than 12 ounces with exception to water\(^1, 3, 4\)
- Snacks should be single serving packages\(^3\)

**Other Suggestions: Not Evidenced Based**
- At least one item meeting the FDA definition of low sodium (<140mg of sodium)
- Nuts and seeds sold in one ounce packages
- At least 100 calorie item
- At least one whole grain product containing >2 grams of fiber
- At least one fruit item
- At least one dairy item in beverage vending machines

\(^1\) Recommendation from the Institute of Medicine’s report: Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth

\(^2\) Recommendation from the FDA definition for “healthy” food label claim
Recommendation from 2002 National Consensus Panel on School Nutrition: Recommendations for Competitive Food Standards in California Schools

Recommendation from Alliance for a Healthier Generation: Healthy Schools Program Framework
Sample Policy:

Adapted from Mecklenburg County, North Carolina with intent to be implemented in all County owned, leased, or operated space or facility.

SECTION 1: SCOPE AND RESPONSIBILITY:

A. This policy covers all machines designed to dispense food and beverages located in any County owned, leased or operated space or facility.

B. Facility Managers have primary responsibility for the management and administration of vending machines located in any Mecklenburg County owned, leased or operated space or facility.

C. Health Department and Worksite Wellness Administrator have the shared responsibility for periodic auditing of vending machines for compliance with nutrition standards outlined in this policy.

SECTION 2: FOOD AND BEVERAGE MACHINE REQUIREMENTS

A. General Considerations:

1. All vending machines must meet the standards of the National Automatic Merchandising Association and be listed in their latest “Listing of Letters of Compliance,” or meet the standards of the National Sanitation Foundation and be listed in their “approved list,” or the equivalent thereof.

2. Any microwave oven used in conjunction with a vending operation must be approved for safety by the County Facilities Maintenance Division prior to installation.

3. All food and beverage products must be delivered and placed in machines in their original wrappers.

4. All food vending machines must comply with the NC State Health Code. Machines not complying with the above criteria or the State law will be removed from service.

5. Machines must be equipped to allow for the adjustment of prices on an item per item basis.

B. Product Placement and Pricing

1. Products meeting the Nutrition Standards should be placed at eye level within the machine.

2. Advertising should be limited to only products meeting the Nutrition Standards.

3. Products meeting the Nutrition Standards should be priced at least 25 cents less than products that do not meet the Nutrition Standards.

4. Items meeting the Nutrition Standards will be identified through a logo placed on the shelf below the item.

5. Each vending machine will have a sign located on the machine outlining the Nutrition Standards.

6. Vendor is to maintain equal inventory of products that meet Nutrition Standards and those that do not so the healthy options are always available for purchase.
7. Vendor may not provide a lower profit return for healthy items versus unhealthy items. Vending Machine profit must be cumulative, not adjusted per product.

C. Nutritional Standards for Beverage Machines:

1. 100% of beverages offered in each vending machine shall be one or a combination of the following:
   a. Water: Every machine will contain plain, unflavored water and will maintain consistent stock of this product so it is always available for purchase.
   b. Coffee or tea, with no added caloric sweeteners
   c. Reduced fat or fat free milk, including soy or lactose-free products
   d. Flavored milk not containing more than 150 calories per 8 ounce serving
   e. 100% fruit juice in no greater than 8 ounce containers
   f. 100% vegetable juice in no greater than 8 ounce containers
   g. Fruit based drinks containing at least 50% juice and no added caloric sweeteners
   h. Sports drinks that contain no more than 100 calories per 12 oz serving.
   i. No or low calorie beverages with fewer than 10 calories per 8 oz serving
      i. Includes: unsweetened tea, unsweetened coffee, diet soft drinks, flavored water, diet tea, etc

D. Nutrition Standards for Vending Machine Beverages and Snacks

1. 100% of Snacks/Foods offered in each vending machine shall meet the following criteria:
   a. Not more than 200 calories per serving
   b. Not more than 35% calories from fat with the exception of nuts, seeds, and trail mix
   c. Not more than 7% of calories from saturated fat
   d. Zero grams of trans fat (> 0.5 g per serving)
   e. Not more than 35% total weight from sugar and caloric sweeteners with the exception of fruits and vegetables that have not been processed with added sweeteners or fats
   f. Not more than 360 mg of sodium per serving

E. Other Requirements

a. At least one item meeting the snack criteria in each vending machine shall also meet the FDA definition of “low sodium” (≤ 140 mg per serving)
b. Snacks should be packed in single serving packages
c. At least two 100% whole grain products per machine that contain at least 2 grams of fiber
d. At least one 100 calorie product per machine
e. Nuts and seeds sold in one ounce packages, if available
f. Beverages no greater than 12 oz containers except for water
g. At least one fruit item
h. At least one dairy item in beverage vending machines
F. Consultation:

The Mecklenburg County Health Department, Health Promotion Department staff will be available to consult with vendors on item placement in machines, healthy item identification strategies, and consumer outreach and education.

G. Options available:

Attachment to this policy, Healthy Options for Vending Machines which contains valuable information on specific approved products.

SECTION 3: PLACEMENT OF VENDING MACHINES

A. No independently owned vending machine will be allowed on County property without prior approval of the Real Estate Services.

1. Real Estate Services will authorize the placement of vending machines in strategic locations throughout the county where traffic patterns or other circumstances warrant their placement.

2. Prior to installation, the location of new or replacement vending machines must be reviewed and approved by Real Estate Services.

3. Machines may not be located in corridors unless adequate space has been provided as determined by the Fire Marshall.

4. The vending machine may not in any way obstruct or otherwise interfere with emergency exits or access areas.

5. Failure to comply with these provisions may result in removal or disablement of the vending machine.

SECTION 4: FACILITY REQUIREMENTS

A. Plumbing

For machines that require an external water source, connections must be made from a potable water supply.

B. Electrical

1. All vending machines utilizing electrical power shall be grounded with an approved three wire cord and plug.

2. All machines vending perishable foods shall have a lock on the power cord plug to prevent accidental or intentional disconnection.

3. All vending machines must be properly wired and grounded to prevent electrical shock, and must comply with applicable federal, state, and local codes and standards.

4. The vending machine owner is responsible for installation of electrical circuits when there are no existing circuits available, or if existing circuits are inadequate.

SECTION 5: COSTS ASSOCIATED WITH THE PROGRAMS

Each department or work center shall be responsible for County costs associated with vending machines in their workspaces. These costs will normally include utility costs for operating the machines and any additional costs incurred to ensure compliance with this policy.
References:


