

A Greener Tomorrow:
Reducing Food Waste In Maryland K-12 Schools

Governor's Summer Internship Program, August 2018



Abigail Wikner

University of Maryland '19

Department of Housing & Community Development

Hassan Almaala

University of Maryland '20

Department of Education

Leena Aurora

Johns Hopkins University '18

Department of Health

Simi Adeoye

McDaniel College '19

Governor's Office on Service and Volunteerism

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Acknowledgements

We would like to thank the following individuals for their valuable contributions to our policy proposal and fellowship experience.

The Honorable Larry Hogan
Governor
State of Maryland

The Honorable Boyd Rutherford
Lieutenant Governor
State of Maryland

Hannah Schmitz
Public Service Scholars Coordinator
The Shriver Center at University of Maryland,
Baltimore County

Laura Hussey, Ph.D.
Associate Professor of Political Science
University of Maryland, Baltimore County

Stephen Holt
Assistant Director, Homelessness Initiatives
Maryland Department of Housing and Community
Development

Mariana Marques
Chief of Staff, Public Health Services
Maryland Department of Health

Danielle Susskind
Lead Academic Policy Specialist &
State Director for Title IV, Part A
Maryland Department of Education

Claudia Fabiano
Environmental Protection Specialist
U.S. EPA

Van Brooks
Office Director
Governor's Office of Service and Volunteerism

Elana Goldstein
Environmental Protection Specialist
U.S. EPA

Cheryl Kollin
Program Director
Community Food Rescue

Jenna Umbriac
Director of Programs & Policy
Manna Food Center

Jeffrey Proulx
President
Maryland School Nutrition Association

Erica Chapman
Administrator II, Office of the Director
Maryland Department of the Environment

Lola Abdulai
Outreach Coordinator
Governor's Office of Service and Volunteerism

Virginia Till
Recycling Specialist / Sustainable Management of
Food Lead
U.S. EPA Region 8

Luke Wolfgang
Sustainable Management of Food
U.S. EPA Region 3

Mary Gable
Assistant State Superintendent
Maryland Department of Education

Executive Summary

This brief analyzes three policy options for the state to reduce food waste in K-12 school nutrition programs, culminating in a recommendation to implement a wide-reaching study on the issue. In creating this proposal, the group met with a variety of stakeholders and conducted research of current legislation, grassroots efforts, and evidence-based practices across the US. Food waste happens at every level of our food system and has a negative impact on our environment, health, and economy. K-12 schools are no exception, and pose particular consequences. Many students rely on their school nutrition programs for breakfast and/or lunch and those on free and reduced meal programs have no other option than what is provided in their schools. Thus, the practices of school nutrition programs have a large bearing on the food wasted and consumed within schools. Three policy options are presented and analyzed within this paper:

- 1) A "Green Cafeterias" certification program supported by a statewide study,
- 2) A program to encourage schools to audit their food waste, and
- 3) A program to divert uneaten and unspoiled food to in-school pantries, which are stocked and staffed by high school students as a job opportunity.

After careful analysis, the group recommends the certification and study option, as it has the greatest potential to reduce food waste at the source and to incorporate ongoing student education, while giving flexibility and resources to local administrators. By reducing food waste in schools, we not only create immediate positive environmental impact, but can continue to build an environmentally-conscious and civically engaged generation for the future.

Introduction

Throughout the academic year, millions of children are able to receive a healthy lunch from their school lunch program. These meals offer growing students a balanced meal while

remaining affordable to school nutrition programs. However, this process results in millions of dollars of food waste. According to the *American Journal of Preventive Medicine*, over 1.2 billion dollars is wasted on discarded lunch food in America¹. This food is thrown out while over 205,000 children in Maryland struggle with food insecurity².

Reducing food waste presents Maryland with an enormous challenge with potentially rewarding outcomes. Public schools are an appropriate place to look at food waste as they teach students life long lessons that can build responsible habits as they become older citizens. Additionally, feeding more students efficiently can result in less hungry kids in the classroom. According to the Center for Disease Control and Prevention, children dealing with hunger can experience lower dietary quality and undernutrition, which can negatively affect cognitive development and school performance³. It ought to become a priority of the state to address this issue with openness to new policy solutions and a commitment to a long term reduction of waste.

Definition of the Problem

Up to 40% of the food in the United States is never eaten⁴. Within the state of Maryland, 850,000 tons of food are wasted every year, averaging about 282 pounds of food per person⁵. These high levels of waste occur throughout the entire food supply chain: farms (16 percent), manufacturers (2 percent), businesses (39 percent), and households (43 percent)⁶.

¹ Cohen, J. F. W., Richardson, S., Austin, S. B., Economos, C. D., & Rimm, E. B. (2013). School Lunch Waste among Middle School Students: Implications for Nutrients Consumed and Food Waste Costs. *American Journal of Preventive Medicine*, 44(2), 114–121. <http://doi.org/10.1016/j.amepre.2012.09.060>

² “Hunger in Maryland”. (2018). *Feeding America*. Retrieved from: <http://www.feedingamerica.org/hunger-in-america/maryland/>

³ “Nutrition Fact.” (2018). *Centers for Disease Control and Prevention*. Retrieved from: <https://www.cdc.gov/healthyschools/nutrition/facts.htm>

⁴ “Food Waste”. (2018). *National Resources Defense Council*. Retrieved from: <https://www.nrdc.org/issues/food-waste>

⁵ Polasky, Jeanette. (2017). “Taking a Bite out of Food Waste.” *Baltimore County News* Retrieved from: <https://www.baltimorecountymd.gov/News/BaltimoreCountyNow/taking-a-bite-out-of-food-waste>

⁶ “Food Waste”. (2018).

While all this food is wasted, one in eight households in Maryland are unable to meet their nutritional and caloric needs and 21 percent of households with children are unable to procure healthy, nutritious meals on a daily basis⁷. In Baltimore, 25 percent of the population are food insecure and rely on the Supplemental Nutrition Assistance Program (SNAP) to meet their caloric needs⁸.

Food waste also contributes to environmental degradation and climate change. When food is thrown in the trash, it is sorted, trucked, dumped, and then compacted into landfills. Food comprises the largest portion of municipal landfills at around 20 percent⁹. These scraps take up valuable space and release methane during the anaerobic decomposition process¹⁰. Methane is a potent greenhouse gas with a high global warming potential of up to 25 times more than that of carbon dioxide¹¹. If landfills are not properly maintained, remnants of waste can leach out into the surrounding groundwater and pollute the area. If waste is not placed into landfills and instead incinerated, the process releases harmful gases into the environment.

It is evident that food waste harms our environment and our health. It is also detrimental to our wallets. The amount of food waste within the United States constitutes an average of \$165 billion every year in retail prices. Food waste costs the United States an average of \$165.6 billion every year¹². The cost of disposing of excess food requires a tremendous effort on multiple

⁷ “Hunger In Maryland.” (2018). *MD Hunger Solutions*. Retrieved from: http://www.mdhungersolutions.org/hunger_in_maryland.shtm

⁸ Alejandro, Roberto. “Food Insecurity a Problem for Nearly a Quarter of Baltimore Residents.” (2014). *Afro*. Retrieved from: <http://afro.com/food-insecurity-a-problem-for-nearly-a-quarter-of-baltimore-residents/>

⁹ Schultz, Jennifer. (2017).

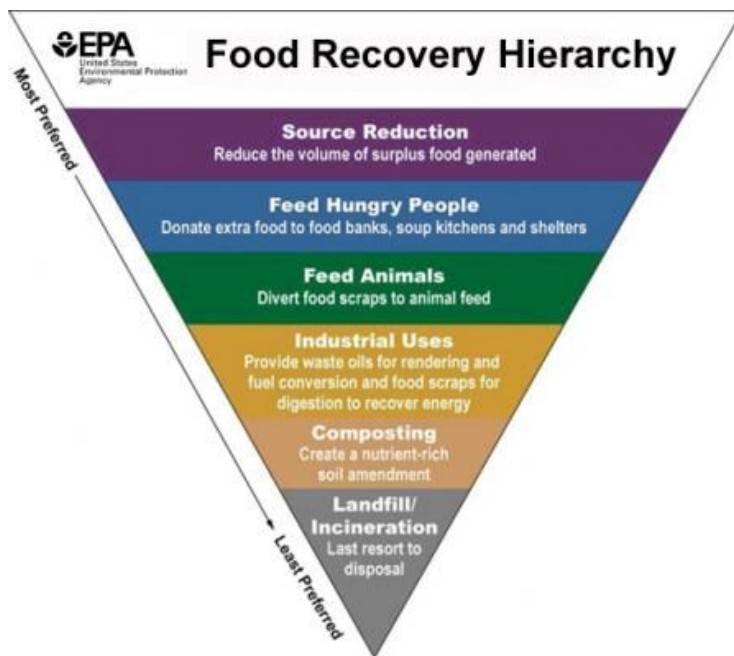
¹⁰ Schultz, Jennifer. (2017).

¹¹ Buzby, J.C., & Hyman, J. (2012). Total and per capita value of food loss in the United States. *Food Policy* Volume 37, Issue 5, October 2012, Pages 561-570. <https://doi.org/10.1016/j.foodpol.2012.06.002>

¹² Buzby and Hyman (2012).

fronts. According to a study published in Food Policy, reducing food loss by just one percent in the United States would result in savings of \$1.66 billion¹³.

School cafeterias account for a significant percentage of food that is thrown out. In Montgomery County alone, schools throw out 14,000 tons of garbage every year - food scraps being a primary component¹⁴. A study among middle school students in Boston found that \$423,349 (26.1% of the total food budget) was thrown out by students every year¹⁵. Students were throwing out 19 percent of entrees, 47 percent of fruits, 25 percent of milk, and 73 percent of vegetables¹⁶. While this food was being wasted, students were not achieving the recommended level of nutrients and were returning home hungry, often to seek out empty calories like chips, soda, and sugary snacks.



It is crucial to reduce food waste in response to the national crises of hunger, environmental pollutants, and poverty. The US Environmental Protection Agency (EPA) prioritizes steps that can be taken to alleviate food waste in the food recovery hierarchy (pictured left)¹⁷. The hierarchy begins at the source reduction level as the most

effective step and works down towards composting and landfill/incineration as last resorts to use

¹³ Buzby and Hyman (2012).

¹⁴ "Recycling in Schools." (2012). *Department of Environmental Protection*. Retrieved from: <https://www.montgomerycountymd.gov/sws/sorrt/sectors/schools.html>

¹⁵ Cohen et. al. (2013).

¹⁶ Cohen et. al (2013).

¹⁷ "Food Recovery Hierarchy." (2018). *Environmental Protection Agency*. Retrieved from: <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy>

excess food. The state can incorporate this hierarchy in its effort to measure the amount of food discarded in school cafeterias and determine new policies which alleviate unnecessary waste, conserve resources, and improve the health of students. In December 2014, the State of Maryland published “Zero Waste Maryland: Maryland’s Plan to Reduce, Reuse and Recycle Nearly All Waste Generated in Maryland by 2040”. This report was generated in order to combat the high levels of waste, including food scraps, produced by Marylanders and to promote a cleaner environment. The Maryland Food Charter also presents food recovery as one of its primary goals to improve the state’s food system. The passing of HB0983 in 2016, titled “Public Schools - Food Recovery Programs - Authorization”, provided county boards of education with the ability to initiate food recovery programs in schools, but many schools still lack the knowledge and resources to conduct these programs. In line with these and other efforts, further policies ought to be implemented to promote greener schools, reduced food waste, and healthier children who are conscious of their impact on the environment.

Origins of the Problem

Although the roots of food waste on a national level are beyond the scope of this paper, there are a multitude of factors which contribute to the high levels of food waste seen in schools.

Over-Serving

Nearly 100,000 schools/institutions participate in the National School Lunch Program (NSLP), a federally run program that reimburses the price of the meal with federal dollars¹⁸. Schools must adhere to the policies implemented by NSLP in order to receive funds. For example, participating cafeterias are required to serve every child five components: meats/meat

¹⁸ “School Meal Trends and Stats”. (2018). *School Meals Trends and Stats*. Retrieved from: <https://schoolnutrition.org/AboutSchoolMeals/SchoolMealTrendsStats/>

alternates, grains, fruit, vegetables, and milk. Children may not finish all five components and leave food uneaten, only to be thrown into the garbage.

Offer versus Serve (OVS) is a provision in NSLP that allows students to decline foods they are unlikely to eat, as long as they take at least three components in the required serving sizes, including a fruit and vegetable. OVS is mandatory within high schools, but only optional in elementary and middle schools. When children are able to choose the foods they enjoy, they are more likely to complete their meal, resulting in reduced food waste¹⁹.

Lack of Infrastructure/Guidance on Waste Reduction

Although federal agencies encourage schools to avoid food waste, many schools are not aware what measures they are able to take to reduce waste, such as maintaining proper food storage. Approximately four to ten percent of food is thrown out before it is even served in the cafeteria, due to over-ordering, overproduction, trim waste, expiration, and spoilage²⁰. Schools may order too much due to a lack of data on how much has been needed to serve students in the past. Kitchens may also practice improper storage etiquette, leaving food to rot at a faster rate.

Food donations and composting are further initiatives which serve to reduce food waste that many schools lack guidance on. Organizing food donations can be challenging, but can serve to help the community and conserve resources. Many schools are not aware of the proper protocol to make donations or what laws protect them in the process, such as the federal Bill Emerson Good Samaritan Act which protects the liability of schools who donate excess food²¹. Due in part to the lack of resources on best practices, thousands of pounds of food go wasted.

Unappealing Food Presentation

¹⁹ “Keeping Food out of the Landfill.” (2016). *Harvard Food Law and Policy Clinic*. Retrieved from: https://www.chlpi.org/wp-content/uploads/2013/12/Food-Waste-Toolkit_Oct-2016_smaller.pdf

²⁰ “Keeping Food out of the Landfill.” (2016).

²¹ “Keeping Food out of the Landfill”. (2016).

Although this may appear obvious, when children are served unappetizing food, they are unlikely to consume it! While children may be averse to fruits and vegetables, more efforts could be made to present nutritious food in an attractive manner and use proper seasoning and cooking methods for an appetizing flavor. Schools may not be keeping track of what students are consuming and are unable to identify what foods are commonly thrown out, or the reasons for waste. If children are not interested in the foods they are served, they will leave them untouched.

Current Efforts

Maryland is making great strides towards reducing food waste, but more progress is needed. As mentioned previously, the passing of House Bill (HB) 0983 in 2016, titled “Public schools - Food Recovery Programs - Authorizations”, allowed county boards of education to initiate food recovery programs within their schools²². In part, this bill allowed the policy options presented in this paper. Stakeholders from food recovery nonprofits and school nutrition programs who consulted on these recommendations cited a lack of knowledge regarding this bill and its usability, as well as a general lack of knowledge and resources to conduct food recovery programs within schools.

In addition to the legal authorization to conduct school recovery programs, organizations like the Maryland Food Bank have put together school pantry tool kits in order to help schools form and maintain a pantry program. The toolkit provides schools with a list of resources they will need to maintain the pantry, establish how much space is necessary, and overcome any obstacles they may face. With the help of initiatives like these, there are now approximately 200 school pantry programs throughout the state²³.

²² “House Bill 983” (2016), *Maryland General Assembly*, Retrieved from:
<http://mgaleg.maryland.gov/2016RS/bills/hb/hb0983f.pdf>

²³ “School Pantry Toolkit.” (2018), *Maryland Food Bank*, Retrieved from:
<https://mdfoodbank.org/wp-content/uploads/2014/03/SchoolPantry-Toolkit.pdf>

Prior to the passing of HB0983, Maryland published the “Zero Waste Maryland: Maryland’s Plan to Reduce, Reuse and Recycle Nearly All Waste Generated in Maryland by 2040” in 2014²⁴. This report was generated in order to combat the high levels of waste, including food scraps, produced by Marylanders and to promote a cleaner environment. It defines what it means for a state to be “zero waste”, overall state goals, and the wide-reaching benefits to waste reduction. It also laid out specific benchmarks and activities for state organizations. This report has since been cancelled but similar food waste reduction efforts have since been initiated²⁵. On November 30, 2016, with help of the Maryland Department of the Environment (MDE), several schools and other stakeholders came together for the Maryland Food Recovery Summit to discuss ongoing programs within the state and potential measures to further reduce food waste²⁶.

We looked to Montgomery County as a current waste reduction leader with its Food Recovery program. This program involves collecting edible food that would otherwise go to waste from places such as restaurants, grocery stores, produce markets, farms, or dining facilities, and distributing it to local emergency food programs within the state. The county has recently approved \$667 for their 2019 fiscal year budget in order to “promote recycling of food scraps as part of the County's overall effort to increase recycling, and reduce the amount of food waste within the County”²⁷. Montgomery County has also put together a 5-year strategic plan in

²⁴ “Zero Waste Maryland: Maryland’s Plan to Reduce, Reuse and Recycle Nearly All Waste Generated in Maryland by 2040.” (December 2014), *Maryland Department of the Environment*, Retrieved from:

http://www.mde.state.md.us/programs/Marylander/Documents/Zero_Waste_Plan_Draft_12.15.14.pdf

²⁵ Dresser, Michael. (June 27, 2017). “Hogan cancels O’Malley-era ‘zero waste’ plan.” *The Baltimore Sun*, Retrieved

from:

<http://www.baltimoresun.com/news/maryland/politics/bs-md-waste-order-20170627-story.html>

²⁶ “Food Scrap Management”. (2016), *Maryland Department of the Environment*. Retrieved from:

<http://mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Pages/FoodScraps.aspx>

²⁷ “Program Description”. (2018). *Solid Waste Services*. Retrieved from:

<https://apps.montgomerycountymd.gov/BASISOPERATING/Common/Program.aspx?ID=81V01&PROGID=P81P23>

order to increase food security within the county. The plan outlines the findings of food waste studies, root causes, and the demographics affected within the county²⁸.

Policy Alternatives

School Food Pantry Job Program

Our first policy option would be to develop a program that combines food waste reduction and high school youth employment opportunities. Throughout the State of Maryland, schools have shown interest in finding ways to donate unopened and unused food items to students and their families. Many initiatives involve donations to local community partners with less of a focus on finding innovative ways to use excess food to feed students at schools²⁹.

This policy calls for a pilot program with two main functions. The first is focused on the donation of uneaten, safe foods being donated to an in-school food pantry. These pantries will be operated in conjunction with the Maryland Food Bank, which currently operates school pantries in 209 sites across the state³⁰. Both types of schools will be considered: those which already have food pantries with the Maryland Food Bank, as well as schools which do not have existing food pantries but would like to establish one. Participating schools must also reach a certain percentage of students who receive free or reduced school meals, as this can serve as a good indicator for food insecurity in the student population. This program will pilot a system to bring uneaten foods from school meals to store in the pantries, and distribute them to students and their families. This would likely be supplemented with other donated food items via the Maryland

²⁸ “A Food Secure Montgomery, What we know now and what we can do: A 5-year Strategic Plan” (2017), *Montgomery County Government*. Retrieved from:

https://www.montgomerycountymd.gov/exec/Resources/Files/pdf/MoCo_Food-Security-Plan_2017.pdf

²⁹ “Keeping Food out of the Landfill”. (2015).

³⁰ “School Pantry.” (2018). *Maryland Food Bank*. Retrieved from:

<https://mdfoodbank.org/our-programs/school-pantry/>

Food Bank, which is how current pantries are stocked. Because these pantries will be staffed by paid student workers, they will be operated out of high schools for the pilot program.

School pantries can reduce the stigma which families feel by being food insecure by presenting donations in a familiar environment. It can also ease the time and effort it can take to get donations, as the student may be able to bring them straight home from school. Additionally, it can help schools continue to help their students, as many teachers and school staff cite frustration at their inability to assist food insecure students, and watch as their attention and educational performance suffer from their lack of nutrition³¹. School pantries also do not require the labor and cost of transporting the food, as a donation to an off-site partner would.

Including high school students as the employees of the pantry makes this a particularly unique program, but one that can have even more impact. This program allows youth to access jobs within their own schools, doing work that benefits their peers as well as themselves. It also reduces the burden for those who need to work at the food pantry, as this normally falls on volunteer work from school staff and parents. Students should not staff the pantry itself, as this may make peers nervous to retrieve their food in fear of confidentiality breaches and possible stigma related to being food insecure. However, students can do all other support activities, such as transporting food from school meals, assembling packages to give to students and families, and creating promotional material. Working in a school pantry has the potential to teach students about the effects of food waste and food insecurity. This education can be through formal lessons that are part of the job program, or simply from students' experiences with the pantry. Thus, this

³¹ "School Pantry." (2018). *Maryland Food Bank*. Retrieved from: <https://mdfoodbank.org/our-programs/school-pantry/>

option accomplishes another objective: to teach future generations the impact waste has on the environment, so that they may carry on a culture of being more environmentally conscious, and promote these practices to their peers both now and in the future.

Food Waste Audits

The second policy option is to encourage schools and LEAs to conduct food waste audits. The audits would be accomplished by a number of mechanisms, including the provision of guidance documents, technical and financial assistance, and connections to potential vendors or stakeholders to provide further assistance.

Food waste audits are able to shed light on streams of waste, allowing organizations to understand the main contributors and primary reasons why the food is wasted. Food waste audits are one of the most impactful investments of time, effort and money that organizations can make to reduce waste. After an audit, organizations can specifically target their waste reduction efforts on their true sources of waste³². In particular, post-audit efforts can often be more focused on source reduction, which, as mentioned previously, is the most impactful manner of reducing waste and its harmful consequences.

The typical school food waste audit has two components: a “pre-consumer” audit and a “post-consumer” audit. The pre-consumer audit documents the practices of the school nutrition program. The audit is compiled over the course of a day or several days, where various members of the school nutrition program staff document food that is wasted and the reason for its waste. This documentation also includes practices detailing food ordering, cooking methods, menu planning, and procedures for waste disposal. Post-audit analysis allows school nutrition

³² “Keeping Food out of the Landfill”. (2015).

programs to better adapt their kitchen practices to reduce waste³³. The “post-consumer ” audit measures the waste that occurs once students have taken their food. Waste is sorted by the type of food so that measurements can be specific. Interviews are conducted with students to learn the reasons why they discarded various food items. School nutrition programs can then improve practices based on their finds. For example, administrators could focus on making food items more appetizing, if this is a commonly cited reason for disposal.

The EPA and other leaders on school food waste audits recommend that students are active members of the waste audit team. As a result, conducting waste audits can be a hands-on educational tool. Students can be involved in conducting the audit in a number of ways, especially the post-consumer waste audit in planning, data collection, data analysis, and creating post-audit strategies³⁴. Additionally, waste audits can be incorporated into class curricula. Iowa’s guide to school food waste audits describes one school which had math classes conduct various calculations on the audit data³⁵. By incorporating these efforts into student education, students become engaged with food waste on an educational and personal level. This leads students to become increasingly passionate and active around the issue, helping Maryland build the next environmentally-conscious generation.

As a result of the many positive ramifications of food waste audits, the state of Maryland would enact policies to encourage schools and LEAs to conduct food waste audits. One helpful, yet inexpensive practice is for Maryland and its agencies, particularly MDE and MSDE, to make

³³ “Food Service/Cafeteria Waste Reduction: Suggestions & Guidance.” (2011). *Ne. Recycling Council*. Retrieved from: <http://nerc.org/documents/schools/FoodServiceWasteReductionInSchools.pdf>

³⁴ “A Guide to Conducting Student Food Waste Audits: A Resource for Schools.” (2017). *The U.S. Environmental Protection Agency, the U.S. Department of Agriculture, and the University of Arkansas*. Retrieved from: https://www.usda.gov/oce/foodwaste/Guide_to_Conducting_Student_Food_Waste_Audit_11-20-2017.pdf

³⁵ “Food Waste Minimization Toolkit For Iowa Schools” (2017). *Iowa Department of Natural Resources, Iowa Department of Education (DOE)*. Retrieved from: <http://www.iowadnr.gov/Portals/idnr/uploads/waste/iowaschoolsfoodwasteminimizationtoolkit.pdf>

information on waste audits more widely available. This would be through the dissemination of materials such as “A Guide to Conducting Student Food Waste Audits: A Resource for Schools” created by the EPA, the USDA, and the University of Arkansas in 2017. MDE and MSDE can also share information specific to Maryland’s policies as they relate to conducting waste audits. They would also create a updated resource listing of other partners who can provide assistance in conducting audits, such as providing supervision, leadership, or even necessary equipment. MSDE and MDE would also be called on to provide technical assistance to interested schools and LEAs.

If possible, funding should be made available to schools and LEAs interested in conducting food waste audits. Although post-audit efforts should decrease costs in the long-term, the audit’s short-term investment may serve as a barrier³⁶. Thus, funding can be granted to assist with costs for equipment, such as sorting bins and gloves, as well as to offset the increased operations for the school nutrition program staff. This funding could be provided as a grant and may be provided to schools which meet certain standards, such as demonstrated financial need as well as commitment to post-audit analysis and waste reduction efforts. This policy also recommends that school waste audits are included in the checklist for the MDE Source Reduction credit. This encourages counties to support school waste audits, as the credit amount increases as counties complete further activities on the checklist³⁷. Another option is that food waste audits could be a required or optional activity for schools to obtain the “Maryland Green Schools” certification. Please read below for more information on this certification program.

³⁶ “Keeping Food out of the Landfill”. (2015).

³⁷ “Source Reduction.” *Maryland Department of the Environment*. Retrieved from: http://mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Pages/source_reduction.aspx

By encouraging schools to conduct food waste audits, they may better understand their particular contributions to food waste, and thus better tailor their waste-reduction efforts. Food waste audits can also serve as a source of education for students by including them in the implementation and analysis of the audits.

Maryland Green Cafeteria Certification Program

Our third recommendation first involves the development and implementation of a study to understand the landscape of food waste in Maryland schools and to identify best practices for waste reduction. This involves the convening of a diverse workgroup, led by the Maryland State Department of Education (MSDE) as well as the Maryland Department of the Environment (MDE). It will be crucial to include directors of state school nutrition programs and school district recycling coordinators from across the state to discuss the feasibility of implementing various practices. The end result would be a report to legislators and the creation of a “toolkit” for school nutrition programs. This toolkit would include best practice recommendations, guidance documents to make state or county based regulations more understandable, and other educational resources. It is important that this toolkit include recommendations which can reduce operational costs for school nutrition programs, as this will make these efforts more likely to be sustainably implemented.

Using this toolkit, the Maryland government would then create a new certification that specifically addresses the growing issue of food waste in public education. Creating a new certification for public schools would accomplish the Governor’s commitment to protecting Maryland’s environment by reducing waste that reaches landfills and possibly the Chesapeake

Bay³⁸. This certification would also further the mission of the Maryland State Department of Education, which aims to promote a healthy environment for all students³⁹.

This certification program would mirror Maryland Green Schools, a program developed by multiple state government agencies with the help of several non-governmental partners. The objective of Maryland Green Schools is to recognize and incentivize schools that include environmental education in their curricula, identify model management practices for their schools, and address environmental issues in their community. The program is also able to provide assistance in areas related to environmental sustainability including tree planting, teacher training, and small grants towards school yard projects.

This new certification could be called the Maryland Green Cafeteria Certification Program (MGCCP). The MGCCP will maintain benchmarks for LEAs and schools to reach. These benchmarks would be influenced by the statewide study and would be developed by the MSDE, in conjunction with other food waste and school nutrition experts, to ensure they are realistic for LEAs and schools to reach. Schools and LEAs would not be incentivized to reduce the amount of nutritious food given to students but rather to limit the waste of students through strategies such as increased options in the cafeteria, provision of more appetizing food, food recovery options, and educational awareness campaigns for students.

In order for schools to achieve the certification, they must implement some of the recommendations from the study. Once showing how these recommendations resulted in a reduction of food waste, they will receive the certification. MGCCP would also require schools to conduct community outreach that teaches students and/or their families various strategies to

³⁸ “Environment”. (2018). *Larry Hogan for Governor*. Retrieved from: <https://larryhogan.com/issues/environment/>

³⁹ “About the Maryland State Department of Education.” (2018). *Maryland Department of Education*. Retrieved from: <http://marylandpublicschools.org/about/pages/default.aspx>

reduce waste when they are outside of their school or at home. The program would require schools to educate students on food waste reduction in order to receive the certification.

There would be multiple incentives for schools to apply for the certification of a Maryland green cafeteria school. Certified schools would be recognized in the community as leaders in reducing waste, saving money, and creating a smarter and greener next generation of community leaders. Secondly, both Maryland Green Schools and MGCCP would help schools meet the U.S. Green Ribbon Schools requirements. Finally, a financial component can be created by the Maryland state government that would make a small grant available to schools that meet the MGCCP benchmarks. These funds could be used to further the expansion of waste reduction campaigns or programs within the school.

Analysis and Recommendation

In order to determine our final policy recommendation, we have developed standards to use in analyzing each option. Each policy is rated along six metrics: cost to state, cost to school nutrition programs, food waste reduction efficacy, potential to educate students on food waste reduction, political feasibility, and added benefits. These metrics are used to determine the best option for the state government to implement in fighting food waste within school nutrition programs. “Cost to state” refers to the financial impact of each policy on the state budget and various agencies for the upcoming fiscal year. “Cost to School Nutrition Programs” refers to the financial impact of each policy on the operational cost of local school nutrition programs. “Food waste reduction efficacy” refers to how effective the policy is in diminishing food waste based off the EPA food waste reduction hierarchy, starting at the source reduction level and working down towards composting⁴⁰. “Student education” refers to the potential each policy has in

⁴⁰ “Food Recovery Hierarchy.” (2018).

educating students on environmental consciousness and waste reduction. “Political feasibility” refers to the likelihood of the state government and other relevant stakeholders to adopt each policy. “Added benefits” refers to any extra advantages offered by the policy outside of waste reduction and education. Each policy is ranked on a scale of one to five, with one being the least advantageous and five being the most. Each policy’s total score was added up based off each metric in order to determine the best policy to implement.

	<u>School Pantries</u>	<u>Food Waste Audits</u>	<u>Certification Program</u>
Cost to State	High (1)	Moderately Low (4)	Moderate (3)
Cost to School Nutrition Programs	Moderately Low (4)	Low (5)	Moderately Low (4)
Waste Reduction	Lower (2)	Moderately High (4)	High (5)
Student Education	Moderate (3)	Moderate (3)	High (5)
Political Feasibility	Low (1)	Moderately High (4)	Moderately High (4)
Added Benefits, 0 or 2	Youth Job Development (2)	0	0
TOTAL:	13	20	21

School Pantries

The in-school pantry program would initially cost the State and school nutrition programs in setting up new pilot pantries, paying the students involved, and attending to the additional fiscal and operational costs. However, the financial benefits of the school pantry program would not be greater than the disadvantages. With having to set up the program, operational and administrative costs, as well as paying the students, the State and the School Nutrition Programs

would face ongoing costs with no foreseeable payout. In regard to waste reduction efficacy, since this option focuses on the recovery of excess food, it falls within the middle range of the food recovery hierarchy. While recovering excess food a step in the right direction it does not go to the source of food waste.

While this program falls short in other categories it is ranked highly in terms of student education. By having students actually working in the pantry program they learn how much food actually goes to waste and the importance of food recovery. Students can learn how they have the power to benefit those around them by donating excess food. The initial and continued cost to upkeep the pantry would make it a hard sell to the legislature, thus the option ranked low for its political feasibility.

Food Waste Audits

The policy received a high score for cost to state. At its start, agencies will have extra operations to compile informative materials and contact external resources. Otherwise, the only ongoing cost is to provide schools and LEAs with funding for audit materials. These costs are low as the materials needed (heavy duty gloves, plastic bins, etc) are basic, and schools often own most of them. This option has a strong potential to eventually decrease costs for school nutrition programs. The immediate investment to conduct these audits is overall low, as the audits have a short duration and most work can be done by student volunteers. Then, the understanding– and eventual reduction– of waste can lead to significant reductions in costs for school nutrition programs. Waste reduction efficacy received a high score as waste audits have been evidenced highly effective for reducing school food waste, particularly at the source. However, because of the lower potential for uptake by schools, the policy may have less effect on the state’s food waste and thus the second-highest score was awarded. The policy has a weaker

ability to educate students. While audits provide a meaningful, hands-on lesson in food waste, they only affect those students who are incorporated into the audit, rather than being school-wide. This education also lasts only for the audit's short duration. This option has a higher political feasibility. For the state, it is non-controversial and has a low cost to the state and its agencies. It also provides a large potential for school nutrition programs to reduce costs, which, as noted previously, is widely supported by school nutrition program advocates. The policy received a zero score for "added benefits" as it focuses solely around food waste reduction and education.

Certification Program

The MGCCP would initially have a moderate cost barrier for the State of Maryland due to the development of a comprehensive statewide study and certification program. However, because the purpose of the study and certification is to save the state money and resources in the next five to ten years, short term cost is to be expected. In comparison to the cost for the school nutrition program, the schools should expect moderately low expenses depending on the LEA. The school nutrition programs would implement some of the recommendations from the study if they choose. As a result, nutrition administrators can decide best practices to implement at their own time and at their own school's ability to allocate funds. In regards to waste reduction efficacy, schools will be given flexibility in determining where to identify areas of waste. As a result, this can manifest in the form of food scrap recycling or other programs that are on the food recovery hierarchy. The MGCCP will require that schools involve students in teaching waste reduction strategies and stress the importance of waste reduction. Furthermore, MGCCP will recommend that schools become active in identifying waste reduction opportunities within their community as another component of student education. Finally, regarding the political

feasibility of the policy, the MGCCP will likely face moderately low political barriers. Stakeholders within school nutrition programs are given direction and flexibility from the State. Furthermore, the State is able to incentivize waste reduction without removing authority normally given to the local administrators.

Implementation Issues

One of the main concerns in effectively implementing these policies is conducting proper outreach. Many stakeholders who were consulted in the production of this paper cited a lack of awareness of policies to be a major barrier to progress in food waste reduction. This is a significant consideration for all of these policies, which rely on uptake by LEAs and area school nutrition programs. Effective outreach can be difficult, given the vast number of policies enacted each legislation cycle as well as the capacities of state agencies to conduct targeted outreach.

Another issue for waste reduction is the cost that is associated with administration, maintenance of programs, and the experts needed in addressing the problem effectively. Schools in affluent areas will have an easier time addressing the issue. As a result, benchmarks for the program should be high for the program's certification to have any real value. However, schools in less affluent areas will likely be discouraged to apply or enact policies to a program with very high requirements.

Conclusion

With roughly 205,000 children within our own state facing hunger⁴¹ and 40% of food produced in the United States going to waste⁴², we believe that our policy options provide a way to help improve Maryland by reducing food waste and its negative impacts on our environment

⁴¹ "Hunger in Maryland". (2018) *Feeding America*

⁴² "Nutrition Fact." (2018). *Centers for Disease Control and Prevention*.

and economy, helping to feed those without sufficient food, and building a generation passionate about keeping Maryland green and healthy.

In summation, we have presented three policy options: 1) A "Green Cafeterias" certification program supported by a statewide study, 2) Policy options to encourage schools to audit their food waste, and, 3) A program to divert uneaten and unspoiled food to in-school pantries, which are stocked and staffed by high school students as a job opportunity.

After performing a detailed analysis, we have determined that the Green Cafeterias Certification Program is our most feasible option in continuing our journey to reduce food waste in Maryland Public Schools. This is due to its moderately low cost to the state and school nutrition programs, and most importantly, its great potential for student education and waste reduction. Ultimately, we believe that by implementing policies to reduce food waste in K-12 schools, Maryland continues to serve as an example of a state that care for the health of all of its residents and their environment.

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