

**A Review of the Recycling Industry  
and the Recyclable Materials Markets  
in the State of Mississippi**



**Report to the  
Mississippi Legislature  
by the  
State Task Force  
on Recycling**

**December 31, 2006**

*This page  
intentionally  
left blank*

# Table of Contents

<b>I</b>	<b>Executive Summary .....</b>	<b>5</b>
<b>II</b>	<b>Background Information.....</b>	<b>7</b>
	The Task.....	7
	The Process .....	8
	The Recycling Business Survey Results.....	11
	Overview of Recycling Laws and Requirements in Mississippi .....	12
	A National and Regional Recycling Perspective.....	14
<b>III</b>	<b>Status of the Existing Recycling Industry in Mississippi .....</b>	<b>17</b>
	Metals .....	17
	Paper and Cardboard.....	19
	Plastics.....	23
	Glass.....	26
	Automotive.....	27
	Electronics.....	34
	Other Materials.....	37
<b>IV</b>	<b>Impact of the Recycling Industry on Mississippi.....</b>	<b>41</b>
	Economic Impacts and Benefits.....	41
	Other Benefits.....	48
<b>V</b>	<b>Barriers/Disincentives to Growth of the Recycling Industry.....</b>	<b>51</b>
	Barriers Identified by Survey Participants .....	51
	Barriers Identified by Other Sources .....	52
<b>VI</b>	<b>Recommendations for Growth of the Recycling Industry and Recyclable Materials Markets.....</b>	<b>55</b>
<b>VII</b>	<b>Summary Conclusion.....</b>	<b>65</b>
	<b>References and Acknowledgements.....</b>	<b>67</b>
	<b>Appendices.....</b>	<b>69</b>

*This page  
intentionally  
left blank*

# **I Executive Summary**

***“According to a 2001 national study on the impacts of recycling, the United States has over 56,000 recycling establishments employing almost 1.1 million people with an additional 1.4 million in indirect service jobs. These establishments generate an annual payroll of \$37 billion and gross \$236 billion in annual revenues.”***

Given these tremendous economic benefits from recycling, the State Task Force on Recycling, at the direction of the Mississippi Legislature, has spent the past several months reviewing the conditions of the recycling industry and the recyclable materials markets in Mississippi and discussing possible ways that our state can enhance these business conditions. During this time frame, the Task Force surveyed various recycling businesses in Mississippi as well as other recycling businesses outside the state that are believed to take materials from Mississippi sources. This report contains the findings and recommendations developed by the Task Force for the consideration of the Mississippi Legislature. The report contains important background and historical information but the substance of the Task Force review is organized into four sections. These components of the report include: a review of the status and existing conditions of the recycling industry in Mississippi; an assessment of the economic impacts and other benefits of the existing recycling industry, a description of the barriers or disincentives to the growth of the recycling industry, and recommendations by the Task Force to the Legislature on actions that could enhance the growth and development of the recycling industry. The recommendations of this report focus on various forms of assistance, actions and programs that the state should implement in order to stimulate and encourage the development and expansion of recycling businesses and industries in Mississippi. These recommendations can be found in Section IV of this report and have been separated into categories. The recommendations include:

- Changes to certain laws and regulations to grow recycling businesses;
- Programs to enhance collection of recyclables in the state;
- Requirements for reporting and measuring recycling in the state;
- Efforts to improve public outreach and education;
- Enhancing transportation conditions for recycling businesses;
- Training and technical assistance programs for recycling businesses;
- Recruitment of recycling businesses;
- Provisions to grow recycling markets; and
- Development of focused research to foster new recycling businesses.

The Task Force also recommends that the Legislature consider the continuation or re-initiation of this Task Force on Recycling in the coming years. In its continuation, the Task Force would be expected to review our state’s overall progress towards enhancing recycling conditions in Mississippi and to ensure that this report’s recommendations have been considered and where possible, implemented.

The desires of the Task Force in producing this report were to minimize the creation of additional paper wastes. Therefore, limited copies of this report have actually been printed and distributed in hard copy. The report is available in electronic format and can also be downloaded from the web page of the Task Force on Recycling at the following address:

[http://www.deq.state.ms.us/MDEQ.nsf/page/SW\\_MississippiTaskForceonRecycling?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/SW_MississippiTaskForceonRecycling?OpenDocument)

## **II Background Information**

### **The Task**

The Mississippi Legislature created the State Task Force on Recycling in the 2004 Legislative session. The Task Force was originally created to develop a comprehensive state plan for a system to recycle household items and to serve as a consensus group to coordinate the efforts of the state and local governments to create an effective recycling system in the state. This report was finalized and provided to the Legislature early in the 2005 Legislative Session. In 2006, House Bill 896 was adopted by the State Legislature requiring the Mississippi Development Authority (MDA) to assist the Task Force in developing a report assessing the status of the recycling industry and the recyclable materials markets in the state. Because the Task Force was assigned to the Mississippi Department of Environmental Quality (MDEQ) under the original law, MDEQ has also assisted in facilitating the meetings and in developing this report to the Legislature by the Task Force in 2006. However, it should be noted that the observations and recommendations of this report are those of the State Task Force on Recycling and are not the recommendations of the MDA or the MDEQ.

The primary purpose of the 2006 Task Force report as described in House Bill 896 was to prepare a report assessing the recycling industry and recyclable materials markets in the State for the Legislature. This report includes a description of the process that the Task Force undertook in conducting its review. In addition to the Task Force report, the Mississippi Department of Environmental Quality was required by House Bill 896 to develop a comprehensive report on the status of pollution prevention and recycling activities in Mississippi.

Under the provisions of the original legislation, the Task Force was comprised of representatives from 13 organizations designated in the law. In addition, there were six appointees of the Governor representing various recycling sectors that were asked to serve on the Task Force. Membership in the Task Force was voluntary and no member was compensated or reimbursed with state funds related to the discharge of duties associated with the Task Force. The organizations named in the law as members of the Task Force and the persons that actively served as the designees of those organizations were as follows:

- (a) Mississippi Municipal League: Mr. Nick Wilson;
- (b) Mississippi Association of Supervisors: Mr. Joel Yelverton and Ms. Lori Langford;
- (c) Department of Corrections: Mr. Butch Meredith;
- (d) Department of Environmental Quality: Mr. Richard Harrell;
- (e) Cooperative Extension Service: Mr. Stuart Dean;
- (f) Sierra Club: No Participant;
- (g) Keep Mississippi Beautiful: Ms. Barbara Dorr;
- (h) Mississippi Malt Beverage Association: Mr. Richard Brown;
- (i) Mississippi Soft Drink Association: Mr. Ron Aldridge;

- (j) Mississippi Retail Association: Mr. Crowell Armstrong;
- (k) Mississippi Manufacturer's Association: Mr. Russell Bennett;
- (l) Mississippi Petroleum Marketers and Convenience Stores Association: Mr. Jerry Wilkerson and
- (m) Mississippi Farm Bureau Federation: Mr. Vernon Hartley

There were six (6) members, under the law, appointed by the Governor in 2004 from various recycling industry sectors. The Gubernatorial appointees that participated in the 2006 Task Force were as follows:

- (a) Plastic recycling: No Participant;
- (b) Metal recycling: Mr. Phil Morris, Metal Management, Inc.;
- (c) Paper recycling: No Participant;
- (d) Glass recycling: Ms. Renee' Howell, Columbus Air Force Base;
- (e) Household and highway hazardous waste recycling: Ms. Kathy Avis, Metal Management, Inc.; and
- (f) Solid waste disposal: No Participant.

## **The Process**

The meetings of the Task Force were subject to the State Open Meetings Law and members of the public were invited to attend the meetings. In order to publicize the Task Force activities, the scheduled meetings were listed on the MDEQ web site and were posted on the MDEQ public notice board at the offices of the MDEQ. In addition, persons in the recycling community who were interested in attending the meetings of the Task Force were emailed notices of the meetings in advance of the meeting dates.

The minutes of each of the Task Force's meetings along with other information can be found on the web site cited in the Executive Summary. Through these efforts, the Task Force attempted to advise and involve the public of its actions. The Task Force was also interested in receiving information from members of the recycling business community related to growth and development of the industry and consequently a number of recycling business representatives were also invited to attend various Task Force meetings.

The Task Force held its initial meeting on August 23, 2006 at the offices of the Mississippi Department of Environmental Quality in Jackson, Mississippi. At the meeting, Task Force members were introduced to the new representatives on the Task Force as well as the officials with the Mississippi Development Authority (MDA) that would be working to assist the Task Force. Mr. Kenneth Calvin, the Director of the Energy Division with MDA was introduced as the lead representative of that agency to assist the Task Force. Mr. Bob Lord with MDA also was introduced and would provide assistance to the Task Force as necessary. The group elected to maintain those officers previously chosen in the 2004 Task Force effort. Those chosen to continue serving in their positions as officers of the Task Force were Mr. Phil Morris of Metal Management, Inc., President; Ms. Barbara Dorr of Keep Mississippi Beautiful, Vice-President; and Mr.



Richard Harrell of the Mississippi Department of Environmental Quality, Secretary. At the initial meeting, the Task Force conducted a review of the 2004 report recommendations and process and discussed the new requirements of the 2006 bill. In addition, the Task Force held discussions on the development of its recycling business report and the process by which it would gather information for the report. Task Force members also discussed a recently released economic impact study by the State of South Carolina of the recycling industry in that state conducted by economists at the College of Charleston. The Task Force agreed that a survey of recycling businesses in and around the state would help in collection of information important to the development of the report. A smaller work group was appointed to draft a proposed draft outline of the report and to develop a draft of a recycling business survey to be distributed. The work group consisted of Task Force members: Vernon Hartley (Farm Bureau), Richard Harrell (MDEQ), Nick Wilson (MML), and agency support staff Mark Williams and John David Burns (MDEQ) and Kenneth Calvin and Bob Lord (MDA). This work group met on Friday, August 25<sup>th</sup> to discuss and draft these documents for the review consideration of the full Task Force.

At its second meeting on September 6, 2006 the Task Force met at the offices of the Mississippi Association of Supervisors. The discussions of this meeting centered on the content and format of the recycling business survey and of the draft outline of the report. Changes were suggested by Task Force members to simplify the survey to encourage better response. In addition, Kenneth Calvin of MDA presented information on discussions with the State Economist, Mr. Bob Neal, with the Institutions of Higher Learning (IHL). Mr. Calvin on behalf of the Task Force requested the assistance of IHL in preparing an study of economic impact of the recycling industry on the state. The Task Force was advised that IHL would likely be able to assist with some assessment of the economic impacts based on results and response of the recycling business survey. The Task Force set a goal of attempting to get the recycling business survey completed and mailed out by the end of September. Mark Williams of MDEQ agreed to make the requested changes to the survey form and to provide a revised version to the Task Force prior to its next meeting. In addition, Mr. Williams agreed to draft an accompanying cover memo for the survey for consideration of the Task Force.

The Task Force held its next meeting on September 25, 2006 again at the offices of the Mississippi Association of Supervisors in Jackson, MS. The Task Force again focused on the content of the survey and the draft cover memorandum. Several guests were invited to participate in the discussions of that meeting. Mr. Walter Ward of Community Recycling in Rolling Fork, Mississippi attended and provided the Task Force with some perspective of a recycling business person that would receive the group's survey. In addition, Kristi Sather-Smith and Allison Satterfield representing the recycling programs at Hinds Community College attended and offered helpful observations and suggestions to the Task Force process. Also in attendance was Mr. Bob Neal of IHL who offered comments on the information in the survey that would be important to that agency in conducting an economic impact analysis. The Task Force members also were provided a copy of the proposed mailing list and were asked to help correct information and consolidate facilities where possible. It was agreed that the recycling business surveys

would be mailed out by the end of September with a deadline of Monday, October 16<sup>th</sup> for receipt of the completed surveys.

The Task Force held its next meeting on Tuesday, October 17<sup>th</sup> at the offices of the Mississippi Farm Bureau Federation in Jackson, MS. At this meeting, the Task Force discussed the response to the survey. It was noted that survey response was relatively low at about 20% of recipients. The Task Force members were given a copy of the mailing list with the survey respondents noted and the members went down the listing and designated members of the group to contact businesses who had not responded to ask for their participation in the survey. In addition, the Task Force agreed to create work groups centered on the various recycling sectors to conduct more focused work on the report. The work groups were organized as follows:

- *Metals*: Kathy Avis, Russell Bennett and Phil Morris;
- *Paper & Cardboard*: Butch Meredith, Richard Harrell, Walter Ward (invited guest) and Nick Wilson;
- *Plastics & Glass*: Ron Aldridge, Vernon Hartley, Renee Howell, and Richard Brown
- *Auto/Electronics/Other*: John David Burns, Barbara Dorr, Joel Yelverton and Stuart Dean.

The Task Force agreed that each work group would develop their assigned parts for integration into the overall report. After discussion, Mark Williams of MDEQ agreed to draft and provide an outline for each work group to follow for the content and format of the work group reports.

The Task Force held its next meeting on November 1, 2006 at the offices of the Mississippi Association of Supervisors. Task Force members were provided with binders containing hard copies of the completed recycling business surveys. The contact information on each survey was blanked out so as to protect the confidentiality of the survey participant. The focus of the meeting's discussions centered on the survey responses and the content of the work group reports. The Task Force members agreed that each work group would take the month of November to develop its report for integration into the overall report.

On Wednesday, November 29<sup>th</sup>, 2006, the Task Force reconvened to discuss the individual work group reports. There was a great deal of discussion about the content of these reports and information that should be included. The work groups all indicated that they were on schedule for completing the work group reports and having drafts to MDEQ for integration into the overall report.

On December 15<sup>th</sup>, the Task Force met at the offices of the MDEQ to discuss the draft report and to develop comments and a review strategy for the content and recommendations of the report. A hard copy of the report was distributed to those in attendance and the Task Force went through the report section by section discussing the components of each section that needed to be reviewed more closely. A revised draft of the report was then sent by email to Task Force members for their final review and

comment. The Task Force held its final meeting at the offices of the MDEQ on Thursday, December 28<sup>th</sup> to finalize comments and changes to the final report for the Legislature.

## **The Recycling Business Survey Results**

As previously stated, the Task Force elected to survey recycling businesses in Mississippi and in the surrounding region as a means of collecting information on the status of recycling in the state and barriers to growth of the recycling industry. Prior to sending the survey out, the Task Force had to construct a completed mailing list of recipients. This mailing list was developed from various sources, including MDEQ's current state and regional recycling directories, information obtained from recycling information on the internet, referrals and recommendations of Task Force members, and information obtained from the recycling community and/or local government collectors of recyclables. The Task Force made its final revisions to the recycling business survey and cover memorandum and mailed out the survey on Friday, September 29, 2006. The survey requested that recipients complete the information and mail the completed survey back to the Task Force by October 16, 2006. A copy of the survey has been included in this report in Appendices 1. The survey was sent to 263 recycling businesses in Mississippi and in the states surrounding Mississippi. Almost 60% of the businesses surveyed were in Mississippi.

Initially survey response was extremely poor with just under 20% of the survey recipients responding. After the October 16<sup>th</sup> deadline, the Task Force members initiated follow-up telephone calls to many in-state survey recipients to encourage them to respond. This assistance did help to increase the survey response. The final survey responses were received from just over 26% of the overall survey recipients. However, for in-state recipients the survey response reached 34% of the surveys sent. While this increased survey response was helpful and according to experts is about the standard rate of response, the level of information that the Task Force received from the surveys was very limited. Many survey participants did not provide salary or employee information. Even more survey participants failed to provide the quantity information on the amounts of recyclables received and processed. Many businesses consider this information confidential and were concerned that the information might somehow become available to their competitors. This perception seemed to be a concern even though the Task Force committed to keeping the information confidential and committed to reporting only aggregate information. Consequently, because of the limited information provided in the survey responses, the Task Force was somewhat restricted in its ability to adequately assess the recycling business conditions in the state through the survey data.

The survey recipients did provide information on the roles of their businesses in the recycling industry. Survey recipients indicated that their business operations fit into the recycling business activity categories as described in the following Table A. The first column describes the recycling business categories on the survey. The middle column represents the percentage of in-state responses and the 3<sup>rd</sup> column indicates the overall

percentage of responses for that category from both in-state and out of state survey participants.

**TABLE A.**

<b>Recycling Business Activity Category</b>	<b>% of In-State Survey Respondents Involved in this Recycling Activity</b>	<b>% of All Survey Respondents Involved in this Recycling Activity</b>
Transporters	53%	42%
Collectors	65%	54%
Processors	62%	56%
Brokers	15%	25%
End Users	15%	17%
Manufacturers	9%	12.5%
Re-Manufacturers	9%	8%

Many of the recipients surveyed indicated that their business operations fit into multiple recycling business categories. Some 53% of the in-state businesses responding to the survey indicated that their operations include transportation of recyclables, 65% are collectors, and 62% processors. These figures provide an indication of the types of recycling businesses that responded to the survey. Additional details of the survey responses will be shared and discussed in other areas of this report.

### **Overview of Recycling Laws and Requirements in Mississippi**

The State of Mississippi has a current state-recycling goal of twenty-five percent (25%). This goal was originally set in the Mississippi Multimedia Pollution Prevention Act, adopted by the State Legislature in 1990. This act, among other things, established state policy with regards to the role of pollution prevention and recycling in waste management. The law promoted recycling over waste disposal; required all state agencies to establish recycling programs; required state agencies to establish policies for the procurement of goods containing recycled content; fostered education to the public on recycling; established a cooperative state program for assistance in pollution prevention and recycling; encouraged local governments to implement recycling programs in their jurisdictions; and promoted the development of successful markets for recyclables. Another component of the Act was the creation of a Recycling Market Development Council to review and develop a report on improving market development conditions in the state for recyclables. This Council met for period of around two years and released a report in November of 1993 that contained various recommendations related to enhancing recycling market conditions.

The 1993 report outlined several key concepts that are central to the successful implementation of a recycling program that are still valid today. The RMDC realized that a driving force behind these concepts was to educate the citizens of Mississippi on how to recycle, the options available, and the benefits of recycling. A few of the concepts outlined in the 1993 report included:

- In an effective recycling program, participation must be simple and repetitive.
- Incentives and rewards increase the likelihood of recycling.
- Citizens must feel that they have a reason to recycle, whether it is a cleaner environment or increased income.

Also in 1991, the Solid Waste Planning Act was adopted by the Legislature. This act required that each local government develop a solid waste management plan with a focus on meeting the waste collection needs of its citizens and minimizing the amount of waste going into landfills. The Act required that these local plans include a strategy for achieving the State's waste reduction goal of 25% and a schedule for implementing that strategy. Many local governments have moved forward and successfully implemented recycling and waste reduction programs. Other local governments, however, have been unable to feasibly implement a recycling program.

Also in the 1991 session of the Legislature, the waste tire law of Mississippi and the lead-acid battery recycling law were established. These laws encouraged the development of waste-specific recycling programs for tires and batteries in the state. Waste-specific recycling programs such as those that were adopted through legislative actions in 1991 have become very successful. The Task Force observed that these existing programs could serve as models in developing recommendations for growing recycling businesses and markets in Mississippi. For example, the Mississippi waste tire program currently has a recycling rate for waste tires that exceeds 85%. Tires in Mississippi are collected by private haulers, local governments, tire retail outlets and other entities and are transported to facilities in the state that process the tire into a more usable form or into a tire derived product. Some of the uses of Mississippi waste tires include molded rubber products such as air conditioning pads, mobile home pads and floor mats, crumb rubber products that are used in tire derived asphalt and in the production of new tires, tire derived fuel sources, and chipped rubber for play ground, athletic and equestrian facility use. In addition, other smaller scale forms of waste tire recycling include the manufacture of horse swings, belted floor mats, and bush hog tires. Recycling of waste tires has been aided by the availability of funding support from waste tire recycling grants and local government collection grants as well as policies and regulations that specifically encourage recycling of the tires. The 1991 session also saw laws passed requiring that plastic containers be imprinted with the type of plastic resin for recycling purposes and requiring the MDEQ to develop regulations and standards for composting facilities and for compost distribution and use in the state.

In the 1997 Session of the Mississippi Legislature, the Local Governments Solid Waste Assistance Fund was created. This amendment to state law redirected portions of the funding derived from solid waste disposal fees in the state from the state Corrective Action Trust Fund to a solid waste assistance grants fund for local governments. The funding was initially directed at assisting local governments in dealing with illegal dumping issues in their jurisdictions. However, the law also allowed the local governments to use the grant funds to support local recycling programs and projects and for bulky waste collection and recycling programs for white goods and yard wastes.

These grant funds have been instrumental to many local governments in developing and implementing various recycling programs.

In 2004, the Legislature created the State Task Force on Recycling. As indicated in the Executive Summary, the Task Force was required by the Legislature to develop a comprehensive system for recycling in the state. The Task Force developed and finalized its report and provided the report to the 2005 Legislature. The recommendations from that report were used to develop additional recycling legislation that was adopted in 2006. The 2006 Legislation required the Task Force with the assistance of the Mississippi Development Authority to prepare this report assessing the status of the recycling industry in Mississippi and the recyclable materials markets in the state. In addition, the 2006 Legislation clarified the ability of local governments to implement recycling projects or to sell recyclables, required MDEQ to give priority to recycling projects in awarding solid waste assistance grants; required MDEQ to provide technical assistance programs for businesses that will recycle; required MDEQ to develop reports on the overall status of recycling in the state, required MDEQ and MDA to work together to recruit and promote recycling industries and potential recyclable materials markets in the state and required the State Department Of Education to develop or select an updated waste minimization awareness curriculum for elementary and secondary levels of education. Many of these efforts are now underway and will be finalized or addressed in the coming months.

### **National and Regional Recycling Efforts**

As reported in the 2004 Report of the Task Force on Recycling to the Legislature, recycling of solid wastes nationally is directed and promoted by the U.S. Environmental Protection Agency (EPA) and by the efforts of individual states. The U.S. EPA in late 2002, created the Resource Conservation Challenge (RCC). This national challenge represents an effort to find flexible, yet protective ways to conserve our national resources. One of the major challenges of the RCC is to prevent pollution and to promote the recycling and reuse of materials. The RCC supports six different program elements that reflect a lifecycle, multimedia approach to improving our environment. These elements serve as the framework for numerous partnerships and projects that comprise the RCC. The RCC also includes a challenge to the nation to achieve a recycling goal of 35% by 2010. The EPA reports that the nation has already attained a 32 percent recycling rate, while Biocycle Magazine reports that the nation's recycling rate is 28%.

EPA has launched several national recycling or waste reuse programs and partnerships including: "America's Marketplace Recycles," "Plug-In to e-Cycling," "Waste Wise," and the "Coal Combustion Partnership." "America's Marketplace Recycles" is a recycling program aimed at shopping centers and their retail tenants and employees. The "Plug-In to e-Cycling" program is a program that is aimed at reclaiming the thousands of tons of electronics wastes that we discard annually. The "Waste Wise" program is a partnership program that focuses on waste reduction and prevention. Finally the Coal Combustion Partnership is an organization that promotes the legitimate re-use and recycling of coal combustion by-products. The creation of these programs by EPA and

the challenging recycling goal set by the agency indicates that EPA's focus and plans for recycling will be long term. The State of Mississippi will definitely benefit in partnering with EPA in these recycling programs.

EPA's efforts on the national level have also been supplemented by programs of various sectors of the recycling industry. Industry associations or partnerships exist for virtually every sector of recycling and work to support and increase recycling activities. The aluminum industry for instance unveiled the Curbside Value Partnership (CVP) in August 2005 in an attempt to combat municipal recycling program funding reductions and reductions in education efforts and recycling staff. The project has been described by the Aluminum Can Council as a national initiative to engage municipalities, recycling coalitions, MRF operations, haulers and other interested third parties in collaborative efforts to educate residents, boost participation and measure success with real data. Local communities nationwide are offered assistance through the CVP in improving their local recycling programs through research efforts, partnership activities, and the development and distribution of best management practices and communication tools and templates. Mississippi representatives in the beverage industry have also been working to involve Mississippi communities in these CVP efforts.

In addition to the national efforts, there are a number of regional efforts and organizations that promote the growth and expansion of recycling in the southeast. The U.S. EPA Region IV office has established the Southeast Recycling Alliance that includes recycling programs from each of the States in EPA Region IV. The states involved include Mississippi, Alabama, Florida, Georgia, Kentucky, North Carolina, South Carolina, Tennessee and Florida. In addition to the state programs involved in the alliance, a new regional recycling group called the Southeast Recycling Development Council (SERDC) has joined EPA as a partner in the alliance. SERDC was formed as a consortium of state recycling organizations, various private recycling businesses and industries, as well as state agencies from across the southeast. The states involved in SERDC mirror the EPA Region IV states but also include the states of Arkansas, Louisiana and Virginia. This organization was formed solely to promote and grow recycling businesses and development in the southeast. Another partner in the Southeast Recycling Alliance is the Southern States Energy Board (SSEB). The SSEB is a compact organization created originally in 1960 to enhance economic development and the quality of life in the south through innovations in energy and environmental policies, programs and technologies. The SSEB includes all of the states in EPA Region IV and SERDC but also includes Missouri, Oklahoma, Texas and West Virginia. The final partner in the Southeast Recycling Alliance is the Southern Waste Information Exchange (SWIX). SWIX is a non-profit clearinghouse and repository for the solid waste and recycling industry. SWIX is quartered in Tallahassee, Florida and provides various services concerning recycling market development, recycled products, solid and hazardous waste management, regulations/legislation on waste and recycling, alternative and emerging waste technologies, trade journals and associations, technical reports, the availability of and demand for recyclables, and various other waste and recycling services and products. The Task Force was pleased to note that the State of Mississippi is represented in the

regional organizations identified above and is actively participating in these important regional efforts to promote and grow recycling in the south.



### **III The Status of The Recycling Industry and Materials Markets in Mississippi**

The State Task Force on Recycling has conducted a review of the various recycling businesses and recyclable materials markets in the state. The results of that review are included below and are separated by the various materials sectors. In addition to the traditional recycling sectors of metals, paper, plastics and glass, the Task Force has also included a review of recyclable automotive wastes, electronics, and various other miscellaneous wastes.

#### **The Metals Sector**

Perhaps the strongest recycling business sector in Mississippi and nationally is the metals recycling industry. The healthy status of this segment of the recycling industry has been driven by the dramatic increase in global demand for the different types of scrap metals. Due to this increased demand, the value of scrap metal has dramatically increased. According to a recent article in Smart Money Magazine, just five years ago, a ton of ferrous metal scrap (discarded bits of iron and iron-based alloys like steel) could have been purchased for \$100. Today buyers may pay more than \$250 per ton. Higher energy prices have made recycling metals more attractive. Recycling and re-melting metals has actually become more cost efficient than mining new material because it takes much more energy to extract ore from the ground and turn it into useable metal than it does to reprocess and remelt scrap metal.

Recyclable metals can be categorized into two categories: ferrous metals and nonferrous metals. Ferrous metals are those metals that contain iron including various forms of steel and cast iron materials. Non-ferrous metals are those metal alloys that do not contain only residual amounts of iron. Non ferrous metals include aluminum, copper, brass, lead, nickel, and zinc. Sources of recyclable metal materials in Mississippi appear strong for the metal recycling industry at this time. However, the strong sources of materials may change in the future as metal stockpiles around the state are reclaimed and recycled. Available metal recyclables originate from five types of sources as follows (the percentages are estimates of the Task Force metals work group):

<b>Sources of Recyclable Metals in Mississippi</b>	<b>Percentages from Sources</b>
Industrial	40%
Automotive	35%
Residential	15%
Agricultural/Commercial	9%
Government	1%

A complex network businesses and individuals involved in the metals recycling industry has evolved across the state. This network includes collectors, haulers, brokers and processors. The collection network ranges from the individual who collects cans at a residence or business to those persons who are called “peddlers” who search daily for recyclable materials to companies and businesses which provide containers and established locations to purchase recyclable materials. Scrap metal collectors have opened businesses throughout the state and are fairly evenly distributed in correlation to the population density and the resulting available volumes of metal recyclables.

Processors of metals are fewer in number in the state than are collectors. The main purpose of processors is to convert the scrap metals to an acceptable package for transporting and re-melting. At the processing stage, a large amount of capital investment is needed. The Task Force noted that metal processors appeared to be strategically located across Mississippi to attract a certain volume from the collectors. Processors are not usually in close proximity to each other unless significant volumes of recyclables are generated in the area.

Transporters or haulers service the processors to haul the packaged product to the smelters. In some cases, these transporters may also haul the unprepared materials to the processors. Over the recent past, transportation costs have had a significant impact on the recycling industry due to increased fuel prices. Processors and collectors have had to decrease the amount that they will pay for recyclables to offset the added transportation costs. Even though transportation costs have risen, there currently appears to be no shortage of carriers in general.

Brokers are primarily used to facilitate transactions between the collectors/processors and the final consumers of the recycled metal materials. These brokers do not necessarily live in Mississippi since these transactions, by nature are conducted by telephone or electronically. The brokers can purchase material for use in any state or for export. Independent buyers are commonly used in the casting industry, domestic foundry industry and extrusion industry. These buyers are normally employees of the foundry and buy only the specific material needed for their company. There are several foundries and a few casters and extruders located in Mississippi.

Steel mills represent the primary consumer of recyclable metals. Because of the vast amounts of scrap material needed by steel mills that purchase recycled metals for melting, steel mill facilities are sparsely located. Mississippi is fortunate to have Nucor Steel in Flowood and the soon-to-be-opened SeverCorr facility in Columbus. The new SeverCorr mill is expected to use a large quantity of recyclable steel material. There are also a few foundries, casters, and extruders that purchase smaller amounts of scrap material, located in Mississippi. These consumers buy scrap aluminum and scrap copper. However, the majority of all non-ferrous scrap metal generated in Mississippi is sent out of state to other US markets or to the export market.

The economic impact of the metal recycling scrap metal market is significant. At every level of metals recycling, jobs are produced. The turnover of dollars paid in salaries as

the employees purchase goods and services are obvious. The purchase of equipment and supplies, especially by the processors also generates economic benefits.

The potential for growth of the metals recycling industry and markets is expected to be positive, primarily because of the new steel mill, SeverCorr being built in Columbus, Mississippi. This large mill is expected to consume a significant amount of scrap steel. On the other hand, the total volume of metal to be recycled is likely going to decline. This decline is the result of the high market values paid to collectors over the past two years for scrap metals. The high prices have caused acceleration in the recycling of obsolete type scrap material that had accumulated around the state. The replacement of this obsolete material accumulation will require time and possibly new sources. The overall potential for growth of scrap volume for Mississippi is dependent upon acquiring new industries that will produce metal scrap. The potential for growing in recycling metal businesses in the state could be improved with new industries that either generate or consume scrap and by increasing the collection of metals from sources that currently are not well-tapped. These sources could include residential collection programs, building demolition efforts, and small automobile salvage yards that have not been considered due to proximity to processors. It is also possible that at some point in the future, landfills may be “mined” to recover metal recyclables. A considerable amount of residential generated metal and other valuable material will be found there. A significant adjustment in the way recycling is viewed by regulatory agencies will be necessary to encourage the recovery of these materials.

### **The Paper and Cardboard Sectors**

According to the U.S. EPA, paper materials comprise over one third of the municipal solid waste stream. Every day, Americans use enough paper to circle the globe 20 times. While nationally, we now have three times as much wood available as we did eighty years ago due to an increase in tree farming, Americans today consume fifteen times more paper products. Without paper recycling, we would need to increase timber harvesting by 80% just to provide for the demand over the next ten years. Therefore, recycling of paper products even in a state rich in timber resources is important, beneficial and necessary. Recycling just one ton of paper can result in saving 17 trees. In addition, every ton of paper recovered for recycling saves 3.3 cubic yards of landfill space.

Paper recycling has been a part of the paper manufacturing industry for over 100 years, and recovered fiber now provides more than 36 percent of the country’s domestic raw material supply. According to the national Paper Industry Association Council (PIAC), total U.S. paper and paperboard recycling reached a record 51.3 million tons in 2005, resulting in a national recycling rate of 51.5 percent. That’s approximately 346 pounds of recovered paper for every man, woman, and child in the country. The PIAC indicates that the paper industry recovers more material from the municipal waste stream than all other industries combined. Similar to this national growth, the paper and cardboard recycling industries in the Mississippi have been experiencing some growth over the past few years. While paper comes in various forms, this report will focus on three

“segments” of the paper industry including: mixed and sorted paper, old newsprint and old corrugated cardboard.

### *White Paper and Other Mixed Paper*

High grade white paper is another highly recyclable material. However, one difference between this paper material and other paper types is that white paper is heavily dependent on commercial businesses and institutional participation (including offices, schools, colleges, and other similar types of facilities). High grade white papers that have been separated generally have high value in the recycling markets. The primary reason for this high value is that the fibers that comprise this recycled paper are less expensive to process than processing timber in the paper manufacturing process. About one third of the paper and paperboard mills in the United States depend heavily on waste paper as their raw material. In a recent recycling plan and market analysis submitted to MDEQ for Marshall County, Mississippi, that plan indicated that 8 buyers of high grade white paper existed in Mississippi and 17 buyers were located in the surrounding region. Industries that consume white paper included insulation board manufacturers, paper towel and tissue mills, paperboard mills, animal bedding, hydro mulch and molded pulp products.

In considering the growth of white paper recycling markets the Task Force noted that Mississippi could likely grow the recycling of white paper by increasing its emphasis and outreach for office and business recycling. The State of South Carolina has a model business recycling program called Business Recycling Assistance Program (BRAP). This program conducted out of the South Carolina Department of Health and Environmental Control helps businesses find ways to reduce and recycle wastes thus reducing the cost of disposal for the business. In addition to outreach to the business community, the Task Force also noted that increasing the attention on recycling by state and local government agencies and educational institutions would enhance collection of white paper and help grow this important recycling market.

Mixed paper and paperboard is the largest paper type found in the residential solid waste stream. These paper items include junk mail, discarded envelopes, food packaging, other product packaging and home office papers. It is estimated that more than 20% of the residential solid waste stream is this mixed paper. This product has lower recycling value, unfortunately because it already contains a high percentage of recycled material and because processing the paper into usable material requires extensive de-inking of the material. Still, the paper category represents an area of potential growth for the state if the state can work to increase residential recyclable collection programs and increase public education efforts for recycling.

### *Newsprint*

Old Newsprint (ONP) comes primarily in pre-consumer print (newspaper never printed upon) and post-consumer print. The Newspaper Association of America reports that more than 69 percent of old newspapers in the United States were recovered and recycled

in 2005, representing more than 9.7 million tons of old newspapers out of a total supply of nearly 14 million. The industry has made great progress in improving costs and lessening environmental impact through increasing the use of recycled fiber. In 1989, the average amount of recycled fiber in newsprint was 10 percent; today, it's more than 32 percent. Newspapers are also recycled to make other products from cereal boxes to insulation materials. Of the more than 9 million tons of newspapers recycled in 2005, More than 32 percent was converted to new newsprint by producers in the United States. In addition, many old newspapers were exported to Canada, also primarily for the production of new newsprint. The remainder of newsprint was recycled into other useful products such as paperboard, packaging, construction paper, cereal boxes, egg cartons, pencil barrels, grocery bags and tissue paper, or exported for recycling into newsprint and other products. Old newspapers were also turned into cellulose insulation for construction materials and bedding for farm animals.

In Mississippi, the recycling rate for old newsprint is unknown at this time. However, it is believe that newsprint recycling offers a tremendous opportunity for growth. Nationally, it is estimated that as many as one in four people subscribe to a daily circulated newspaper. Applying this ratio to Mississippi, the rate would mean that some 700,000 newspapers are read daily in the state. Newsprint is predominately a material that would be collected in residential programs. Some office recycling and retail recycling programs could also collect substantial amounts of newsprint, however, it is expected that the greatest opportunity for growth for recycling newsprint would be in increasing residential recyclable collection opportunities for our citizens.

### *Cardboard*

Corrugated fiberboard, commonly called cardboard is made from a natural, renewable resource, is frequently manufactured using high percentages of recycled fiber and is recycled more than any other packaging material used today. Corrugated has been recycled for decades, mostly by commercial users such as the neighborhood grocery store. As a matter of fact, 73% of all corrugated was recovered for recycling in 2004. The corrugated industry wants to recover its product to make more boxes, which almost always include substantial recycled content, and to derive revenues from the sale of OCC (old corrugated containers).

Corrugated fiberboard is more likely to be recycled than any other product, surpassing glass, aluminum and plastic. Nationally 73 percent of all corrugated is recovered for recycling today - up from 54 percent in 1990. In 2004, over 24 million tons of corrugated were recovered for recycling in the United States. One advantage in recycling corrugated is that a single fiber from a corrugated box can be recycled many times before it is too short for continued use. Old corrugated containers (OCC) are recycled into the following types of products: containerboard (63 percent), recycled paperboard (17 percent), tissue (less than 1 percent), packaging and industrial converting (1 percent), exports to other countries (17 percent), and other products (1 percent). To recycle corrugated products, the materials are collected and baled. The bales are then transported to the paper mill. In Mississippi there appear to be five mills in the state in Columbus, Grenada, Monticello,

New Augusta and Vicksburg that can accept recycled corrugated cardboard. In addition there are mills on the borders of the state in Counce, Tennessee; Bogalusa, Louisiana; Mobile, Alabama and Crossett, Arkansas that may also accept corrugated from Mississippi sources. Also, according to the Fiber Box Association there are 17 box plants in Mississippi that benefit from the recycling of corrugated fiberboard.

One type of corrugated container has not seen as much recycling success and that is corrugated product that has been treated with wax coatings to provide moisture and vapor protection for safely transporting certain products (such as broccoli, usually packed in ice). Wax coatings cannot be recycled because they do not dissolve in water, so the materials create problems in the re-pulping process. The industry has worked diligently to develop recyclable alternatives, many of which are now becoming commercially available. Some of these alternatives may represent opportunities for additional growth in the recycling of corrugated materials. This growing demand for and market value of OCC gives communities a good economic reason to recycle corrugated.

The outlook for growth in paper recycling in Mississippi is extremely positive. According to the American Forestry and Paper Association (AFPA), the paper industry has set a national recycling goal to recycle 55% by 2012. AFPA indicates that recycling of OCC or old corrugated cardboard and of newsprint both is at levels of over 70%. One area of potential growth for Mississippi in increasing the paper recycling rates is in collecting higher grades of paper from offices and schools. A recent study by AFPA results also identified a significant growth in the number of paper grades being collected for recycling such as mixed paper items like direct mail, telephone directories, and coated and uncoated paperboard. This is encouraging news as the paper industry works to increase the amount of paper recovered in community recycling programs. This same potential is true for Mississippi where great potential exists for growing office paper collections, retail establishment recycling, and in particular residential recycling. However, the state must take actions to better encourage the collection of more paper from these residential, commercial, institutional and industrial sources.

An example of the potential benefits to our state in supporting the recycling industry is the success of the Mississippi River Corporation (MRC) of Natchez to formalize an arrangement with Starbucks Coffee of Seattle, Washington to produce the “recycled” paper pulp that will be supplied to the paper board and cup manufacturers companies for final product development for the company’s recycled-content beverage cups. Approximately 2 years ago, Starbucks received approval of the U.S. Food and Drug Administration (FDA) to utilize the first ever recycled-content beverage cups. The company indicates that use of the recycled content cups reduces the company’s dependence on tree fiber by more than five million pounds a year. As interest in the FDA approval continues to spread, orders for the recycled content product from MRC could likely continue to increase. With support and vision from the state of Mississippi, new product development at existing recyclers, like MRC and at other potentially new recycling companies can significantly help our state economically and environmentally.

## **The Plastics Sector**

Nationally, recycling of plastics appears to be a strong and growing industry. While there are several different resin types used in manufacturing plastics, there are two predominant plastic resin types that are the focus of much of the nation's recycling. These resin types are high density polyethylene (HDPE) and polyethylene terephthalate (PET). Recycling of other plastic resins such as polypropylene, PVC or PS will not be discussed in any detail in this report. Recently, the National Association for PET Container Resources (NAPCOR) and the Association of Postconsumer Plastic Recyclers (APR) have released figures showing that the U.S. recycled 23.1 percent of Polyethylene Terephthalate (PET) in 2005, a 1.5 percent increase over the 2004 rate. According to NAPCOR, a total volume of 1.17 billion pounds of PET post consumer containers were collected in 2005, representing a 16.7 percent increase over 2004. Furthermore, the American Plastics Council reports that nationwide, the number of plastics recycling businesses has tripled since 1990. Also from 1986 to 1999 the number of companies handling and reclaiming post-consumer plastics grew over six times. In addition, more than 80 percent of all U.S. households now have access to recyclable plastics collection services.

While these current markets nationally are strong, results for continued future growth for the plastics recycling industry seem somewhat mixed. For instance, there are commitments by major industrial consumers of plastics such as Proctor & Gamble, Lever Brothers and Johnson & Johnson to increase the amount of recycled plastics materials used in their products. However, at the same time, the 2<sup>nd</sup> largest PET reclamation plant in the country, Wellman of Johnsonville, South Carolina recently closed its plastics recycling operations. While it is not apparent that much plastic from Mississippi was going to this plant, the closure will have an immediate affect on the demand and value for baled PET materials in the country.

In looking at our state's plastics recycling markets and conditions, it appears that Mississippi's collection and recycling rates are somewhat behind the current national recycling levels. The Task Force reviewed these conditions to determine the potential for growing and enhancing plastic recycling markets and businesses in the state. The state recognized the importance of plastics recycling back in 1991 with legislation requiring that plastic bottles or containers be molded or imprinted with symbols indicating the type of plastic resin used in producing the container. This requirement is now an industry standard and is required in most states. Today, while the plastics industry overall appears to be strong business sector in Mississippi, the portion of that industry in the state that is involved in recycling appears to lag behind other areas of our country. According to Trade & Industry Development Magazine, plastics manufacturing is one of Mississippi's targeted industry markets and is among our state's fastest growing sectors. Mississippi was ranked among the 20 hottest plastics locations and one of the top 20 top value sites for plastics companies in the U.S. by Business Facilities. While being 33<sup>rd</sup> among the states in the number of processing plants, the state is 8<sup>th</sup> in per capita employment in the polymer industry. The overall plastics manufacturing industry currently employs more than 18,600 people in Mississippi with a projected growth rate of 4.7 percent through

2010. There are more than 350 plastics/polymer companies located in the state including some of the more internationally known companies: BASF, DuPont, GE Plastics, Sunbeam Oster, and Wellman.

While the state's overall plastics manufacturing industry is a strong and growing industry, the plastics recycling industry has not equaled this growth. The Southern States Energy Board's (SSEB) 1996 report on the Economic Benefits of Recycling in the Southern States indicated that at that time, recycled plastics processing and manufacturing accounted for only 170 employees in Mississippi. Only Tennessee and Louisiana ranked lower in the southeast in plastics recycling employee figures in that study. While employment figures for plastics recycling has likely improved since that 1996 study, it appears from the Task Force surveys that much of the in-state plastics recycling business sector is in collection and processing, particularly for HDPE materials. Most HDPE materials collected in Mississippi go to the KW Plastics plant in Alabama. This facility is not located in Mississippi but company officials have indicated that the plant could actively run another plastics processing line if the company could get more plastics materials. While survey responses were not received by all recipients, Mississippi plastic recycling respondents indicated that they were transporters, collectors, processor and a few brokers of plastics. Most survey respondents also indicated that they handled less than 100,000 pounds of plastics material per year. Much of the information available to the Task Force indicated that most plastic recyclables are collected and shipped to end users out of state.

Based on this comparison of the state's plastics recycling industry versus the overall plastics manufacturing industry, the Task Force believes there is a tremendous opportunity for growth of both the plastics industry in general and the markets and uses of recycled plastic content among the existing industry. In addition, survey respondents involved in plastics recycling also indicated that they believe that their plastics markets and businesses will grow within the next 5 years. According to the surveys, most in-state respondents added employees over the past year and plan to add employees in the next year. Also, slightly more than half of all respondents intend to upgrade equipment within the next year. One company indicated that their facility will make a sizeable monetary upgrade of over \$350,000 in equipment.

With the strong overall plastics manufacturing base in the state, the Task Force recommends that the state conduct a study of existing plastics manufacturing companies in the state. This study (similar to one conducted by the state of North Carolina) would help identify processors and manufacturers that could convert or include recyclable plastics feedstock in place of virgin materials in their processes. The study should also identify ways that the plastics manufacturers could reduce wastes or use their own wastes back in their processes. The study would build upon the efforts of this report in identifying barriers and challenges for the plastics recycling industry and the need for better technical assistance to expand or introduce the use of recycled materials. There had been some speculation by Task Force members that a possible growth area of plastics recycling in the state could have been the Wellman facility in Hancock County. However, speculation that Wellman could expand its Mississippi plant in the future to



include recycling operations does not seem likely with the closure of that company's South Carolina recycling plant. However, this more in-depth study of these conditions would help to identify the real potential for use of recycled plastics at this facility and others.

In addition, there are other positive opportunities for growth in the state such as the plant opened by the Trex Company, Inc. in Olive Branch, Mississippi. The Trex Company turns millions of pounds of recycled and reclaimed plastic and waste wood each year into Trex decking. Most of these raw materials come from recycled plastic grocery bags, reclaimed pallet wrap and waste wood. The Trex Company purchases approximately 300 million pounds of used polyethylene and an equal amount of hardwood sawdust each year, materials that would normally end up in a landfill. The polyethylene film is ground, heated and mixed with waste wood to produce a premier decking material sold under the brand name **Trex**<sup>®</sup>. The volume of PET materials collected and processed by Trex from Mississippi sources is not known. However, nationally, the company estimates that it receives about 50% of the recycled grocery bags available on the market. Considering these facts, the Trex facility represents a tremendous growth area for recycled plastic film (e.g. grocery bags, etc.) for the state. The potential to increase the quantity of plastic recyclables collected from Mississippi sources for the Trex facility should encourage the state to increase its promotion of collection of PET plastics. In addition, a similar facility, Advanced Environmental Recycling Technologies opened recently in northwest Arkansas and may also help the PET recycling markets in the region.

Another example of potential growth is the PolyVulc, USA facility in Vicksburg, MS. collects rubber and plastic materials for product manufacturing. While most rubber materials collected by the plant are currently processed out of state at the company's facility in Louisiana, it is the understanding of the Task Force that PolyVulc's Vicksburg facility continues to process plastics and the company has the ability to formulate, compound and pelletize scrap HMWHDPE, HDPE, LDPE, PP or a combination of these polymers with rubber. These pellets can be used by other compounders for product manufacturing just as PolyVulc's own injection molding division uses them as raw materials. This company was provided funding assistance for start up operations by the state through the MDEQ waste tire incentive grants programs. Even though the company has experienced a current shutdown of its rubber processing operations at the Mississippi plant, the plastics recycling operations have also grown from the grant support the company received for recycling rubber.

The Task Force believes that the State is poised for growth of the plastics recycling industry in Mississippi. In achieving such growth, Mississippi will need to examine financial incentives such as grants, loans, or tax incentives that will help the existing plastics manufacturing industry build the capabilities for use of recycled plastic feedstock into their current manufacturing processes. The Task Force also recommended that the state work to sponsor research through the state's universities such as the Department of Polymer Science at USM or the College of Engineering at MSU. Such focused research efforts will help companies grow product development and recycled content use. In addition, in conjunction with helping manufacturing plants modify and enhance their

recycling capabilities, the state must also grow and expand collection of plastics recyclables in the state through increasing residential curbside collection programs, building rural recycling cooperatives, and educating our state's citizenry on the economic benefits of recycling materials that would otherwise be disposed as wastes.

### **The Glass Sector**

Glass in the municipal waste stream primarily originates from discarded food or beverage containers and is found in three basic colors: clear, green and brown. According to the U.S. EPA, the United States generates about 11 million tons of glass in the MSW stream annually, (representing 5.2% of the overall municipal solid waste stream) of which only 22% is recycled. Glass is 100% recyclable and can be melted down repeatedly and recycled. There appear to be two primary markets regionally for glass container cullet: 1) new glass containers; and 2) other uses, including sandblasting grit, masonry sand, base course for roads and sidewalks, drainage control, landscaping applications, and septic systems. These uses represent just a few of the other beneficial uses of recycled glass. According to the Glass Packaging Institute, although recycling glass yields a 10 percent energy savings and preserves the life of a glass furnace, less than a third of glass bottles sold in the U.S. are recycled.

In Mississippi, there are only a few known initiatives to collect glass containers for recycling. One such "grassroots" collection program is located in Jackson and was developed at the initiative of the Mississippi 2020 Network, an organization founded in 1985 to discover "perfect vision for the future." The main function of the Mississippi 2020 Network is to help make Mississippi sustainable, meaning living in harmony with the Earth's regenerative systems—air, water, soil, plants, and animals. Mississippi 2020, Rainbow Whole Foods, Strategic Materials, and Recycle America established a drop off site at the Rainbow Foods facility in Jackson. At the facility, ten 90-gallon barrels donated by Recycle America have been set up as collection receptacles. Residents of the Jackson Metropolitan area are encouraged to drop off glass containers for recycling. Once the containers are at capacity, Mississippi 2020 volunteers transport the glass to Strategic Materials facility in Flowood, MS. This initiative offers a viable alternative for Jackson residents to recycle glass containers.

The second known initiative is at the Columbus Air Force Base (CAFB) which manages an aggressive recycling program that in Calendar Year 2005 diverted as much as 50% of their solid waste from the landfill. The CAFB recycling program includes recycling all colors of glass. In 2003, a glass pulverizer was purchased allowing all colors of glass to be commingled. The pulverizer produces a sand-like substance that can be used in various ways. CAFB produces approximately 40,000 pounds of pulverized glass each year. The material is transported via the East Mississippi Community College's Truck Driving School to Holcim, Inc., a cement company based in Artesia, MS. Holcim uses the pulverized glass as a sand substitute in the company's cement mix. Both of these initiatives are innovative which is likely what will be required to increase glass recycling in Mississippi. However, these programs serve as examples of opportunities for growing glass recycling in the state.

Another potential growth opportunity for glass recycling markets exists in that Strategic Materials, the largest glass processor in North America, has an office base in Flowood, Mississippi. This company sells approximately 1.3 million tons of glass cullet each year. According to information from the company's website, Strategic collects scrap glass from a diverse range of sources, extending from residential collection programs to bottle and plate glass manufacturers. However, the actual volume of recyclable glass that the Flowood, Mississippi facility manages annually was not made available. In addition, the volume of glass the facility receives from Mississippi sources also was not clear to the Task Force. However, according to Strategic Materials website, glass container recycling increased significantly through the mid-1990s due to various state and local glass collection efforts. Even with these increases, the U.S. continues to recycle significantly less glass than much of the world.

During its review, the Task Force was unable to obtain specific data on how much total glass is recycled in Mississippi. However, the Task Force did learn that glass is not collected in most of the state's residential recycling programs because of the difficulty in finding recycling markets for the materials. There are three basic reasons why glass beverage recycling is difficult in Mississippi. The markets for glass containers are primarily in Texas and Georgia and the transportation cost to ship glass to these facilities is generally more than the revenues received for the material. The second reason is increased the manpower hours and labor costs to separate the three different glass color grades because customers of recyclable glass material can not tolerate variances in the glass colors. The third reason is that Mississippi has relatively low landfill tipping fees, making the option of disposal with the garbage an inexpensive and convenient option. With these factors in mind, it is easy to understand why most commercial, residential and industrial recycling initiatives do not include glass collection.

The Task Force noted that statistics show nationally that recycling rates, including glass, can be increased (perhaps doubled) by increasing curbside collection of recyclables. The Task Force believes that the increasing curbside collection of glass can help grow this industry in our state, especially since the state appears to lag behind many other states in the number of operating curbside collection programs. The Task Force also believes that another area of growth exists in the road construction industry and recommends that the State Department of Transportation (as has been done in other states such as North Carolina) study how Mississippi can increase the use of glass in our state road and highway construction activities, thereby increasing the demand and markets for glass in the state.

### **The Automotive Sectors**

In today's world, automobiles are an important and necessary part of everyday life. Automobiles require various components that must be changed regularly to run properly. These components include tires, batteries, oil and oil filters. The Task Force review of automotive waste focused on these recyclable components that are generated as a result of operating and maintaining an automobile. The recycling of the automobile body, however, has been more appropriately considered and described in the "Metals" sector report of this section. This report will focus on tires, lead acid batteries, used oil and used

oil filters. The recycling of these commodities has great potential for growth and expansion in the present climate. There is already a significant amount of recycling activity in the state for these materials, but there remains room for growth and enhancement of the markets, not only for industry and business sources of recycling but also in residential sources.

### *Tires*

According to a report by the Washington-based Rubber Manufacturers Association (RMA), nearly 87 percent of tires discarded each year in the United States go on to be used in new products. Compare this to 1990, when only 11 percent of scrap tires were recycled or reused. RMA's report also revealed that the number of tires sitting in stockpiles last year shrunk to 188 million from 275 million in 2003. That number is even more impressive when compared to 1990, when more than 1 billion scrap tires were stockpiled. According to the report, the three largest markets nationally for recycled tires are ground rubber, civil engineering applications and tire-derived fuel (TDF).

Mississippi's waste tire program mirrors the growth and success in tire recycling nationally. The state waste tire program is one of the few comprehensive waste management and recycling programs in place in the state that also has a funding mechanism provided for promoting and developing recycling companies and markets. In fact, the RMA recently rated Mississippi's waste tire program as the fifth overall nationally in performance of state scrap tire programs. This system included various factors such as recycled rubber markets, quantities of tires in stockpiles, and the percentage of tires still disposed in landfills. As a result of the comprehensive nature of the waste tire program, the state recycling rates for waste tires is high and the information we have on this state recycling industry is more complete than perhaps any state recycling sector. In 2005, some 6,362,065 waste tires were processed in Mississippi with approximately 50% of those tires originating in Mississippi. Approximately 95%, or 6,036,177 tires, were recycled while 5% (325,888) were landfilled.

The waste tire management infrastructure in the state includes seven waste tire processing facilities, 4 which are recycling facilities located in Jackson (2), Slatton, and Gulfport and 3 non-recycling facilities located in Lumberton, Booneville, and Gulfport. In addition, there are also three mobile waste tire processing operations in Cleveland, Jackson, and Saucier. There are also 4 commercial collection sites in Greenwood, Meridian, Jackson, and Flowood. Finally, the waste tire collection infrastructure includes some 145 local government waste tire collection sites (located in every county in Mississippi) and 107 registered waste tire haulers (distributed all across the State).

The active end use markets for processed waste tire material are currently predominately located on the outskirts of the state. The waste tire recyclers listed above provide products primarily to tire derived fuel (TDF) users and to a crumb rubber facility both located in adjacent states. Markets do exist in the state for processed tire material including septic tank drainage fill material, landfill uses, steel recycling uses and tire derived fuel. However, these in-state markets have either not fully developed or suffer

from a lack of recyclable materials and thus are not using significant amounts of waste tire material at this time.

In addition, the effects of Hurricane Katrina on the tire recycling industry in the state were substantial in that the hurricane damage contributed to the shut down of a coastal tire recycling facility with a processing capacity of over 600,000 waste tires per year. A certain number of those tires will be diverted to other recycling facilities or markets in central and north Mississippi or out of state, but a majority will probably either be processed and landfilled out-of-state or in south Mississippi. The loss of this recycling capacity will certainly affect the state's waste tire recycling rate for calendar year 2006.

Waste tire recycling (primarily of the tire rubber component) in Mississippi has grown significantly over the past 10 years resulting in an all time high recycling percentage in 2005 of over 95%. This percentage may likely drop in 2006, due to the effects of Hurricane Katrina on the waste tire recycling facility on the coast. The steel and fluff components of the waste tire have experienced somewhat low levels of recycling due to various reasons. The potential for growth in recycling all components of the waste tire (rubber, steel and fluff) appears strong depending on the development of markets and the possibility of a landfill ban on tires that under state law is to be evaluated and implemented when appropriate. The potential growth for in-state end-uses is good since very most potential end users of waste tire material are not active in Mississippi at this time. Changes to the state waste tire regulations also may have a positive impact on the waste tire recycling and end-use sectors. These changes include bonding/insurance for waste tire haulers, updating the beneficial use rules, and possible inclusion of language banning the landfilling of waste tires.

One barrier to growth of the waste tire recycling industry in the state is the variation in waste tire laws and regulations in our neighboring states. These variations between states have caused problems for Mississippi businesses seeking to recycle waste tires because they allow tires to be disposed under standards lower than Mississippi standards or they create state funded programs that capture all tires in the neighboring state rather than allowing for competition. These variations between state laws and regulations can cause low tipping fees for recyclers, loss of product and markets, and a general unlevel playing field between competitors.

Another barrier that some recyclers have identified is that Mississippi has not implemented a full landfill ban on waste tires in the state. State law currently allows this ban to be implemented by the Commission on Environmental Quality contingent on evaluation of the recycling markets in the state and the potential impacts to local governments. The lack of the ban according to some businesses has somewhat hindered collection of adequate tipping fees for recycling facilities and prevents the capture of the remaining 10% of the Mississippi tires still being landfilled. Landfill disposal of the waste tire often provides an easier and sometimes less expensive alternative to recycling. As for the other components of waste tire recycling, a reluctance of steel recyclers to accept the steel from waste tire processors in the un-bailed form has resulted in the

landfill disposal of this valuable material and a lack of markets for the fluff component has resulted in the same.

The goal of the Mississippi waste tire program and its original legislation has been since inception to achieve statewide recycling of waste tires. Therefore, the growth of markets in the state for the rubber, steel and fluff components of the tire is integral to achieving this goal. The implementation of a statewide ban on the landfilling of waste tires may also assist if collectors and processors are forced to develop recycling alternatives for these valuable materials. Other program initiatives that may increase the recycling of waste tires would be the required bonding of all commercial waste tire haulers to help prevent illegal dumping of tires, the investment of grant funding to waste tire recyclers for the purchase of waste steel balers, and the continued research and development of uses for the fluff components of the waste tire.

### *Used Oil*

According to the American Petroleum Institute (API), more than 600 million gallons of motor oil is purchased each year nationally. Over half of this amount (345 million gallons) is purchased by the “do-it-yourself” vehicle owner (DIYers) – those that change their own oil. Over 380 million gallons of used oil is recycled each year according to the U.S. EPA, which equates to over 50% of all motor oil purchased annually. Currently, used motor oil can be re-used or recycled in one of three ways – reconditioning, reprocessing or re-refining. It is important to note that each process can be important in helping to manage the overall volume of used motor oil in the U.S. Recycling just two gallons of used oil can generate enough electricity to run the average household for almost 24 hours. Nationally there are more than 12,000 community-based oil recycling locations provided by either local governments or private businesses such as auto parts stores or service stations.

With good design and process management, used oil can be re-refined into “new” oil, giving it a second life so it can be used for vehicle motor oil again. Currently only about 14% of used motor oil is re-refined and the consumer demand for this product has not made re-refining economically efficient for oil manufacturers. The result is that in some cases re-refined motor oil may actually be more expensive than virgin motor oil. In some industries, a filtration cleaning process when combined with replenishment of key additives can extend the used oil product’s life and use. However, when used oil can no longer perform its original lubrication job, it may be suitable for re-use as fuel to generate heat or electricity for commercial operations. 74% of all oil re-use/recycling in the U.S. is for burning in turbines, incinerators, power plants, cement kilns and manufacturing facilities (asphalt, steel, etc...). An additional 11% of used motor oil is burned in specifically designed industrial space heaters. These recycling efforts create a valuable form of energy, which helps our economy and our dependence on foreign oil by avoiding the need to refine new commercial heating oil from imported crude oil.

In Mississippi, most commercial oil change service centers, retail outlets, salvage yards, trucking companies and other similar commercial companies will recycle the used oil that

the business collects in its business practices. In addition, many such centers along with oil retail outlets will accept used oil from do it yourselfers for recycling. There are also several local governments in Mississippi that provide used oil collection programs either as stand alone programs or as a part of a comprehensive household hazardous waste collection program or event. However, if there is an area of growth for the used oil recycling industry in Mississippi, it is likely in the growth of residential and small business do it yourselfers. In many areas of our state, particularly rural areas, citizens and small business owners do not have a viable recycling option that is within a reasonable proximity of their business. Consequently, the management of used oil from these entities is not known to the Task Force or to the state for that matter. Assumedly some of these entities may put the used oil in the normal trash while others may use it in as fuel in specially designed industrial space heater or other similar uses. However, it is expected that some of the used oil from these sources is likely managed improperly.

There are at least two known commercial collection companies in Mississippi that have used oil collection facilities in the state. Atlantic Industrial Services in Jackson, Mississippi and Gautier Oil in Gautier, Mississippi provide commercial collection services for used oil. Most of the sources of the used oil for these companies are commercial or industrial in nature. Residential, institutional or governmental used oil represents a small percentage of collections. It is estimated that between 30 and 50% of used oil is generated from residential do it yourselfers. Therefore, there appears to be potential for significant growth in Mississippi if the state can improve collection of used oil from sources such as residences, institutions and government agencies for recycling.

#### *Used Oil Filters*

Each year the U.S. generates 425 million used automotive oil filters containing 160,000 tons of iron units and 18 million gallons of oil. According to the Mississippi State Tax Commission, there were approximately 2.6 million vehicles registered this past year in our state. Studies have shown that on average each motor vehicle generates 1.5 to 2 used oil filters per year. Therefore, it is estimated that Mississippi generates between 3.9 and 5.2 million used oil filters per year.

Recycling all the filters sold annually in the United States would result in the recovery of about 160,000 tons of steel. A report by the U.S. Department of Energy (DOE) released in July 2006 on Used Oil Re-Refining indicates that the national recycling rate for used oil filters is at about 50%. The Energy Act of 2005 that required the DOE report also requires that the DOE in coordination with the U.S. EPA conduct a study of used oil filters. The U.S. EPA has indicated that this study on used oil filters is currently underway.

Under the current Federal and State regulations, most used oil filters are considered nonhazardous waste by the U.S. Environmental Protection Agency and by the Mississippi Department of Environmental Quality. However, used oil filters can contain more than 45 percent used motor oil in weight when removed from the vehicle. Therefore, the used oil filters must meet be drained and dismantled prior to disposal. Filters that are not

drained or dismantled may require handling as hazardous wastes. Because of these disposal conditions, the best option for managing used oil filters is to recycle the filters.

Used oil filters contain three recyclable elements: used oil, a paper filter media and a steel shell. Most commercial auto service and repair centers can locate recycling companies to collect their filters on a periodic basis and deliver the filters to a recycler. Atlantic Industrial Services, Inc. has a used oil filter recycling plant in Jackson, MS where the steel, paper filter element and the residual oil are recycled. However, filters generated by private households or "Do It Yourselfers" (DIYers) are more difficult to recycle because collection programs may not be readily available for filters from these sources. Residential or DIYers represent anywhere from 30 to 50 % of the used oil filters generated. Because DIYers often do not have local outlets to deliver their filters to for recycling purposes, many DIYer filters end up being disposed with the household trash at the local landfill.

According to the Filter Manufacturers Council (FMC), several states do have bans on the disposal of used oil filters in landfills. These states include California, Florida, Minnesota, Rhode Island, and Texas. From another source, we also learned that Delaware has a ban on used oil filters being disposed in landfills. Many states address used oil filter management as a subset of used oil collection programs, since the filters do contain residual oils. In addition to the six states above that ban filter disposal in landfills, the State of North Carolina enacted legislation in 2005 that will ban the landfill disposal of used oil filters in October 2009. North Carolina calculated that it costs between 10 to 30 cents per filter to recycle, depending on various factors such as size, how well the filters are packed into drums and the cost of the specific recycling company. North Carolina also found that many lube and auto repair shops in their state were charging customers a \$2-3 "environmental fee." North Carolina officials indicated that the amount of this fee was unjustifiably high since the costs of oil and antifreeze recycling for the repair shops is actually very low. North Carolina concluded that these repair shops were already collecting excess environmental fees from customers and that those excess fees could be used by the business to pay for filter recycling.

Most other states are similar to Mississippi and do not currently ban landfill disposal of used oil filters. However, many of these states do have programs that encourage and promote the recycling of used oil filters as the preferable method of managing used oil filters over disposal in landfills. For instance, South Carolina does not prohibit properly drained oil filters from being disposed in landfills but strictly enforces the laws governing hot draining of the filters. As a result, the majority of South Carolina counties (40 of 46) collect and recycle used oil filters from do-it-yourselfers (DIYers). South Carolina also did not have any fees attached to the purchase of new oil filters. However, South Carolina does have a \$0.02 fee that is assessed at the wholesale level on each quart of oil sold in the state. These fees go into a solid waste trust fund in that state that supports the recycling activities as well as provides grant funds to support local government used oil and related products (e.g. filters and bottles) recycling programs. Under the grant program, South Carolina counties can apply for funds to cover 100% of the cost of collecting and recycling used oil filters. South Carolina has also worked to establish a statewide contract that any local government can purchase of off for used oil filter



collection and recycling services. The statewide contract price is \$15.00 per 55-gallon drum of used oil filters. Based on South Carolina's current state contract, their recycling cost is approximately \$0.10 per uncrushed filter or \$0.05 per crushed filter.

If there is an area of potential growth for recycling businesses that collect used oil filters, it is likely similar to the potential for used oil. The difference in the recycling of used oil filter versus used oil is that likely while most auto service centers do recycle used oil, there are likely many that do not recycle filters. Furthermore, as long as these businesses drain the filters of the oil and puncture or dismantle the filter, it is currently legal to place such filters in the landfill. Mississippi should consider placing restrictions on disposal of these commercial auto service industry filters in landfills since we have businesses in state that recycle the materials. In addition, DIYer sources from residences, government agencies and small business sources of used oil filters would benefit from state support for local recycling collection programs for used oil filters. Finally, Mississippi recycling businesses could benefit from the added quantities of filters that would now become valuable products rather than wastes.

### *Lead Acid Batteries*

Another automotive waste material that has seen successful recycling rates is used automotive batteries. According to the Battery Council International, used automotive batteries nationally have a recycling rate of around 97% due to the value of the materials in the battery that can be reclaimed. The typical new lead-acid battery contains 60 to 80 percent recyclable lead and plastic. When a spent battery is collected, it is sent to a permitted recycler where, the lead and plastic components are reclaimed and sent to a new battery manufacturer. In Mississippi, this recycling rate is aided by the fact that state law bans the landfill disposal of such batteries and requires that retailers of lead acid batteries accept a battery in return for a battery sold, if offered by the customer. The retailer also is required by state law to recycle the automotive batteries. In addition to retail collection, various household hazardous waste collection programs sponsored by local governments also will collect these lead acid automotive batteries from residents for recycling. One area where the state has seen declining collection of batteries has been with the state's automotive scrap dealers. Historically automotive scrap dealers in the state have also collected and/or purchased scrap automotive batteries as a part of their business operations. However, within the past few years, many of the state's scrap dealers have stopped collecting or purchasing spent batteries.. The decision by dealers to cease collection is the result in many cases of the large financial losses to the dealers caused by the "superfund" liability lawsuits. Today, most batteries in Mississippi are collected by battery retailers and returned to the smelters through the battery manufacturers.

The Task Force was unable to quantify the total number of automotive batteries collected and recycled in the state annually. Respondents to the recycling business survey of the Task Force reported almost 500,000 pounds of automobile batteries recycled in 2005. However, based on the average weight of automotive batteries, this only represents about 26,000 automotive batteries. Consequently, the survey numbers do not include all recycled batteries as many survey recipients either did not participate in the survey; did

not provide quantity information on their survey responses or were not identified by the Task Force and mailed a survey.

It is believed that the recycling rate in Mississippi although not directly quantifiable is comparable to the national recycling rate. This success is due to the recycling value of the battery and to the mandatory recycling laws that Mississippi has in place for this material. If there is a need in the state with battery recycling businesses it is in improving collection and encouraging scrap dealers to renew their collection and purchase of batteries as has been historically done. In order to accomplish this task, Mississippi should consider adopting state statutes that will provide "Superfund" liability protection to collectors of recyclables. In addition to this recommendation, the state could perhaps do more to encourage and provide local governments with additional resources to offer collection programs for automotive batteries generated by private individuals in more rural areas of the state.

### **The Electronics Sectors**

Electronic waste or e-waste commonly refers to electronic equipment and products that are broken, obsolete, discarded or have reached the end of their useful life. Electronic wastes can include: Computer Equipment (monitor, keyboard, CPU, etc...), Televisions, Cellular Phones, Video & Stereo Equipment, Video Game Consoles and various office equipment such as fax & copy machines, PDA's, etc.). This report will focus on three predominant categories of e-waste: computers, televisions and cellular phones.

These three waste products were chosen because of the significant quantity of potentially discarded material that they represent. By the end of 2007, there will be nearly 500 million obsolete computers in the United States. EPA estimates that nearly 75% of all computers ever sold in the United States remain stockpiled, awaiting disposal. In addition, the Task Force also noted that a significant increase in the numbers of personal computers is expected across North America. This increase in discarded personal computers is the result of many businesses beginning to upgrade to Microsoft's latest version of Windows called "Vista." A recent study by the Softchoice Corporation of Toronto, Canada estimates that about half of the personal computers currently used by businesses in North America do not meet the minimum requirements to properly run the Vista operating system. The survey further indicated that approximately 12% of the computers could not be upgraded and would have to be totally replaced. This software change will result in substantial increases in the number of discarded computers entering the recycling and solid waste streams.

In addition, beginning this year in 2006, the Federal Communications Commission (FCC) has mandated that all TV transmission will be digital. It has been estimated that 98% of all homes in the United States own at least 1 television. Unfortunately, most of these television sets are analog, not digital. Because analog TVs are not capable of receiving digital transmission, it is estimated that 250 million analog TVs in the United States will eventually be discarded. It is estimated that in Mississippi this number could be between 2.5 and 3 million television sets. Due to the significant landfill space these bulky items

occupy and the fact that many landfill owners will not accept TVs for disposal, illegal dumping of these materials has become a problem across the state. Finally, cellular phones also present our state and nation with a growing disposal problem. Nationwide, it is projected by EPA that 130 million cellular phones will go out of use this year. This quantity of cell phones will create an estimated 65,000 tons of garbage. There are currently more than 200 million active cell phones in the United States alone. In addition, Some estimates suggest that there are in excess of 500 million “retired” cell phones that are no longer in use, but not yet disposed.

Not only is electronic waste a problem because of the volumes of materials entering the solid waste stream, but electronic wastes also often contain varying levels of contaminants including: Lead, Polychlorinated Biphenyl's, Chromium, Cadmium, Mercury, Silver, Selenium, and Arsenic. Computer monitors and television screens for instance, contain an average of 4.5 pounds of lead in the cathode ray tube and usually are characterized as hazardous wastes due to the toxicity of the lead. Because of the toxicity issues with these wastes and the sheer quantities of materials, recycling or reuse has become the preferred method to manage computer wastes over disposal.

In 2005, it is estimated that over 36 million pounds of electronic scrap was recycled. However, according to the U.S. EPA this represents only about 15% of electronic scrap nationally. In Mississippi, while the Task Force was unable to quantify the total amounts of electronic wastes recycled, we do know that there were numbers of programs at schools, non-profits, and businesses that recycled computers, rechargeable batteries; ink jet, laser, and toner cartridges; and cell phones in 2005.

Currently there is no comprehensive program to promote or provide for the recycling of electronic waste in Mississippi. However, there are a variety of programs and initiatives to assist with recycling computer wastes in the state. One example of such a program is a joint project with the Hinds County Board of Supervisors and the Hazardous Materials Management program in Jackson State University's Department of Technology that collects and refurbishes discarded computer wastes in the Jackson metropolitan area. The JSU program trains disadvantaged young people to disassemble and refurbish the computers for reuse. The refurbished computers are donated to low income families and to non-profit and charitable organizations for continued use. In 2005, the JSU program refurbished 259 computers for distribution to non-profit organizations and disadvantaged families. In addition, the program recycled over 30,000 additional pounds of electronics that did not have refurbishment value.

In addition, state agencies have a variety of opportunities to recycle electronic equipment. Most state agencies are able to discard equipment through the auction of the State Department of Finance and Administration. Pallets of computer equipment are auctioned by DFA to buyers who will reuse the parts or components of the computer equipment. A past joint program between the Mississippi Department of Corrections, the Mississippi Department of Education and the MDEQ also had collected state agency computers for refurbishment by female inmates. After refurbishment, the computers were donated to

school districts around the state for continued use. This joint computer refurbishment program has now sunset.

There are various other collection and recycling efforts in the state. For instance, in the past the Corinth Vo-Tech Center has also implemented a computer refurbishment program for its students. In Tupelo, the Keep Tupelo Beautiful organization sponsors the Tupelo Computer Camp. In this program, young people attend the computer camp and learn about the various components of computer systems. The young people learn how to assemble the computer and the result of the camp is that they assemble a computer made of donated computer system components that they are then able to take home with them for personal use. This program has a number of advantages in that it recycles computers that ultimately would be disposed, it trains young people to have computer skills and it provides computers to young people who might not otherwise be able to afford their own computer system.

There are also at least two known commercial business collectors operating in Mississippi: Starkville Recycles in Starkville, Mississippi and Electronics Collectors in Leakesville, Mississippi. At this writing, it is understood that both of the companies simply act as commercial collectors and transporters and the materials they collect are transported out of the state for end use. The Leakesville collection facility transports the materials it collects to a recycling company in Florida. There are no commercial “end use” recyclers in Mississippi. However, on the north end of the state, 5R Recyclers is located in the Memphis, Tennessee area and services many communities and businesses in North Mississippi. On the southern end of the state, electronics recycling companies in Baton Rouge, Louisiana have in the past provided commercial services to collectors in south Mississippi.

In addition to the commercial recycling companies, several local governments across the state have conducted electronic collection events or sponsor ongoing programs. The City of Jackson sponsors an ongoing collection program at the city’s Environmental Service Center. This service is available to residents in the Jackson Metropolitan area. In addition, some household hazardous waste collection events sponsored by local governments have added electronic wastes to the types of materials that they collect. Other local governments such as the City of Southaven have held electronic collection events. In the spring of 2003, MDEQ partnered with several organizations to sponsor computer waste collection events in several central Mississippi counties under a grant from the Dell Computer Corporation. In all of these local government recycling programs, the computers were collected by a private recycling companies and were recycled out of state. The Task Force noted that while these efforts in the state are helpful, the existing programs fall short of comprehensively addressing the state’s computer and electronics waste management needs.

The Task Force did recognize a potential growth opportunity in that a national electronics recycling company, now has its headquarters in Jackson, Mississippi. The company, Intechra Holding Corp., within the recent past has acquired electronics recycling facilities in Los Angeles, California; Columbus, Ohio (3); Hartsfield, Connecticut; and Scottsdale,

Arizona. However, currently Intechra has no collection or processing facilities here in Mississippi. The Task Force agreed that potential for growth, development and for partnering with existing businesses such as Intechra could offer the potential for growth of this recycling industry in the state.

Televisions offer a more substantial recycling problem in that there is not a substantial recycling value in components of a discarded television as compared to computer systems. However, televisions contain comparable levels of lead in the cathode ray tube to computers. Local governments across Mississippi are beginning to experience problems with an increase in discarded televisions. Since residents do not always have a legitimate local option for recycling televisions, many televisions end up being illegally dumped, discarded in landfills or simply stored in home closets or garages. In developing markets for recycled electronics, Mississippi must also support tandem markets for televisions and comparable household electronic units.

Recycling of cellular phones offers another opportunity for capturing lost economic resources. One example of a local cell phone recycling program is the City of Jackson's recycling program at the City's Environmental Service Center for discarded cellular phones in the Jackson metropolitan area. The City of Jackson collects the discarded cell phones from residents and recycles the phones by reprogramming the phones and distributing them for 911 and emergency use by the elderly and victims of abuse. In addition, various schools in the state have launched cell phone collection programs to provide the cell phones to recyclers to raise money for various educational causes.

Nationally, many electronics manufacturers are beginning to recognize and respond to the need to recycle their products when they are replaced or discarded. These manufacturers are instituting recycling efforts nationwide because they understand it is necessary and will soon be forced upon them if they do not respond to the need. The Dell Computer Corporation initiated the company's current "take-back" initiative in 2005 in the United States. The company has now increased that to various other global electronics recycling markets. Currently, Dell customers anywhere in the world can now take advantage of the free recycling program for any Dell-branded product regardless if a replacement purchase is made. The establishment of Dell's take-back program is in response to the Company's opposition to new government mandated programs for recycling electronic wastes. However, it is not known whether these voluntary efforts by the electronics industry will result in the successful management and recycling of these materials. The Task Force believes that the state should carefully consider the creation of a state electronic recycling program but should at the same time continue to evaluate market conditions to determine if more manufacturers will involve themselves in recycling initiatives.

### **Other Recyclable Material Sectors**

There are many types of wastes that the Task Force encountered and collected information on during its development of this report. Many of these miscellaneous wastes categories do not fit in the categories of waste described above but do offer

potential for recycling business growth and development. Some of the more notable recycling material categories that the Task Force encountered include the following:

#### *Household Hazardous Wastes.*

Household hazardous waste (HHW) represents another opportunity for recycling in Mississippi. The collection programs for these types of wastes are continuing to grow across the state and many communities are beginning to integrate HHW collection programs and events into the normal solid waste services that they offer. Many components of HHW are recyclable.

For example, compressed gas cylinders are often collected at many HHW events because these cylinders or tanks are not appropriate to place in the landfill due to the potential for puncture and explosions. A number of local governments throughout the state have implemented programs to recycle compressed gas cylinders. These cylinders or canisters are bought or leased in various sizes primarily for residential propane use. In addition, new laws were adopted in the past several years that require that certain sized gas canisters be retrofitted with a protection device to prevent overflow. That means that many canisters that are not retrofitted are now unusable. Consequently, a large number of canisters are being disposed in the normal trash collection. Some communities have developed partnerships with private manufacturers or distributors of the gas canisters to collect and recycle the materials.

Another example of recycling HHW is the City of Jackson's HHW program for collecting and where possible, recycling household hazardous waste (HHW) specifically for the Jackson metropolitan area. At the ESC, the city collects a number of types of HHW items that it is able to recycle including paints and solvents, household pesticides, used oil, automotive batteries and discarded computers. The city has developed a successful program for reclaiming and selling the useable paint that it collects. The program offers cans of the recycled usable paint for \$4.00 per can. According to city officials, the program has become so successful that the city is unable to keep the recycled paint products in stock.

#### *Yard Waste and Wood Debris.*

Wood wastes and natural vegetative debris represent a significant waste stream for Mississippi. These wastes originate from various sources such as local governments, timber product industries, construction and land development companies, pallet companies and other wood producing entities. A number of local governments in the state offer yard waste recycling programs. These programs vary in the manner and method of collection and processing. Some communities only offer recycling programs for natural vegetative wood debris. These communities will generally have the woody debris brought to a central location and will chip or grind the debris into a usable mulch product. The resulting mulch product is then generally used on city properties for landscaping purposes or given away to city residents for use in residential landscaping. Numbers of municipalities in the state have received grant support from MDEQ Solid Waste

Assistance Grants to purchase the chippers. Other local governments may manage yard wastes through composting operations. The yard wastes are typically collected at curbside by the municipality on a special collection day, separate from the routine garbage collection days. The wastes are delivered to a central location for processing, blending and composting. Composting operations generally will use some grass clippings, leaves, and other small vegetative debris items. Yard waste recycling and composting programs such as these help to save landfill space, keep the costs of disposal down for local governments, and create usable landscaping products.

Another business development opportunity actually has grown from the damage and debris left in the aftermath of Hurricane Katrina. Mississippi lost an estimated 19 billion board feet of timber from Hurricane Katrina. This loss of timber represented tremendous loss for many citizens of our state as many families saw the funding for their retirement, for the children's college education and for future homes or plans destroyed by Katrina. However, with this tremendous amount of downed timber in the state, some opportunities have emerged for the development of small businesses. We have seen various small businesses grow from the business potential to gather downed trees that no longer have value for timber processing and chip the material for new products. These products range from landscaping mulch to boiler fuel and these conditions may offer an opportunity to grow new businesses in southeast Mississippi. However, in order to sustain these small businesses, the state may need to provide assistance to the business owners.

Another area of growth in the state is for wood waste recycling for materials from industrial sources. Substantial amounts of wood waste are used each year as boiler fuel at various industries across the state of Mississippi. Other amounts are used as animal bedding and in poultry farms. In addition, there are other industries that use wood waste as feedstock for other products. For instance, the Kingsford plant in Corinth, Mississippi produces char for charcoal production from wood wastes. The Kingsford facility will use upwards of 40,000 tons of wood waste a year. In addition, as has already been mentioned, the Trex Company nationally purchases approximately 300 million pounds of hardwood sawdust each year in addition to an equal amount of used polyethylene. A certain amount of this sawdust is processed at the Trex facility in Olive Branch, MS. The wood material is mixed with the polyethylene film after the plastics have been ground and heated to manufacture a premier decking material sold under the brand name **Trex**<sup>®</sup>.

### *Vegetable Oil*

Based on survey information received by the Task Force, there was at least 10 million pounds of vegetable oil recycled in 2005 in Mississippi. With the increased interest in ethanol and other alternative fuels, there could be an increased demand for vegetable oil. Many analysts have speculated that one way to make ethanol more viable for use by consumers is to make it more accessible by increasing production. Mississippi is adding new ethanol refining plants, and we have always had a strong food processing industry. Increased collection of used cooking oil from these industries, restaurants, and by encouraging collection from households could easily increase the amount of vegetable oil collected and thereby, supply the need of the ethanol refineries. The only companies in

Mississippi that currently have the capability to recycle waste vegetable oil into biodiesel fuels are in Meridian and Greenville. Most biodiesel fuel plants in the state do not have the additional process equipment needed for recycling waste vegetable oil. Consequently, an incentive program to purchase recycling equipment could help facilitate more recycling of this material. With increased collection and other assistance, the need for growing existing plants and for locating even more refineries with recycling capabilities in the state can be supported.

### *Industrial Process Wastes*

Another growing recycling market is in the reuse or beneficial use of industrial process waste streams. Many industries in the state, particularly manufacturing facilities, are seeking ways to recycle their process waste streams. Examples of this include the use of coal ash in road construction purposes, the use of wood ash and pulp mill sludge as soil amendments and the use of cement kiln dust as a solidification reagent at landfills in the state. MDEQ in 2005 developed state regulations that will better facilitate the legitimate beneficial use of certain nonhazardous industrial process wastes. Many of these wastes can be distributed and sold as products resulting in less landfill space being used, less natural resources being consumed and sales revenues being generated for a material that previously carried a management cost. Mississippi can expect that recycling of these industrial materials will continue to grow as outreach and awareness of the beneficial use program increases.



## IV. Impacts and Benefits of Recycling on Mississippi

### Economic Impacts of Recycling

Recycling has been shown by numerous studies to have substantial economic impacts on the states and communities that invest in recycling efforts. Recycling businesses, like other businesses, positively impact our state's economy by creating jobs, making investments, and paying taxes. The Task Force attempted to gauge the economic impacts of the recycling industry by including employment and salary inquiries on its recent recycling business survey. This information was provided to the Institutions of Higher Learning to assist in preparing and economic impact analysis. Unfortunately the survey information was not as complete as the Task Force had hoped and did not really provide a sufficient indication of the total economic impact of the industry. At least half of the surveys received did not contain sufficient information to use in an economic impact analysis. The responses that were provided by the remaining half of survey participants revealed information for at least a partial look at some of the economic impacts. IHL indicated that the surveys revealed recycling survey participants created:

830 direct jobs,

\$43,800,000 in direct labor income, and

\$59,100,000 in total labor income. (1)

This labor income (\$59,100,000) would generate an estimated \$3,546,000 in State General Fund Revenue annually.

(1) Total labor income is direct labor income plus the secondary impacts as estimated by the MicroIMPLAN Model.

This labor income (\$59,100,000) would generate an estimated \$3,546,000 in State General Fund Revenue annually.

Extrapolating from the usable data points to the unusable, the 24 remaining surveys with insufficient info would add another:

1,035 direct jobs,

\$54,600,000 in direct labor income,

\$73,700,000 in total labor income. (1) and

\$4,422,000 in State General Fund Revenue.

However, because the reporting firms had such widely different average annual wage/salary figures, IHL expressed concern this extrapolated data could not be viewed as accurate or defensible. If we use the extrapolated data, the total labor income and state general fund revenues for those participating in the survey would **exceed \$140 million**. However, it must be noted that this figure is estimated to be very low compared to the actual economic benefits to Mississippi. For instance, these numbers are for only that one-third of survey responses that were provided for in state recipients and is highly dependent on extrapolated data for half of those sources. In addition, there were

numerous large recyclers in Mississippi (particularly in the manufacturing sector) that did not participate in the survey which would significantly impact these economic figures. Also, the figure does not include government employees who work developing and managing local recycling programs. These figures do not include the economic impacts of the recycling benefits that the Severcorr steel mill will bring to the state. Finally, it must also be recognized that these figures do not include any financial benefits to the state from the sale of recyclables or products containing recycled materials. Therefore, the Task Force looked to other sources to get a truer picture of the economic impacts of recycling.

In this review, the Task Force did note a study conducted by the Southern States Energy Board (SSEB) in 1996 entitled “Economic Benefits of Recycling in the Southern States.” This report indicated that at that time Mississippi had over 5,000 persons employed in the recycling industry or about 2.1% of the state’s manufacturing employment. The only southern states with lower rates of employees in recycling in 1996 were Louisiana and West Virginia. However, the SSEB report is now over 10 years old and thus it is anticipated that there have been dramatic changes in employment and in recycling business development since that time.

The Task Force noted also that the MDEQ had conducted a survey and summary in 2005 of the economic impacts of the waste tire recycling industry in the state. According to this survey, the waste tire recycling industry employed approximately 100 employees with a payroll of \$2.7 million. These employment and direct salary figures were primarily for four large waste tire processing facilities and did not include figures for local government employees involved in waste tire collection efforts or commercial waste tire transporters and haulers. Inclusion of these persons would add to these employment numbers for the tire recycling industry. However, these numbers do present some idea of the significant impact that recycling can have on our state’s economy for a single waste material.

In addition, the Task Force looked at other national or state reports to better gauge the economic impacts of recycling. As reported in the 2004 Task Force report, the economic benefits of recycling nationally were measured by The National Recycling Coalition (NRC) in a study prepared in 2001 called the United States Recycling Economic Information (US REI) Study. This study measured various direct economic values that included the number of establishments; the employment of the establishments, the annual payroll; the annual receipts; and the annual throughput (for recycling categories).

The broader effect of recycling businesses and their employees on the economy was derived through economic modeling using direct data as inputs. The nation’s recycling industry is extremely diverse in terms of which recovered materials are utilized, the average establishment size, and the types of technologies that are employed. The recycling sector includes long-established sectors like paper, steel, and metal recycling, as well as new entrepreneurial ventures such as composting and plastic and rubber product manufacturers. The reuse and re-manufacturing sector encompasses a diverse mix of establishments including wood reuse (e.g. pallet re-builders, etc.), tire re-treading companies and electronic appliance de-manufacturers. In Mississippi, a prime example

of a “re-manufacturing” industry in the state is the Caterpillar Inc. operations. The company has two remanufacturing facilities in Mississippi (Corinth and Booneville) that accept certain Caterpillar engines that are sent from the company’s dealers around the country. These plants disassemble these engines and assess the parts for reusability. Parts that pass the company’s quality check are cleaned and used with new parts to remanufacture engines. Each engine receives new identification numbers and the same guarantee as a new one. The parts that do not meet the company’s standards are discarded into scrap hoppers for shipment to a scrap metal processor where the parts are sorted, graded, processed, and shipped to foundries or mills to be melted into new products. Caterpillar operations have a tremendous economic impact on these northeast Mississippi communities in which they are located.

While the Task Force was only able to acquire limited employment information for Mississippi for a very small number of recycling facilities, the 2001 US REI study indicated that the United States currently has 56,061 recycling establishments that employ approximately 1.1 million people (with an additional 1.4 million in indirect service jobs). These establishments include businesses, governmental entities and non-profit organizations generating an annual payroll of \$37 billion, and gross \$236 billion in annual revenues. The REI study also indicated that the average wage paid by the recycling industry is \$32,700 – approximately \$3,000 per year more than the national average wage. In addition, the recycling industry supports 3.1 percent of the paid jobs in the United States – 0.9 percent through direct employment, and 2.2 percent (contributed equally) by industry and employee spending in the economy. Some 2.7 percent of the U.S. gross domestic product is attributable to the recycling industry, with 0.7 percent provided directly by the industry. According to this study, a total of 2.5 million jobs are generated nationally by the recycling industry sector. The study further indicated that another 1.5 million jobs were created by the personal spending of the 2.5 million recycling employees. So nationally for very one person employed directly by the recycling industry or a recycling service industry, another 0.6 jobs were created by the spending power of those recycling employees.

The national study also offered a comparison between the numbers of persons directly employed by the recycling industry and the number employed by the waste management industry. As stated previously, the number employed by recycling companies totaled some 1.1 million in direct employees. In 2001, the waste management industry provided around 250,000 direct jobs to the nation. These figures offer some comparison to the employment potential that recycling companies may offer over companies that dispose of solid waste.

In addition to this national study, the Task Force reviewed a study by the State of South Carolina just commissioned and completed on the impacts of recycling on that state. According to the study completed by the College of Charleston’s Department of Economics and Finance, South Carolina’s recycling industry directly and indirectly supported 37,440 jobs, resulting in \$1.5 billion in personal income impact. The recycling industry also produced \$69 million in state tax revenue and generated a total economic impact of \$6.5 billion for that state.

A similar study by the State of North Carolina in March of 2005 indicated that the recycling industry in that state included over 500 businesses and directly employed over 14,000 people in the state. The North Carolina study indicated that recycling employed more people than either the bio-tech or agricultural livestock industries in that state. The study also indicated that more than half of the recycling businesses in that state indicated that they planned to hire more people within the next two years.

### Economic Impacts of Recycling Business Types

The ultimate value of a good or service is represented by the sale price of that good or service. Sales revenues, in turn, are used to employ persons and pay their wages, make payments on equipment, provide a return to owners and investors, and pay upstream supplier establishments for the value of their goods or services. The cost (in terms of labor, equipment, and etc.) of performing a particular process is a measure of the value that is added by that particular process.

As recycling progresses from the collection phase to the processing phase to the manufacturing or end use phase, more value is added to the recovered material as it moves through the recycling chain. Initially, a relatively small amount of value is added by consolidation (collection). Processors then invest significantly more expense (value) in the recovered material by sorting and densification of the materials. However, no real change to the recovered material has actually occurred. The material has simply been concentrated and perhaps altered for ultimate use. The greatest value is added in the manufacturing of a new recycled-content product where wastes are transformed into useful products of considerable value.

These manufacturing establishments rely on local collectors and processors for their supply of materials. When the two groups are compared, local collection and processing businesses make up approximately 20 percent of total recycling employment and receipts, whereas the downstream manufacturing makes up the remaining 80 percent of employment and receipts. This suggests that our state do significantly more to encourage recycling and discourage disposal. It also suggests that public and private investment in local recyclables collection and processing infrastructure pays great dividends in supporting significant downstream private recycling economic activity.

The US REI study shows that the manufacturing sector of recycling is the largest contributor to the economic benefits of recycling. Over half of the economic activity for the entire recycling industry is accounted for by the following four recycling manufacturing sector categories:

- Paper, paperboard, and de-inked market pulp mills, which employ 139,375 people and gross nearly \$49 billion in estimated annual receipts;
- Steel mills, which employ 118,544 people and gross \$46 billion in estimated annual receipts;
- Plastics converters, which employ 178,700 people and gross nearly \$28 billion in estimated annual receipts; and

- Iron and steel foundries, which employ 126,313 people and gross over \$16 billion in annual estimated receipts.

These four categories alone account for 50 percent of all employees, 62 percent of wages, and 59 percent of total receipts. Figures 1 and 2 on Page 20 place this information into further perspective by showing how the sizes of the nation's major recycled content product manufacturing industries compare to each other. As the Figures show, ferrous metals recycling manufacturing leads the other material groups.

#### Other Indirect Economic Activity Produced

The data reviewed by the Task Force also indicated that other economic activity in the national economy that, was not directly part of the recycling industry, could be attributed to the recycling industry. In addition to the economic activity of the recycling industry itself, other economic activity is supported because the industry purchases goods and services from other types of establishments (such as office supply companies, accounting firms, legal firms, building and landscape maintenance firms, etc.). Economic modeling estimated that nearly 1.4 million jobs are maintained in support businesses because of the recycling industry. These jobs have a payroll of \$52 billion and produce \$173 billion in receipts.

Employees of the recycling industry (and employees in other businesses that support the industry) also support another round of economic activity when they spend their wages in the economy. Economic modeling estimated that employee personal spending supports 1.5 million jobs with a payroll of \$41 billion, and produces receipts of \$146 billion.

#### Economic Benefits to Government

##### *Tax Revenues*

This U.S. REI study reviewed by the Task Force estimated government tax revenues arising from the recycling industry based on income levels and tax rates. The study estimated two levels of taxes paid by recycling industry establishments and their employees to various levels of government. The direct tax revenues would be those taxes paid directly by a recycling company or establishment and by their employees. The total tax revenue includes the direct taxes and all other taxes from additional economic activity as estimated by economic modeling.

The study also indicates that U.S. government tax revenues of almost \$25 billion exceeds the combined revenues collected by state (\$11.9 billion) and local governments (\$9.4 billion) as a result of the recycling industry's economic activity. Individual federal income tax payments by employees in this industry make up over 70 percent of federal tax revenues, with corporate income taxes making up about half of the remainder. The State taxes primarily come from sales and individual income taxes. Local taxes come primarily from property taxes and miscellaneous fees.

A conclusion that can be drawn by comparing the local government revenues to local government expenditures on recyclables collection and processing services (estimated at over \$3 billion per year) is that state and federal governments experience significant tax revenue benefits from local government investments in recycling programs. These benefits would seem to confirm the need for the State of Mississippi to assist local governments in investing in local recycling programs and assist start up and expanding private recycling companies.

### *Sales Revenues from Recycling*

Local governments can also see economic benefits from implementing recycling programs from the sale of the recyclables. One common problem is that often the local government tends to judge the recycling programs against a profit goal. Because recycling is a solid waste management option, it should be judged by the local government against competing waste management options such as source reduction, landfill disposal, incineration and composting. Local recycling programs should not be judged as to whether the program turned a profit or not but whether the program reduced the overall costs of managing solid wastes. So the direct benefit to the local government of the sale of recyclables is that such sale can reduce the cost of managing the solid waste. In addition, managing the materials as recyclable products rather than as wastes to be landfilled, will provide the many other economic benefits that have been previously discussed such as new jobs, new businesses, added tax bases and other positive economic impacts.

One example of a local government that has seen such benefits is Wayne County, a rural county in southeast Mississippi. The county has a solid waste enforcement officer who also oversees the county's recycling programs. Wayne County has proven that rural communities can successfully implement recycling programs with the support of local officials and available grant funding support. In 2004, the County recycled 107.5 tons of wastes, resulting in a profit of \$7,161.15 and saving \$3,977.50 in landfill disposal costs. The profit the county makes is used to buy equipment such as surveillance cameras for prevention of illegal dumping and littering. Wayne County also has a local illegal dumping and litter ordinance that fines people a minimum of \$100 for such offenses.

Another example of how recycling can provide local economic benefit, is the recycling programs at the Columbus Air Force Base (CAFB) in Columbus, Mississippi. CAFB has a mandatory curbside recycling program for the base's residential housing area. The housing residents are provided a multi-cart for sorting their recyclables. The U.S. Department of Defense had set a 40% diversion rate goal to meet by 2004. In 2004, CAFB exceeded that 40% recycling goal by 93%. CAFB saw a profit in 2004 from recycling of approximately \$38,000. In 2005 CAFB diverted 50% of its solid waste from the local landfill. The CAFB is averaging approximately \$230,000 cost avoidance yearly with an average profit of \$40,000 in actual sale of recyclable materials. Participation in Military Family Housing is also high with 85% of the families involved in the recycling program. The residents of CAFB are from many different states and backgrounds and

when they arrive at Columbus AFB, they expect to have recycling programs in which to participate.

Another example of local benefits was seen from the work of the Recycling Marketing Cooperative of Tennessee, Inc. (RMCT). This cooperative was formed by the state of Tennessee to help rural communities of less than 10,000 in population collect sufficient volume to make their rural recycling programs viable. The RMCT has been highly successful in generating revenue and diverting landfill costs for its members. It's a good model for Mississippi to consider as we look to assist communities in developing successful recycling programs. In 2005, RMCT partner communities saw economic successes including an average of \$42,000 of revenue generated for most of the participating recycling programs. The RMCT also helped to divert an average of 600 tons of waste per month from landfills to recycling markets, saving an average of \$18,000 in landfill tipping fees for the participating recycling programs. Those figures represent an annual average economic benefit of \$60,000 for these small communities.

### Other Economic Benefits

There are at least two other economic benefits that do not garner a lot of attention but that do have the potential to offer economic benefits to companies that recycle. One such benefit is the decreased regulatory burden that accompanies recycling of certain special waste streams. A number of products, such as mercury-containing lamps and thermostats, various types of batteries, and certain pesticides, are regulated by the U.S. Environmental Protection Agency and the State of Mississippi under the Universal Waste Rule (UWR). The UWR is a subset of the Resource Conservation and Recovery Act. The wastes regulated under this rule are generally regulated as hazardous wastes and must be managed in compliance with the full spectrum of these federal and state hazardous waste rules, unless the wastes are recycled. When the wastes regulated under the UWR are recycled, generators are exempt from the hazardous waste manifesting requirements. The UWR allows the use of a record of shipment like any bill of lading for shipment. In addition, under the UWR, a generator may use a common carrier to transport the wastes rather than a certified hazardous waste transporter for shipment to a recycling facility. These regulatory exemptions afforded to recycling activities lower the shipping and management costs for these wastes. The State of Mississippi can assist more industries in gaining the benefits of reduced regulatory burdens by working to develop more recycling options in the state for industry and business.

Another economic benefit that has gained recent attention is the assertion that facilities that recycle wastes are actually safer work places. A recent survey was conducted by WasteCap Wisconsin indicating that sites with organized recycling programs appear to be safer than those without. WasteCap Wisconsin is a group that helps businesses in that state establish recycling programs. Business owners and contractors repeatedly told WasteCap in the survey that their work sites were more orderly and safer thanks to recycling efforts that promoted designated locations for reclaimable materials. A safer work site means fewer work place injuries to employees resulting in less lost work time.

The safer site ultimately means an increase in productivity and efficiency and lowered injury related health care costs for those businesses that recycle.

The recycling industry is an integrated system that fundamentally requires that the public and private sectors work together to collect wastes and to transform those wastes into useful products of value. Recycling solid wastes into commodities that are sold as products is a value-adding, job-providing, and economy-spurring activity. The study examined by the Task Force clearly indicated that the recycling industry is a significant contributor to the United States economy, providing large numbers of well paying jobs.

These economic benefits confirm that the investments made at the local and state level in education and outreach, and collection and processing of recyclables and the establishment at the state and federal level of public policies that favor recycling support large private sector investments in downstream processing and manufacturing. These large private sector investments create an economic stimulus that far outweighs the original investment of government and would appear to affirm that Mississippi needs to do more to support the growth of recycling in the state.

### **Other Benefits of Recycling**

There are of course various other benefits to our state that growing and developing our recycling businesses and industries will have. These benefits predominantly are in the form of environmental benefits and quality of life benefits. The 2004 Report to the Legislature from the State Task Force on Recycling discussed these benefits in more detail. Therefore, this report will simply summarize many of the findings of the previous report developed by the Task Force.

Recycling conserves our natural resources. Recycling relieves pressure on dwindling natural resources and places the responsibility on the current generation, where it belongs, to be wise stewards of our resources for our children and grandchildren. America's aluminum, steel, and paper industries all rely significantly on recovered wastes for their raw material feedstock. The recycling of plastic containers, most notably beverage containers, has spawned new business ventures and has enabled manufacturers in industries such as textiles and carpeting to take advantage of a new feedstock. The same is true for scrap tires and a numerous other wastes. In addition, for every ton of steel recycled there is a savings of 1.25 tons of iron ore, 0.7 tons of coal, 0.06 tons of limestone.

Recycling saves energy. Recycling paper uses half the energy compared to producing paper from raw materials. Every pound of steel recycled saves 5,450 BTU's of energy, enough to light a 60-watt bulb for over 26 hours. Recycling used aluminum cans requires only about five percent of the energy needed to produce aluminum from bauxite, the raw material for aluminum. Recycling just one aluminum can saves enough electricity to light a 100-watt light bulb for 3.5 hours. In addition, recycling often produces better products than those made of virgin materials; for instance, the tin in metal cans is more refined (thus more valuable) after being processed for recycling. Recycling used oil can also



result in energy savings. According to studies, recycling two gallons of used motor oil can provide enough energy to run the average household for about a day. Additionally, recycling a ton of glass saves the equivalent of nine gallons of fuel oil and recycling a ton of paper results in a 60% energy savings over the processing of virgin pulp.

Recycling prevents litter and illegal dumping. A strong recycling program in conjunction with local, solid waste enforcement efforts can help reduce litter and illegal dumping. The majority of people, if given a choice, will choose to properly recycle or dispose of waste materials. However, if people are not provided with a legitimate and reasonably convenient outlet for recycling or disposal, they may often create an illegal one.

Recycling conserves landfill space and reduces the need for more landfills. Another benefit of recycling is that it diverts solid wastes away from landfills and conserves valuable landfill space. One downside to landfill disposal is that it simply extends the responsibility for and the potential costs of managing our wastes to future generations. The Federal design and operating criteria for landfills essentially result in creating a “dry tomb” for the wastes to remain on a long term basis. Therefore, the landfill and the wastes contained therein pose a potential ongoing problem and cost for many decades after the landfill has actually closed. In addition, the land and property values around any type of landfill or rubbish site may often be affected by the public’s perception of landfill operations. Placement of landfills can also hamper future commercial and residential development in the area, reducing the potential tax revenues and other land development opportunities in the long term.

Recycling improves management of problematic wastes. There are many waste streams for which disposal in a landfill or incinerator is simply not a practical option. It is not practical that we would place the thousands of tons of bulky scrap appliances (known as white goods) in landfills. Therefore, recycling is the most practical management solution for these wastes. Similarly, recycling is the most practical management alternative for various other wastes such as computer wastes, compressed gas cylinders, used oil, automotive batteries and automotive tires. Without strong recycling programs, there would be no management outlets for these wastes and many of these items would likely be illegally dumped rather than recycled.

Recycling improves water quality. Recycling can reduce a range of pollutants from entering the rivers, streams and other waters of our state by reducing discharges to the environment. By decreasing the need to extract and process new raw materials from the earth, recycling can eliminate the pollution associated with the initial stages of a product’s development: material extraction, refining and processing. Recycling a ton of paper saves as much as 7,000 gallons of water and reduces the potential contaminants that must be discharged to the environment. In a 2002 study by the State of Washington, that state determined that its recycling efforts had reduced the discharge of water pollutants by 7,600 tons in the preceding year. In addition, recycling used oil can prevent this very damaging contaminant from being discharged into the environment. Just one quart of used oil can create a two-acre oil slick on surface waters. Used oil is also harmful to aquatic life in various ways. A gallon of used oil can contaminate up to one

million gallons of fresh water. However, used oil, if recycled, can be a valuable commodity.

Recycling improves air quality. According to national studies by the U.S. EPA, recycling saves natural resources and prevents much more pollution than is created by the industry in processing raw materials. Greenhouse gas emissions associated with the manufacture, distribution, use, and subsequent disposal of products are reduced as a result of increased recycling. By 2005, recycling will reduce greenhouse gas emissions by 48 million tons, the equivalent of the amount generated by 36 million cars annually. Furthermore, EPA has identified waste prevention and recycling as some of the best strategies to combat global warming. The previously cited study in 2002 by the State of Washington indicated that that state's recycling efforts had reduced discharges to the air by 124,000 tons.

Recycling reduces our nation's reliance on fossil fuels. Industrial facilities often use supplemental fuels in boilers and kilns that are made from recycled materials such as tire derived fuel (TDF) chips, wood chips, corrugated card board and other materials. These materials often burn cleaner than the raw materials they are replacing and often, as in the case of TDF, have a higher BTU value per ton than the raw material.

Recycling reduces toxics/hazardous materials. Recycling can also reduce the amount of toxic or hazardous constituents placed into the environment. Programs to collect and recycle more toxic wastes can remove these toxics from the environment by diverting such wastes from landfills and from being illegally dumped. The household hazardous wastes include items such as used oil and other automotive fluids, computer equipment and other electronic wastes, mercury containing lamps, and paints and other architectural wastes. Diverting the wastes from landfills also will potentially reduce the toxicity of the leachate removed from the landfill and generally disposed through publicly owned wastewater treatment facilities in the state.

Recycling increases community pride and attitude. With the simple act of recycling, Mississippians can help protect our ecosystem, reverse environmental damage, and ensure the health of our planet for future generations. According to the Environmental Protection Agency, recycling is one of the best environmental success stories of the late 20<sup>th</sup> century. Recycling turns materials that otherwise would be disposed in a landfill as waste into a valuable resource, diverting millions of tons from landfills each year. The average family generates approximately eight pounds of garbage each day. If given the option to recycle, citizens can truly divert enough items from disposal to make an impact. Recycling allows citizens to contribute to improving the environment, as well as the economy. Most people want to participate, if given the chance.

## V. Barriers/Disincentives to Growth of the Recycling Industry

### Barriers Identified in Survey Responses

The Task Force review of the recycling industry in the state revealed various barriers or disincentives to further growth or expansion of the recycling industry. These barriers will be divided into two sections, those identified by the recycling business survey participants and those identified by the Task Force from other sources of information.

The survey asked participants to rank listed barriers giving the highest ranking to those having the most significant impacts on growth or expansion of their recycling operations. The barriers identified by survey recipients are listed below in the order of the number of times the barrier was selected:

1. According to the overall survey respondents the top barrier identified by the survey participants was **“the cost and distance of transporting recyclables.”** This barrier received the highest number of selections from survey participants by both in-state businesses and out of state businesses as a problem for growth of their businesses. The significance of this barrier to recycling growth was more pronounced by in-state business participants, which is an indication that many end use markets for recyclables are located out of state. Over half of the recycling business survey respondents indicated that they were involved in transportation of recyclables. These Mississippi recycling companies must transport the materials great distances in some cases to get the materials to the proper end use markets. In addition, the price of gasoline and diesel fuel over the past couple of years has caused a significant cost increase for transporting recyclable materials as it has with many commodities.
2. For the 2<sup>nd</sup> highest ranking, two different listed selections received the same number of overall ranking votes as top barriers to growth. The next two barriers to growth identified were **“laws and regulations”** and **“lack of recyclables.”** However, the **“laws and regulations”** category was chosen by the 2<sup>nd</sup> highest number of in-state survey recipients. There was no real consensus as to what this meant though and in most cases recycling businesses actually wanted more regulation and more enforcement by government to pass mandatory recycling laws or to enforce existing laws. In other instances, laws regarding liability protection, transportation issues, and government bidding processes were seen as important. One survey respondent felt that local government ordinances were too burdensome while another felt ordinances were not sufficient to prevent urban sprawl around his business.
3. The other equally ranked category was the **“lack of recyclables”**. This category received about the same level of importance from in-state and out of state survey participants. In Mississippi, survey recipients indicated that there was not enough done to require or encourage more participation and more collection of recyclables and that their businesses could not grow or expand without more recyclable materials

being collected. The reasons for the lack of recyclables may also vary between recycling sectors. In the metal sector the decline in available recyclables can be attributed to the amount of obsolete scrap that has been consumed during the last two years.

4. The next highest category for in-state survey participants was “**labor cost or labor issues in general.**” Numbers of survey recipients went further than just simple labor cost though and indicated that labor was not available in either quality or quantity in the state. It is interesting to note that this category received almost no votes or attention from out of state survey participants which lends credence to the argument that Mississippi must do more to educate its work force to be competitive with other states.
5. The next highest ranked categories were linked by many survey participants and those indicated that they could not grow or expand recycling businesses due to a “**lack of interest**” and to a “**lack of public education**”. These categories were ranked equally and could also be linked to the previous category of lack of recyclables. There was not an appreciable difference in importance given to these categories between in-state and out of state survey respondents.
6. Finally, the “**lack of resources**” and the “**lack of financial incentives**” were also identified by a substantive number of survey participants. Some of these recipients cited tax incentive and grant and loan programs in other states as successful incentives provided to their competitors in other states. It is also interesting to note that the category of “poor markets” received very few votes as being the problem for recyclers in the state. The lack of selection of this category suggests that there are available markets but that they are perhaps not in close proximity to collectors as previously discussed or that growth is not possible because recyclables are not being captured from the waste stream.

### **Barriers Identified By Other Task Force Sources**

In its continuing research efforts, the Task Force identified other significant barriers that often inhibit the growth or expansion of recycling businesses in Mississippi. These barriers are not listed in any order of importance or ranking but were simply identified in the research of the Task Force as problems in the growth of recycling businesses.

1. The Task Force sources also identified **the lack of financial resources** as a problem. This lack of resources to fund equipment and facilities for collection, processing and end use poses a significant threat to recycling business growth in the state. It was interesting to note in the survey results on pages 11 and 12 that a high percentage of recycling companies in the state are involved in transportation and collection because processing and end use equipment and facilities are often so expensive that businesses cannot invest in the capitol improvements needed to become a processor or end user of the material.

2. The Task Force also found that **fluctuating market prices for recyclable goods** also contribute to less than successful recycling conditions in our state. These fluctuating market prices were not encountered in every recycling sector but did seem to prevent Mississippi businesses from launching projects that would require large capital investment.
3. Another significant barrier to recycling found by the Task Force was the **lack of education** on the importance and the benefits of recycling. Our citizens, local governments, institutions and businesses often lack the knowledge of the overall benefits of recycling or even of the availability of recycling. Often times only the upfront cost of collection is factored into decisions about whether local communities should recycle.
4. As relayed in the survey results, the lack of **dependable productive labor** was also listed as a major issue by Task Force members. This barrier primarily was cited by Task Force members that were also involved in the business side of recycling as well as those members who work with or support recycling employers in the state.
5. The Task Force found that **collection systems for recyclables are not sufficient to grow or expand recycling businesses in our state**. This barrier coincides with the findings of the business survey on the lack of available recyclable materials. We cannot expect that recycling businesses will develop, if we do not give emphasis and initiative to increasing collection of recyclables from residences, businesses, institutions and agencies. A study recently conducted by AFPA shows that 86 percent of the U.S. population (254 million people) have access to curbside or drop-off recycling programs. However, the state of Mississippi appears to fall well short of this success. According to a recent report by MDEQ on the Status of Recycling in Mississippi, our state falls well below this figure with approximately 44% of our population having access to residential curbside or drop-off recycling programs.
6. The Task Force found instances where **state and federal regulations on recycling businesses may have created unintended burdens**. Some of these include: 1) Inclusion of recyclables under the definitions of solid waste puts unnecessary liabilities on recyclers. 2) Current law does not differentiate between disposal and recycling transactions. 3) “Clean title” requirements for scrap vehicles, unfairly places the burden on the recycler and not the seller. 4) “Design for Recycling” concepts are not widely considered in manufacturing new products. In short, this concept means that products would be designed and manufactured to be easily recycled or reused where possible; 5) Lack of policies defining standards for use of recycling by-products. An example of this would be standards for the use of automotive shredder residue as daily landfill cover. This means that processors that operate automobile shredders in the state have thus far have had to dispose of the material as a solid waste, which adds to the cost of recycling the automobile.
7. The Task Force noted that another substantive problem in the state with enhancing recycling business conditions was that **insufficient resources were provided to the**

**state agencies** expected to direct state recycling efforts and recruit recycling businesses. While there are requirements in law for the Mississippi Department of Environmental Quality (MDEQ) and the Mississippi Development Authority (MDA) to actively recruit recycling industries to the state and to provide technical assistance to such industries, neither of these state agencies has appropriate designated funding from the Legislature to help accomplish these efforts. MDEQ does not appear to have sufficient resources overall to direct recycling in the state. The current funding for the MDEQ's Recycling Coordinator's position has been eliminated. This lack of resources affects the agency's ability to conduct appropriate technical assistance programs to recycling businesses and industries as well as assisting local governments in a meaningful way in developing recycling programs. MDA also does not appear to direct resources towards the specific recruiting and development of the recycling industry. While industries that recycle such as Severcorr and others are actively recruited by MDA, MDA offers no program, strategy or incentives specific to recruiting the recycling industry sector.

8. Based on the information received by the Task Force, there does not appear to be any formal type of state program for **training, education or technical assistance** to private recycling companies. Technical assistance to these industries has been available in the past from the Mississippi Technical Assistance Program (MSTAP) quartered at Mississippi State University. The MSTAP program provided environmental assistance on waste reduction and recycling to a variety of industry sector groups. The group also had a waste exchange that provided the opportunity for industry groups to exchange waste materials or byproducts that could be useful in the receiving industry's manufacturing processes. This technical assistance program no longer exists though, due to lack of funding and attrition of technical staff.
9. The Task Force also noted from various sources that a number of recycling industries appear to be having **difficulty in maintaining a high quantity and quality of materials**. Local governments attempting to collect and process these materials cannot afford the significant cost of the processing equipment nor the staff to adequately preserve the quality of the collected recyclables. Depending upon the location of markets, transportation costs can potentially exceed the expected revenues from the sale of recycled materials. Once the recyclables have been collected, the time and methods used to process the material to maintain the high quality necessary to meet industrial standards further diminishes the profits which can be expected from the sale of recyclable materials. Therefore, an important first step towards growing recycling business is to offer assistance to collectors, processors and transporters of recyclable materials.

Overcoming these barriers is key to increasing the strength and stability of recycling businesses and markets in Mississippi. In addition, it will enable our state to create a thriving industry that has far reaching and positive environmental and economic impact on our people.

## **VI. Recommendations of the Task Force**

With the barriers and disincentives identified above, the State Task Force on Recycling has developed the following recommendations for the consideration of the Legislature. These recommendations have been grouped by category but are not listed in any order of priority or importance. As has previously been stated, the observations and recommendations of this report are those of the State Task Force on Recycling and are not the recommendations of the MDA or the MDEQ.

**Laws and Regulations-** The Task Force identified several recommendations that dealt with enhancing or amending laws or regulatory controls to facilitate growth of recycling businesses or markets. State regulations and programs should be continuously reviewed to insure they do not present a significant barrier to recycling. These recommendations were as follows:

1. The Task Force recommends that the State consider the adoption of appropriate laws that offer liability protection for collectors and processors of recyclables. It was brought to the attention of Task Force members that a significant problem for private businesses and local governments that collect recyclables is liability protection for problems that may occur after delivery of the recyclables to an end user or private recycler. One example of this problem involved the recycling of automotive batteries. A private company in Mississippi collected lead acid batteries for recycling, delivered the batteries to a company out-of-state that processed the batteries for recovery. That out-of-state company caused contamination that ultimately had to be cleaned up by the Federal government. The Federal government then sought recovery of the clean up costs from all of the previous companies and entities that had delivered batteries to the plant for recycling purposes. Since that time the Mississippi collection company has ceased collecting automotive batteries. In response to this problem, the Federal government later adopted legislation to remove the unintended liability placed on recyclers to pay for these associated clean up costs. However, this Federal legislation did not completely address the ability of individual states to collect these clean up costs. Therefore, the Task Force recommends that the Legislature consider amending Mississippi statutes to reflect the purpose of the “Superfund Recycling Equity Act of 1999, codified as CERCLA Section 127.” This state amendment would mirror the Federal statutes and would clarify the difference between recycling transactions and disposal transactions and the difference between recyclable materials and waste materials. The state amendment would also remove any unintended liability placed on recyclers at the state level to pay for the “clean up” of contaminated sites of the consumers of recyclable materials. The Institute of Recycling Industries (ISRI) has offered to aid in the understanding, interpretation, intent, and need of the language of the referenced statute.
2. The Task Force recommends that the State Legislature amend Mississippi statutes (Mississippi Code Annotated, Section 63-25-13) that place an inordinate and unfair burden on recyclers for vehicle “Clean Titles”. Once a vehicle is sold to a scrap

processor the relative value is extremely low. Yet, the requirement to “track and clear” the title is placed on the recycler rather than the owner of the vehicle. These current statutes create an unnecessary expense burden on the recycler, without accomplishing the purpose of the statutes.

3. The Task Force recommends that the State conduct a comprehensive evaluation of the effects of a statutory or regulatory ban on disposal by commercial businesses of used oil and used oil filters in landfills. If this evaluation indicates that a landfill ban on these materials can be implemented without detrimental affects to businesses in the state, the Legislature should consider implementing this statutory ban. The ban could be enacted in a phased approach providing businesses with sufficient time to make recycling arrangements for the materials. These materials, in one form or another, are already restricted from landfill disposal in an indirect sense through prohibitions on liquids disposal or hazardous waste disposal. However, a state ban would clarify this prohibition and would help increase recycling and drive the continued growth and development of end-uses in the state. According to survey responses from recycling companies, a ban on these types of materials would dramatically increase the recycling rate first by demonstrating that the state is committed to seeing these materials recycled rather than disposed of. With this commitment from the state, recycling businesses will be more compelled to invest in new equipment, new facilities, and new collection systems.
4. The Task Force recommends that the state develop additional programs to increase the collection of used oil and used oil filters wastes from residential sources. The improper disposal of used oil has the potential to cause more environmental damage than perhaps any other recyclable commodity discussed in this report. Consequently, the state should do more to promote recycling options for these materials. The state could consider developing a statewide recycling contract, possibly through the MDEQ, for used oil collection that local governments could sign on to, similar to the State of South Carolina’s program.
5. The Task Force recommends that the MDEQ develop a guidance policy that will allow and facilitate the use of certain by-products from recycling companies as daily cover in landfills. One example of a recycling industry by-product that could be considered is the auto shredder residue (ASR) generated by the metals processing industry in the state. Such a policy could reduce the cost for landfill operators and would potentially allow them to charge the recycler less for disposal of the recycling by-product. Currently, MDEQ may consider proposals for using daily cover on a case by case basis. However, there are not specific standards for the alternative daily cover and a policy with more specific standards would help the recycling industry in evaluating the use of by-products in this manner.

**Enhancing Collection of Recyclables** – The Task Force also identified several recommendations related to improving the collection of recyclables in the state. These recommendations were in response to the lack of recyclables that many recycling businesses indicated was a barrier to growth of recycling.



6. The Task Force recommends that the Legislature annually fund assistance programs through the MDEQ (both technical and financial) to specifically increase collection of recyclables in the state through local governments, businesses and industries. The state should give stronger emphasis and assistance to local governments in particular to better integrate recycling programs into the local, solid waste management system. MDEQ should be provided with adequate resources to support and assist local governments with their goals to develop and implement plans for achieving the state's 25 percent waste reduction goal. The Task Force learned that most successful local recycling programs have one primary thing in common. In successful programs, there is usually an active local, recycling coordinator who serves as a point person, point of contact, and a conduit for the local governments' recycling and associated solid waste management activities. Local governments need to be provided with resources to employ such local recycling advocates. The lack of support, structure and credibility for many local recycling programs hampers the ability implement cost savings strategies. If Mississippi's 25 percent waste reduction goal is to be met, in many cases, this local person focused on recycling, collection efficiencies, reducing processing costs and developing or finding stronger markets is needed for local governments, particularly for larger communities. In addition, over the recent past grant funds targeted for local government programs have been utilized to help balance the state budget. The Task Force requests that the Legislature take action to prevent use of these grant funds in addressing state budget shortfalls. Protecting these funds will provide consistent state support to local government recycling programs. The Task Force's Recommendation No. 12 describes a possible assistance center through which these actions to improve the collection infrastructure in the state could be conducted.
7. The Task Force recommends the Legislature give strong review and consideration to the development of a collection and recycling program for discarded electronics wastes from residential sources, (in particular computers and televisions). While the Task Force believes the various existing electronics recycling initiatives in the state are helpful, they do not provide a comprehensive solution to our state's problems with electronic waste management. There are several states around the country that have successfully implemented collection and recycling programs for electronics that could serve as models for the development of such programs.
8. The Task Force recommends that the State organize and implement Regional Cooperative Marketing and Processing Programs to better market recyclables. Cooperative marketing programs occur when a group of local governments, sometimes in conjunction with private organizations or businesses, voluntarily agree to work together to sell and/or process their recyclable materials. Such a program would seek to create one or more cooperative recycling programs among local governments and the private sector in Mississippi. Cooperatively collecting, processing and marketing recyclable materials will allow local governments and the private sector to obtain more competitive prices for this material which can ultimately be turned into a source of local revenue. A prime example of a successful

cooperative, the Recycling Marketing Cooperative of Tennessee (RMCT) was previously discussed on page 42 of this report. The RMCT aids communities that are less than 10,000 in population to collect and market recyclables. Another example of such a cooperative is the Central Texas Recycling Association (CTRA), a 501 (c)(3) non-profit organization. Today, the CTRA consist of 59 members representing more than 500 public, private, and nonprofit entities. In FY 05 members recycled 10,238 tons of recyclable materials which exceeded \$915,000 in gross revenues and netted members over \$564,000. Also meaningful job opportunities in the recycling industry were created for citizens with disabilities and senior citizens.

9. The Task Force recommends that actions be taken to ensure that all state agencies or other appropriate authorities and institutions of higher learning have the recycling collection programs in place and functioning as required by the Mississippi Multimedia Pollution Prevention Act of 1990. In addition, the Task Force recommends that each agency report to the MDEQ annually on the status of their recycling programs. These actions will increase the volume of recyclables collected in the state. The increased volume of recyclables will aid in growing existing and new recycling businesses in the state.

**Reporting and Measuring Recycling** – One recommendation was identified by the Task Force in relation to measuring recycling progress for the state.

10. The Task Force recommends that the State develop a methodology for adequately quantifying our recycling rate and for gauging the overall success of our state's recycling system. Past estimates place Mississippi's recycling rate at between 12 and 16 percent. These percentages were based on speculative information that is voluntarily provided by various recyclers and local governments in the state. Biocycle Magazine released figures this summer that put Mississippi's recycling rate at less than 2%, which state officials believe is inaccurate. However, there simply is no reliable system in place to measure the state's current or future recycling rates. Consequently, we have no way of truly knowing the state's status in attaining our 25 percent recycling goal in state law. A method for measuring the state's recycling rate would also provide the state with a truer indication of how recycling is helping our state environmentally and economically. If Mississippi is to meet the current Federal initiatives (including a 35% recycling rate) and mirror the successes of other states' recycling programs, we must develop an accurate measurement of our state's recycling activities. This measurement will be an important step in helping Mississippi fully recognize the economic, environmental and quality of life benefits of recycling that are so often overlooked today.

**Public Education and Outreach** – Another recommendation was included that would create a new education and outreach effort for recycling automotive wastes in the state.

11. The Task Force recommends that the State develop and adequately fund a comprehensive recycling education and outreach effort to the various public sectors including adult consumers (ranging from young adults to baby boomers), recycling

businesses, state agencies and institutions, commercial businesses and industries, and school-aged children. These outreach efforts could be conducted through the MDEQ, MDA and other state agencies and would include partnering or utilizing other available national, state and local efforts already in use for outreach to these various sectors or persons.

12. The Task Force recommends that a program and curriculum be developed that will educate young people and adults on minimizing and recycling wastes from automotive maintenance and operation. This curriculum would be integrated into the State's Drivers Education courses and would be required for completion of the course. This waste reduction component of the class would teach students about how proper maintenance of the vehicle can reduce impacts to the environment and can assist recycling businesses in the state. For example, one possible action that an automobile owner can do is to purchase longer lasting oil. Less oil is then used by the auto owner reducing the volume of oil that has to be dealt with and the frequency of oil changes. The State of South Carolina already has a model curriculum and program that Mississippi could consider and adopt. Stronger education efforts on the importance of waste reduction and recycling will assist recycling businesses in the state by increasing the volume of these materials available for processing and collection.

**Training and Technical Assistance for Recycling Businesses** – The Task Force also identified recommendations that were related to training and technical assistance programs to assist recycling industries and businesses.

13. The Task Force recommends a recycling technical assistance program be created and adequately funded by the Legislature at the MDEQ. The program would be known as the Community and Business and Recycling Assistance Center (CBRAC). Assistance through this center would be offered to private recycling companies, local governments and to other businesses and industries looking to reduce or recycle wastes. The Task Force believes that such assistance is vital to sustaining current recycling companies, and to encouraging their growth. In the past, similar assistance was offered primarily to industries through an arrangement between MDEQ and the Mississippi Technical Assistance Program at Mississippi State University. The CBRAC could provide some of those same services but would expand its outreach to the recycling sectors and to local governments. CBRAC would help with business development issues for start up companies and existing companies seeking to expand. CBRAC would assist local Planning and Development Districts (PDD's) and Small Business Development Centers (SBDC's) with funding and business assistance issues related to the recycling industry. CBRAC could also connect recyclers with various recycling technology sources such as the National Recycling Coalition, Solid Waste Information Exchange, Solid Waste Association of North America, Southern Waste Information Exchange and the Institute of Scrap Recycling Industries. The CBRAC would also partner with the MDA in recruiting recycling businesses to the state and would serve as a valuable resource for information on recycling feedstock, recycling incentives and resources, and recycling markets in the state and region. Finally, if

CBRAC is established at the MDEQ or at a state university or other agency, then the agency or institution should be provided adequate funding and resources for the program.

14. The Task Force also recommends that a specific work force training program (perhaps encouraged through the state's community college system) be developed to cater to recycling companies and organizations. The Task Force noted that one important way to address this training would be for the current state Work Force Investment Board to make work force training for recycling industries a targeted area and add such training initiatives to its plans for the state. Numerous recycling business survey respondents indicated that labor issues were a problem for growing their businesses. Such a training program would need to be flexible enough to retrofit the training to the specific needs of a particular recycling industry (e.g. collectors, processors, manufacturers, end users, etc.).

**Transportation Costs and Issues** – A recommendation was developed for enhancing transportation conditions in the state also in response to the concerns voiced about transportation costs.

15. The Task Force recommends that a comprehensive review of the transportation systems for recyclable materials (truck, rail, barge, etc) be conducted that would identify improvements for the transport and delivery of recyclables to state, national and global markets. Transportation costs and distances were identified as one of the single most important factors inhibiting the cost effectiveness of recycling in the state. In Mississippi, these problems are especially true given the size and rural nature of this state. Over half of the in-state survey participants indicated their business operations included transportation of recyclables. This review would be expected to identify recommendations for changes in current transportation regulations or possibly other administrative and policy areas to assist in transporting recyclable materials to the marketplace, particularly since markets are growing and expanding globally. In addition, the analysis should be conducted by an engineering or technical firm with appropriate expertise and should be adequately funded by the Legislature. The Task Force on Recycling along with appropriate representatives of the Mississippi Department of Transportation, the Mississippi Public Service Commission, the Mississippi Development Authority, the Mississippi Department of Environmental Quality and any other agency identified as having an important role in transportation related issues would review this analysis prior to it being provided to the Legislature.

**Improve Financial Incentives and Assistance for Recycling Businesses and Industries** - The Task Force recommends that the State evaluate and expand financial assistance programs for recycling businesses. These assistance programs would likely need to include grants, low interest loans and tax incentive programs. Any existing recycling financial assistance and tax incentive programs need to be reviewed and new programs created to insure that we are responsive to the realities of the current state of recycling and materials markets.

16. The Task Force recommends creating a Recycling Business Development Grant Fund possibly administered through the proposed CBRA Center in partnership with MDA. In the past, small amounts of grant funding had been made available to private industry and small businesses through the MDEQ's Pollution Prevention grants, but these funds have not been awarded in several years due to the state's general budget shortfall. In addition, the grants were always relatively small and certainly not large enough to fund the more high value recycling activities of processing and manufacturing. Creating a new business grant program or reviving these previous grants and making the program more sustainable would offer assistance to start up and expanding recycling companies.
17. The Task Force recommends that the State create tax incentive programs for recycling businesses. Currently, income tax credits are available for an existing manufacturer that has operated in the state at least 2 years and invests at least \$1 million in additional buildings and equipment. The company is eligible for an income tax credit of 5% of the approved investment. The credit is allowed for the year that the investment occurs and can be carried forward for up to five years, with the minimum tax credit allowed on any project being \$1 million. The Task Force recommends that this incentive be modified for recycling businesses (to be defined by state law) allowing the 5% credit for investments of at least \$500,000. The State of Arkansas has another program for consideration that offers tax credits for recycling and waste reduction equipment at any type of industry. The program is managed through the Arkansas Pollution Control and Ecology Commission and offers tax credits of up to 30% of the costs of purchasing and installing new equipment employed in waste reduction, reuse or recycling. These state tax credits offer incentives to new companies seeking to install such equipment at start-up manufacturing plants or to existing companies seeking to expand operations. In addition, the credits apply to various other types of industries that may incorporate waste reduction or recycling equipment into their overall manufacturing operations. Other options could include: specific financial assistance to industry for recycled product testing and research, for process assessment and development and for modifying existing economic development grant and incentive programs to create specific incentives for recycling businesses.
18. The Task Force recommends that the Legislature consider other sales tax reductions for recycling facilities. One possibility is to expand the existing sales and use tax reductions for construction or expansion to specifically cover "recycling facilities." Another possibility that several states have implemented is to remove or lower the sales tax rate on the purchase of products that meet certain recycled content standards. Mississippi could aid recycling of various material categories and grow markets by removing or reducing these sales taxes on approved recycled content products.

**Recycling Business Recruitment** – The Task Force also recognized that recruiting new recycling businesses to the state was important and included recommendations reflecting such.

19. The Task Force recommends the creation of a Recycling Market Information Sources and Services initiative through the proposed Community and Business and Recycling Assistance Center (CBRAC). These Recycling Market Information services with additional support from MDA should provide a host of resources to prospective and existing recycling industries interested in locating or expanding in the state. The information provided through this service center would include an enhanced and updated Recycling Market Development Directory that overviews all state recycling assistance programs and government regulations. The current directory is helpful but additional information and useful tools could be incorporated into the enhanced directory. In addition, the CBRAC would produce a comprehensive recycling profile of the State of Mississippi to aid in recruiting new recycling businesses to the state and to aid expansions and growth of existing industries. This state profile of recycling would characterize the quantities, types, and locations of various recyclables within the state. This information would be used to assist in business recruitment, siting and expansion decisions by providing more precise information about the available levels of recyclable materials in a given area of the state. Other sources of information from the CBRAC would include recycling commodity market assessments, online pricing trends for recyclables, and an online marketplace and exchange mechanism that links to regional and national exchanges.
20. The Task Force recommends that appropriate programs to recruit and entice new recycling industries into our state and to encourage expansion of existing recycling industries be developed as a part of Mississippi's overall economic development efforts. The development of long-term and sustainable markets for recycled products should be integrated into the Mississippi Development Authority's (MDA's) mission as part of its ongoing market development efforts. This mission should be implemented through a phased process, with MDA preparing an implementation plan for review and approval by the Legislature during one of the future sessions. The amount of funding required for this effort will be dependent on the plan's outcome and could be provided in part by leveraging other resources (federal, private sector) to address research, development, and implementation barriers.

**Improving Recyclable Market Conditions** – The Task Force also developed recommendations that would improve certain market conditions in the state.

21. The Task Force recommends an increased focus by the State on purchasing recycled-content products. The Task Force recognizes that many recycled-content products are cost effective and should be purchased, yet barriers remain that affect the ability of our recycling programs to close this loop. State agencies and local jurisdictions have enormous buying power and, by increasing their purchasing of recycled-content products, have the ability to make those products more cost effective and provide leadership to the private sector. Development of guidelines and goals for purchasing of recycled-content products will require time and resources of state agency staff. The Task Force recommends that the Department of Finance and Administration

(DFA), MDA, MDEQ and other appropriate state government procurement staff be tasked with implementing this increased focus.

22. The Task Force recommends that State agencies develop individual agency goals for purchasing recycled-content products. State agencies should set goals for purchasing recycled-content products that coincide with the guidance developed by DFA, MDA and MDEQ. In instances where recycled-content products are cost effective and within the state's economic preference, these products should be purchased. To establish recycled-content purchasing goals, DFA should convene appropriate state agency representatives to identify individual agency goals and how those goals will be met (i.e., what recycled-content products will be purchased). A review by DFA should be made biannually (every other year) to determine whether agency goals were met and what changes should be implemented.
23. The Task Force recommends that DFA and ITS incorporate the U.S. EPA's Electronic Product Environmental Assessment Tool (EPEAT) into its selection and purchasing procedures for computer and other similar electronic systems. EPEAT is an environmental procurement tool designed to help institutional purchasers in the public and private sectors evaluate, compare and select computer desktops, laptops and monitors based on their environmental attributes. The adoption of EPEAT will ensure that state agencies and institutions are purchasing computer systems that are more environmentally friendly and are easier to recycle.

**Focused Research on Recycling Market Development** – The final recommendations by the Task Force addressed the role that focused research by our University community and associated industries and agencies should play in growing the state's recycling industry.

24. The Task Force recommends that in general the state do more to encourage research efforts, pilot programs and other projects related to the development or expansion of product stewardship efforts. Through the proposed Community and Business Recycling Assistance Center, the state should develop a focused state research strategy. Through this strategy, public/private partnerships should be sought to conduct voluntary pilot programs or projects, in which product stewardship concepts are applied locally and regionally within the state. In addition, research projects through the state's institutions of higher learning would help to assist in developing new technologies for making products safer and more easily recyclable. Input from the private sector should also be used to target especially difficult recycling and disposal problems. The results of these research projects, pilot programs and outreach efforts will promote better understanding and use of product stewardship methods as well as additional local product stewardship models that can be employed by industry in the state. Coordination of research, development and implementation activities could be conducted through the proposed CBRAC with local universities and community colleges, agricultural extensions, and the private sector to manage the technical issues related to developing and expanding recycled product use. This will require a pool of available and flexible research funding that can be leveraged with other resources (federal, private sector, state) to address research, development, and

implementation barriers. One example is for USM's premier School of Polymer Science to conduct specific research on plastics for the creation of new recycled products, which also results in new businesses for Mississippi. In addition, research at Mississippi State University's College of Engineering on biofuels and other products that can be created from wastes will also help grow recycling markets and businesses in the state.

25. The Task Force recommends that the state conduct a comprehensive study of existing plastics manufacturing companies in the state. This study (similar to one conducted by the state of North Carolina) would help identify processors and manufacturers that could convert or include recyclable plastics feedstock in place of virgin materials in their processes. The study should also identify ways that the plastics manufacturers could reduce wastes or use their own wastes back in their processes. The study would build upon the efforts of this report in identifying barriers and challenges for the plastics recycling industry and the need for better technical assistance to expand or introduce the use of recycled materials.
26. The Task Force recommends that a comprehensive study be conducted on new and enhanced uses of recyclable materials in highway and road construction in the state. The study would be led by the State Department of Transportation in partnership with state university research programs, the highway construction industry and MDEQ conduct additional studies into the increased use of glass cullet and other recyclable materials in highway and road construction in the state and from this research, develop recycled product standards and incentives for road and highway construction uses.



## **VII. Summary Conclusions**

During the past few months, the Task Force identified barriers in the state that need to be addressed in order for recycling businesses and market development efforts to be successful. These barriers included the inadequate leadership and resources at the state level to develop recycling markets, the lack of education about the economic value of recycling, liability issues for companies that collect, process and use recycled products, regulatory issues that inhibit the conversion of wastes to products, and the lack of technical and financial programs to support new recycling business startups and expansions.

The Task Force developed a comprehensive set of recommendations addressing various issues to help grow the state's recycling industry. As has previously been stated, these recommendations included:

- Changes to certain laws and regulations to grow recycling businesses;
- Programs to enhance collection of recyclables in the state;
- Requirements for reporting and measuring recycling in the state;
- Efforts to improve public outreach and education;
- Enhancing transportation conditions for recycling businesses;
- Training and technical assistance programs for recycling businesses;
- Recruitment of recycling businesses;
- Provisions to grow recycling markets; and
- Development of focused research to foster new recycling businesses.

In addition, our state has numerous operations manufacturing recycled materials and products, with some on the cutting edge of recycled-content food packaging as well as those using their artistic skills. The creativity, resourcefulness, and entrepreneurship of our citizens have never been our problem. Our ingenuity is not lacking, and it is the hope of this Task Force that our state will utilize these recommendations as a stepping stone to initiate, develop and maintain an ongoing, coordinated effort and focus on the needs and future of this growing industry.

The state must also do more to encourage cooperation of the public and private sectors in building recycling businesses and markets in the state. Opportunities for involving and partnering with the public and private sectors must be fostered and encouraged from the inception of any market development strategy to its successful implementation. A spirit of cooperation and not coercion is always more effective if we are to attain excellence in our initiatives to enhance and grow recycling in the state. The private sector has proven its ability to develop markets for recyclables. The State should learn from this experience and seek to invest in and assist the private sector in our efforts to increase these markets for recycled materials and to improve the efficiency of the overall recycling system.

It is obvious that, if our state is interested in creating and maintaining long-term sustainable markets, then Mississippi must insure there is a consistent and continuous

infrastructure and leadership in place, ready to assist, promote and develop our state's recycling industry. Our state must be committed to developing and providing the technical and financial resources needed by both the public and private sectors to move Mississippi's recycling industry to a level that can have the most significant impacts to our state's economy and environment.

In closing, Mississippi must realize that we now live and do business in a global marketplace. If Mississippi is to enhance our recycling and material recovery efforts to take advantage of the global demand for these materials, leadership and investment at the state level is vital. Without significant state resources and leadership in the area of recycling business growth and recyclable materials markets, new recycled businesses will not develop and existing businesses will not grow or expand. Our state's focus must include a new vision and leadership towards recycling business development, research and financial assistance for emerging recycling technologies, marketing for Mississippi recycled content products, and analysis and alteration of statutory, regulatory and bureaucratic barriers to producing and using recycled products

## **References and Acknowledgements**

The following reports, periodicals, papers and organizations were utilized in developing information regarding this report on the various components of the state recycling system:

*American Forestry & Paper Association (AF&PA)*, organizational website.

*American Petroleum Institute*, (API) organizational website.

*Annual Report of the RMDC*, (November 1993), prepared by the Mississippi Recycling Market Development Council.

*Case Study on Caterpillar Remanufactured Products Group* researched and presented by Walter R. Stahel of The Product-Life Institute, Geneva for the 1995 Geneva Environment Meetings;

*Central Texas Recycling Association (CTRA)* website: [www.cash4trash.com](http://www.cash4trash.com)

*Corrugated Packaging Alliance*, organizational website;

*Earth 911*, organizational web site, Used oil recycling information web page;

*Institute for Scrap Recycling Industries*, organizational web site provided by ISRI.

*Mississippi Business Journal Online*, article entitled “Intechra to Purchase Three Companies,” published December 15, 2006;

*Mississippi Department of Environmental Quality*, organizational website: *Recycling web pages*: [www.deq.state.ms.us](http://www.deq.state.ms.us);

*Mississippi Institutions of Higher Learning*, Policy, Research and Planning Division.

*Mississippi 2020 Network, Inc.* organizational website: [www.mississippi2020.org](http://www.mississippi2020.org);

*Plastics Recycling Update*, a monthly publication of Resource Recycling, Inc., September 2006 edition.

*Recycling Works! State and Local Solutions to Solid Waste Management Problems*, prepared by the U. S. Environmental Protection Agency, Document # EPA530-K-99-003, (April 1999).

*Regulations of the State of Arkansas for Waste Reduction, Reuse or Recycling Tax Credits*, prepared by the Arkansas Pollution Control and Ecology Commission, Regulation No. 16, (July 2004).

*Report to the Mississippi Legislature*, by the State Task Force on Recycling, December 31, 2004.

*Report to the Mississippi Legislature on the Status of Recycling and Pollution Prevention in Mississippi*, by the Mississippi Department of Environmental Quality, dated January 3, 2006.

*Revitalizing Recycling in Washington, Recommendations of the Recycling Assessment Panel for the State of Washington*, Ecology Publication No. 00-07-009, (February 2000).

*Smart Money.com, Magazine website, November 13, 2006 article entitled: A Heap of a Bargain.*

*Solid Waste Management Plan for the Solid Waste Authority of Marshall County, Ms.*, prepared by Environmental Business Services, Inc.

*Strategic Materials, Inc* company website, [www.strategicmaterials.com](http://www.strategicmaterials.com)

*The Economics of Recycling: Understanding the Whole Picture*, a publication of the U.S. Environmental Protection Agency Region IV Office, Atlanta, Georgia.

*United States Recycling Economic Information Study*, by The National Recycling Coalition, prepared in 2001.

*Used Oil Re-refining Study to Address Energy Policy Act of 2005, Section 1838*, developed by the U.S. Department of Energy, Office of Fossil Energy, July 2006.

*Waste Age Magazine, web site December 4<sup>th</sup> 2006*, Article entitled: "PET Recycling Rate Continues Slow Rise"

*Waste Age Magazine web site, December 5<sup>th</sup> 2006*, Article entitled: "Scrap Tire Recycling at All Time High, Says New Report"

## **APPENDICES**

*This page  
intentionally  
left blank*

# Mississippi Recycling Industry Survey

## State Task Force on Recycling

Complete and submit by October 16, 2006- (Attach additional pages if necessary)

### Facility Information (Requested)

Business Name \_\_\_\_\_

Mailing Address \_\_\_\_\_

Physical Address \_\_\_\_\_

Contact Person \_\_\_\_\_

Position/Title \_\_\_\_\_ Email: \_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_

If known, please provide your facility NAICS Code \_\_\_\_\_ or SIC Code \_\_\_\_\_ (Note: Consult your workman's compensation information for information on these codes).

If the codes are not known, describe your recycling operations. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Which category describes your role(s) as a recycling company (check all that apply):

Transporter \_\_\_\_\_

Broker \_\_\_\_\_

Re-manufacturer \_\_\_\_\_

Collector \_\_\_\_\_

End User \_\_\_\_\_

Other (describe) \_\_\_\_\_

Processor \_\_\_\_\_

Manufacturer \_\_\_\_\_

### Business Information

Total # of Employees Currently \_\_\_\_\_ Total Payroll (total annual) for 2005 \_\_\_\_\_

Percentage of your business engaged in recycling \_\_\_\_\_

How did Hurricane Katrina impact your recycling business operations? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

What percentage of recyclable materials do you collect from Mississippi sources? \_\_\_\_\_

What percentage of your recyclables is sold to Mississippi vendors/users? \_\_\_\_\_

### Future Business Plans

Have you added or reduced employees in 2006?

Added \_\_\_\_\_ Reduced \_\_\_\_\_ If so, how many? \_\_\_\_\_

Do you plan to hire or reduce the number of employees in the next year?

Add \_\_\_\_\_ Reduce \_\_\_\_\_ If so, how many? \_\_\_\_\_

Do you plan to invest in more plant equipment, buildings or land in the next five years?

Yes \_\_\_\_\_ No \_\_\_\_\_

(See Back)

If so, what is the estimated investment value of that equipment, building or land? \_\_\_\_\_

**Recycling Industry Outlook (next five years)**

How do you envision your business growing in the next five years? \_\_\_\_\_

What would you estimate the annual growth rate percentage? \_\_\_\_\_

Please rank (#1, 2, 3... with 1 being the most significant barrier) the top barriers or disincentives below that you have experienced or are experiencing in growing your recycling business:

*Lack of Resources* \_\_\_\_\_ *Poor Markets* \_\_\_\_\_ *Labor Costs* \_\_\_\_\_

*Lack of Financial Incentives* \_\_\_\_\_ *Lack of Recyclables* \_\_\_\_\_ *Transport Costs/Distances* \_\_\_\_\_

*Lack of Public Education* \_\_\_\_\_ *Laws & Regulations* \_\_\_\_\_ *Lack of Interest* \_\_\_\_\_

*Other* \_\_\_\_\_ *(Explain)* \_\_\_\_\_

What suggestions do you have for actions by the state or local government that could help improve and/or grow your recycling business? \_\_\_\_\_

Identify any incentives or advantages offered to your competition in other states \_\_\_\_\_

**2005 Recyclable Materials Collections**

Please complete the table for Calendar Year 2005. If the information is not known, please provide your best estimate.

√	Material Category	Amount Collected (pounds)	% Residential	% Commercial	% Industrial	% Governmental	2005 Value of Material Produced/Sold
	<b>Metals</b>						
	<b>Plastics</b>						
	<b>Glass</b>						
	<b>Cardboard</b>						
	<b>Other Paper</b>						
---	<b>Automotive</b>						
	- Tires						
	- Used Oil						
	- Oil Filters						
	- Auto Batteries						
	<b>Electronics</b>						
----	<b>Other</b>						

*Please complete and submit to the Task Force by October 16, 2006.*



