

3.1 Overview

The objective of this task is to utilize the data gathered through the Study's survey efforts to identify potential opportunities for enhancing recycling market development. To identify these commodity opportunities, the Project Team considered the following criteria:

- Reliability and completeness of the survey data;
- Quantities of recyclable materials imported into Iowa for processing and end-use; and
- Overall documented commodity supply as compared to documented demand.

Company specific information from the survey results is not detailed because the Study methodology specified confidentiality for all respondents as related to company specific information.

3.2 Recyclable Materials Flow

To initiate the analysis, the quantitative survey data for the recyclable materials was aggregated by commodity type. Total 2005 tons collected, processed and consumed by Iowa entities was estimated based on the survey responses. Then, the quantities of recyclable materials imported by processors and end-users were calculated. The quantity of in-state commodity purchases were subtracted from the overall total quantities purchased for each individual respondent to calculate the quantity of imports. The imports for individual respondents were summed by commodity type to identify the total imports for each commodity. The commodity imports identified in the recyclable materials flow may represent a supply/demand imbalance because the import of materials may be due to lack of supply in Iowa. The exports for collectors also were calculated but the focus of the review is at the processor and end-user level. The 2005 Iowa Recyclable Materials Flow is provided below.

Table 3-1
Iowa Recyclable Materials Flow
2005 Tons¹

COMMODITY	COLLECTORS		PROCESSORS		END-USERS	
Material Types	Total Collected ²	Exported	Total Processed ²	Imported (Calc) ³	Total Consumed ²	Imported (Calc) ³
PAPER	91,543	6,582	338,252	20,959	1,167,178	902,088
Newspaper	40,603	4,301	61,350	10,335	14,406	5,533
Old Corrugated Containers	24,794	1,494	193,969	8,982	983,509	834,813
High Grade	341	71	9,852	181	-	-
Other Paper	25,805	716	73,082	1,461	169,263	61,742
PLASTICS	7,288	1,946	25,788	7,700	10,214	1,742
PET	2,334	476	4,715	52	-	-
HDPE	1,069	389	8,765	6,096	7,000	-
PVC	-	-	101	-	-	-
LDPE	123	93	1,837	-	930	30
PP	126	126	156	-	124	124
PS	1	-	134	-	-	-
Mixed Plastics	3,636	862	10,080	1,552	2,160	1,588
GLASS	22,974	13,097	37,260	42	-	-
Clear (Flint)	4,521	3,962	5,704	-	-	-
Brown (Amber)	6,441	6,161	21,688	-	-	-
Green/Blue	3,026	2,921	3,139	-	-	-
Mixed Glass	8,987	53	6,729	42	-	-
METALS	34,954	2,175	172,976	20,862	1,607,620	917,418
Steel Cans	1,972	298	2,580	140	-	-
Aluminum Cans	4,704	1,281	8,926	13	-	-
Ferrous Scrap	18,205	-	147,456	19,786	1,605,450	915,248
Non-ferrous Scrap	10,073	596	14,014	924	2,170	2,170
WOOD SCRAP	30,110	4,000	179,496	23,710	44,000	27,500
SUB-TOTALS	186,869	27,799	753,772	73,273	2,829,012	1,848,748

Table 3-1
Iowa Recyclable Materials Flow
2005 Tons¹

COMMODITY	COLLECTORS		PROCESSORS		END-USERS	
Material Types	Total Collected ²	Exported	Total Processed ²	Imported (Calc) ³	Total Consumed ²	Imported (Calc) ³
CONSTRUCTION & DEMOLITION	20,969	24	207,236	118	1,000	-
Asphalt	4,979	-	57,112	-	1,000	-
Concrete	5,382	-	146,411	-	-	-
Drywall	5,781	-	-	-	-	-
Carpet	36	-	118	118	-	-
Carpet Pad	539	24	-	-	-	-
Asphalt Shingles	2,742	-	3,595	-	-	-
Other Mixed C&D	1,510	-	-	-	-	-
ORGANICS	80,454	-	291,837	5	91,000	19,000
Food	500	-	11,071	-	-	-
Yard Trimmings	67,273	-	107,799	5	-	-
Other Organic By-Products	12,681	-	172,967	-	91,000	19,000
			-			
ELECTRONICS	634	34	522	107	-	-
TIRES	90,950	28,891	51,253	11,747	1,176	876
TOTALS	379,876	56,747	1,304,620	85,250	2,922,188	1,868,624

¹ Represents only the quantities documented based upon the survey conducted by R. W. Beck as related to the Economic Impacts of Recycling study. It does not represent 100% of the materials collected, processed, or used in Iowa.

² Totals may not sum due to rounding.

³ These estimates are calculated by aggregating the data received from the individual respondents concerning overall commodity purchases as compared to in-state commodity purchases.

3.3 Data Limitations

The data characterized above have limitations as related to measuring Iowa's overall recyclable materials supply and demand. Some survey respondents failed to differentiate between the quantities of materials originating from Iowa suppliers and the quantities originating from out-of-state suppliers. In these instances, it was assumed these quantities were generated by Iowa suppliers.

Survey responses were not obtained from all Iowa recycling firms and community programs. As a result, the documented quantities per the survey do not represent 100% of the recyclable materials collected, processed, and end-used within Iowa. Yet, the Project Team worked collaboratively with IDNR staff to identify major recycling industry organizations and attempted to gather information from those key organizations. Information was received from the major processors and end-users based on quantities managed.

3.4 Materials Supply and Demand

The Project Team reviewed the recyclable materials flow to assess the supply and demand for the various commodities. The processor information is compared to the end-user information to undertake the supply/demand analysis. A brief analysis is provided below by commodity type. All tonnages are for the calendar year 2005.

3.4.1 Paper

3.4.1.1 Old Newspaper

The supply of ONP appears to be substantially greater than the demand for ONP. Approximately 61,350 tons of ONP were processed but only 14,400 tons were consumed in Iowa. Thus, additional ONP consumption represents a recycling market development opportunity in the State. However, the overall differential is not large enough to offer an opportunity for an ONP recycling mill, but for smaller more decentralized end uses, such as cellulose insulation or egg carton manufacturing.

3.4.1.2 Old Corrugated Containers

Nearly 194,000 tons of OCC was processed in Iowa in 2005. Approximately 983,500 tons were consumed. Out of the total tons consumed, only 149,000 represents the portion of materials estimated as generated in Iowa. This results in almost 835,000 tons of OCC being imported to Iowa for consumption. Based upon the documented survey information, it appears that the demand for OCC substantially exceeds the quantity of OCC collected and processed in Iowa. It should be noted that long-term contractual relationships between processors and end-users may influence the quantity of materials imported. Yet the large quantity of OCC materials imported certainly represents, at some level, a recycling market development opportunity for processors of OCC.

3.4.1.3 High Grade Paper (Office Paper)

The quantity of high grade paper processed in 2005 was 9,900 tons yet none of the end-user survey respondents reported any tons consumed in the state of Iowa. These results suggest none (or perhaps a very small portion) of the high grade paper processed in the state is being consumed in Iowa, so the total supply exceeds the demand for this material. These results represent an imbalance in the supply and demand. However, some survey respondents may have included office paper quantities with “other” or mixed grades of paper. This issue should be further researched before determining if a market development opportunity exists.

3.4.1.4 Other Paper (Other Grades & Mixed Paper)

Approximately 73,000 tons of mixed paper was processed in Iowa in 2005 while 169,000 tons were consumed. Out of the documented tons consumed, 61,700 tons were imported. Based on this data, it appears that demand exceeds the quantity of mixed paper processed in Iowa. It should be noted that the definition of “other” or mixed paper is relatively fluid and may have impacted the survey responses. Moreover, long-term contractual relationships between processors and end-users may influence the quantity of materials imported. Again, specifications of the consumed fiber should be researched prior to finalizing conclusions as to a recycling market development opportunity.

3.4.2 Plastics

3.4.2.1 PET

The amount of PET plastic processed in Iowa in 2005 was 4,700 tons, while no tons were documented as consumed by Iowa end-users. This may offer an opportunity for a PET end-user, but the amount processed seems to underestimate the quantity of PET collected, considering Iowa’s Beverage Containers Control Law or “Bottle Bill”.

3.4.2.2 HDPE

Almost 8,800 tons of HDPE were processed in 2005, and 7,000 tons were consumed. It should be noted that none of the tons consumed were imported for end use. Supply appears to be only slightly greater than demand. More research is recommended concerning the extent of the HDPE processors and end-users.

3.4.2.3 LDPE

The quantity of LDPE processed in Iowa in 2005 was 1,800 tons, while 930 tons were consumed. Of the amount consumed, only 30 tons were reported to be imported. The supply appears to be greater than demand. More research is recommended concerning the extent of the LDPE processors and end-users.

3.4.2.4 Mixed Plastics

Approximately 10,000 tons of mixed plastics were processed in Iowa in 2005, but only 2,000 tons were consumed. The supply of mixed plastics appears to exceed the demand and may offer an opportunity for an end-user of mixed plastics.

3.4.2.5 PVC, PP & PS

The amounts reported of other types of plastics processed and consumed were negligible.

3.4.3 Glass

The amount of glass processed in Iowa in 2005 was over 37,000 tons. It is believed that the majority of this glass is container glass via the Iowa “Bottle Bill”. Because there were no survey responses from end-users of glass in the state, the supply of glass is believed to be shipped out of state for glass-to-glass recycling. Some glass may be crushed and used for sandblasting, road bed construction, drainage filter media, landfill cover, and other alternative uses. While there appears to be a greater supply of glass than there is demand, more research on the extent of alternative uses should be undertaken to determine local end-markets.

3.4.4 Metals

3.4.4.1 Steel Cans

Approximately 2,600 tons of steel cans were processed in Iowa in 2005. No tons were reported consumed, indicating supply exceeds demand.

3.4.4.2 Aluminum Cans

Almost 9,000 tons of aluminum cans were processed in Iowa in 2005. Because no end-users of aluminum can scrap were identified, it appears that supply exceeds demand.

3.4.4.3 Ferrous Non-Container Scrap

The amount of ferrous scrap reported as processed in Iowa was nearly 147,500 tons. Because 1.6 million tons were consumed (includes auto bodies per survey responses), and over 900,000 tons were imported for consumption, it is estimated that approximately 690,000 tons of Iowa-generated ferrous was consumed. Thus, it appears that the total amount of ferrous processed in Iowa is under-represented, based on end-user survey responses. More data on processors of ferrous scrap should be gathered regarding this commodity to assess the supply and demand.

3.4.4.4 Non-Ferrous Non-Container Scrap

Survey results indicate that approximately 14,000 tons of non-ferrous scrap was processed in Iowa in 2005, while only 2,000 tons were consumed. Of the amount

consumed, 100% was imported. Supply appears to exceed demand, however only imported tons were reported by end-users. More research on end-use is needed.

3.4.5 Wood

Nearly 180,000 tons of wood scrap were processed in Iowa in 2005. Because approximately 44,000 tons were consumed, and 27,500 tons were imported for consumption, approximately 16,500 tons of Iowa wood scrap was consumed. This indicates that supply exceeds the demand for this material. Based on our knowledge of the wood scrap industry, the supply typically exceeds the demand for this commodity type.

3.4.6 Construction & Demolition

3.4.6.1 Asphalt

Over 57,000 tons of asphalt were reported processed in 2005, while only 1,000 tons were consumed. Likely end-users of asphalt may not have been surveyed. It is common for asphalt to be removed, crushed, and then reapplied during the construction of a new roadway. Typical road construction companies were not included in the recycling survey. More research on end-use is recommended before drawing specific conclusions.

3.4.6.2 Concrete

Over 146,000 tons of concrete were reported processed in 2005, while no end-users reported consuming concrete. Likely end-users of concrete may not have been surveyed. Similar to asphalt, recovered concrete often becomes aggregate for road base during the construction of a new roadway. However, most concrete is removed from the construction site to be crushed because the rebar must be removed as well. Typical road construction companies were not included in the recycling survey. More research on end-use is recommended before drawing specific conclusions.

3.4.6.3 Drywall

No drywall was reported by survey respondents as having been processed or consumed in 2005.

3.4.6.4 Asphalt Shingles

Survey results indicate 3,600 tons of asphalt shingles were processed in 2005. No end-users for this material were documented, but it is likely that end-users of this material are active in Iowa. More research on end-use is needed.

3.4.6.5 Carpet and Carpet Padding

Carpet tonnages processed were negligible at 118 tons, and no consumption was reported. No carpet padding tonnages were reported.

3.4.7 Organics

3.4.7.1 Food Residuals

Approximately 11,000 tons of food residuals were processed in Iowa in 2005 based on survey results. Most likely the food residuals are composted with yard trimmings. No end-users for this material responded to the survey. More research on end-use is recommended before drawing specific conclusions.

3.4.7.2 Yard Trimmings

The amount of yard trimmings processed was 108,000 tons in 2005. No end-users were documented, resulting in excess supply. Given the varied types of potential end-users, it would be difficult to effectively survey all yard trimmings end-users. It should be noted that there is a significant reduction in the volume of yard trimmings after it is processed/composted, thus for every ton of yard trimmings composted there is not one ton of compost produced. Moreover, based on our knowledge of yard trimmings operations, the supply typically exceeds the demand for this commodity type and many municipalities provide the finished compost to residents at no charge. Iowa has also experienced tremendous growth in the use of compost in nursery, sports turf, and erosion control activities in the last three to five years.

3.4.7.3 Other Organic By-Products

Approximately 173,000 tons of other organic by-products (manures, biosolids, industrial by-products, etc.) were reported processed in 2005. The reported tons consumed was 91,000 tons. However, it is not evident from the survey respondents that the material processed was the same type of material consumed. It is likely these materials were used as inputs to composting operations.

3.4.8 End-of-Life Electronics

Approximately 500 tons of electronics (including computers, keyboards, monitors, televisions, VCRs, stereos, cell phones, etc.) were reported as processed in 2005, while no end-users reported consuming electronics. The supply of used electronics parts are likely to have been shipped out of state.

3.4.9 Tires

Over 51,000 tons of tires were processed as tire scrap in 2005, while less than 1,200 tons were reported as consumed in Iowa. Most likely the tire scrap is transported out of state to be used as an alternative fuel or made into crumb rubber for various civil engineering applications.

The table below summarizes the supply/demand assessment.

Table 3-2
Materials Flow Commodity Analysis

Material	Supply/Demand Status
ONP	Excess supply
OCC	Excess demand
High Grade (Office)	More research needed
Other Paper (Mixed)	More research needed
PET Plastics	Excess supply
HDPE Plastics	Supply slightly greater than demand
LDPE Plastics	Excess supply
Mixed Plastics	Excess supply
Container Glass	Excess supply
Steel Cans	Excess supply
Aluminum Cans	Excess supply
Ferrous	More research needed
Non-Ferrous	Excess supply
Wood	Excess supply
Asphalt	More research needed
Concrete	More research needed
Drywall	No data reported
Asphalt Shingles	More research needed
Food Residuals	More research needed
Yard Trimmings	Excess supply
Other Organic By-Products	More research needed
End-of-Life Electronics	Excess supply
Tires	Excess supply

3.5 Summary

With the exception of OCC and those commodities requiring more research, it appears that there is excess supply to meet the present demand for most recycled material commodities in Iowa. Based solely on the data gathered above and our knowledge of the industry, we recommend consideration of the following preliminary recycling market development opportunities:

- Facilitate additional development of the Iowa processing infrastructure for OCC to meet documented in-state demand;
- Promote new end-users of ONP by focusing on quality and quantity of fiber available;

Section 3

- Promote new end-users of various recycled plastics, with emphasis on PET because of the quantity of the available supply of this recycled material;
- Promote the research and development of alternative end-uses for container glass;
- Further document the processing of ferrous metals to compare the supply to the present demand for these materials;
- Gather more data and promote development of end-users of organics and construction and demolition materials;
- Facilitate additional development of the Iowa end-use infrastructure for end-of-life electronics; and
- Promote the research and development of alternative end-uses for tires.

The above preliminary recommendations should be considered in the context of the economic impacts analysis and its results to prioritize the opportunities.