

APPENDIX A DESCRIPTION OF RECYCLING AND REUSE BUSINESS CATEGORIES

Table A-1 provides detailed descriptions of 45 recycling and reuse business categories, grouped into 5 industry segments. The table is intended to comprehensively include all business establishments undertaking recycling and reuse economic activities, as defined in Chapter 5. However, this breakdown is not intended to be a definitive classification scheme, and should be refined during the implementation of the study recommended in this report as new information is obtained. In particular, additional research is recommended to more comprehensively identify and categorize reuse businesses. Note that recycling processors and manufacturers are grouped into a single industry segment. This is because many of the establishments in these categories undertake both processing and manufacturing.

Table A-1 lists *Standard Industrial Classification* (SIC) codes for each category. These codes were identified by comparing each category to the official definitions listed in the *Standard Industrial Classification Manual, 1987*, prepared by the Executive Office of the President, Office of Management and Budget. Note that in most cases, the listed SIC category also includes businesses not involved in recycling and reuse. Beginning in 1997 the SIC system will gradually be phased out and replaced by the new *North American Industry Classification* (NAIC) System, which is harmonious with systems used in Mexico and Canada, in accordance with the North American Free Trade Agreement. Table A-1 also lists the NAIC codes which correspond to the traditional SIC codes. Where the NAIC categories differ significantly, the new category name is provided. Notable changes in the NAIC system include a new category for material recovery facilities, and a division of SIC 4953, Refuse Systems into separate categories for haulers and disposal facility operators handling hazardous, solid and other wastes.

Table A-1 Descriptions of Industry Segments and Business Categories of the Recycling and Reuse Industries

Industry Segment	Business Categories in Segment	Typical SIC and NAIC Code Assignments
Recycling Collection	Government-staffed collection programs Programs staffed by municipal, state or other government agencies which provide curbside, drop-off or other recycling collection services. Does not include programs focused on education, market development or other activities not directly supporting collection programs. Does not include municipal programs staffed by private contractors.	SIC 9511 Public Admin. - Solid Waste Management (NAIC 92411)
	Hauler-Based Collection Private sector establishments which provide recycling collection services to residential, commercial and industrial waste generators, sometimes under contract to municipal or state government agencies. The primary activity of many of these establishments is waste hauling.	SIC 4953 Refuse systems SIC 4212 Local trucking without storage NAIC 562111 Solid Waste Collection
Recycling Collection	Disposal Facility-Based Collection Establishments which operate solid waste disposal facilities, such as landfills, incinerators or transfer	SIC 4953 Refuse systems NAIC 562212 Solid Waste Landfills

Industry Segment	Business Categories in Segment	Typical SIC and NAIC Code Assignments
(Continued)	stations, which also segregate recyclable materials from mixed solid waste intended for disposal, and/or operate collection programs for source separated materials. Activities may include sorting, baling, grinding, densifying and/or brokering recyclables for wholesale distribution.	NAIC 565213 Solid Waste Combustors and Incinerators
	<p>Commercial Facility-Based Collection Commercial business establishments of any type which operate and staff recycling collection programs targeting materials generated by customers or on-site. Examples include retail store recycling programs for used batteries, tires, grocery bags, bottle bill redemption centers and recycling collection staff in office buildings and institutions.</p>	Many SIC/NAIC categories.
	<p>Manufacturing and Industrial Facility-Based Collection Manufacturing and industrial facilities which recover materials generated during manufacture or other industrial activities, and which transport the recovered materials to other facilities for recycling. Does not include establishments which recycle recovered materials on-site, in the same facility in which they were generated.</p>	Many SIC/NAIC categories.
Recycling Processing and Manufacture	<p>Recyclable Material Wholesalers Establishments which process recycled materials by sorting, grading, densifying, removing contaminants and otherwise preparing the materials for shipment to manufacturing facilities for use in industrial production. Examples include paper stock dealers and scrap metal processors. These establishments may also provide recycling collection services. This category is intended to be defined consistently with the new NAIC category for recyclable material wholesalers.</p>	SIC 5093, Scrap & Waste Material Wholesalers NAIC 42193 Recyclable Material Wholesalers
	<p>Materials recovery facilities Establishments which accept mixed and/or source separated recyclables, typically from municipal curbside and drop-off collection programs. Activities include sorting, baling, grinding, densifying and/or brokering recyclables for wholesale distribution. May also segregate recyclables from mixed solid waste. This category is intended to be defined consistently with the new NAIC category for materials recovery facilities.</p>	SIC 4953 Refuse Systems NAIC 56292 Material Recovery Facilities
	<p>Construction & Demolition Debris Processors Establishments which process for the purposes of recycling materials generated primarily through road and building construction and demolition activities, including wood, asphalt, pavement, shingles, comingled materials, gypsum, and soil. Activities include sorting, grinding, washing and crushing. This category may need to be aggregated with materials recovery facilities or recyclable materials wholesalers for consistency.</p>	SIC 4953, Refuse Systems
	<p>Deinked market pulp producers Independent establishments which deink discarded paper and produce market pulp for sale to paper and paper board mills.</p>	SIC 2611 Pulp mills (NAIC 32211)
Recycling Processing and Manufacture	<p>Paper and paper board mills Establishments which produce first stage intermediate paper and paper board products (e.g., paper rolls) using discarded paper or deinked market pulp as a feedstock. These mills may operate paper sorting or</p>	SIC 2621 Paper Mills SIC 2631 Paper Board Mills (NAIC 32213) NAIC 322121 Paper Mills (Except newsprint)

Industry Segment	Business Categories in Segment	Typical SIC and NAIC Code Assignments
(Continued)	deinking facilities on-site as well.	NAIC 322122 Newsprint Mills
	<p>Other paper product producers Establishments which produce paper products other than traditional paper and paper board products, using discarded paper as a feedstock. Examples include cellulose insulation, molded fiber products, construction board, hydro-seeding mulch or animal bedding.</p>	<p>SIC 2679 Miscellaneous converted paper and paper board products NAIC 322215 Non-Folding Sanitary Food Container Manufacturing (egg cartons) NAIC 322298 Other Converted Paper Product Manufacturing NAIC 325221 Celulosic Organic Fiber Manufacturing</p>
	<p>Beneficiation facilities Independent establishments which produce clean, crushed glass cullet satisfying the specifications of end users, primarily glass container and fiberglass insulation manufacturers. Activities may include sorting by color, removing contaminants, crushing, grinding, screening, grading and monitoring size and quality. This category requires additional examination and may need to be combined with recyclable material wholesalers.</p>	<p>SIC 5093 Scrap and waste materials NAIC 42193 Recyclable Material Wholesalers</p>
	<p>Glass container manufacturing plants Establishments which produce finished glass containers for shipment to bottlers, using recycled glass cullet as a feedstock. May also undertake beneficiation activities on site.</p>	3221 Glass containers (NAIC 327213)
	<p>Fiberglass insulation producers Establishments which produce fiberglass for conversion into insulation and/or molded products, using recycled glass cullet as a feedstock.</p>	SIC 3296 Mineral Wool (NAIC 327993)
	<p>Other recycled glass product producers Establishments which produce products other than containers and fiberglass, using recycled glass as a feedstock. Examples include decorative tiles, glassware, and construction blocks.</p>	SIC 3229 Pressed and blown glass and glassware (NAIC 327212)
	<p>Detinning Facilities Establishments which process recovered metallic cans for sale to manufacturers.</p>	Undetermined.
	<p>Steel mills Basic oxygen furnaces (BOF) producing raw steel in various forms using a mix of scrap and molten iron</p>	SIC 3312 Steel works, blast furnaces and rolling mills

Industry Segment	Business Categories in Segment	Typical SIC and NAIC Code Assignments
	made in blast furnaces from scrap and raw materials (iron ore, coke, limestone) and also electric arc furnaces (EAF) using scrap. Products from EAF mills are primarily slabs, billets or rebar. Products from BOF mills are primarily flat or rolled products. Activities include grading scrap, detinning, refining and product fabrication. Additional fabrication and assembly of final stage products may occur at these facilities.	NAIC 331111 Iron and Steel Mills
Recycling Processing and Manufacture (Continued)	<p>Iron and steel foundries Establishments which produce a wide range of cast steel products using unrefined scrap and steel ingot produced in steel mills. Activities may include grading scrap, refining and casting.</p>	SIC 3321 - 3325 Iron and Steel Foundries (NAIC 331511 - 331513)
	<p>Smelting and refining mills Establishments involved in the recovery and alloying of nonferrous metals. Activities include grading, sorting, detinning, refining, and other processes. Produce intermediate products such as ingot. May also include fabrication of basic products. Note that primary smelters of nonferrous metals, excluding aluminum and copper, process scrap in addition to virgin materials. Primary aluminum and copper smelters do not process scrap.</p>	SIC 3341 Secondary smelting and refining of nonferrous metals SIC 3339 Primary smelting and refining of nonferrous metals, except copper and aluminum NAIC 331314, 331423, 331492 Miscellaneous Secondary Nonferrous Smelting, Refining and Alloying.
	<p>Nonferrous extruded product producers Establishments which produce a wide range of intermediate products through extrusion processes, primarily from billet manufactured in smelting operations. Many of these plants may also operate in-house casting operations which process unrefined nonferrous scrap.</p>	SIC 3351 - 3356 Miscellaneous Nonferrous Products (NAIC 331421, 331315, 331315, 331316, 331319)
	<p>Nonferrous foundries Establishments which produce castings and die-castings of various non ferrous metals and alloys. Note that many manufacturers of specific end-products, e.g., automobiles, may operate foundries and purchase scrap.</p>	SIC 3363 - 3369 Nonferrous Foundries (NAIC 331521 - 331528)
	<p>Plastics reclaimers Establishments which produce plastic pellets or granulated plastic suitable for use by plastics product manufacturers. Activities include separating, washing, grinding, flaking and/or pelletizing. This category also includes establishments which manufacture intermediate products directly from unprocessed recycled plastic, such as plastic lumber products.</p>	SIC 5162 Plastics materials and basic forms and shapes (NAIC 42261)
	<p>Plastic converters Establishments which produce intermediate plastic products (e.g., molded products and components, sheet products)</p>	SIC 3081 - 3089 Miscellaneous plastics products (NAIC 326113, 326121, 32613, 326112,

Industry Segment	Business Categories in Segment	Typical SIC and NAIC Code Assignments
	and fiber) using recycled pellets or granulated plastic as a feedstock.	32616, 32615, 32614, 325991, 326191, 326122, 326121, 326199)
	Crumb rubber producers Establishments which produce crumb rubber from used tires, for sale to miscellaneous rubber product manufacturers. Activities include tire shredding, washing and grinding.	Undetermined.
Recycling Processing and Manufacture (Continued)	Miscellaneous rubber product manufacturers Establishments which produce first stage intermediate products end products using crumb rubber as a feedstock.	SIC 3069 Miscellaneous fabricated rubber products SIC 3011 Tires and inner tubes SIC 3021 Rubber and plastics footwear SIC 3052 Rubber & plastics hose & belting SIC 3053 Gaskets, packing and sealing devices (NAIC 326211, 316211, 32622, 339991, 326291, 31332, 326192, 326299
	Compost producers Establishments which produce compost and miscellaneous soil amendment products from source separated yard trimmings, discarded wood and food, biosolids and other organic feedstocks.	Undetermined.
	Miscellaneous organic product producers Establishments which produce products, excluding compost, using discarded organics as a feedstock. Examples include mulch, bark and other landscaping products. This category also includes vermiculture.	Undetermined.
	Aggregate and pavement mix producers Establishments which produce asphalt paving mix and aggregate for use in road construction using recycled pavement, asphalt, rubber modified asphalt and/or glass, in addition to virgin materials.	SIC 2951 Asphalt paving mixtures and blocks (NAIC 324121)
	Textile processors Establishments which collect, sort, grade and otherwise process discarded textiles.	Undetermined.
	Used oil refiners Establishments which re-refine used engine oil to produce a product which competes with new, "virgin" engine oil. This category does not include establishments which process used oil for use as fuel.	Undetermined.
	Household hazardous waste processors Establishments which process discarded materials classified as household hazardous waste for the purposes of recycling.	Undetermined.
	Other recycling processors and manufacturers Other recycling processors and manufacturers, not elsewhere classified. May include agricultural facilities and landscapers using ash or paper mill sludge, engineering applications of tires, and other users of materials not elsewhere classified.	Varied.

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Wholesale Reuse	Tire retreaders Establishments which sort, clean, buff and remanufacture used tires by adding new tread. These establishments produce crumb rubber as a by-product.	SIC 7534 Tire retreading and repair shops NAIC 326212 Tire retreading
Wholesale Reuse (Continued)	Electronic appliance demanufacturers Establishments which sort, classify, grade and remanufacture used electronic appliances, primarily computers. Remanufacture may encompass entire appliances or components. These establishments may also recycle materials not suitable for remanufacture.	Undetermined.
	Wood reuse Establishments which produce graded lumber and/or finished goods by cleaning, grading, and otherwise processing used wood. Includes establishments which purchase used, damaged pallets and remanufacture for reuse. Does not include establishments whose primary product is fuel.	Undetermined.
	Materials exchange services Establishments which provide listings and otherwise facilitate the reuse of products and materials, primarily by commercial and industrial establishments.	Undetermined.
	Motor vehicle parts Establishments which clean, sort, inspect and remanufacture used motor vehicle parts.	SIC 5015 Wholesale Used Motor Vehicle Parts (NAIC 42114)
	Equipment remanufacture Establishments, not elsewhere classified, which purchase used equipment and remanufacture it for resale, including toner cartridges, fork lifts, valves, electrical turbines, diesel engine components, mining machinery, oilfield equipment, machine tools, welding equipment, power transmission equipment, etc.	SIC 3511 - 3599 Miscellaneous industrial machinery & equipment (51 SIC codes) Undetermined NAIC codes.
	Other wholesale used merchandise sales Establishments which purchase used merchandise in bulk and remanufacture, clean and otherwise prepare the used products for wholesale distribution.	5399 Wholesale Misc. General Merchandise Stores (NAIC 45299)
Retail Reuse	Miscellaneous used merchandise sales (retail) Establishments which operate retail sales facilities dedicated to reused products. Activities may include providing drop-off or pick-up collection services for used products; cleaning, repairing and otherwise preparing products for resale. Includes "thrift" stores, reusable product depots, reuse centers and product-specific stores such as used clothing and used sporting goods, not elsewhere classified.	SIC 5932 Used Merchandise Stores (retail) NAIC 45331 Used Merchandise Stores (excluding pawn shops)
Retail Reuse (Continued)	Repair and used product shops Establishments which clean, repair, remanufacture and other wise prepare used products, and operate retail sales facilities. These establishments also offer repair services.	SIC 7378 Radio and tv repair shops SIC 7622 Radio and television repair shops SIC 7623 Refrigeration and air conditioning service and repair SIC 7629 Electrical and electronic repair shops SIC 7631 Watch, clock and jewelry repair SIC 7641 Reupholstery and furniture repair SIC 7692 Welding repair

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		SIC 7694 Armature rewinding shops SIC 7699 Repair shops, not elsewhere classified SIC 7532 - 7539 Miscellaneous automotive repair shops (NAIC 811212, 811213, 811219, 811412, 811211, 81149, 81142, 81131)
Support Businesses	Recycling and reuse equipment manufacturers and vendors Establishments which produce the primary equipment used by recycling businesses. Includes all significant equipment used by collection and intermediate processing establishments, such as trucks, balers, conveyors, magnets, automated sortation devices, grinders, choppers, etc. Also includes specialized equipment used specifically to accommodate recycled materials in manufacturing processes, or to process or remanufacture used products. Examples include plastic bottle washing, sorting and pelletizing systems, wastepaper deinking systems, tire processing equipment, glass bottle washing systems, etc. This category does not include standard processing and manufacturing equipment not specifically designed for recycling or reuse.	SIC 3511 - 3599 Industrial Machinery and Equipment (NAIC 336399, 333618, 333111, 333922, 333923, 33312, 333131, 332999)
	Consulting and Engineering Services Establishments which provide technical research and development services and engineering services to recycling collectors and intermediate processors, and reuse establishments, and which provide specialized services essential to the recycling or reuse process in manufacturing facilities. Examples include engineering services to develop deinking plants, composting facilities and plastics processing facilities. Broad consulting services to government or non-profits which does not directly support establishments listed above are not included.	SIC 7389 Miscellaneous business services, not elsewhere classified (NAIC 561449) SIC 8711 Engineering services (NAIC 54133) SIC 8742 Management consulting services (NAIC 541611- 541614)
	Brokers Establishments which purchase recycled materials or reusable products for purposes of resale without processing or otherwise adding value. Includes export brokerage services.	SIC 6221 Commodity contract brokers and dealers SIC 4731 Shipping brokers NAIC 52314 Commodity Brokerage NAIC 48851 Freight Transportation Affangement
Support Businesses (Continued)	Transporters Establishments which transport recycled materials or reusable products to intermediate processing facilities and/or processing and end-use facilities by air, truck, sea or rail.	SIC 44011 - 4499 Freight Services Undetermined NAIC.