Chapter 2
The Scope of FCA for MSW

The Complete Job of Solid Waste Management: MSW Activities and Paths

Many communities have discovered that integrated solid waste management (i.e., using a mix of solid waste management approaches) can minimize costs and environmental effects and maximize recovery and conservation of energy and materials. No single solid waste management approach is perfect. Some waste cannot be successfully recycled, composted, or converted to energy. In addition, some waste will always need to be landfilled, along with any residues from recycling, composting, and waste-to-energy (WTE). Communities using integrated solid waste management can use FCA to communicate the costs of different MSW approaches.

This *Handbook* distinguishes between two ways of disaggregating the entire MSW system. You can focus on the various *activities* that are the building blocks of the system or the *paths* that MSW follows in the course of integrated solid waste management (i.e., point of generation through processing and ultimate disposition). Both the "path" and "activity" ways of looking at MSW costs can be useful. Because these two perspectives share common terminology, it is important to be explicit in presenting FCA data so that users understand the costs of different services. MSW activities include:

- Waste collection
- Operation of transfer stations
- Transport of waste from transfer stations to waste management facilities
- Waste processing and/or disposal at waste management facilities
- Any sale of by-products

MSW paths are cross-cutting components of the solid waste system. Four primary solid waste management paths are:

- Recycling
- Composting
- Waste-to-Energy
- Land disposal

Understanding the costs of each MSW activity often will be necessary for compiling the costs of the entire system and helps you evaluate whether to provide a service yourself or contract out for it. Understanding the full costs of each path is an essential first step in discussing whether to shift the flows of MSW one way or another.

Exhibit 2-1 presents a generic flow chart illustrating how solid waste management is composed of activities and paths. Activities appear as boxes organized in five rows on the flow chart. Because source reduction keeps MSW from entering the management system, it is not included as an activity in Exhibit 2-1. Source reduction also does not appear as a path in Exhibit 2-1 because it reduces the amount of MSW that flows along the paths shown. The costs of source reduction activities, however, should be recognized in FCA. Exhibits 2-2 through 2-5 illustrate the four solid waste management paths.

Note that recycling, composting, and WTE paths all rely, in part, on land disposal of their residues, if any. Activity costs for land disposal, therefore, should be allocated to MSW paths in proportion to each path's contribution of waste for disposal. For example, in calculating the costs of the composting, recycling, and WTE paths, each path should be assigned the waste disposal activity costs entailed by the residues each sends for landfilling. (This means that the full costs of the landfilling path might be less than the full costs of the landfilling activity.) Other shared activity costs, such as collection, transfer, and transport, also should be assigned fairly to waste paths in proportion to the weight or volume of MSW headed in each direction.

Typically, local governments focus on the costs of the component activities of solid waste management, such as collection and disposal. Accounting systems might even be set up to record expenditures separately for these different MSW activities. Additionally, deciding whether to privatize or outsource services can depend on good cost accounting on an activity basis. However, in considering changes to the level of MSW activities—which affect how much MSW ends up being recycled, composted, converted to energy, or landfilled—you should focus on the costs of the different MSW paths, including all their component activities. The economics of recycling, composting, WTE, and disposal paths are strongly affected by the costs of collection, transfer, and transport.

Exhibit 2-6 shows the relationship between MSW activities and paths. The checks indicate those activities that are inescapable parts of MSW paths, but all the other cells are potentially part of a given MSW system as well. Paths include the cost of managing waste from the point of generation through processing and ultimate disposition. For example, a land disposal path can include costs from mixed waste collection, transfer station, transport, landfill and by-product sales activities. A recycling path might combine activity costs from curbside collection for recyclables and/or a drop-off recycling center, a materials recovery facility (MRF), and a landfill for disposal of nonrecyclable residues. Analyzing paths allows you to evaluate costs and revenues associated with individual waste management options and their respective impacts on total waste management system costs. The specifics will vary across communities.

In disaggregating full costs for the complete job of handling solid waste in a community, the "bottom line" will remain the same whether disaggregated by activity or path. If the purpose of presenting disaggregated information is to facilitate comparisons within a community about different programmatic options of handling solid waste, then the full costs are better presented in terms of MSW paths. In that way, discussions about whether to expand or reduce recycling, composting, or WTE programs in a community will be based on the actual economics of each path. If the purpose of presenting disaggregated information is to facilitate discussions about whether a service can be performed for a community

Exhibit 2-1

Solid Waste – Generic Flow Chart

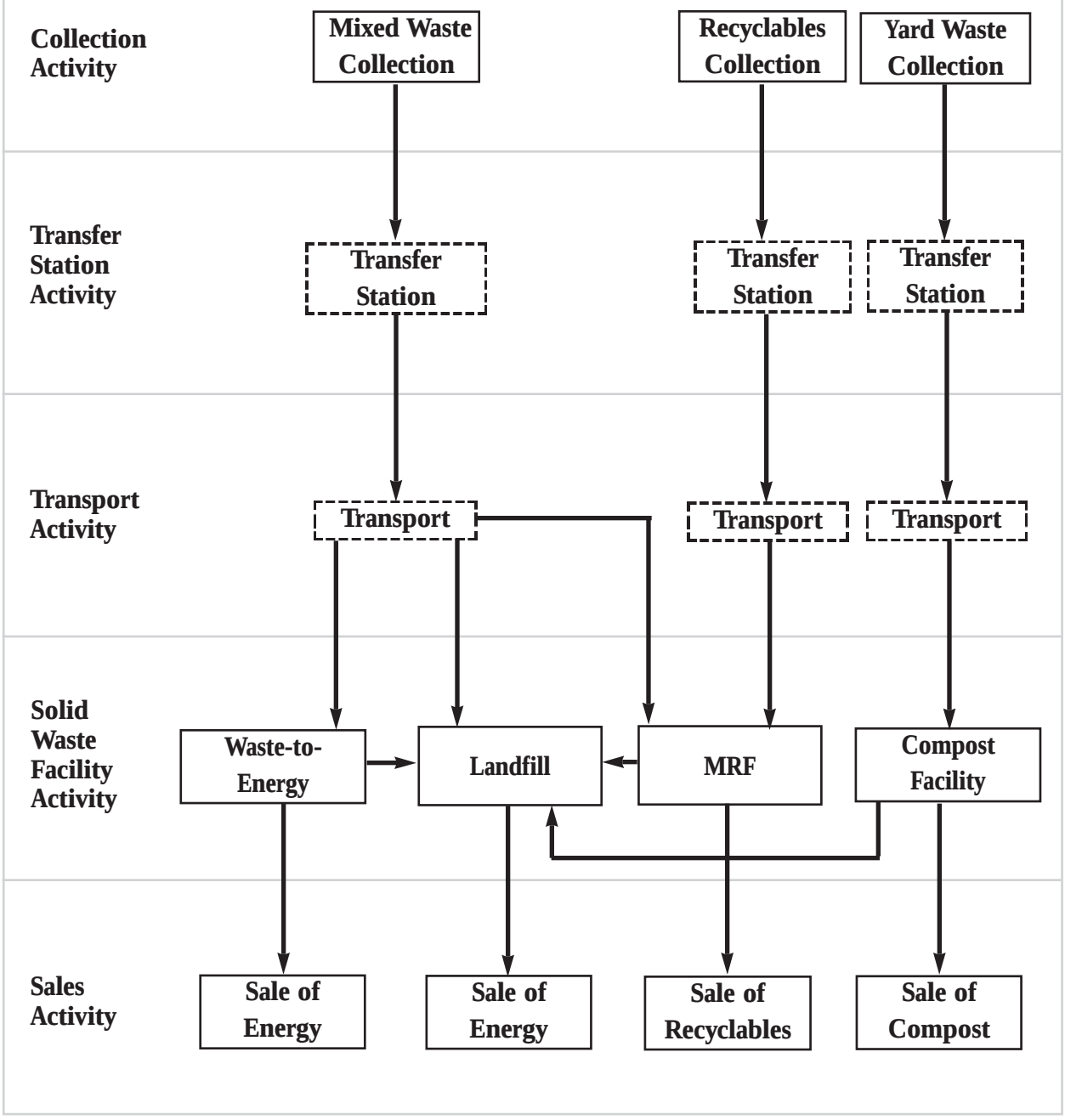

Exhibit 2-2

Recycling Path – Generic Flow Chart

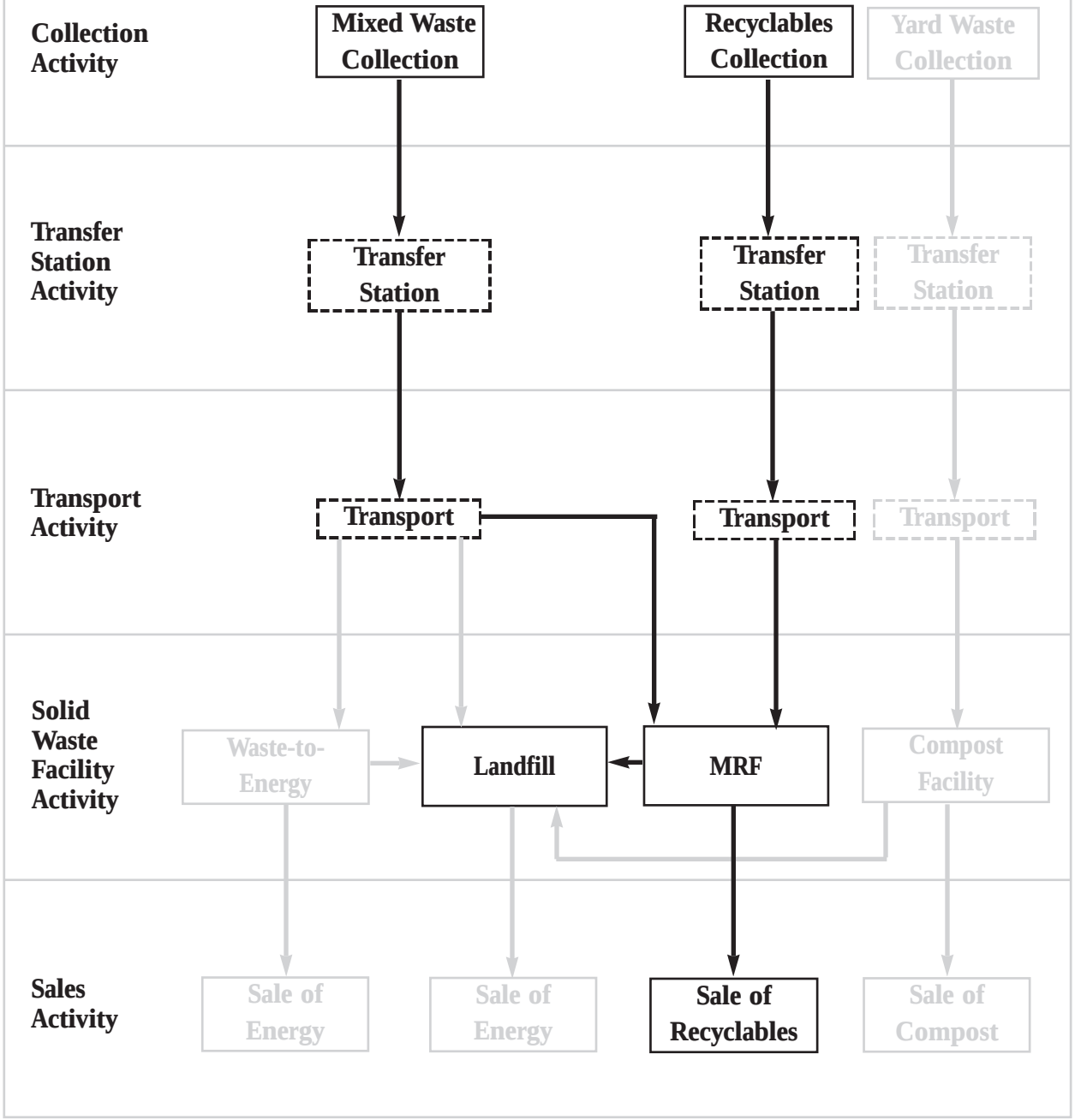

Exhibit 2-3

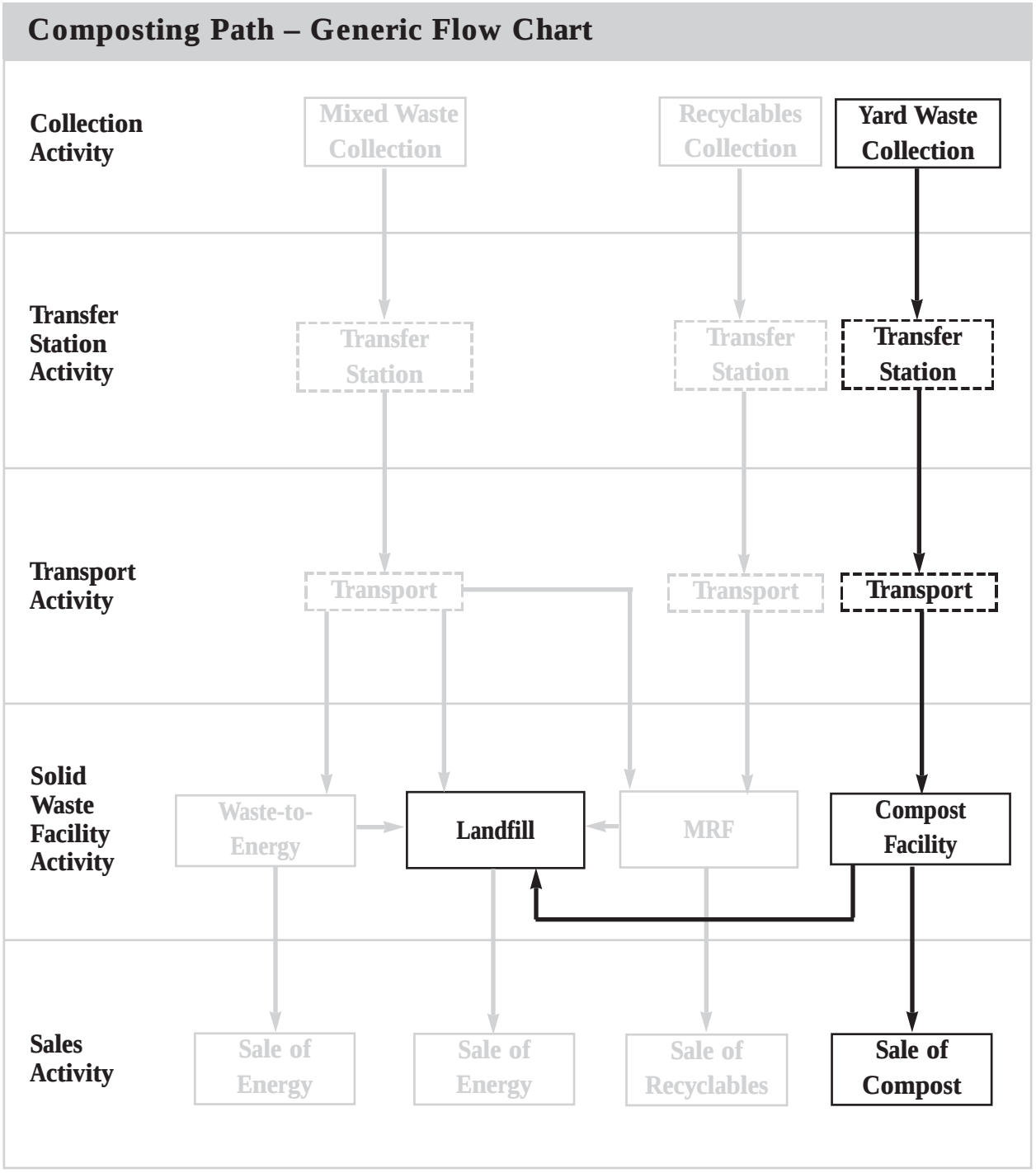
Composting Path – Generic Flow Chart
Collection Activity
Mixed Waste Collection
Recyclables Collection
Yard Waste Collection
Transfer Station Activity
Transfer Station
Transfer Station
Transfer Station
Transport Activity
Transport
Transport
Transport
Solid Waste Facility Activity
Waste-to-Energy
Landfill
MRF
Compost Facility
Sales Activity
Sale of Energy
Sale of Energy
Sale of Recyclables
Sale of Compost

Exhibit 2-4

Waste-to-Energy Path – Generic Flow Chart

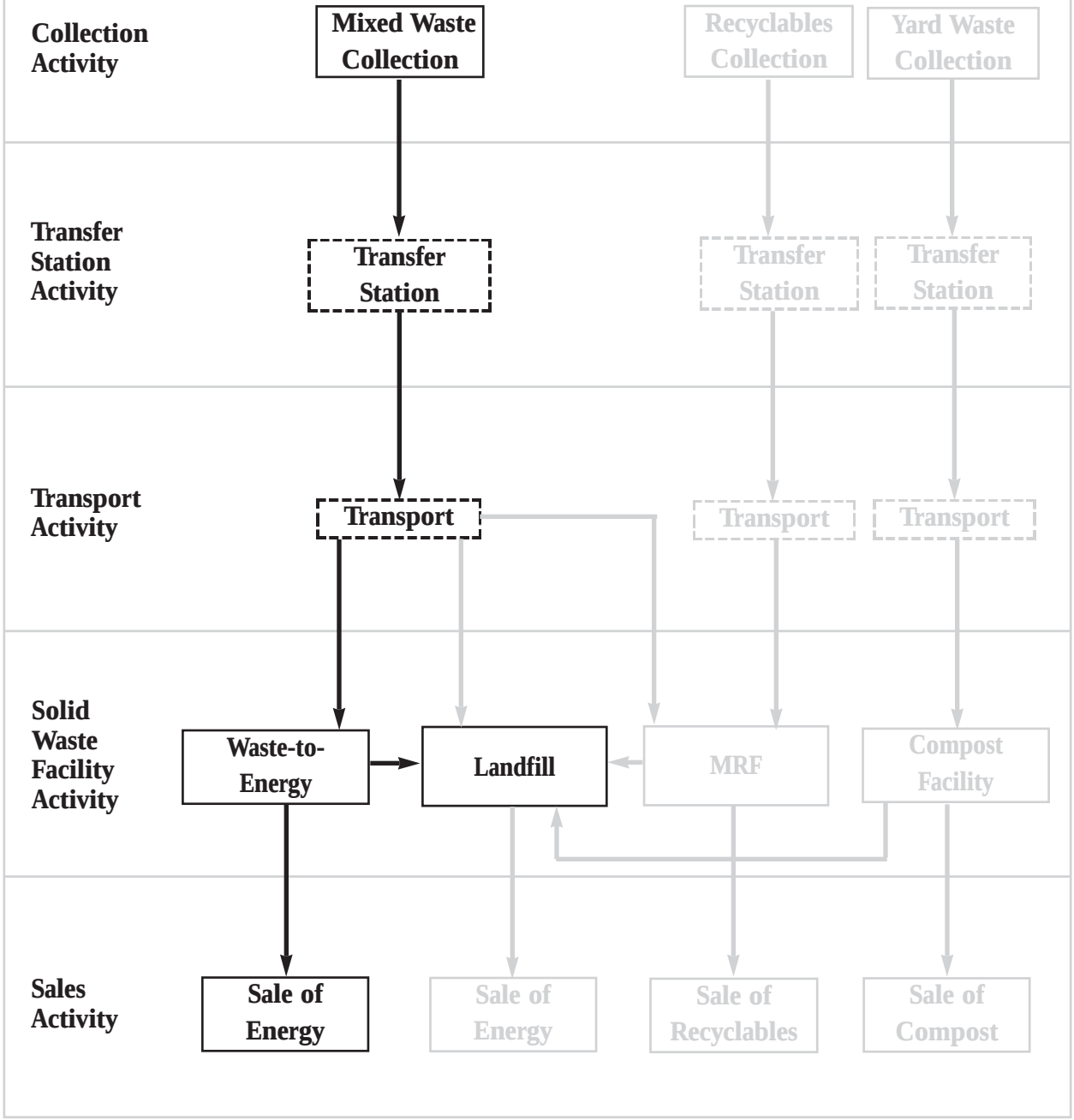

Exhibit 2-5

Land Disposal Path – Generic Flow Chart

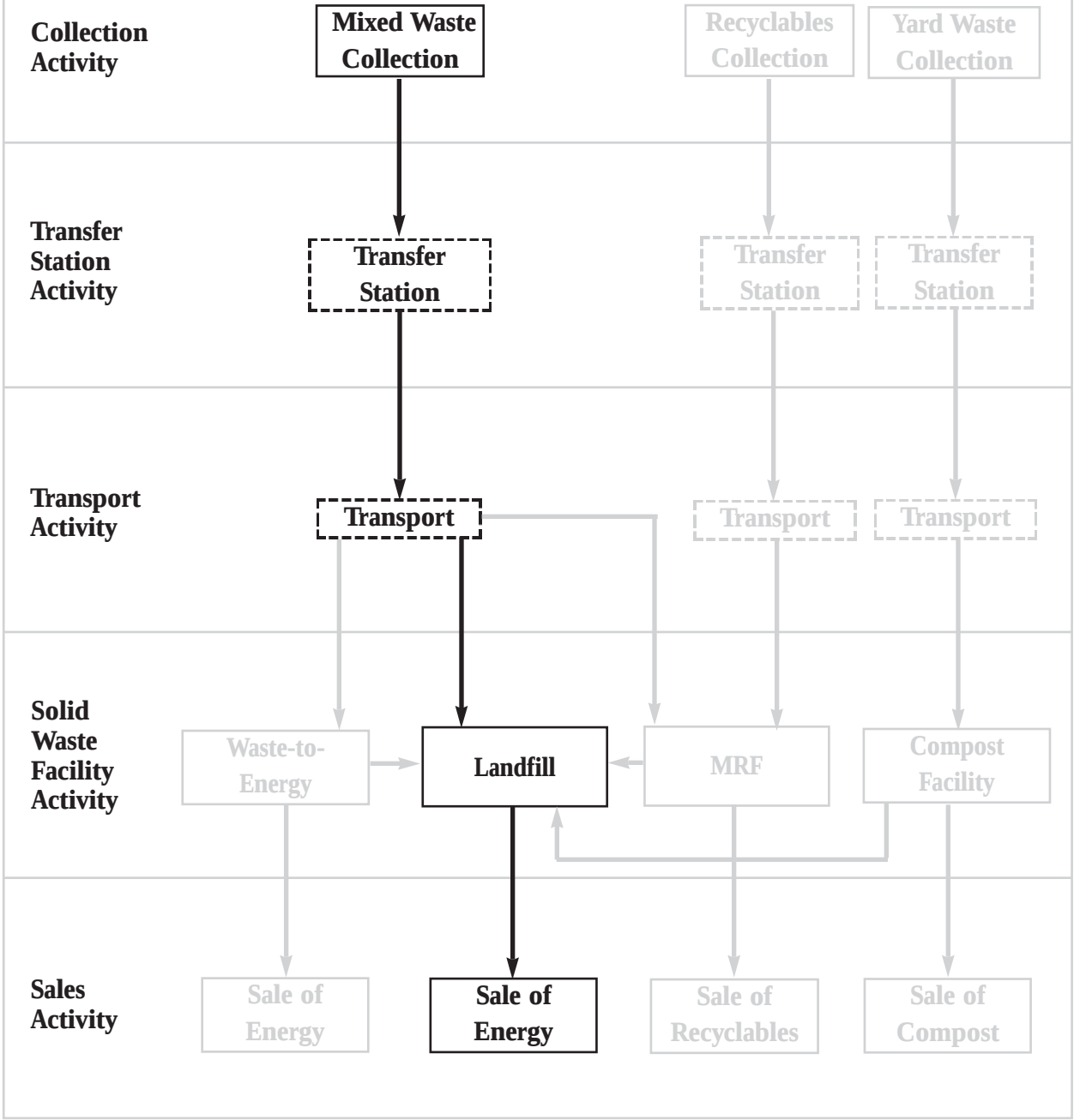

Exhibit 2-6

Potential Cross-Walk Between MSW Activities and Paths

MSW Activities	Recycling Path	Composting Path	WTE Path	Land Disposal Path
Collection	?	?	?	?
Transfer Station(s)	?	?	?	?
Transport	?	?	?	?
Facility(ies)	✔	✔	✔	✔
Residuals Disposal	✔	✔	✔	
By-Product Sales	✔	✔	✔	?
Education/Outreach	?	?	?	?

at a better price by a different provider, then the full costs might be better presented in terms of MSW activities.

The FCA approach used in this *Handbook* lets you have the best of both worlds. In reporting FCA information, you can tailor the format to your community's needs and interests. Counties, cities, and towns can continue to track costs by activity, use that data in privatization or outsourcing (e.g., "make or buy") decisions, and report full costs to the community. Some audiences might want the costs reported separately for waste management paths such as recycling, composting, WTE, and land disposal. Reporting costs per ton for MSW paths can facilitate comparisons of different waste management strategies. In responding to such needs:

- Remember that some of the activity costs of running landfills properly belong to paths such as recycling, composting, and WTE. These paths should be allocated their fair share of landfill activity costs based on how much material (e.g., residues) they send to landfills.
- You might need to allocate collection, transfer station, and transport activity costs appropriately to each solid waste management path in proportion to their use of those activities.
- Mixing "apples and oranges" can cause confusion. If your community uses more than one MSW path, consider reporting costs by either activities or paths to avoid confusion.

The flow charts do not include other functions important to any solid waste program, particularly community education and outreach, executive and oversight functions, and support services such as billing, maintenance, and the like. These functions can be provided directly by the solid waste department or by other units of local government. Chapters 3 and 4 will describe how to identify and incorporate the costs of these functions in FCA.