

EQUIPMENT

Horizontal Baler with In-Pit Conveyor

NMRC recommended two types of horizontal baler for the new hubs. These were both entry-level horizontal, manual tie systems available on the federal GSA purchasing website. One of the brands was chosen because it had an add-on three-phase electricity converter. We found that some locations did not have three-phase power on site, and to bring in new lines was quite expensive. There are many ways one can convey the materials into the baler and the in-pit system was selected in order to keep workloads and handling time down. We figured pushing material into a pit was simpler and cleaner than lifting material into the air. On the design template, a black line running around the front and around back are push walls. They prevent heavy equipment from bumping the baler, and ensure material ends up only in the pit and not everywhere else. These can be made locally by a welder. New baler recipients received two trainings on baler operation, one from the installer and another training from NMRC. ISRI's Baler Safety video was then left on hand for future trainings. Balers are dangerous and safety must be put first.

Fork Lift or Skid Steer

Every hub needs a way to push the material from storage bunker into the baler, to lift finished bales into the storage area, load trucks with finished product and in some cases to un-load portable recycling trailers. The goal of this recycling hub is efficiency in the sense of reducing the number of times the material must be handled. All materials are sorted by the citizen into divided containers. Baler staff provide a visual level of quality control while loading the baler, but are not expected to hand-sort materials. Safe operation training of the fork lift or skid steer should be provided.

Portable Loading Yard Ramp

For many reasons, this program found that a portable metal loading dock made the most sense rather than adding this feature to the building or constructing a permanent dock. Many hub sites have varying degrees of level and the portable dock also provides flexibility in truck loading. Another factor is that the ramp is economically priced.



Bunker Storage for Recyclables

This system can be done in many ways to provide holding areas for the loose recyclables. They are designed to be placed on the open-side of the structure so that the trailer or roll-off can tip directly into the compartments. They can even be used as a public drop-off area if needed. The hub design called for donated Department of Transportation jersey barriers that were dented and not useful any longer for road projects. Chain link fencing was then added on top of the barriers to provide additional storage space.

Sample Hub Project Budgets

This is an example of the final budget for one of the hubs as designed above. Each of the three hubs varied as the baler with the converter cost more, the structure cost was affected by local costs and how much in-kind each grantee was able to provide and that left the amount to spend on collection equipment as the final variable and the last item purchased once all other items were in place and final costs were known.

Item	Value
Horizontal Baler with In-Pit Conveyor (Excel EX63 With 3-Phase Converter)	\$97,689
Fork Lift	\$24,817
Portable Loading Dock	\$11,019
Roll-Off Collection Equipment	\$50,473
Structure (3,000 sq ft)	\$125,822
TOTAL	\$309,820

The following budget is an example of the New Mexico Environment Department's "Balers and Trailers" grant program also funded via Department of Energy funding. This program utilized either an existing city-owned empty warehouse or buildings at landfills or transfer stations. Each awardee received \$150,000 to launch their hub.

Item	Value
Horizontal Baler with In-Pit Conveyor (Gemini EX)	\$87,738
Electrical and Concrete Work	\$3,102
Roll-Off Collection Equipment	\$59,160
TOTAL	\$150,000

Spoke Design and Equipment

Collecting recyclables in the rural environment requires planning. Important considerations include drop-off location, type of equipment, switch-out needs and which materials to collect.

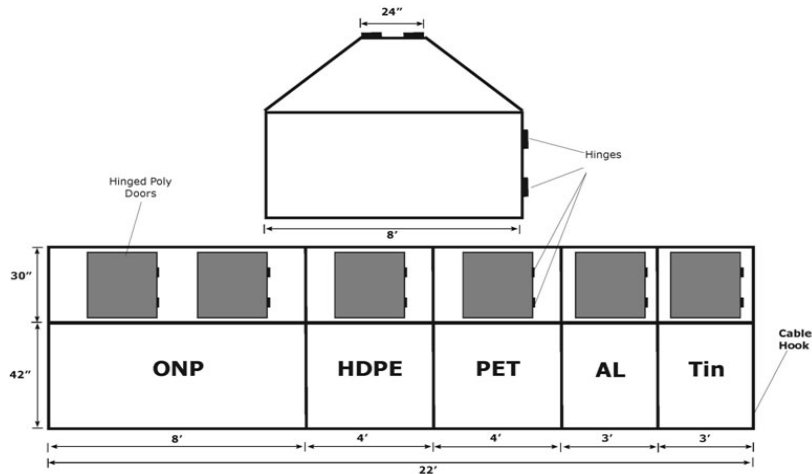
The following table reviews these considerations:

Activity	Trailers	Roll-Offs
Hauling	Standard pick-up truck can haul trailer.	If roll-off truck already owned, roll-offs recommended
Location	Existing drop-off or secure urban	Existing drop-off or secure urban
Right-Sizing	One OCC and one 8-bin multiple material trailer allows for material capacity adjustments (e.g. 2 bays for ONP or PET). Movable signage.	Larger bay used for highest volume of material collected. Movable signage. OCC roll-off separate.
Security	Wheel lock, bin locks, fencing	Door locks, fencing
Unloading	Unload with standard fork lift attachment, OCC is gravity tip	Can unload one commodity at a time
Switch-Out	Always recommended	Always recommended

Equipment

Roll-Off Containers

Roll-off collection equipment is recommended when a roll-off truck is owned. NMRC has written a generic bid document that can be used to procure a set of collection equipment. One for cardboard and then another divided container for sorted materials.



Recycling Trailers

There are two routes a community can take to using trailers designed to be hauled by a regular pick-up truck. You can have a simple wire-fencing type trailer available for each of your commodities and haul them to the hub when each one gets full. This may be practical for closely located spoke drop-off sites. For spokes sites of any distance, two recycling collection containers are recommended. Again, one for cardboard only and another divided container for sorted materials. You can configure available bins so that two of the bins may be used for the most commonly collected material, be it mixed paper or plastic #2 bottles. Whichever fills up faster. We recommend using signage that can be bolted on and off in the case that you need to experiment with number of divided bins per material. The goal is to not haul empty air, but mostly full bins of each material. To locate portable recycling trailer options, we recommend using Google.



NMRC Grant Sub-Awardee Communities

Recycling Hub & Spoke Grant

\$929,460 Awarded December 2010. This program sought out three communities willing to

become new regional recycling hubs. The hub and spoke model was prescribed almost identically to these three awardees and all were awarded \$309,820 each. This funding provided for the hub infrastructure, horizontal baler with conveyor, loading ramp, fork lift and initial spoke collection equipment.

- Torrance.County (population 16,269)
- Otero.County (population 62,776)
- Deming (surrounding region population 32,137)

Recycling Spoke Grant

\$385,060 Awarded April 2011. This program provided spoke collection equipment. Communities received varying award amounts and either purchased roll-off containers or trailers depending on existing equipment and distance to hub. For each site, it was recommended to place one container solely for cardboard and another multi-divider container for sorted materials. All were recommended to collect cardboard, mixed paper, aluminum cans, steel/tin cans, plastic #1 bottles and plastic #2 bottles.

- Cibola.County
- Maxwell
- Otero.County
- San.Miguel.County

Recycling Center Improvement and Spoke Grant

\$590,303 Awarded February 2012. This program was designed to improve existing recycling hub facilities wishing to expand/improve to serve their region and provide further recycling spoke collection equipment.

- Angel.Fire (spoke equipment)
- Cibola.County (spoke equipment)
- Las.Vegas (hub improvement)
- Luna.County (spoke equipment)
- Otero.County (spoke equipment)
- Raton (hub improvement)
- Silver.City (hub improvement)
- Truth.or.Consequences (hub improvement)

