



TWINNING THE BIN

What does it cost to provide comprehensive recycling access away-from-home? Government researchers in North Carolina are looking to provide some answers and move closer to having a recycling receptacle next to every trash can.

**BY NORTH CAROLINA DEPARTMENT
OF ENVIRONMENT AND
NATURAL RESOURCES**

The ultimate vision of a fully built-out U.S. recycling system would have recycling access on par with garbage access. Various studies and sheer observation tell us that even small gaps in access deter recycling behavior. Curbside recycling has clearly helped to close the gap on the residential side, but arguably the biggest mountain we've yet to climb is creating parallel access at away-from-home (AFH) locations – the challenge amounts to “twinning the bin” at every park, sports field, festival, mass transit stop and pedestrian landscape in the country.

AFH recycling – defined as recycling services provided at locations other than a residence, workplace or school – is critical because of the high proportion of bottles, cans and other recyclables that are generated on-the-go and the appetite that processors and manufacturers have for this material. North Carolina's State Recycling Program in the Department of Environment and Natural Resources (DENR) has been working to grow access to AFH recycling by offering grants, technical assistance and best practice guidance to local governments that want to build AFH recycling infrastructure in their communities. In the last few years, the state has provided more than \$400,000 in grant funding to support AFH projects.

As part of this effort, North Carolina recently analyzed current AFH access in the state and tried to estimate what it would cost to fully “twin the bin.” This research was done in part to help fuel conversation and spur additional research on building this essential infrastructure. Our hope is that it catalyzes work in this arena and

helps to create an understanding of the scope of investment needed for entities aiming to develop AFH infrastructure, including communities and states throughout the U.S., government entities such as the U.S. EPA, commodity groups and brand owners.

Methodology

North Carolina's AFH study attempted to achieve two things: discover the total investment needed for the state to reach universal AFH recycling access and determine how much of that investment has already occurred. The study focused on infrastructure investments and therefore only looked at the cost of the containers needed to achieve twinned access. Any costs associated with collection and service operations were not included.

DENR conducted the first tier of the study by investigating the total number of possible AFH recycling locations in North Carolina where waste bins are frequently provided. Locations were grouped together by categories, including:

- Downtown and pedestrian areas
- Beach access points
- Gas stations
- Transit locations
- State and local parks
- Public athletic complexes (not including school sports fields)
- Public events
- Rest areas

To estimate the total number of possible recycling stations that could be required to successfully twin the bin, we analyzed geographic information system data, reviewed state databases, surveyed local government public works and parks and recreation departments, and consulted numerous industry partners. We used

this data to estimate the number of waste bin locations in the state and the amount of recycling bins that would have to be added to achieve 100 percent access to AFH recycling.

The second tier of the study involved surveying all North Carolina municipal and county solid waste and recycling departments to determine how much recycling access was already provided for the subset of AFH locations typically established and served by local governments. The survey asked recipients about whether their communities provided AFH recycling bins at these locations:

- Downtown and pedestrian areas
- State and local parks
- Public athletic complexes
- Transit locations
- Public events
- Beach access points

The survey also asked about the number of recycling and waste bins communities used, the percentage of bins that were paired, and the cost of the average recycling receptacle.

Analysis of findings

The first tier of the research determined North Carolina needs a total investment of \$38 million to pair waste and recycling receptacles statewide. This amount assumed that no receptacles were currently paired, so the sum reflects the required investment if the state started from scratch to build a complete AFH recycling

Table 1 | Projected cost for full pairing

AFH Type	Number of locations for waste bins	Number of recycling receptacles per location	Total number of recycling stations needed	Average price per recycling station	Cost
Beach access	524	1	524	\$103	\$53,972
Gas stations	6,254	4	25,016	\$500	\$12,508,000
Transit stops	1,500	1	1,500	\$675	\$1,012,500
Park-and-ride lots	118	1	118	\$675	\$79,650
Amtrak stations	25	5	125	\$675	\$84,375
Rest areas	60	7	420	\$500	\$210,000
Airport	202	2	404	\$750	\$303,000
State park locations	1,328	1	1,328	\$1,000	\$1,328,000
Local parks and sports fields	6,935	2	13,870	\$327	\$4,535,490
Public entertainment venue	64	10	640	\$1,000	\$640,000
Pedestrian	14,000	1	14,000	\$768	\$10,752,000
Public events	2,200	25	55,000	\$121	\$6,655,000
Total			112,945		\$38,161,987

Table 2 | Community survey results indicating levels of current pairing

Receptacle	Average recycling station cost	Percent paired
Pedestrian locations	\$768	16 percent
Local parks	\$361	25 percent
Sports fields	\$293	25 percent
Transit stops	\$675	9 percent
Public events	\$121	42 percent
Beach access	\$103	60 percent

infrastructure. Table 1 shows the total cost for the state to achieve 100 percent pairing between AFH waste and recycling receptacles.

The second stage of research focused on the typical types of AFH locations that local governments establish and manage, and revealed different levels of progress for different categories of AFH infrastructure, with the most progress having been made at beaches, parks and sports fields.

The findings about the level of recycling infrastructure currently in place reveal that much investment is needed before North Carolina achieves AFH waste and recycling parity. For example, with only 16 percent of pedestrian waste stations currently twinned, another \$9 million of investment will be required to reach full parity. An additional

\$3 million is needed to fully pair recycling and waste at local parks and sports fields. In all, at least \$17 million in investment is still required to build a completely paired recycling infrastructure for just those AFH categories typically managed by local governments.

An examination of the categories of AFH infrastructure not typically managed by local governments further reveals that significant investment remains necessary here as well. Direct project work by state recycling staff has shown that the largest category of potential AFH investment, gas stations, is almost wholly undeveloped and will alone require an investment of roughly \$12 million to achieve full recycling access. All told, combining all categories of AFH infrastructure reveals the need for

an investment of at least \$30 million in public and private funds before the AFH system in North Carolina can approach the objective of true parity between recycling and waste.

Leaders showing the way

North Carolina is seeing momentum in AFH recycling as more and more communities take this next step in developing their recycling programs. The early adopters are helping to build the baseline experience that other communities can learn from, which, over time, will make for both a larger and more efficient system.

Most large cities in North Carolina, including Asheville, Charlotte, Greensboro, Raleigh and Wilmington have established extensive downtown pedestrian recycling programs, but many smaller communities with downtown districts, such as Hendersonville in the western part of the state and Edenton in the east, are also embracing this concept.

Park recycling is also gaining ground, with municipalities taking a look at their most frequented parks and busiest ball fields to capture more recyclables. Cities such as Burlington have excelled at converting trash cans to recycling containers in parks, reducing costs and allowing the addition of recycling to more areas. The North Carolina State Parks system has also taken a leadership role in committing to provide uniform and twinned access to recycling in most of the 41 state parks.

In addition, North Carolina's beaches are popular tourist destinations, and Currituck County on the northern Outer Banks has set the tone for beach area recycling, utilizing curbside carts at access points with great success.

Most communities start developing their AFH recycling programs at special events, and there are many great examples of festivals that effectively divert traditional recyclables. Increasingly, organics are also being recovered from event waste streams.

For all of their challenges, even gas stations and convenience stores are fueling



Twinned recycling and trash containers in downtown Asheville



Athletic field recycling and the model for recycling in North Carolina State Parks



Recycling carts added on the Outer Banks in the community of Corolla



up their collection of recyclables with a pilot project in Apex, several stations collecting recyclables in Orange County, and a larger project coming on-line this year with multiple chains in Greensboro.

With this momentum, a growing

number of communities are seeking state grant funding to establish AFH programs, helping North Carolina steadily chip away at the development of a statewide system. Public recycling programs investing in AFH infrastructure are finding that the presence



Recycling efforts at the North Carolina State Fair, which attracts close to 1 million visitors each year

of recycling receptacles in the public sphere contributes to the creation of a community recycling ethic.

Best practices on the way

With such a wide array of AFH locations managed by a very large and diverse set of entities, it was difficult to achieve a completely accurate statewide assessment of current and needed access. However, the data produced by this analysis does help deliver a sense of the scope of work required to twin all AFH garbage access with recycling. The research may also provide a simple methodology for other entities seeking to understand and address their own AFH situation.

The survey data has helped DENR better understand the range of costs that communities are experiencing with specific kinds of bins in specific locations. Communities or others establishing AFH recycling have a wide range of choices and costs for recycling containers, so the estimate of the total investment needed to build out the infrastructure can vary substantially.

But as more AFH infrastructure is



A pilot project with Handee Hugo is helping advance recycling at gas stations.

established and the collective experience with providing AFH recycling services grows, we anticipate that even better information will emerge on the most effective kinds of AFH recycling bins, the best management practices for signage and program promotion, and the top-performing strategies for mitigating operational issues such as high costs and contamination. As with many recycling issues, the path to achieving the ultimate vision of twin binning will require discussion, strategic thinking and lots of

sound, experience-based data. **RR**

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