



Recycling Works

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A cooperative effort of the N.C. Department of Environment and Natural Resources and the N.C. Department of Commerce.

ReVenture Park™ Transformation Complete, Seeks Recycling-Related Businesses

by Matt Ewadinger, RBAC Manager

Forsite Development is looking for recycling-related businesses to occupy newly renovated space at ReVenture Park®, Charlotte's first Eco-Industrial Park.

2014 Recycling Business Development Grant Round OPEN

[Details on page 3.](#)

On Sept. 26, 2013, Forsite Development announced recent improvements at ReVenture Park aimed at attracting recycling businesses. ReVenture Park is an innovative brownfield redevelopment of a 667-acre shuttered manufacturing complex in Charlotte into an eco-industrial park that is focused on attracting environmentally responsible businesses.

Forsite worked diligently during the last year to complete the transformation of the existing buildings within ReVenture Park, including selective demolition and interior upgrades. The results created nine buildings that are ready for occupancy between 8,000 square feet and 80,000 square feet. The goal of these improvements is to make the facilities attractive to new and emerging recycling projects as well as alternative fuels and renewable energy technologies.

[\(REVENTURE continued on page 2\)](#)



ReVenture Park, Charlotte's new eco-industrial park, offers a variety of amenities to businesses considering locating in the more than 300,000 square feet of industrial space, including a dedicated CSX rail spur with 36 rail car parking spots.

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"The Southeast is littered with shuttered manufacturing facilities. Our goal with ReVenture Park is to show that these sites have many attributes that can be used to attract clean energy and recycling projects. We are taking a liability and turning it into an asset, the essence of recycling," said Tom McKittrick, president and founder of Forsite Development Inc.

The existing infrastructure at ReVenture is extensive, including: more than 300,000 square feet of existing industrial space with I-2 heavy industrial zoning, more than 100 acres of outside storage, onsite wastewater treatment, tank



ReVenture Park

CHARLOTTE'S FIRST ECO-INDUSTRIAL PARK

farms, process water plant, site wide storm water management, truck scales, heavy electrical infrastructure, fully fenced, 24-hour security and more. Many of the buildings have significant clear spans, tall ceilings and floor drains throughout. The site also has a dedicated CSX rail spur with 36 rail car parking spots.

Low cost heat/steam is another feature of ReVenture Park. Forsite is currently constructing a 1.4-megawatt biomass Combined Heat and Power (CHP) plant. The waste heat from the power plant can be made available to tenants as low cost steam, hot water, and/or hot air. The CHP project is forecast to be fully operational by early 2014.

"ReVenture Park provides an ideal setting for startup recycling and related businesses, and for established companies looking to expand," says McKittrick.

ReVenture Park is designed with "industrial ecology" in mind, where inputs and outputs are maximized between multiple businesses. The project's eco-industrial redevelopment model looks to leverage the synergies between recycling technologies, alternative fuel and renewable energy projects. "Recognized as the largest project of its type in the U.S., ReVenture Park provides an ideal setting for startup recycling and related businesses and for established companies looking to expand," said McKittrick.

For more information, contact McKittrick at tom@forsiteinc.com, or visit: <http://www.reventurepark.com>.



The master plan of ReVenture Park, as seen above, includes a host of current and proposed projects designed to provide an eco-friendly business site.



2014 Recycling Business Grant Round Opens

by Wendy Worley, Recycling Business Development Specialist

The N.C. Recycling Business Assistance Center (RBAC) announces the opening of the 2014 Recycling Business Development Grant round. Please visit our website to download the [RFP](#).

Applicants may request any amount of funding up to a maximum of **\$40,000**. Applicants must provide at least a **50 percent cash match** to the requested amount. RBAC has committed **\$690,000** for this grant cycle.

RBAC is seeking viable, well-planned and effective proposals and encourages North Carolina recycling businesses to consider applying for this grant. The goal of this grant program is to build lasting, private-sector capacity to divert materials from the waste stream and create North Carolina jobs.

Proposals are due on Thurs., Jan. 16, 2014.

Who is eligible?

Private sector and nonprofit organization applicants are eligible for funding under this grant cycle. One funding request per applicant will be accepted.

What kinds of projects are eligible?

Projects that involve the collection, processing or end use of materials in the solid waste stream are eligible for funding. Generally, the grant money is intended to fund sustainable investments in equipment and buildings necessary for increasing the capacity of a recycling business to divert more materials from disposal and into economic use.

What materials will be considered for this grant round?

Any material that can be disposed in a municipal solid waste landfill, construction and demo-

lition debris landfill, or land-clearing and inert debris landfill is eligible for consideration for this grant round.

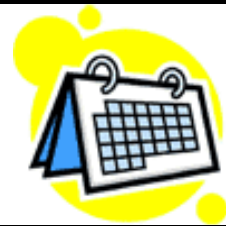
Projects that address construction and demolition waste recycling, food waste collection, and domestic processing for #3-7 plastic containers or mixed rigid plastics will receive special consideration.

For more information, contact Wendy Worley at wendy.worley@ncdenr.gov, or 919-707-8136.

IMPORTANT DATES:

Grant Proposals Due:
Jan. 16, 2014

Target Project Dates:
June 1, 2014 — May 31, 2015



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Agricultural Plastics Recycling Sees New Growth in North Carolina

by Bev Fermor, Waste Reduction Partners

Editor's note: Bev Fermor is an Independent Research Specialist with Waste Reduction Partners. Waste Reduction Partners is a team of highly-experienced staff and volunteer retired engineers, architects and scientists that provide North Carolina businesses and institutions with waste and energy reduction assessments and non-regulatory technical assistance.

In 2012, the N.C. Nurseryman and Landscapers Association (NCNLA) and the Department of Agriculture and Consumer Services (DACs) partnered with the Division of Environmental Assistance and Customer Service (DEACS) and Waste Reduction Partners (WRP) to create solutions for managing discarded agricultural/nursery plastics, including 'clean' plastic films, nursery containers and drip-tape.

Numerous times in the past, North Carolina growers attempted to recycle agricultural plastics, but lost money because the plastics were too dirty and trucks were not stacked to full capacity before being hauled to market. Recycling markets tended to be out of state. In addition, growers faced difficulty with the required separation system, particularly during grower's busiest season when unable to spare staff time for recycling.

Growers requested an easy way to recycle and reduce the labor required to manage the pro-



Drip tape can be separated and baled on-site for recycling markets, as seen above.

The problem

- About 500 tons of overwintering film is torn down each spring in N.C. and goes to landfill.
- Landscapers have many tens of thousands of landscape pots of mixed plastic types in storage waiting for a recycling solution.
- Many tons of drip tape and black mulch film are stashed in the hedgerows on farms in N.C.
- Some growers, landscapers and recyclers previously lost money trying to recycle.

gram. Many growers also requested domestic markets to reduce hauling costs and improve efficiencies.

Through research, site visits and phone calls, WRP identified a range of recycling options for various kinds of agricultural plastics. WRP located a number of North Carolina plastic recycling markets that are able and willing to accept agricultural plastics for recycling. As a result, some recyclers are meeting with growers in the winter months to help growers plan for recycling the overwintering plastic next spring.

Another outcome of the team's research is the production of an agricultural plastics recycling information sheet. This sheet provides important information to growers about potential markets and recycling program options.

([AG PLASTICS](#) continued on page 5)

AG PLASTICS continued from page 4



N.C. companies are working with growers to plan for recycling of the overwintering plastic film (above).

Now many growers are connecting with the markets, more processors willing to accept the material are being identified, and momentum is building toward increased agricultural plastics recycling. Examples of such activity include:

- Since 2011, Metrolina Greenhouses, a major supplier to Lowes stores, saw a 25 percent increase in plastic pots returned by consumers.
- Nurseries are teaming with each other to combine loads and reduce hauling costs.
- Farmers are spreading the word to fellow farmers to bale drip tape separately from black mulch film, enabling the drip tape to be recycled as well.

Reasons for Optimism

- Growers and landscapers want to make their businesses greener.
- Growers, landscapers and recyclers are working together to find solutions to recycle agricultural plastics.
- If nurseries and landscapers train employees on the importance of removing contaminants and continue to work together to transport efficiently, nursery container recycling can continue to expand.
- If recyclers and nurseries plan better for recycling in the winter months when the nurserymen are not as busy, much more overwintering film will be recycled in N.C.
- If drip tape is baled separately from black mulch film, it can be recycled.

The recycling of agricultural plastics will continue to mature and evolve, with more nurseries recycling and markets/processors continuing to expand the recovery of the material.

If you are a recycler and would like to be added to the agricultural plastics recycling information sheet being distributed to producers, please contact Bev Fermor at bfermor@tjocog.org or 919-597-0698. For information about WRP, visit: <http://wastereductionpartners.org/>.



Difficult to recycle in the past, nursery containers (like those shown above) are being separated by growers more often for recycling as relationships with markets continue to improve.



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dedicated professionals sharing expertise

Client Outcomes	Since 2000
No. of On-site Assessments	1,974
Total Utility Cost Savings	\$60.3 million
Megawatt Hours Saved	443,854
Million Btu Reduced	1.75 million
Energy Cost Savings	\$39.7 million
Greenhouse Gas Reduction	222,796 Metric TCO ₂ e
Solid Waste Reduced	230,383 tons
Water-use Conserved	783 million gallons
Payback on Program Investment	\$15.8 to \$1
Hours of Technical Assistance Provided	214,116

Compressed Natural Gas Vehicles Good Fit for Recycling in N.C.

by Mike Greene, Recycling Business Development Specialist

Compressed Natural Gas (CNG) vehicles are becoming more common for route-based applications that traditionally relied on diesel fuel. Waste and recycling haulers are prime candidates to make the change. In fact, many national and some local independent collection companies are replacing their old fleet with CNG collection vehicles.

The primary attraction to CNG is lower fuel cost, which is now slightly more than \$2 per gallon equivalent. Other advantages include lower emissions and longer service-life for the trucks. The amount of fuel used by a CNG vehicle is similar to the amount used in a normal gas or diesel engine. The savings are found in the cost of the fuel itself. In addition, the CNG engine is much quieter than a diesel engine, making it ideal for service in residential areas.

Piedmont Natural Gas's Natural Gas Vehicle Business Development Specialist, Joseph O'Neill, stated that a natural gas vehicle (NGV) designed for waste and recycling collection can add around \$45,000 to the cost of a collection truck. Smaller companies may find it best to convert one vehicle at a time as trucks in the company's current fleet reach the end of its service life. The more miles a truck travels per day, the quicker the additional investment in the NGV can be recouped.

At this time, conversion kits are not recommended for vehicles greater than 14,000 pounds. While there are a few kits available, it is expected that such kits will become more widespread as the technology evolves.

O'Neill explained there are two variations on NGVs. One is a dedicated vehicle that operates on CNG only. The other is a bi-fuel vehicle operating on natural gas with a gasoline backup



The three components of a fast-fill CNG station (shown clockwise above) include a three bank storage tank, a compressor, and a dispenser that operates much like a traditional gasoline filling station.

fuel source that extends the travel range. Bi-fuel is primarily found on smaller vehicles, such as cars, delivery vans and pickups.

Filling CNG Trucks

There are two methods commonly used for delivering CNG: fast-fill and time-fill.

Fast-fill looks similar to a gasoline pump with a credit card reader and takes a short amount of time to fill the tank. Because CNG is not measured in gallons, a tank is considered full when it reaches 3,600 pounds per square inch (psi).

Piedmont Natural Gas, PSNC and several municipalities have approximately 20 fast-fill sta-

(CNG VEHICLES continued on page 7)

[CNG VEHICLES](#) continued from page 6



Waste collection trucks shown above are being refueled at a time-fill CNG station.

tions around the state that are open to the public, with more being planned. Many take credit cards at the pump. For a list of public CNG stations and CNG prices, visit <http://www.cngprices.com>.

Time-fill stations are ideal for route-based operations that return to the same point every day. At the end of the day, the driver plugs the truck into the dispenser and leaves it overnight where it will slowly fill and automatically shut off. A time-fill system servicing five vehicles can cost around \$100,000. Systems for a larger number of trucks can cost \$400,000 or more. Fast-fill and time-fill dispensers can also be built at one location.

Service and Maintenance

Service and maintenance of NGVs are different from diesel trucks and will require special consideration. Technicians must receive training to service NGVs and fleet maintenance garages must be modified to code to ensure proper ventilation of the gas.

In general, maintenance cost of NGVs is about the same as a diesel engine. Because CNG burns cleaner, it is possible to operate three times longer between oil changes. The cleaner burning fuel also leads to less particulate matter,

which is easier on the engine and can expand the service life. As crude oil becomes more expensive, CNG will continue to become a popular alternative.

For more information, contact Mike Green at 919-707-8137, or mike.greene@ncdenr.gov.



A waste collection truck, shown above, is filled at a fast-fill CNG station, much the same as a traditional gasoline filling station.

Additional Resources

[Natural Gas Vehicles for America](#)

[CNG Now](#)

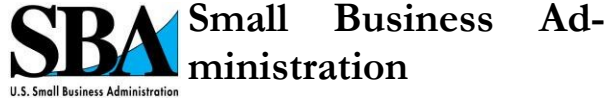
[Piedmont Natural Gas](#)

[U.S. Department of Energy
Alternative Fuels Data Center](#)

[N.C. Solar Center](#)



Business Resources & Training Opportunities



Among its many services, the Small Business Administration publishes regular blogs on business-related topics. Recent postings on the [Small Business Cents blog](#) include:

- Six Step Guide—How to Get a Business Loan
- Bookkeeping Basics, Part 1 and Part 2: How to Set Up and Manage Accounts Payable and Receivable
- Five Ways to Help Young Entrepreneurs Finance Their Business Ideas

SBA also offers free, online courses such as “Introduction to Accounting” and “Finance Primer: Guide to SBA Loan Guaranty Programs” through its [Small Business Learning Center](#).



Service Corps of Retired Executives is a nonprofit association dedicated to helping small businesses get off the ground, grow and achieve its goals through education and mentorship. SCORE provides:

- Volunteer mentors
- Free, confidential business counseling
- Inexpensive or free workshops (locally and online)
- Free, online business tools, templates and tips.

More information can be found at www.score.org. Search for a local chapter at: www.score.org/chapters-map

Does Your Waste Have a Home?

Find one at...

NORTH CAROLINA
WasteTrader

www.ncwastetrader.org

N.C.'s Industrial Waste Exchange

North Carolina's marketplace for discarded or surplus materials and products.

This free, waste exchange service is designed to divert recoverable materials from disposal while providing feedstocks and supplies to potential users.

**For more information, call
Tom Rhodes, 919-707-8140**

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Recycling Works is published by the N.C. Recycling Business Assistance Center, a program of the Division of Environmental Assistance and Customer Service of the N.C. Department of Environment and Natural Resources. For more information, call 877-623-6748, or write to DEACS, 1639 Mail Service Center, Raleigh, NC 27699-1639.

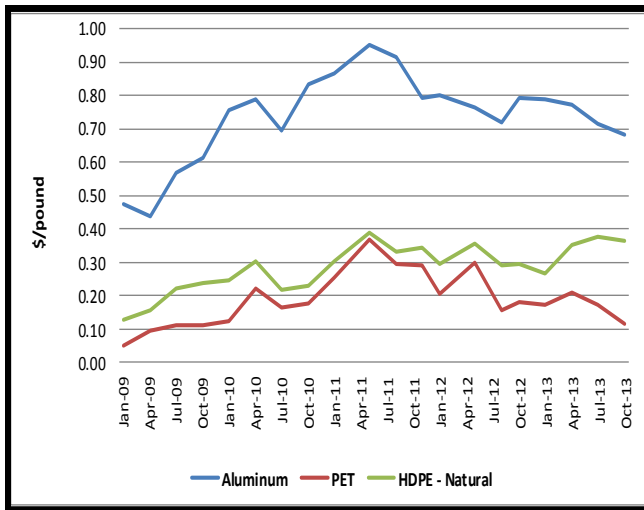
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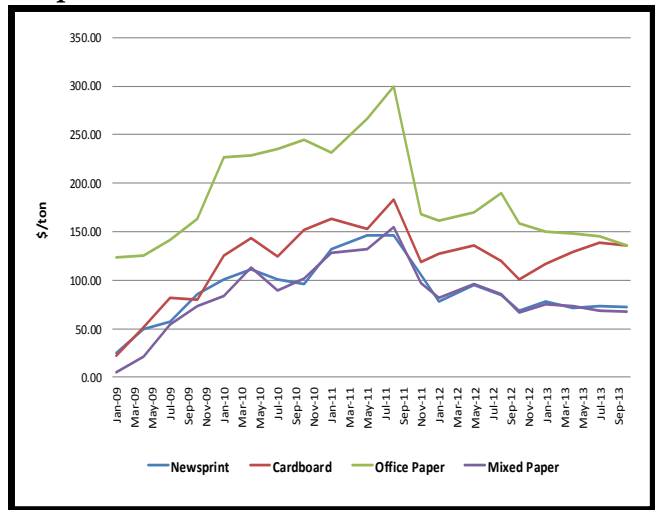


Container Price Trends



Quarterly prices for aluminum cans (loose), PET (baled) and HDPE natural (baled) in dollars per pound.

Paper Price Trends



Quarterly prices for newsprint, cardboard, office paper and mixed paper in dollars per ton, baled.



The Recycling Business Assistance Center (RBAC) is a program of the N.C. Division of Environmental Assistance and Customer Service (DEACS).

Call 877-623-6748 for free technical assistance and information about preventing, reducing and recycling waste.



North Carolina Market Prices for Recyclables

Prices current as of Oct. 29, 2013

Item	Western Region	Central Region	Eastern Region
METALS			
Aluminum Cans lb. loose	\$0.69	\$0.69	\$0.67
Steel Can, gross ton baled	\$213.00	\$110.00	\$151.80
PLASTICS			
PETE, lb. baled	\$0.180	\$0.160	\$0.175
HDPE, lb. baled Natural	\$0.350	\$0.370	\$0.380
Colored	\$0.230	\$0.200	\$0.230
PAPER			
Newsprint, ton baled	\$85	\$60	\$*
Corrugated, ton baled	\$135	\$125	\$148
Office, ton baled	\$150	\$130	\$*
Magazines, ton baled	\$*	\$85	\$*
Mixed, ton baled	\$65	\$55	\$82
GLASS			
Brown, ton crushed delivered	\$18	\$20	\$ 8
Clear, ton crushed delivered	\$25	\$30	\$18
Green, ton crushed delivered	\$3	\$12	\$(12)

*Markets with Mixed Paper

Note: Prices listed above are compiled by RBAC and are for reference only. These prices are not firm quotes. RBAC obtained pricing information from processors for each category and developed a pricing range.

Visit RBAC online at <http://portal.ncdenr.org/web/deao/rbac>