

For Teaching Cleveland

# Better than it was, not where it needs to be: Sustainability in Northeast Ohio

By Richey Piiparinen

## Introduction

Cleveland is perhaps most recognized as the place where the river caught fire. What is less known is that Cleveland—and to a large extent Northeast Ohio—is a place with a long history in the country's environmental movement.

Take the first ever Earth Day. It was April, 1970 and celebrations were happening worldwide, yet it was Cleveland's that was one of the biggest: 5,000 students taking part in litter clean-up and tree plantings—1,000 Cleveland State University students holding a “death march” from campus to the Cuyahoga River where, according to the [Encyclopedia of Cleveland History](#), “a young man dressed as Moses Cleaveland rowed ashore to meet the marchers but soon turned away in disgust because of the filth he found”.



Eventually, that activism worked, as 1970 was also the year a major federal legislation was written called the Clean Air Act. On its heels followed the 1972 Clean Water Act, with both pieces of legislation becoming milestones in the ever-burgeoning “green” movement.

Still, questions remain. For instance, what have these environmental regulations accomplished? Is Northeast Ohio better off than it used to be, and if so by how much? How far do we still have to go if not?

What follows is an examination of these questions. The investigation will look at the state of Northeast Ohio's water, air, and land quality, with particular attention paid to what environmental concerns have been improved and what issues still linger. As well, local environmental innovations will be examined that are once again making Northeast Ohio a battleground in the fight for a healthy future.

## The Battle for Clean Air

It was New Year's Eve, 1970, and President [Richard Nixon was speaking](#) to the country about the passage of the Clean Air Act. He had high hopes, stating that “[the past year] will be known as the year...in which we really began to move on the problems of clean air and clean water and open spaces for the future generations of America.”

And exactly what were these problems that President Nixon was talking about? Generally, he was speaking about airborne pollutants released into the air that are known to be harmful to human health. Be it particulate matters or greenhouse gasses, air pollution is largely the result of human activity. For example, the cars we drive add Carbon Dioxide into the atmosphere, whereas the factories that create our goods do so with Sulfur Dioxide being released into the air. Put simply, the Clean Air Act was meant to put limits on just how much pollution can be released by factories and cars.



For Northeast Ohio the legislation was literally a breath of fresh air. After all, Cleveland was consistently ranked as having the worst air quality in the country during the 1970's. For instance, a [1976 report](#) by the Environmental Protection Agency (EPA) entitled *National Assessment of the Urban Particulate Problem Volume XII—Cleveland* documented the extent of Northeast Ohio's air pollution. The report states that the Cleveland region "has a very large number of air pollution sources", or somewhere in the neighborhood of 20,000 sites. Most of these sources were industrial.

Now, to the question of whether Northeast Ohio's air got better over the last 40 years. According to the [Ohio Air Quality Development Authority](#) (OAQDA) the answer is yes. For instance, the agency recently examined current air quality for Ohio versus the air quality in 1979. The agency estimates that Sulfur Dioxide and Carbon Monoxide levels dropped 76 percent and 75 percent, respectively. Also, ozone levels dropped between 18 percent and 22 percent, while large particulate material dropped 31 percent.

### *The Persistence of Air Pollution*

Still, while air quality has generally improved from the extremely substandard conditions of the 1970's, this does not necessarily mean the air in Northeast Ohio is without problems. Some particular areas of concern are below.

#### Smog is in the air

In a report called [Danger in the Air: Unhealthy Air Days in 2010 and 2011](#) Cleveland was ranked as the 14<sup>th</sup> smoggiest metropolitan area in the region. Smog—one of the most harmful air pollutants—is formed when pollution from cars, power plants, and industrial facilities reacts with other pollutants in the presence of sunlight. And while smog standards as set in 2008 were meant to reduce smog to healthy levels, what occurred was that standards were set too low.

Why not increase the standards to more healthy levels then, right? Well, the Obama administration decided the issue would not be addressed until 2013 at the earliest. Issues to consider here include whether business and political interests get in the way of establishing healthy baselines of breathable air. Note also that the period of revisiting the standards would occur *after* the 2012 election.

#### The problem of electricity

According to the Environmental Protection Agency (EPA), electricity generation in the United States from coal- and oil-fired power plants accounted for nearly 50% of the country's air pollution in 2009. This equates to 381,740,601 pounds of pollution, or the equivalent of about

31,000 male elephants. Moreover, [Ohio leads the country in electricity-based air pollution](#) with nearly 45,000,000 million pounds emitted, or about 3,750 elephants. No doubt, that is some serious poundage in pollution, and it's costly—with an estimated 13,000 Americans killed annually from power plant pollution according to [the Clean Air Task Force](#).

Again, it is important to ask why such pollution is still occurring, especially given the fact the war on dirty air was waged some 40 years ago. Much of the problem begins and ends with the fact states like Ohio have simply become too dependent on coal for their electricity generation. In fact, 90% of Ohio's electricity comes from coal-burning plants. This—coupled with the fact that coal remains a “cheap” source of energy—has created an atmosphere in which adhering to strict environmental regulation would prove too costly to local and regional economies.

In other words, while the modern-day messaging “of clean air for our health” has become the norm in public discourse, there still exists a gap between what is promised and what actually occurs.



This dichotomy was recently played out in Cleveland's University Circle. Specifically, in the shadow of University Hospital and Case Western Reserve University stands the Medical Center Company (MCCo) power plant: a burner of 40,000 tons of coal a year. In 2010 the company's permit was up, setting a stage for a stand-off between the area's environmentalists and MCCo's supporters. The issue centered on whether or not we can ever clean our air if we continued to allow polluting sources to exist *right beside* our health institutions whose job it was to create better health.

"It's a polluting facility," said Mathew Reitman of the Sierra Club in a [Plain Dealer article](#). "It impacts people's health, the neighborhoods. This is a steam plant the serves Case Western Reserve University, a regional leader in clean energy research. You've got a cancer hospital there. It's just such a paradox to have such a polluting source next to a center for health."

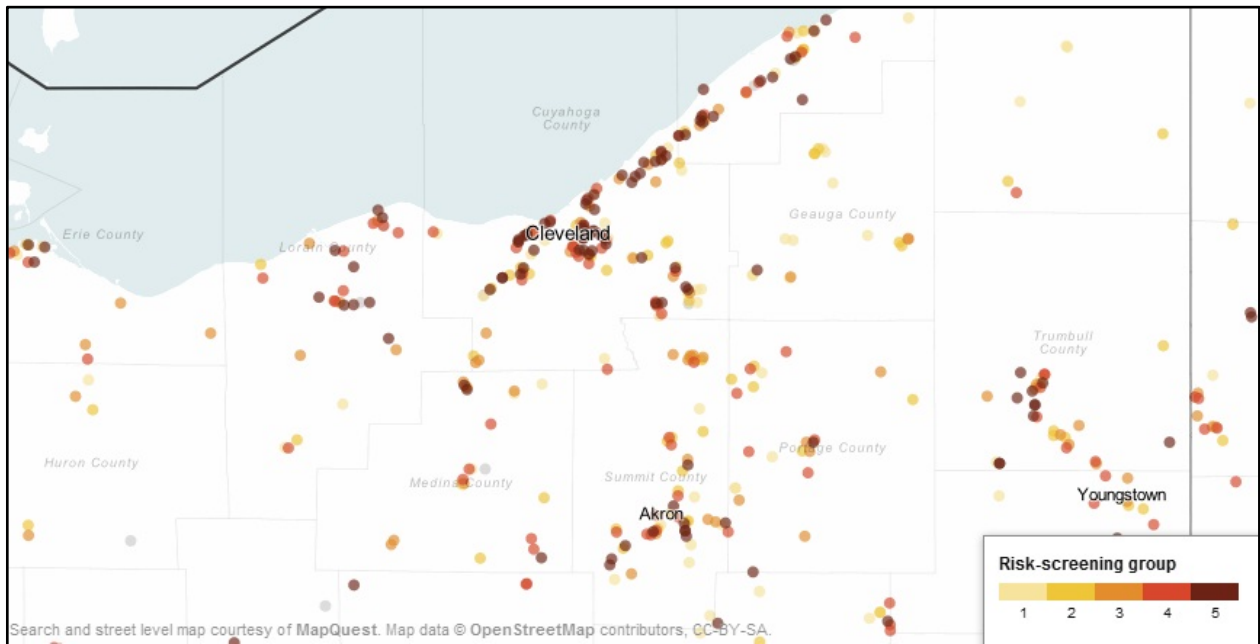
In the end the public awareness campaign made substantial movement, in effect winning concessions from MCCo in relation to clean energy investment. From the [MCCo website](#), the company states: “While MCCo has been moving beyond coal for the past 40 years by installing natural gas-fired boilers...the Company has begun the process for replacement of the plant's two remaining coal-fired boilers. The company has no plans to establish any new coal-fired production facilities.”

#### Regulation does not equal enforcement

As was stated, while the Clean Air Act enabled the opportunity for environmental regulation to be written into law, the actual practice of enforcement has been lacking. This fact was recently reinforced with the uncovering of a secret “watch list” compiled by the EPA that contains the locations of “chronic offenders” that have failed to limit very harmful levels of air pollutants.

There are some 1,600 plants on the list across the nation, with 300 of them remaining on the list for the past decade.

Below is a map showing “hot spots” in Northeast Ohio. The reason the hot spots remain deal with the fact that federal EPA cannot enforce regulations without the state’s help. Again, political haggling—this time at the state- and local-government levels—exists that interfere with the process of environmental regulation. Why?



Again, the answer is largely related to finances. From an article entitled [“Secret 'Watch List' Reveals Failure To Curb Toxic Air”](#), the rationale for states like Ohio to allow high levels of pollution is explained clearly: “It’s not surprising that some states balk when the federal government wants them to force companies to spend millions of dollars on pollution controls. States rely on companies to provide jobs and tax revenue.”

Still, the question remains whether or not allowing companies to avoid cleaning up their act makes economic sense? And there is a growing movement called “sustainability” that declares boldly: No, it does not.

### *Is “Dirty” Really Cheap?*

Lax environmental enforcement deals with concerns that economic interests will be hindered. However, there is an emerging chorus within both the business and government communities that are challenging these assumptions. The thinking goes that “being green” is not simply about environmental consciousness, but it is also about profitability.

Clarifying, the term “sustainability” introduces the thinking that environmentalism and capitalism are not mutually exclusive. In other words, being sustainable, whether you are a

government, a business, or a society, is about not wasting resources and becoming more efficient. It entails using renewable forms of energy such as wind power that do not pollute, and that will (in theory) become more economical than non-renewable sources of energy like oil that are becoming increasingly scarce (and thus more expensive).

Still, transitioning from non-renewable to renewable sources of energy is not an easy task. It takes a coordinated effort between both the private and public sector. In Northeast Ohio such an effort is under way between local business, government, and environmental leaders called [Sustainable Cleveland 2019](#). Headed by Mayor Frank Jackson, the group's [Action and Resource Guide](#) answers the question "What is a sustainable economy?" this way: "A sustainable economy integrates the goals of economic prosperity, environmental health and social vitality. Industrial Era trade-offs between environmental degradation, economic growth and equity are no longer necessary...Businesses are more innovative, efficient, and competitive, nationally and globally."

And just what does a "sustainable economy" look like? Below provides some examples, particularly relating to the interplay between wind power and cleaner air.

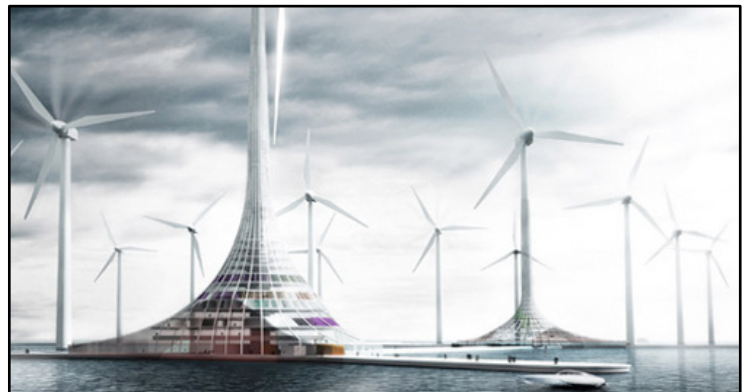
### The Lake Erie Wind Farm

Imagine a city horizon diminished of its smokestacks and its smog. At the edge of this city sits a shoreline stocked with wind turbines taller than football fields. The turbines capture the natural energy of the wind, eventually kicking out electricity that ends up making your microwavable pizza.

Sounds like the future, right?

Actually, it has been occurring in Europe for decades. And now a group in Cleveland called the Lake Erie Energy Development Corporation, or [LEEDCo](#), is trying to do the same.

LEEDCo is a regional non-profit and economic development organization attempting to build America's first offshore wind farm not far from Downtown Cleveland. The reasons the Cleveland area was chosen for the site are several, and include:



- the lake's strong wind and shallow depth;
- the proximity to a major power grid which will make the transmission of the electricity more efficient;
- and the proximity to industrial centers, with the thought that more wind-powered factories will equate to less coal-powered factories contributing to pollution.

Will it happen? While the planning has been well under way—with much government funding already in place—the question ultimately turns to whether or not the private sector will commit to financing the construction of the wind farm which, in turn, hinges on getting businesses to commit to buying electricity that the turbines will produce.

Here is where the problems arise, and once again the troubles are centered on concerns about cost. Specifically, potential customers know that coal-powered electricity comes economically cheap, and the cost of wind-powered electricity is a big unknown. This in itself could be enough to kill the project.

Count Cleveland Mayor Frank Jackson as both worried and fed up. The Mayor feels the concerns about cost are short-term thinking, and he has begun pleading to the region to start planning for the future. After all, we know that coal and its byproduct pollution do not come cheap (e.g., health care costs and costs to the environment). What's more, the Mayor feels by instituting America's first freshwater wind farm the Northeast Ohio will be primed for an economic windfall.

Writing a recent [editorial in the Plain Dealer](#), the Mayor states: "The city supports this project on its own merits and because of what it represents -- a vision of our regional economy as a national leader in renewable energy and a major economic growth sector. For this vision to become a reality, our entire community needs to rally behind LEEDCo and the offshore wind farm. This will require that both the private sector and the public sector set aside their own, short-term self-interests and focus on the long-term benefits to our economy, our work force and our community."

#### The small scale model

Though creating large-scale wind farms face innumerable hurdles, this is not the case with stand-alone systems, which entail a localized wind turbine providing electricity for various private sector needs.

For example, the manufacturing business Lincoln Electric in Euclid is not only bullish about the potential of wind-powered energy to save on operating costs, but they have also spent \$4.5 million to [build their own tiny version of a wind farm](#). The German-designed turbine weighs 800,000 pounds, is 444 feet high, and will create 4,160 volts of electricity that will be used in Lincoln's manufacturing shops.

For Lincoln, the potential for profit is two-fold: (1) as a cost-saving measure, and (2) as a demonstration project that will prime the company as a supplier of wind turbine parts if—and when—America's attraction to wind power catches on.

Speaking to the Plain Dealer, [Lincoln's Chief Executive States](#): "The turbine demonstrates to our customer base that we are willing to step up. We think that renewable energy will continue to get more and more focus. Whether people want it or not. They will be driven to it. And if wind energy becomes a significant source of power in the United States or the world, we'll have the opportunity to participate in the fabrication of the towers, wherever they are."

Then there is Pearl Road Auto Parts in Cleveland. There, amidst a tower of crushed metal and scattered auto parts sits a 20,000-watt, 140-foot turbine. While the cost of the turbine neared \$400,000, the owner of the business, Jon Kaplan, envisions a future profit. More exactly, not only will the turbine power Kaplan's "auto boneyard", but he will be able to sell excess electricity generated on his land back to the electric company.



Just think: utility bills that are actually utility checks.

### *The Battle for Clean Water*

The battle for clean water didn't begin in Cleveland. But the 1969 fire on the Cuyahoga River served as a watershed moment—one that would eventually lead to the passing of the Clean Water Act three years later. The Act was much needed, because by the 1960's only one-third of the nation's waterways were safe for fishing and swimming.

Think about that for a moment. In a country nearly 3,000 miles long there was enough pollution created to effectively kill two-thirds of our waters along the way.

The problem? In a word: waste. Up until 1972 there existed few if any controls on what was dumped into the nation's rivers, lakes, and streams. In Northeast Ohio the issue was largely due to industrial waste, as well as human waste being released from the area's sewer systems. The Clean Water Act accomplished much in regards to cleaning up both sources of pollution; however, issues remain, as there exists a next generation of water-polluting concerns that are more difficult to stop, if only because they are harder to locate.

### *Addressing the Problem of Point-Source Pollution*

In 2009, on the 40<sup>th</sup> anniversary of the Cuyahoga River fire, the [New York Times ran an article](#) describing the time Clevelander Gene Roberts fell into the Cuyahoga. It was 1963. Roberts pulled himself from the liquid wreckage smelling like a zoo. He said on his walk home the sidewalks cleared because folks couldn't stand the smell.

Fast forward to 2009 and Roberts was fishing near the spot he had fallen into. In twenty minutes he caught six smallmouth bass. "It's a miracle", he told the reporter. "The river has come back to life".

Since the passage of the Clean Water Act the Cuyahoga is not the only river that has been resurrected from the dead. In fact, it is estimated that the number of waterways in America that



are safe for fishing and swimming have increased from 33% to 66%. It is an impressive achievement, no doubt.



How did this happen?

The Clean Water Act put regulatory restrictions on point source water pollution, which is simply pollution that comes from an identifiable source such as a pipe from a factory or a drain from a city sewer. As was stated, the most pressing problem in Northeast Ohio before passage of the Act was industrial point source pollution. For example, steel mills and other industrial sites that lined Cuyahoga River often used water in the production of their products. The water was often tainted with—among other things—

toxic metals such as cadmium, chromium, and lead. The water was subsequently released into the river, making aquatic life virtually extinct.

From a [1969 Times](#) article on the extent of the Cuyahoga's pollution, the author quotes the Federal Water Pollution Control Administration: "The lower Cuyahoga has no visible life, not even low forms such as leeches and sludge worms that usually thrive on wastes."

After passage of the Act much has changed. The EPA began outlawing point source industrial pollution through regulation and fines. Consequently, many of industrial polluters located on the Cuyahoga have since gone out of business or moved to new locations off of the River. As well, the [Northeast Ohio Sewer District](#) is currently in charge of monitoring over 900 industries along the area's waterways to ensure businesses keep in line with the limits.

"We put a few people out of business in the early days -- we had to," said Keith Linn, an environmental specialist working for the Sewer District. Speaking to the current monitoring process, Linn [tells the Plain Dealer](#), "There were some pretty bad players, but now it's more about keeping people in business, but making sure they are in compliance."

Eventually, with the water monitoring followed a gradual return of the river's health. According to a report entitled [Restoration of the Cuyahoga River in Ohio, 1968-present](#), author Jeff Zeitler states, "the thick, oily [industrial] discharges once common on the Cuyahoga are a thing of the past".

And an absence of pollution means a presence of aquatic life. Specifically, stretches of the Cuyahoga between Akron and Cleveland contain up to 40 species of fish. Also, wildlife that feed on fish have returned. Said Jim White, director of the [Cuyahoga River Community Planning](#)

[Organization](#), “[When] you see eagles and osprey and great blue heron all around, it says something about the health of the river and the health of the fish.”

### *Problems Remain—the Issue of Sewage*

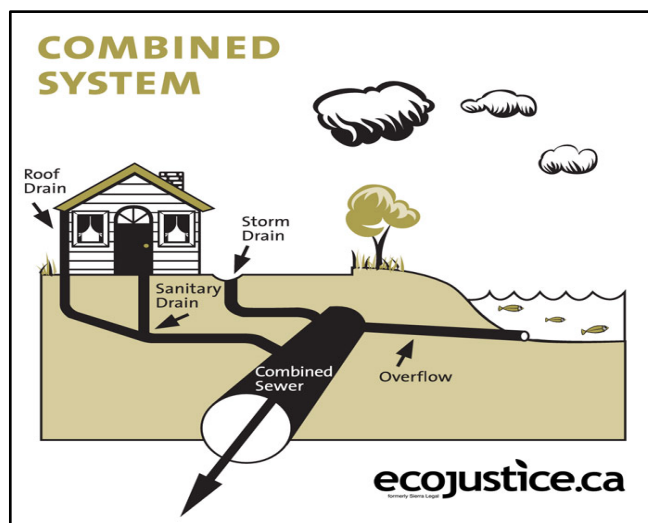
Though progress has been made, pollution problems still exist. To wit: despite all of its improvements, the Cuyahoga is still failing in eight of 14 U.S. Environmental Protection Agency areas that determine whether a river is “swimmable and fishable”. And chances are that the Cuyahoga may never get a clean bill of health.

The reason? From the movie [Return of the Cuyahoga](#), the issue is plainly put: “Some factories cleaned up, others simply moved away; pollution in the ship channel slowly came under control. But a river’s watershed is all the land that drains into it; even the smallest tributary upstream can affect the health of a river. And it soon became clear that industry was not the whole problem. There was another source of pollution spreading over the entire watershed. People. Ordinary people.”

In other words, the waste that people produce is no less of a concern than industrial waste. And while the Clean Water Act was updated to control for point source pollution coming from the nation’s sewer system, the process of clean-up is far more difficult, if only because of the financial cost it will take to get clean.

First, some background on how a sewer system works. Did you ever think about what happens when you flush? Where does the water go? It enters a series of pipes and containers below ground that make up the region’s sewer system. In newer cities [these pipes are separated](#) so that wastewater and stormwater remain apart. The stormwater is then funneled back into rivers and lakes while the wastewater is piped to a local wastewater treatment plant where it is cleaned.

But for older cities like Cleveland the pipes are combined, meaning the water you flush down the toilet meets up with the rainwater that runs into the sewer, with each eventually flowing to the treatment plant. The issue, then? Look at the diagram below. What do you see?



Notice the overflow pipe? The pipe releases untreated wastewater before it reaches the wastewater treatment plant. This overflow commonly occurs after large rainstorms since there is too much volume for the sewer system to hold, and so the sewage is released by combined sewer overflows (CSOs) into Lake Erie, the Cuyahoga River, as well as other streams, rivers, and creeks.



There are several problems with untreated water being released into our region's water bodies. First, bacteria from human waste are detrimental to both aquatic life and to those swimming at area beaches. Second, people dump many things down household drains. Be it paint, household chemicals, prescription pills, etc., each has a deleterious effect on the health of the water. Third, the rainwater that runs down pavement is contaminated with gasoline and oils. This contamination ends up polluting our waters if it is dumped without being pre-treated.

In all, untreated sewer water has become the main polluting source that threatens the health of Northeast Ohio's watersheds. What's more, the problem is worsening. Specifically, our area is becoming more paved with new houses, streets, and shopping developments taking the place of former greenfields. This means that there is more

stormwater runoff entering our sewer systems, with more combined sewer overflow incidences occurring as the result. Now can you see why it us—regular people—that have become the main polluters to our own water systems?

Can anything be done? The answer is that it must, as the EPA is cracking down on those cities that are continually dumping untreated sewage into public bodies of water, going so far as to [sue wastewater agencies](#) such as Northeast Ohio Sewer District for violating the Clean Water Act. In other words, cities like Cleveland and Akron are required to come up with solutions over the next twenty five years that will all but eliminate the problem. The Northeast Ohio Sewer District has come up with a plan called [Project Clean Lake](#) to do just that. The plan, both large in scale and small in how it can be implemented, include the following water pollution controls.

### Underground infrastructure

Note the picture to the right. It is a prototype used to build the \$200 million [Euclid Creek storage tunnel](#), part of which will be buried beneath Lake Erie. One of many to be built across the region, such storage tunnels and tanks will do just that: hold volumes of water after rainstorms so that untreated sewage is not dumped into the rivers and lake. Eventually, the water will be released from the storage

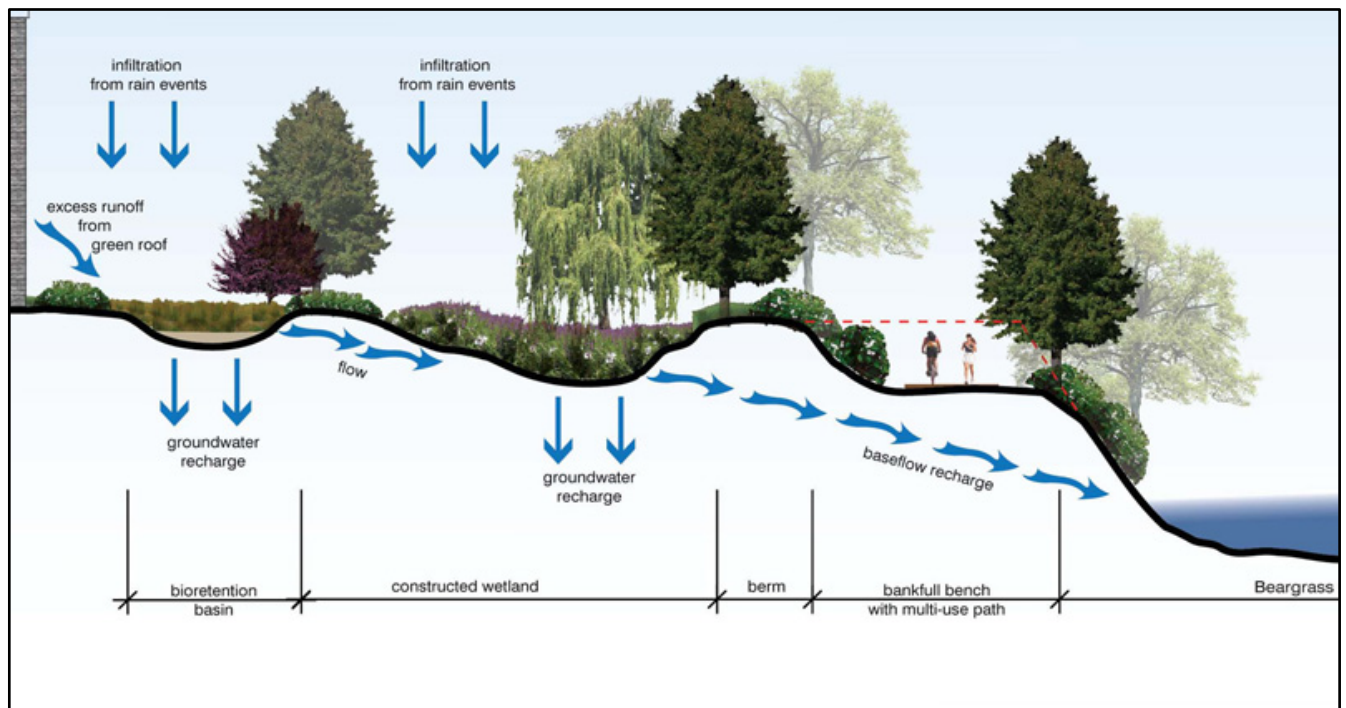


infrastructure where it will enter the wastewater plant for treatment. The solution, while simple, is costly. It is estimated that the storage infrastructure will cost the region upwards of 10 billion dollars!

### The green plan

In December of 2011 NEORS D released their “green plan”. The plan calls for natural methods to drain stormwater outside of sewer system. What does that mean exactly? It means finding ways to drain water through the soils as opposed to collecting it in a pipe.

Think of it as a pavement reversal process. More exactly, pavement acts like a seal to the soil below, disallowing rain to infiltrate to the water table naturally, meaning it will runoff into the nearest sewer drain. Green plans can remediate this with infrastructure that collects rain, storing it, and then allowing it to soak down below gradually all the while bypassing the sewer collection system. Rain gardens, permeable pavements, and bioswales (see example below) are just a few of the methods that can do this. In all, the green plan calls for [20 projects that will cost \\$45 million](#) to implement.



### Incentives at the household level

The high cost of implementing the project will fall largely to homeowners in the form of higher sewer bill rates. The individual cost can be mediated by homeowner measures that—in aggregate—can play a big role in keeping sewage out of the waters. One measure is the installation of a [rain barrel](#) to your house’s downspout. The concept is no different than the large scale holding tanks but on a tiny level. Here, the homeowner keeps rainwater from entering the sewer system, and they can then use the captured rain to water their flowers or plants.

## *The Problem of Non-point Source Pollution*

While point source pollution has received much of the focus in relation to water quality, there remain other problems that need addressing, particularly those related to agricultural run-off, and to a process of natural gas harvesting called hydraulic fracturing, or “fracking”. Both issues are non-point source pollution problems, which simply refers to pollution from diffuse—or hard to pinpoint—sources. The difficulty with non-point source pollution exactly? Well, it becomes difficult to stop a problem when its whereabouts are hard to find.

### Algae blooms and agricultural run-off

Agricultural run-off is created from the production of farming. Be it animal waste or chemicals used in fertilizers, the resultant byproduct is loaded with nutrients that mainly include Phosphorus and Nitrogen. Eventually, the nutrients are picked up in rainfall and melting snow and are carried into lakes, rivers, or streams.

The problem deals mainly with the effect that Phosphorous has once it gets into the water. Specifically, Phosphorous creates freshwater algae blooms. The algae don’t live long, and the decay process consumes the oxygen in the water. Without sufficient oxygen in the water, animals and plants may die off in large numbers, creating so-called “dead zones”.

Currently Lake Erie is under intense threat from algae blooms that are resulting from Ohio farms. Notice the picture below. That [bright green area](#) is an algae bloom on the Lake that can be seen from space! And things are getting worse. According to Roger Knight, Lake Erie program administrator for the Ohio Department of Natural Resources, “The trends [regarding



phosphorous levels] are moving in the wrong direction no matter where on the lake you go.”

[Echoing Knight's sentiment](#) is John Hageman, laboratory manager at Ohio State University: “[Algae is] now blooming in the proportions that it was in the bad old days of the 1960s and early '70s. There's a mystery to it because the lake seemed to be getting cleaner, but now the algae blooms are worse.”

What can be done? The only way to address agricultural run-off is to limit the amount of nutrients that are running off. Once algae blooms in the water the solution is already too late. State government panels are now in the process of engaging in full-fledge research efforts to attempt to pinpoint the source of the problem, with hopes that containing or limiting the amount of nutrients produced on farmland will result in healthier water.

### A fracking concern

Now, to the process of “fracking”, which is an environmental issue that has recently taken center stage. Before getting to the controversy—not to mention the literal “earth shaking” events that have become associated with fracking—some brief description of the process itself.

In short, fracking is a method to extract natural gas from rock and shale areas deep below the earth using high-pressured water that is laced with chemical lubricants (click [here](#) to see a diagram of the process). Both the energy from the pressurization and the lubricants serve to create cracks in rock formations, allowing stored natural gas to be released where it is then harvested so that it can be used as an alternative to oil and coal. Not all areas have natural gas reservoirs that can be tapped, but there in Northeast Ohio we do. Specifically, we sit on a geographic area called the Marcellus Shale (see map).



The proponents of fracking say the benefits of the process are many. First, natural gas is contended to be a cleaner fuel than either oil or coal. That is, it burns “cleaner”, with less carbon dioxide emissions as a result. Also, the source is domestic, as opposed to oil which is largely resourced from the Middle East. Lastly, in a region that lost hundreds of thousands of jobs over the last decade, the prospect of creating an energy boom in Northeast Ohio has politicians—conservative and liberal alike—intrigued at the industry’s economic potential.

Said Senator Sherrod Browne to [the Akron Beacon Journal](#): “I think it’s going to happen [the increasing presence of the natural gas industry in Northeast Ohio]. It’s a lot of jobs. It’s a lot of prosperity.”

Governor John Kasich agrees. Speaking in Columbus recently, the Governor asks: "Did you hear about the revolution that's come to Ohio? Folks, this is huge." So huge—at least according to Kasich—that [he signed legislation](#) that will for the first time make it legal to drill for natural gas in Ohio-owned state parks.

But there are issues according to environmental groups and researchers. First, there is contention that the burning of natural gas is just as harmful to the air as is burning coal and oil. In a report entitled [Fracking the Future](#), the problem of air pollution is summarized as thus: “The production, transport and burning of natural gas produces significant air pollution. Methane the main component of natural gas, is a potent greenhouse gas (GHG), more than 20 times as effective at trapping heat in the atmosphere as carbon dioxide (CO2).”

Also, there is the problem with, ahem, [earthquakes](#). Yes, earthquakes. On New Year’s Eve, 2011, a 4.1 earthquake occurred near Youngstown. Being that Ohio is not known for earthquakes, geologists studying the area looked to a fracking undertaking in the area as the possible culprit. One local [seismologist told the Associated Press](#) that “the quakes were almost certainly caused by operations at an injection well used for the disposal of wastewater from hydraulic fracturing operations”. The State of Ohio has suspended operations at the well pending further investigation.

While both issues with fracking are major concerns, the largest potential environmental fall-out with the process is related to groundwater pollution. More exactly, the natural gas, or methane, that is released from the pressurization is not always captured, with much of it tainting the drinking wells of nearby residents. In fact the movie [Gasland](#) shows homeowners with polluted drinking supplies literally lighting their faucets on fire due to the fact that their water is saturated with gas.



Another potential water-polluting source comes from the chemicals used in the process. According to [Wikipedia](#), “the groundwater contamination doesn't come directly from injecting fracking chemicals deep into Shale rock formations...but from waste water evaporation ponds and poorly constructed pipelines taking the waste water and chemicals to processing facilities.” In short, the pipelines can leak, thus allowing the waste water and fracking chemicals to flow into groundwater systems.

Because the process is so new, the research linking fracking to groundwater contamination is in its infancy. Thus, regulations curtailing the fracking are underdeveloped as well. This is beginning to change, however. In fact the EPA recently stated for the first time that fracking causes contamination, at least in their limited study in an area near Cheyenne, Wyoming.

From [the Associated Press](#): “The EPA found that compounds likely associated with fracking chemicals had been detected in the groundwater beneath a Wyoming community where residents say their well water reeks of chemicals.” The article goes on to state that the findings are a first step that will have repercussions in fracking areas nationwide. So stay tuned Northeast Ohio.

### *The Battle for Clean Land*

Unlike the Clean Water and Air Acts, there isn't landmark legislation that universally protects the environmental integrity of our land. Protective land policies are largely left up to states, regional groups, and cities. While the issues regarding the sustainable use of land in Northeast Ohio are many, there are a few key problems coming into focus, with potential solutions emerging.

#### *Landfills Filling Up: The Need to Throw Away Less*

The life cycle of garbage for many can be described as thus: we eat a candy bar, we pitch the wrapper in the trash, and then we walk away if only to notice that when we come back the trash is empty again. Yet there is more to it than that. Specifically, the part that occurs after the waste hauler comes to take the trash away.



Americans create a lot of trash: over 4 pounds per person per day. The trash has to be stored somewhere, usually in landfills. [According to the Ohio EPA](#), the state has 57 active solid waste landfills as of 2009. Out of sight and out of mind then, right? Not exactly. Landfills can in fact pose major environmental problems.

Landfills pollute local soils and groundwater through leakage of toxic elements. For instance, landfills that take in construction materials can contaminate local groundwater with toxic metals such as arsenic and benzene. Once ignored, landfills are now being regulated by the Ohio EPA due to the problems that came with storing increasingly concentrated amounts of debris.



From an [article in the Columbus Dispatch](#) [on the reasons why regulation became necessary]: “Problems arose after several landfills started taking millions of tons of debris from waste haulers as far away as New Jersey and New York. One site, Warren Recycling in Trumbull County, became notorious for underground fires and clouds of noxious hydrogen sulfide gas.”

So what can be done about landfills? For those whose focus is on sustainably-based waste management practices, the solution is simple, and it involves practicing the [three R's](#), or to Reduce, Reuse, and Recycle.

To *Reduce* means to do exactly that: consume less and thus produce less waste. For the most part, reducing waste is accomplished through changing personal behaviors. Specifically, you can pack a “no waste lunch” by substituting the paper bag and Ziploc baggies for reusable containers.

Another way to reduce waste is to find value in it, i.e., “one man’s trash is another man’s treasure”. In other words, waste can be *Reused* in a number of creative and productive ways. In fact, small businesses if not whole industries are currently being constructed in Northeast Ohio through the reusing of materials that would otherwise end up in landfill. Below are some of the budding industries of the local reuse movement.

### Deconstruction

It is common knowledge that there are a lot of vacant houses in Northeast Ohio. In many cases, the best thing to do is to knock the houses down. Often, many of the demolished houses end up in landfills. But there is a movement called deconstruction that extends the life cycle of the house materials by disassembling the houses piece by piece so that their materials can be reused.

Reused for what exactly? Well, a deconstructed house’s windows, doors, studs, floors, cabinets, brick, etc, can be given a second life in the repair or construction of existing and new houses. The benefit to folks shopping for used construction materials is not only cost, but also the character and craftsmanship of the materials that were used to build houses many years ago. Often, the quality of such materials is difficult to find these days.

Another product from deconstruction is refined woodwork. Take the tradesmen at [A Piece of Cleveland](#). There, artisans reuse wood and other materials from deconstructed houses to create furniture for people and businesses. Ranging from



cutting boards to boardroom tables, the products tell a story—not simply a story about sustainability, but a historical story as well. [According to Chris Kiouss](#), principal of APOC, each remade product comes “with a Re-Birth Certificate, indicating where the materials came from, who re-birthed them and instructions on caring for the product”.

### Waste-to-energy

What’s better than a solution that solves one problem? A solution that solves two—and the waste-to-energy movement is a burgeoning field in sustainability that is attempting to do just that. Waste-to-energy, according to [Wikipedia](#), is described as a “process of creating energy in the form of electricity or heat from the incineration of waste source.” That is, the process not only helps divert waste out of landfills, but it can also help decrease the need for oil and coal as the primary source of energy.

To help explain the process further, a planned local waste-to-energy project will be discussed. Here, the City of Cleveland is attempting to build a trash incinerator that will enable all garbage collected to avoid the landfill, and in turn produce electricity for the city-owned electric provider Cleveland Public Power (CPP). While the City effort would be the first of its kind in the United States, the plan is proving to be a huge point of controversy, especially—if you can believe or not—for area environmentalists.



Before getting to the controversy, some background on the logistics of the plant. The life cycle from trash to energy would begin rather pedestrianly, with garbage men picking up trash from city residents. The trash will be taken to the transfer station on Ridge Rd. in the neighborhood of Old Brooklyn.

From there, however, things get interesting, because instead of hauling the garbage to a Stark County landfill, the trash will be put into [a new \\$180 million dollar incinerator](#), or gasification plant. After removal of recyclables and dangerous substances, leftover trash would then be compressed into pellets and subsequently heated at high temperatures to the point of incineration. The byproduct of this process will be steam that could be sold or used to generate a small percentage of the electricity supplied by CPP.

The City of Cleveland sees their significant investment in this rapidly evolving technology as not only an environmental payoff, but also as a way to save on the cost of dumping trash—not to mention a way to make a profit on what is otherwise, well, garbage.

Count Mayor Frank Jackson as a believer in the process. In fact he recently returned from a trip in Japan where the technology has been used for 30 years. Apparently he came back impressed. In a recent [Plain Dealer editorial](#), the paper characterizes the Mayor’s support this way: “Trash to

gas to cash. Mayor Frank Jackson touts the strategy as a model of sustainability, cutting-edge technology, environmental stewardship, recycling revenue and efficiencies that will position Cleveland on the leading edge of green initiatives.”

But there are critics of the process, and there are many. These include concerned citizens, environmental groups, Cleveland city council members, and even members of Ohio’s EPA. The crux of the critiques boils down to what exactly is being released into the air during the process of incineration. In other words, is a reduction in land pollution worth it at the cost of increased air pollution?

George Baker, Commissioner of the Cleveland Division of Air Quality, doesn’t think so. Specifically, [in an email](#) to the Director of Cleveland Public Health, Baker states plainly that the proposed gasification plant would be “a new, and a large, air pollution source”, with an increase in “Particulates, Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, and Carbon Monoxide” being a major health concern.

Scott Armour, director of the Cleveland Chapter of the Indoor Air Quality Association, agrees. In a [letter to the editor](#) dated January 13<sup>th</sup>, 2012, Armour raises a number of concerns: “The risk to health from the emissions, truck traffic, disposal traffic, storage and hazardous material transport is a concern to the entire region. The technology is unknown. It has never been proven anywhere to work on this scale or with this mix of waste. The permit has been written without any engineered drawings or detailed explanation of the actual process. The supposedly proprietary design has been kept from the public.”

In all, the debate is ongoing, with both the City and Ohio EPA holding public information sessions to address citizen concerns. The most recent session drew a crowd of 200, with nearly all in opposition to the City plan.

That said, while the City of Cleveland’s gasification plan may have warts, there is still a measure of progress in the fact that a large municipality no longer believes the old “use, pitch, and dump” method of waste disposal is sustainable. Here, the opponents of gasification agree with the City, but they feel the solution is much simpler, and it entails the last of the 3 R’s, or the *Recycle* component.

Recycling is processing used materials like plastic bottles and aluminum cans into new products. The reason for this is to prevent waste, reduce the consumption of raw materials, reduce energy usage, reduce pollution, and lower greenhouse gas emissions. What’s more, there are economic benefits to recycling, especially on the local level.



In an [article written by NE Ohio's leading environmental groups](#), the authors argue that recycling is superior to gasification for a number of reasons, including cost and the number of local jobs created. For instance, Cleveland's recycling rate is only 8.5% and investment to increase this rate will be far less expensive than creating a large-scale waste-to-energy plant. What's more—according to Neil Seldman—the co-founder and president of the Institute for Local Self Reliance: “For every 10,000 tons of waste incinerated, one job will be created. For every 10,000 tons of waste recycled and composted, 4-10 local jobs will be created”.

So what are the best ways for cities in Northeast Ohio to increase the capture of recyclables before they enter the waste stream? One method—like that used in Medina—is not to rely on citizens to separate their trash from their recyclables, but to have employers of waste management facilities do it instead.

A description of the process from the [Median County recycling website](#) describes the process further: “Through a series of conveyor belts, refuse is processed and workers extract recyclable materials from the waste stream. In some cases, magnets are used to extract items like cans and other metals. The recyclable materials removed are baled and sold to markets that re-use the materials to produce various products.”

Another way is a bit more sophisticated, and it entails the utilization of high-tech carts with chips and barcodes that will be able to monitor how often a household recycles. Currently [a pilot program in the City of Cleveland](#), the chips will allow workers to check how often residents roll carts to the curb for collection. If a recyclable cart hasn't been brought to the curb in weeks, the trash will be sorted by workers for recyclables. If recyclables are found, fines are levied, with the subsequent negative reinforcement approach meant to increase the rate citizens recycle, much like speeding tickets serve to reinforce us not to speed.

Lastly, recycling is not simply the purview of cities when it comes to reducing waste and increasing profit. In fact many small businesses have sprouted around the recycling and reuse industry. Take the Akron-based [Polyflow](#) for example. The company has recently received a patent on their technology that takes all kinds of plastics—from old baby toys to Sprite bottles—and literally squeezes the reusable energy out of them. The products of the Polyflow process are gasoline and diesel fuel, as well as monomers and solvents that can be used as feedstock for the creation of virgin plastic. Click [here](#) to check out a video of the Polyflow process. It is pretty cool.

#### *Other Concerns: Brownfield Redevelopment*

Issues with land sustainability go beyond that of landfills and waste. For instance, in Northeast Ohio—where factor upon factory and plant upon plant have been shuttered due to the loss of the area manufacturing jobs—there exists the problem of land contamination from abandoned industrial sites. Be it chemicals at a former batter plant, buried gas tanks at a closed gas station, or toxic metals from a foundry, the land around the site becomes soaked with unsafe contaminants. The contaminants can enter the groundwater supply, or become airborne with a disturbance of the soil. In a few words: they must be cleaned up if the land is ever to be put back to productive use.



Enter the EPA's burgeoning Brownfields and Land Revitalization Program. Brownfields, [according to the EPA](#), are defined as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

To incentivize real estate developers and city officials to clean-up the land for future the

development, the federal government will often subsidize the cost of redeveloping brownfields, with the awareness that the reinvesting in such properties protects the environment, reduces blight, and relieves development pressures off greenspaces and other virgin lands.

While brownfield remediation has become common across the United States, with more than 1,400 areas remediated, this was not always the case. This would perhaps not have been possible without "a grassroots movement" in environmental justice that grew out of Cleveland, [said Myra Blakely](#), Deputy Director, Office of Brownfields and Land Revitalization, EPA. Blakely said poor neighborhoods and communities of color were disproportionately impacted by toxic sites.

Today, much of the brownfield project funds are allocated through the [State of Ohio's Clean Ohio Revitalization Fund](#). Recently, over \$25 million was given to nearly a dozen projects. A few local beneficiaries include: the City of Akron, who will receive \$2.9 million to conduct demolition and remediation activities at the former Goodyear Power House property so that new commercial and industrial space can be built; and the City of Cleveland, who will receive \$2 million to conduct demolition and remediation activities at the Viking Hall property on Cleveland State's campus so that the university can redevelop the site into a mix-use facility comprised of offices, retail, and student apartments.

In all, the brownfield programs reemphasize the fact that sustainable practices do not hinder economic development as much as they do remediate the hindrances that can disallow economic development to occur.

### *Summary*

Much progress has been made over the past 40 years in cleaning up Northeast Ohio's water, air, and land. Still, environmental progress is a long road, and we—and to a larger extent the country—have not yet reached the endpoint. The reasons for this deal largely with the fact that change is hard, especially in the economic realm in which business is not yet sold on green technology if only because green technology is a budding—and expensive—science. But

pollution isn't cheap either. And for too long we have focused on the bottom line at the expense of the conditions around us. After all, what good is money if there is no such thing as life?

This, then, is the promise of sustainability, for this approach to ecological protections refuses to limit environmental practices to the social and biological realm, but instead marries efficiency of resources with profit, all the while getting businesses and politicians to listen along the way.

No doubt, President Barack Obama is listening. Let's hope the following words from his recent State of the Union mean as much in 40 years as President Nixon's speech did on the eve of passing the Clean Air Act. Said President Obama, "I will not walk away from the promise of clean energy...I will not cede the wind or solar or battery industry to China or Germany because we refuse to make the same commitment here."

Photo 2:

<http://csudigitalhumanities.org/exhibits/archive/thumbnails/bc50eefcdc892f4b90781732ee0bf21.jpg>

Photo wind farm [http://www.impactlab.net/wp-content/uploads/2010/01/Wind-Farm\\_norway12\\_01.jpg](http://www.impactlab.net/wp-content/uploads/2010/01/Wind-Farm_norway12_01.jpg)

Photo Pearl Road [http://media.cleveland.com/business\\_impact/photo/wind-turbine-junk.jpg-77f9b586395f4808\\_large.jpg](http://media.cleveland.com/business_impact/photo/wind-turbine-junk.jpg-77f9b586395f4808_large.jpg)

Water pollution photo

[http://csudigitalhumanities.org/exhibits/archive/files/mls\\_pollution2\\_c687c40710.jpg](http://csudigitalhumanities.org/exhibits/archive/files/mls_pollution2_c687c40710.jpg)

Sewer diagram

<http://www.ecojustice.ca/images/CSOs.diagram.jpg>

CSO <http://media.cleveland.com/metro/photo/8931756-large.jpg>

Bioswales [http://brokensidewalk.com/wp-content/uploads/2010/02/med\\_urb\\_finale\\_14.jpg](http://brokensidewalk.com/wp-content/uploads/2010/02/med_urb_finale_14.jpg)

Algae bloom

[http://blog.cleveland.com/metro/2008/09/a1\\_08262\\_1805\\_LakeErie\\_143\\_250m.jpg](http://blog.cleveland.com/metro/2008/09/a1_08262_1805_LakeErie_143_250m.jpg)

Landfill photo [http://blog.cleveland.com/business/2009/03/large\\_landfill-energy.jpg](http://blog.cleveland.com/business/2009/03/large_landfill-energy.jpg)

Trash incineration <http://spectrum.ieee.org/image/1585105>

Public against incinerator

[http://ohiocitizen.org/wpcontent/uploads/2012/01/6673685193\\_2bb90d2cd8\\_z.jpg](http://ohiocitizen.org/wpcontent/uploads/2012/01/6673685193_2bb90d2cd8_z.jpg)

Brownfield <http://www.easterncoal.org/images/brownfields.jpg>

