Developments in Sustainability and Implications for Columbus

By
Chelsea Brown
Sarah Fries
Lowell Howard
Glennon Sweeney
Ben Williams

Introduction

The notion of sustainability is a multi-faceted concept that has recently received much attention from the United States and the international community at large due to its innate global importance. It is extremely difficult, if not impossible, to construct a consensus definition on the topic. However, a broader conceptual framework can be deduced that focuses on the relationship between individuals and their physical and social environment. This relationship is imperative and foundational to understanding the overall notion of sustainability. As the concept of sustainability has evolved, related topics such as sustainable development, sustainable communities, and the overall sustainable levels of the world's cities have incrementally garnered more clout in tackling this inevitable issue of concern.

Overall, the fundamental question, for both the purposes of this project and for the broader topic of sustainability, is how seriously are cities taking the pursuit of sustainability? To better understand the importance of this question, one must be aware that many avenues for pursuing sustainable projects are available and that all projects will vary according to their geographic location, governance structure, the overall ideological mood of the location, and many other factors that all deserve consideration, as they contribute to this vital and global topic. Further, a myriad of topics can be included in the realm of sustainability, most importantly are the areas of economic development and ensuring environmental vitality. Additionally, and contrary to the progress of the concept, some cities might not place significant value on sustainability and therefore efforts to improve sustainability measures will ultimately be stifled, or simply non-existent. A key concern, then, is considering the overall level of acceptance of the sustainability movement in a particular place, which ultimately varies significantly due to several significant, complex, and interrelated factors.

2

One area of sustainability that deserves adequate attention is sustainable development. Sustainable development, for the purposes of this report, will be defined as "meeting the needs of the present generation without comprising the ability of future generations to meet their own needs" (Portney, 2003, 7). The focus of sustainable development centers on the pursuit of economic growth accompanied by significant consideration to the ecological impacts of that growth. Essential to understanding this area of concern is the ecological carrying capacity, a concept each city should attempt to minimize its resource use to ensure sustainable development. The idea behind the ecological carrying capacity is that the earth's resources have a finite capacity to preserve life and therefore sustainable initiatives should be forged to create economic growth plans in accordance with the interests of the earth and the overall level of resources available. The concept of sustainable development is also multi-faceted, but the primary and over-arching theme of the subfield is critical to sustainability. Specifically, it is necessary to search for a symbiotic relationship between economic development and the environment. The efforts of cities and communities pursue these initiatives should determine how they are judged in respect to taking sustainable measures seriously.

Sustainable communities and cities play vital roles in achieving greater levels of sustainability, particularly in the United States where the overall level of the federal government's involvement is viewed with significant aversion. The primary underlying notion behind the reliance on sustainable communities and cities, in galvanizing the sustainability movement, focuses on cities' ability to strive towards creating healthy and livable places by focusing primarily on their respective geographic areas. Cities, as opposed to communities, are also vitally important in spearheading sustainable programs; possess the necessary legal

authority to address environmental and ecological results. Upon closer examination of a city's sustainability efforts the overall notion of sustainability becomes more complex.

Pursuing sustainability programs at the city level is an intricate process that ultimately varies according to the particular characteristics of each city. In the realm of sustainability, no two cities will possess the same factors or characteristics, but that should not devalue the significant similarities that some cities share. In particular, cities that have been successful in taking sustainability seriously have maintained both a strong political will to assume significant effort in the process and strong grassroots support for sustainable initiatives. Ultimately, then, the seriousness of a city's commitment to sustainability is determined by the nature of the local governance regime. Therefore, it will be the comprehensive focus of this project to discuss the interaction of private-public partnerships, as well as local non-profit and grassroots efforts that have been instrumental in creating viable sustainability programs. It is our hope that by comparing Columbus, Ohio to the pioneers in this movement, such as Seattle, Washington, Boulder, Colorado, and a few others, that Columbus can be more informed of how to achieve real sustainable programs, initiatives, and ultimately results.

Defining Sustainability. Our definition of sustainability is as follows: pursuing a greater quality of life via improved environmental and economic conditions, without jeopardizing the ability of future generations to enhance their quality of life. This definition is intentionally broad in order to perform a comprehensive analysis and tailor a package of recommendations to Columbus' diverse needs. Portney's definition of sustainability is "maintaining the earth's carrying capacity, usually through alteration of individual and collective human behavior" (6). Portney goes on to cite the United Nations' World Commission on Environment and Development

(WCED) in saying that "sustainable development consists of economic development activity that "...meets the needs of the present without compromising the ability of future generations to meet their own needs" (8). His definitions are broad because too specific a definition would not allow for the necessary comprehensive evaluation that sustainability uniquely considers.

Methodology. In addition to ranking Columbus according to Portney's thirty-four indicators, this report seeks to examine what sustainability initiatives other cities in the United States as well as the state of Ohio's Northeast regional consortium are pursuing. Employing a case study approach, we examine a number of successful sustainability plans and initiatives in the first section of this report. Beginning with the model sustainability plan in Seattle, Washington, we next examine initiatives in Boulder, Berkeley, Austin, and Indianapolis. Each plan and initiative was chosen either because it is renowned nation wide or because the particular city in question shares similarities with Columbus, providing instructive examples. The case studies conclude with an examination of the Northeast Ohio Consortium for a Regional Plan for Sustainable Development. The final section of this report consists of conclusions and recommendations for the City of Columbus, Ohio in its pursuit of a comprehensive and successful citywide sustainability initiative.

Ranking Columbus

Professor Kent E. Portney of Tufts University has sought to evaluate sustainability efforts at the scale of the city. This is an important endeavor, as cities have taken an increasingly important role in adopting innovative approaches to improve the local quality of life. In his book *Taking Sustainable Cities Seriously: Economic Development, the Environment, and Quality of Life in American Cities*, Portney catalogues and evaluates the actions of many major U.S. cities,

seeking through comparison to better understand the development of sustainability efforts and to identify best practices that can be employed in the future.

To perform such a comparison, Portney devised a simple Yes/No index of issues ranging from governance structure to pollution prevention, which tabulates whether a city's programs include each element as a result of public policy effective before January 1, 2000 or not (2003, 65). Portney's analysis included 24 cities with scores ranging from 30 for Seattle to 6 for Milwaukee, corresponding to the number of Yeses earned out of the possible 34. Columbus is evaluated below in table II according to Portney's schema with qualifying paragraphs following each element to be found in the appendix. It is important to note Columbus was evaluated based on what policies were in place as of February 2011, not the original date Portney used.

According to our evaluation of Columbus using Portney's instrument, Columbus fulfills 20 of the criteria, placing it eighth of the 25 cities listed by Portney (see table I). This high score could be a good indication that Columbus is taking sustainability seriously or it could simply be an indication of the rudimentary nature of Portney's instrument. For this reason the qualifications made following the Y or N score are imperative to truly grasp Columbus's sustainability. Furthermore, the index may simply be dated. Many changes have occurred in the last 11 years, which affect our understanding of sustainability and therefore our expectations of cities. Columbus may be taking sustainability seriously in outdated terms and be lagging when evaluated against today's understanding of sustainability.

Columbus fares relatively well along side the other cities, but a few features are noteworthy. For instance, Austin, a city often recognized for its environmentally friendly demeanor, surprisingly ranks poorer than Columbus. Indianapolis a city often considered comparable to Columbus scored less than half what Columbus earned. The elements that earned

Indianapolis points, where Columbus did not become all the more important to consider, especially when Indianapolis had those elements in place 11 years ago and Columbus still does not. A household solid waste recycling program, a water conservation program, and a single government/nonprofit agency responsible for implementing sustainability are areas that set Indianapolis apart from Columbus. In fact, all the three elements were present in all cities that ranked superior to Columbus, as were zoning to delineate environmentally sensitive growth areas, comprehensive land use plan that includes environmental issues, renewable energy usage by city government, and sustainability as part of a city wide comprehensive plan (Portney 70, 2003). Of these areas still lacking in Columbus, the ones that demand most urgent attention are a household solid waste program, which is projected to begin in 2012, appropriate zoning and planning for land usage, and creating a single agency responsible for sustainability.

Table I. Top Sustainable US Cities as Identified by Portney
(Plus Columbus)

City	Score	Rank
Seattle	30	1
Scottsdale	26	2
San Jose	26	2
Boulder	26	2
Santa Monica	25	5
Portland	25	5
San Francisco	23	7
Columbus	**20**	**8**
Tampa	19	9
Chattanooga	18	10
Tucson	18	10
Austin	17	12
Pheonix	15	13
Jacksonville	15	13
Cambridge	14	15
Cleveland	14	15
Brookline	14	15
Boston	14	15
Orlando	11	19
Santa Barbara	10	20
Indianapolis	9	21
Olympia	8	22
New Haven	8	22
Brownsville	7	24
Milwaukee	6	25

Table II. Columbus according to Portney's 34 Elements

Element	Y/N
1. Indicators project active in last five years	Y
2. Indicators progress report in last five years	N
3. Does indicators project include "action plan" of policies/programs?	N
4. Eco-industrial park development	N
5. Cluster or targeted economic development	Y
6. Ecovillage project or program	N
7. Brownfield redevelopment (project or pilot project)	Y
8. Zoning used to delineate environmentally sensitive growth areas	N
9. Comprehensive land use plan that includes environmental issues	N
10. Tax incentives for environmentally friendly development	N
11. Operation of inner-city public transit (buses and/or trains)	Y
12. Limits on downtown parking spaces	N
13. Car pool lanes (diamond lanes)	N
14. Alternatively fueled city vehicle program	Y
15. Bicycle ridership program	Y
16. Household solid waste recycling	N
17. Industrial recycling	Y
18. Hazardous waste recycling	Y
19. Air pollution reduction program (i.e., VOC reduction)	Y
20. Recycled product purchasing by city government	Y
21. Superfund site remediation	Y
22. Asbestos abatement program	Y
23. Lead paint abatement program	Y
24. Green building program	Y
25. Renewable energy use by city government	N
26. Energy conservation effort (other than Green building program)	Y
27. Alternative energy offered to consumers (solar, wind, biogas, etc.)	Y
28. Water conservation program	N
29. Single governmental/nonprofit agency responsible for implementing sustainability	N
30. Part of a city-wide comprehensive plan	N
31. Involvement of city/county/metropolitan council	Y
32. Involvement of mayor or chief executive officer	Y
33. Involvement of the business community (e.g., Chamber of Commerce)	Y
34. General public involvement in sustainable cities initiative (public hearings, "visioning" process, neighborhood groups or associations, etc.)	Y

Total Score: 20

Columbus' Rank: 8

*Please see qualified explanations in Appendix I.

These 34 elements of sustainability identify specific steps that Columbus has taken or can take in the future in its pursuit to improve the city economically, socially, and environmentally. Some encouraging results found behind the numbers are demonstrated by the following local developments. For example, the establishment of the Green Team whose purpose is to "advise the administration on environmental policy, identify resources to carry out the Get Green Columbus initiatives and educate the community," (Get Green Columbus Progress Report, 2009).

The creation of the Central Ohio Green Pact commits the City to lead by example in areas such as Green Public Fleets, Growing a Strong Green Economy, Collaboration to Purchase Green Products, Adoption of Sustainable Land Use Policies, Building Green Facilities and Reducing Energy Consumption, Reducing Waste, Educating and Engaging Our Communities, Reducing Emissions and Climate Protection, Preserving Green Space and Creating Greenways, Improving and Promoting Mass Transportation. To date, thirty-one jurisdictions in central Ohio have signed the Pact and are actively working on implementation collaboratively through the Center for Energy & Environment at MORPC.

In terms of waste, a practical option for Columbus residents is a subscription program available through Rumpke Inc. In 2009, roughly 4,382 tons of materials were recycled from this program, which averages 12,000 subscribers annually. The cost of this service ranged from $5.00 per month in 2005 to $8.25 per month in 2009. In 2005, the Columbus Division of Sewerage and Drainage launched Project Clean Rivers, which includes various programs and services to achieve clean water goals. This includes the Wet Weather Management Plan, a $2.5 billion plan to eliminate combined and sanitary sewer overflows (Get Green Columbus Progress Report, 2009).

Similarly, Ohio has become the first state to have a by-product synergy network, another approach to reduce waste. The project was spearheaded by the Mid-Ohio Regional Planning Commission (MORPC) and the Center for Resilience at The Ohio State University. The Center for Resilience has a tool called Eco-Flow. The tool calculates the environmental and economic impacts of possible synergies and has been employed by many cities, including Kansas City and Chicago. Central to its success, the Ohio By-product Synergy Network identifies diversity, communication, and partnerships as three key factors in the partnerships developed through the network (Raccoon Riots 2010)http://ohiobps.org/.

Also, a public relations initiative began as an effort to galvanize public support known as the GreenSpot program. The program was created to inspire, educate and recognize those making efforts to get green. More than 1600 businesses, residents and community groups have been recognized as GreenSpots. These steps are important to Columbus's sustainability goals and will help contribute to achieving its long-term objectives. One of the City's long-term goals is to reduce greenhouse gas emissions by 2% per year until 2030, which would be 40% below 2005 levels. The City has found its greenhouse gas contributors to be buildings- 31%, wastewater treatment- 37%, drinking water treatment- 18%, and transportation- 12% (Get Green Columbus Progress Report, 2009).

Successful Sustainability Programs in the United States

Most major US cities are pursuing sustainability agendas in some form or another. The purpose of this section is to highlight some particularly successful or instructive initiatives. Each successful program outlined here is part of a broader city (or metropolitan) plan. Cities who are developing a sustainability plan largely look to the innovative and successful Seattle model for

guidance. Thus, we will first discuss the sustainability movement in Seattle, Washington where

the city's approach to sustainability has served as a model for the evolutionary timeline of

sustainable cities. We will then examine a program in Boulder, Colorado which ties building

permit qualifications to sustainable building practices, a model retrofitting financing scheme in

Berkeley, California, a waste to profit network Chicago, Illinois, and a couple of initiatives in

both Indianapolis, Indiana and Austin, Texas. These specific plans and initiatives were chosen

with careful consideration due to the potential applicability to Columbus' sustainable progress.

Seattle

In the realm of sustainability initiatives, it is arguable that no city has been more effective

in promoting the concept of sustainability than Seattle, Washington. Of the 170 sustainability

indicator plans currently constructed, over ninety of these plans have used Seattle's

Comprehensive Plan as a model for taking sustainability initiatives seriously. Seattle's

sustainability efforts are extremely vital to understanding how Columbus can improve its

sustainability practices. The demographics of Seattle resemble Columbus' core demographic

statistics, thus making the comparison between the two cities not only relevant, but also prudent.

The city of Seattle's population is approximately 539,000, with an additional 3 million people

living in the surrounding metropolitan area. Further, Seattle has a city council composed of nine

elected members, which closely mirrors Columbus' seven-member council. Both cities afford

primary decision-making power to an elected Mayor.

Essential to understanding the current Comprehensive Plan, entitled "Towards a

Sustainable Seattle," is a brief history of Seattle's sustainability efforts, which will expose the

intricacy of the relationships between non-profit organizations and governmental agencies and

entities. These relationships are of critical importance, as they highlight core topics in the sustainability movement; primarily the actual ability of sustainability efforts to be implemented and enforced and the manner in which sustainable efforts are incorporated into city agendas.

Seattle's sustainability efforts have its roots in a non-profit grassroots organization called "Sustainable Seattle", established in 1990. The organization's goals were primarily to develop sustainable projects in the three areas of economic prosperity, environmental vitality, and social equity. The organization devised six main goals focusing heavily on providing community resources to its citizens to ensure that they were educated and involved in the sustainability project proposal process. The ultimate goal of this process was to establish sustainable indicators based on the participatory process. This objective was achieved. "Sustainable Seattle", however, realized its limitations, as it was merely capable of adopting or promoting sustainability policies, but ultimately incapable of directly altering the city's policies and programs that affect progress. This obstacle, which is shared by many cities leading the sustainability movement, should not overshadow the non-profit's ability to coax the city's government to internalize "Sustainable Seattle's" agenda.

Prior to discussing the details of Seattle's Comprehensive Sustainability Plan, it is worth pausing to note the importance of putting sustainability plans into action. It seems that non-profit and grassroots movements have been instrumental in catapulting sustainability issues onto city-government agendas. Without these movements, one could argue, sustainability efforts would be prolonged from actual legal and enforceable implementation and therefore have little effect.

This so-called gap in the practical implementation of sustainability initiatives can be seen in Jacksonville, Florida. In the past fifteen years, Jacksonville has developed a coalition project, entitled "The Quality of Life Project," which has aimed at developing the most relevant

indicators to assess the city's overall level of sustainability. However, the project's success has been thwarted by a disconnect between civic organizations and city-government agencies and this disconnect is at the core of impediments to sustainable practices being taken seriously. Transitioning a sustainable agenda from the non-profit sector to incorporation at the city level is therefore imperative for sustainable success. Seattle's success in getting sustainability on the public agenda is therefore one of the main reasons it has been such a laudable pioneer in the sustainability movement and also a primary facet to the city's sustainable success.

In 1994 the city of Seattle adopted its comprehensive plan with the intention of outlining a 20-year policy vision for the city to grow in meaningful and significant ways that simultaneously aligned with citizens' perspectives and values on many substantive topics. The policy plan adopted focuses on 13 areas of sustainability. The main areas include land use, transportation, housing, capital facilities, and utility efforts. The secondary, yet still imperative areas of the plan encompass the topics of economic development, neighborhood planning, and environmental improvement. Seattle's comprehensive plan, which by most accounts is the most developed and advanced sustainability plan in circulation, includes detailed goals and policies for all 13 areas. The organization and structure of Seattle's plan is the defining aspect that differentiates it from other cities pursuing sustainability initiatives.

The high level of coordination in Seattle's plan distinguishes Seattle from other progressive minded cities. Each of Seattle's thirteen sustainable topic areas encompasses a functional plan that carefully outlines the action to take place in the area of development, the intended achievements on the action, and the time restraints necessary to achieve the action. Furthermore, Seattle's plan maintains the ever-present option of allowing updates and improvements to the plan, which occur through an amendment process overseen by the City's

14

Department of Development. Additionally, Seattle's Department of Planning and Development

is the primary agency responsible for regulating the city's sustainability efforts. They achieve

this endeavor primarily by offering incentives and disincentives to local businesses to adhere to

the city's sustainability objectives. Therefore, the obvious shortcoming becomes even more

apparent once delving into the enforcement aspect of sustainability. The blatantly apparent

conclusion is simple, namely, it is very difficult to enforce sustainable policies. However, this

tightly coordinated process, occurring at the city governmental level, allows Seattle to be

successful in implementing sustainable initiatives into its policy agendas, but a downfall exists

because even the most progressive American cities are facing difficulties enforcing sustainable

initiatives.

Boulder

Boulder, Colorado is an excellent example of a city taking sustainability seriously. With

a city population of about 95,000 in a metropolitan area with more than 2 million, the Boulder

metro area is slightly bigger than that of Columbus. Boulder has taken an innovative and

aggressive approach to sustainability, overseen by various administrative agencies and the City

Council. The City Council's sustainability initiative is divided in four committees:

environmental sustainability, economic sustainability, transportation, and housing.

An example of the City Council's environmental sustainability committee's initiative with

a tangible effect is the purchase of hybrid vehicles for municipal government use. Along with

this effort, the environmental sustainability committee has implemented programs focusing on

pesticide reduction, waste reduction, increased energy efficiency, habitat preservation, and water

quality. Boulder's plan to reduce pesticides was propagated by their passing of the ordinance,

15

the Colorado Noxious Weed Act.   They have also taken measures to require increasing solid waste recycling by enactment of a city ordinance (Portney, 2003, 202). Boulder's city council is exemplary because they have taken many actions to get their sustainability initiatives into enforceable city ordinances.

The City Council has eight foci: "(1) air quality; (2) sustainable internal city operations called the "Sustainability 2000 Project;" (3) a Greenpoints green building program; (4) a program for lawn care and integrated pest management; (5) a home energy check-up effort; (6) a comprehensive recycling program; (7) a Greenways program, and (8) a broad based collaborative effort with Boulder business called Partners for a Clean Environment, or PACE" (Portney, 2003, 203). The Environmental Advisory Board, which collaborates, oversees all of this with several other departments to ensure the enforcement of these initiatives.

We will focus here on Boulder's Greenpoints program and the "Sustainability 2000 Project".   Greenpoints is a program that regulates the construction of residential buildings through the local building code. Boulder's original green building code was proposed and accepted in 1996 and revised in 2001. The Greenpoints ordinance was adopted by the City Council on November 13, 2007. This program states that contactors constructing new residential buildings must earn at least 25 Greenpoints before being issued a building permit. The points are earned through a system assessing the plumbing, heating, ventilation, and air conditioning, framing, electrical, land use, and several other factors. Each facet of the program warrants so many points, for example, "a project whose design calls for using engineered lumber in the roof or floor would earn 5 points" (Portney, 2003, 204). Since this program requires contractors to meet certain guidelines, these contractors have to have a license, which is renewable annually.

The City Council oversees this plan and it is enforced by the city code, which states that the city can refuse to issue building permits if the contractors have not reached their 25 points.

The "Sustainability 2000 Project" is an indicator system evaluating the city's sustainability, environmental responsibility, and the governing bodies' effectiveness. There are ten indicators including city's water consumption, amount of renewable energy, recycling rates, commuter rates, park/open space, ecosystem health, and several others. Each indicator has an action plan and evaluation proposal. So far, all but three of the indicators are showing success: one shows decline and the other two have not yet been measured. In comparison to other cities, like Jacksonville, which have similar indicator programs, Boulder's stands out because they are making real progress. The reason this project is so effective is that it does not make the private and public sectors remain mutually exclusive. They work with each other through the PACE program, Partners for a Clean Environment, to make the city a more sustainable place. With the help of small businesses, the city has made improvements on their overall hazardous waste volume. The two sectors together have made the Sustainability 2000 Project more feasible by working toward a common goal.

Boulder clearly demonstrates the value they place on sustainability and serves as an outstanding model for Columbus. Columbus could very easily implement the Greenpoints Program and/or create a plan along the lines of Boulder's "Sustainability 2000 Project". With one or both of these programs, Columbus could, using the 25-point system, construct more energy efficient buildings, thus save resources and money, and have clearly established goals, indicators, and evaluation of its sustainability efforts. The relationship between the private and public sectors would be a step in the positive direction as well, as we see Seattle and Boulder,

two of the most revered sustainable cities in the country, practicing this dynamic and enjoying its positive effects.

Berkeley FIRST

Berkeley *FIRST* is an interesting example of a successful sustainability initiative designed to enable homeowners to retrofit their homes with solar panels (Fitzgerald, 2010). Although solar panels might not be the most practical path towards energy reduction a cloudy city like Columbus, it is the financing method, reflected in the name, Berkeley Financing Initiative for Renewable Energy, or Berkeley *FIRST*, which is of interest in this section. This financing mechanism could be applied to other initiatives, such as plumbing or lighting retrofits.

Residents of Berkeley passed a ballot initiative in 2007 requiring that the city cut its greenhouse emissions by eighty percent by 2050. Achievement of this ambitious goal will require multiple changes in energy consumption patterns as well as energy sources. In Berkeley, one component of meeting this goal involves citizens installing solar panels on their homes. This can be very expensive, ranging from fifteen to twenty-five thousand dollars in upfront costs depending on the size of the home, and this initial cost can take years to recoup in energy savings.

Berkeley *FIRST* solves this problem for homeowners by implementing a brilliant financing scheme in which the city fronts the costs of the solar system to the homeowner. The loan is attached to the property tax, and thus the homeowners see an increase in their property taxes until the loan is paid off (the loans are for twenty year periods), at which time they reap the energy savings of the system. The city's initial costs for the program are paid for by the sale of bonds, and the city contracts with Renewable Funding, a company that oversees the funding

provided by the city. This financing scheme is self-financing for the city, which makes it

sustainable even in tough economic times.

The homeowner's pre-retrofit utility bill is then compared to their post-retrofit utility bill

in order to measure the difference, which is their energy savings. It is this number which is then

used to calculate their annual payments (approximately the accumulated monthly utility savings

post-retrofit attached annually to their property taxes). This ensures that the savings they reap

from their utility bill equalizes the increase in the homeowner's property taxes.   Therefore, the

homeowner essentially breaks even until the loan is paid off, at which time they reap the

permanent benefits of living near to or completely "off the grid." The loans are essentially a lien

on the homeowner's property taxes, and the significance of this financing method has a number

of implications for both the homeowner and the city of Berkeley. First, attaching the loan to

property taxes enables homeowners to sell their homes before the solar system is paid off

because the loan *goes with the house*, unlike other credit-based loans that are attached to the

individual in need of the funds. Second, because the loan is attached to the property, failure to

pay can result in foreclosure by the city to collect delinquent taxes, which ensures that the city

will eventually see each loan paid in full. Third, homeowners are also able to take advantage of

both a rebate from the utility company as well as a federal tax credit that allows them "to deduct

30 percent of the system's cost from their tax bill" (Fitzgerald, 2010).

This financing scheme could be applied not only to solar panels, but also to retrofitting

existing buildings or other plans designed to reduce energy consumption in a city. In

conjunction with other sustainability initiatives, this type of retrofitting-finance scheme could

help Columbus reduce energy consumption and meet any energy reduction targets in the future.

Austin

Austin is a nation-wide leader in sustainability practices. Interestingly enough, Austin is very similar to Columbus. Both have similar population size, geographic size, sprawled layout, both are capital cities, and are home to a large, state university. The following sections will highlight two successful programs in Austin- urban redevelopment and mass transit. Elements of both of these programs can be incorporated into future planning for the City of Columbus.

Sustainable Urban Planning. The transfer of airline services from the Robert Mueller Municipal Airport to the new Austin-Bergstrom International Airport in 1999 created a 709-acre vacant area three miles outside of the city and two miles away from the University of Texas. This created a unique and spectacular opportunity for Austin to redevelop the area into a planned mixed-use community. One of the explicit goals of the redevelopment was to incorporate sustainability by planning "in a way that promotes energy efficiency, reduced auto dependency, watershed protection, and green space preservation (City of Austin 2009)."

Mueller is the world's largest LEED-ND certified community (as of 2009). The development includes commercial and residential development in which all buildings must meet specific green building standards. All of the residential homes have achieved a minimum 3-star Austin Energy Green Building rating (this is the program that LEED standards were developed from) with 43 of the homes achieving a 5-star rating. The commercial buildings in Mueller achieved either an AEGB rating or LEED certification. With the idea to "recycle, restore and reclaim", runway materials from the old airport were recycled and used for street construction, old hangars were carefully taken apart to use as new building materials, existing historic buildings were converted into public spaces, while local, green building materials were used as

much as possible. Ultimately, 37,000 tons of construction waste was diverted from landfills (City of Austin 2009).

The plan calls for the creation of a high-density mixed-use community that is pedestrian and bicycle-friendly. Homes, shops, employment facilities, and the neighborhood school were developed within walking/biking distance of one another. There is an uninterrupted system of trails throughout the entire community and even dedicated paths along the streets for use by both automobiles and bicycles. Mueller even is connected to the metro transit system, which makes it easy and convenient to get anywhere in the Austin area. These features encourage Mueller residents to use these alternative (and safe) means of transportation.

Of the 709-acres in Mueller, 140 of them were reserved for parks, trails, and open space, which is approximately 20 percent of the neighborhood (City of Austin 2009). These green areas are spread out so that every Mueller resident will live within 600 feet from one. The playgrounds in the parks are composed of entirely recycled/reclaimed materials. Planners also had an innovative idea: the "green necklace" surrounding Mueller connects the neighborhood to existing parks and golf courses. This reduces the harsh transition between old and new. There are 15,000 new trees or rescued/replanted trees that were saved from a nearby pecan farm that was being demolished to create a new development (City of Austin 2009). And for every four commercial parking spaces, one tree is planted. Every developer also agreed to use only native plants in their landscaping which significantly reduces the amount of water needed to maintain them.

While Columbus may not have 700-acre parcels of land to be redeveloped, there are certainly smaller areas within Columbus with the potential to be redeveloped in a similar fashion. The old Northland Mall area has potential for redevelopment, it is close to existing State of Ohio offices, which would make for a short commute for those state employees.

21

Columbus could utilize some of the same strategies Austin did in future redevelopment projects. First and foremost, instead of expanding outwards which is typical of Columbus, the city should focus on urban in-fill projects. Redeveloping land closer to the center city is more sustainable because is a smaller reliance on fuel and the green spaces on the outside of the city are preserved. The redevelopment project also needs to focus on reusing and recycling as much of the construction and building materials as possible. This will keeps costs down while diverting these materials from landfills. It is also important to make all new-construction LEED certified and strive for all buildings, old and new, to take steps to become certified. A final important aspect would be to make these redevelopments non-automobile friendly. People need to feel comfortable and safe while walking or biking, and at the same time, have it be a convenient alternative to driving.

Mass Transit. In 1985 voters approved the creation of the Capital Metro for public transportation (financed by a 1% increase in the sales tax). At the time, this only created bus service but the general consensus was that Capital Metro would also be responsible for developing passenger rail service in the near future. The City of Austin and Capital Metro joined pocket books to purchase 162-miles of existing rail from a freight company. After many years of zero progress in the push to create passenger rail, in 2000 the legislature ordered a referendum vote on light rail. The plan proposed by Capital Metro was a 52-mile system that had a red line (north-south) and a green line (east-west) with a price tag of $1.9 billion dollars. The plan was supported by residents in the city, but opposed by suburban residents and was narrowly defeated by a margin of around 2,000 votes (Clark-Madison 2000).

In 2004, Capital Metro came back to voters with a new plan. This time the measure would expand local and express bus service and build the red line rail that would run through new growth areas (including the Mueller redevelopment). The new plan was approved. In March 2010 the red line was up and running, connecting downtown Austin to its northern suburbs. The new line was 32 miles in length with nine stations along the route. The stations farthest from the city are park and ride stations, which allows people in those sprawled areas to make a short commute to the station, park their car, and ride into the city. Due to an increased population density along the rest of the route, the stations closest to the city are not park and ride stations. However, they are connected by the bus service. Austin has also encouraged mixed-use development around the stations. Transit-Oriented Developments are attractive places for people to live, shop, and work that are close to main public transit lines. There have been mixed results so far in the process of establishing these TODs, but Austin planners are optimistic about the future of these sites. The demand for TODs will increase as the price of gasoline increases.

The current passenger rail system is not considered light rail because it operates on a tram-train system, meaning that the cars can run on freight lines as well as tram lines within the city. With any system, there are flaws. The main problem with the red line is that it only provides rush hour focused service. Also, the stations are not big enough to handle coupling two trains together to increase the capacity during peak morning and evening times. There are proposed solutions to these problems but any future expansion requires voter approval. Austin also has plans in the works to add electric-powered light rail or streetcar service, but the costs are high and the city would not be able to do it without federal funding or an increase in taxes. The main lesson Columbus can take away from the Capital Metro system in Austin is that a rail transit system is possible in a sprawled city.

SustainIndy: Indianapolis

The city of Indianapolis is strikingly similar to Columbus in both size and demographic composition. The cities also share a number of industries and, like Columbus; Indianapolis comprises the majority of the county in which it resides. Mayor Gregory A. Ballard launched Indianapolis' sustainability plan, *SustainIndy* in October 2008 with the creation of the Indianapolis Office of Sustainability whose purpose is "driving the sustainability efforts of City-County government and [the Indianapolis-Marion County] community as a whole" (City of Indianapolis, 2008). The official definition of sustainability, according to the plan is as follows: "using best practices to create lasting environmental, economic and community vitality – enhancing our quality of life now and ensuring that future generations of Indianapolis residents have an equally good quality of life" (City of Indianapolis, 2008). *SustainIndy* is quite similar to Columbus' sustainability plan, *Get Green Columbus*. Like *Get Green Columbus*, *SustainIndy* essentially takes a three-pronged approach to creating a sustainable city: public initiatives, public-private initiatives, and education aimed at encouraging individuals and businesses to undertake their own sustainability initiatives.

The program focuses on five broad categories and one narrow category. The categories are as follows, Energy & Emissions, Solid Waste & Recycling, Water & Land, Quality of Life, Green Building & Development, and Bikeways, the sixth narrow category. Indianapolis' sustainability plan includes a number of initiatives that are similar to initiatives that Columbus is currently pursuing. The purpose of this comparison, however, is to emphasize the differences in the two city's sustainability plans, highlighting successful initiatives Indianapolis is undertaking that Columbus might find both beneficial to our quality of life as well as practical in terms of

implementation. It should be noted that many of Indianapolis' initiatives are targeted and rather small in scope. This should not be considered a negative, considering the current economic conditions; it might be economically impossible for implementation of a comprehensive plan with major city investments at this time. Therefore, small, targeted, sustainability programs could prove extremely instructive as Columbus improves upon and adds initiatives to our already successful citywide sustainability plan. Such initiatives will be discussed below in detail.

Columbus is already doing a lot, and even more in some areas, in regards to energy and emissions; however, there are a few programs that Indianapolis is trying out that Columbus might want to take note of. Columbus, like Indianapolis, has been installing LED traffic signals throughout the city. However, Indianapolis is also installing high-pressure sodium streetlights. Although this was recommended in the 2000 downtown streetscape plan, there is little else to be found in city literature discussing these streetlights that are known to be highly efficient. In addition to these efficient streetlights, Indianapolis has enacted an anti-idling campaign. One program associated with this campaign is "smart schools don't idle," a public awareness program funded by an Indiana Education grant. This campaign is supported by an anti-idling policy which seeks to improve air quality and limit emissions by limiting idling of public vehicles to five minutes per hour (City of Indianapolis, 2009).

Another initiative of interest is the Indianapolis Cultural Trail. This trail is "a world-class urban bike and pedestrian path that connects neighborhoods, Cultural Districts, and entertainment amenities and serves as the downtown hub for the entire central Indian green-way system" (City of Indianapolis, 2009). The city also provides a useful interactive map of the cultural trail as well as existing and planned bike trials for Indianapolis.   It should also be noted that the Indianapolis greenway system is nationally recognized for excellence.

25

In terms of solid waste and recycling, Columbus' program rivals Indianapolis'. However, Indianapolis has implemented – though only in its infancy state – a pedestrian recycling program. According to the 2009 *SustainIndy* report, the city has 23 receptacles in various strategic locations. Although this program is only in its infancy in Indianapolis, other cities have experienced success with such initiatives. The city of Philadelphia managed to collect tons of recyclable waste annually and experience significant cost reductions in waste management with the installation of Big Belly Solar recycling receptacles (Big Belly Solar, 2009). An interesting aspect of Indianapolis' initiative is the ReArtFormation II program that coordinates local artists in building pedestrian recycling containers out of recycled materials for use throughout the city.

Although *SustainIndy* is not nearly as ambitious as the plans in some of the other cities we have discussed, Indianapolis is the city most like Columbus that we have examined. Sustainability initiatives like the ones featured from Indianapolis, although they may seem "small" compared to those of other cities, may also be the most practical initiatives for Columbus to adopt given the current economic conditions, the geographic history of the Midwest, and the amount of public support for such initiatives in Columbus.

Sustainability Plans in Ohio

In Northeastern Ohio sustainability initiatives have recently surged as part of the region's efforts to reinvigorate the local economy. Most notably, The Northeast Ohio Consortium for a Regional Plan for Sustainable Development, which is an association of 21 major regional players that includes four Metropolitan Planning Organizations, six of the 12 counties, five of the largest cities, three metropolitan housing authorities, The Fund for Our Economic Future (philanthropic organizations and individuals that seek to strengthen the economic competitiveness of Northeast

Ohio through grant making, research and civic engagement), the Regional Prosperity Initiative (RPI, an organization that will provide the structure for region-wide land use planning and new growth tax base sharing in Northeast Ohio), and Cleveland State University has sought to define collective goals and reach a Memorandum of Understanding (Northeast Ohio Areawide Coordinating Agency). These members defined a Leadership Committee that became the Board of Trustees of the newly formed non-profit organization. After incorporation the board hired a Planning Management Office to carry out the Consortium's objectives.

The Central Ohio Green Pact, now overseen by MORPC, began in 2007 and includes 31 members, comprised of primarily cities, villages, and townships (MORPC 2011). However, Metro Parks, Franklin County, COTA, and the Franklin Soil and Water Conservation District are also members. The primary differences in membership are the many housing authorities, The Fund, and the RPI that are part of Northeast Ohio's efforts and absent from Central Ohio's. This translates to affordable housing not being addressed in Central Ohio's regional sustainability plans. Although the Central Ohio Green Pact has the potential to impact many of the surrounding counties, the organization currently has members from only 5 counties: Franklin, Licking, Fairfield, Union, and Delaware.

Though the members are different, many of the goals between the regional plans are similar. Northeast Ohio is developing a regional plan for sustainable development through an organizing phase, assessment phase, a vision/planning phase, and an alignment phase over the course of 36 months. Under the Planning Management Office's direction Work Stream Committees will be formed in five areas: Built Environment and Natural Systems Integration, Regional Mobility and Transit Options, Equitable Housing Access and Affordability, Community-Focused Economic Development, and Place-Based Community Design.

The Central Ohio Green Pact has identified similar goals: preserving green space and creating greenways, mass transportation, growing a strong green economy, and adopting sustainable land use policies. Beyond such areas of concern, the Central Ohio Green Pact also identified educating and engaging the community, reducing energy consumption, emissions, and waste, and building green facilities (Whetstone 2011).

Similarly, Northeast Ohio will engage the community through inviting residents to participate in the visioning process, with special efforts to include typically marginalized communities. The emphasis on making the planning process inclusive and democratic is an essential feature that strengthens the plan's prospects for success.

The Northeast Ohio Consortium's efforts seem will result in more concrete enforcement strategies for members who do not reach the goals defined. While the Central Ohio Green Pact appears to be an opportunity for governmental and public service entities to voice their concern and commitment to address sustainability, there does not appear to be any enforcement mechanism. It seems the Green Pact has elected to have members perform self evaluations of sustainability. To assist its members, the Green Pact makes certain tools available, such as the Ameresco Carbon Footprint Analysis.

Furthermore, the Northeast Ohio Consortium appears to have a more detailed process outlined for their future actions, probably due to its recent application for a grant from the federal government. The Consortium's plan ultimately aims to establish shared policies to be enforced by a common governing authority, develop regional guidelines where local governments retain authority, and provide ongoing opportunities for continued feedback, dialogue, and collaboration. Such structures will facilitate reaching development priorities, standardizing processes, creating a formal network of decision makers and stakeholders for the region, and

offering a set of tools including a database to improve and strengthen analytic and decision-making capacity. The Central Ohio Green Pact could heed the Northeast Ohio Consortium's example of going beyond a collective commitment to addressing regional sustainability issues, by employing similar collaborative solutions.

Conclusion

This report has examined the concept of sustainability, Columbus' commitment to pursing sustainability initiatives, and some examples of successful sustainability plans and initiatives from across the country. All cities successful in their pursuit of a sustainability agenda enjoy public support in the form of citizen activists; non-profit, and for-profit environmentally concerned organizations and firms. Columbus has already experienced progress on some of Portney's sustainability indicators, however, there is always room for improvement. Columbus is just one of many US cities pursing such agendas, and there are many "veteran" cities from which Columbus can gain instruction. It was the purpose of this report to highlight some of the most constructive local initiatives from this national movement. We discussed the success of Seattle's sustainability plan, which many cities regard for their own plans and movements. Boulder encourages environmentally sensitive practices in residential construction. The Berkeley *FIRST* retrofit financing model could be applied to other energy-saving retrofits and Austin provided us with an example winning public support for mass transit development through creation of park and ride stations on the outskirts of the city as well as a national model for mixed-use development in Mueller. Indianapolis' small-scale initiatives ranging from installation of energy efficient traffic signals, to the creation of a walking/biking path encompassing the city's most popular downtown destinations, to implementation of a pedestrian

recycling program, all serve as examples of cost effective and cost saving sustainability initiatives. Finally, the Northeast Ohio Consortium for a Regional Plan for Sustainable Development provides a prudent example of successful cross-jurisdictional organization for sustainable pursuits. Creating a more sustainable America is a national issue that is finding innovative and unique solutions at the local level. It is our hope that Columbus can move from an active player to a leader in this movement.

Appendix I
Columbus according to Portney's 34 Indicators

Sustainable Indicators
1. Columbus has a nominal sustainable indicators project that is managed by the nonprofit organization, Columbus Research Partners. CRP currently lists 7 primary indicators under a category labeled "community indicators". However, the categories used by CRP are merely the main topics that would be used to categorize data in a census. Therefore, the indicators project does not provide the most relevant data to a sustainable program. Specifically, CRP neglects to account for essential environmental data and many key aspects of transportation. Therefore, it has been decided that while the thought to assess the city's indicators has occurred, an adequate indicators project does not exist in Columbus, even though an indicators project is nominally "active".

2. The CRP has consistently updated its data in the past five years. The organization established a website to monitor Columbus' "indicator" project in 2007, and updated the web site's data in 2010. However, there has been no explicit attempt to declare any progress report for the city or to analyze how the city compares to other similar cities.

3. No Action Plan of policies or programs exists for the city of Columbus. Information and Data for the city is solely focused on current benchmarks.

'Smart Growth' activities
4. The Solid Waste Authority of Central Ohio reports that in 2007 64.6% of industrial waste was recycled (MORPC SOTR09 pg. 8). The Ohio By-Product Synergy Network is a project that the Center For Resilience at The Ohio State University and MORPC are collaborating on. Membership in the network is optional, but incentivize membership by "turning waste into profit" (http://ohiobps.org/).

5. There have been many clustered and targeted economic development initiatives in Central Ohio. A few that immediately come to mind are the development of the Campus Gateway, Lennox Center, and the Arena District. These are more land based development projects, the Third Frontier program which cluster economic funding

6. Central Ohio does not have a government sponsored eco-village project or program. There are some private, individual sustainable living communities in the area but they are not inter-connected.

7. Columbus provides incentives via reimbursement grants to private businesses and non-profits that engage in brownfield redevelopment projects. See:
http://getgreencolumbus.com/PDFs/Green%20Columbus%20Fund.pdf

Land use planning programs, policies, and zoning
8. Zoning used to delineate environmentally sensitive growth areas? NO
It does not seem that there is such zoning in the city. Attached is the city zoning map link (just click "zoning map" on the page). There is also no mention of any such zoning district on the website: http://library.municode.com/index.aspx?clientId=16219&stateId=35&stateName=Ohio.

9. Comprehensive land use plan that includes environmental issues? NO
The city of Columbus has a number of planning areas for which there are detailed plans. These plans do include some environmental concerns, however they could be better and these concerns are not their main focus:
http://development.columbus.gov/planning/plansoverlays.aspx?id=17112

10. Tax incentives for environmentally friendly development? NO
The city of Columbus offers resources for funding on brownfield redevelopment:
http://econdev.columbus.gov/content_two_column.aspx?id=26120. However, these funding sources are either federal or state and there is nothing offered by the city itself.

Transportation planning programs and policies
11. Operation of inner-city public transit (buses and/or trains)
Columbus is home to the Central Ohio Transit Authority (COTA) bus service, which serves much of Franklin County at the cost of a standard fare, and Ohio State University's Campus area bus service, which connects students, staff, and anyone else in the campus area to adjacent neighborhoods and parking facilities free of charge. The COTA bus system has many routes travelling throughout the city, based largely on a Spoke and Wheel scheme with a few "Crosstown" routes to allow for connections away from the core. There are also "Express" routes that run into the city in the morning and out of the city in the evening to allow suburban residents to reach their employment site in the city via public transportation. Furthermore, there is a "Link" route that has a fare of half the price and circulates through a lower income neighborhood (Columbus, Ohio 2008). Many routes stop service around midnight on weeknights and earlier on the weekends, although there is one bus known as the "Night Owl" that runs until after 3:00 am on Friday and Saturday. Otherwise, bus frequency is greatly reduced on the weekend, with many of the "Crosstown and Express" routes lacking service on Sundays.

12. Limits on downtown parking spaces

Columbus does not enforce parking limits for the downtown area, although certain neighborhoods within the city require a parking permit that is issued for $25 and valid September to September (Department of Public Service, 2010). According to Forbes, Columbus is the 5th most relaxing city partly due to its short average commute time (Levy 2010). While limits on downtown parking could be implemented and successfully reduce traffic and commute times by decreasing parking availability to streets' capacities, improvement may be marginal since Columbus's commute time is not as problematic as many other cities.

13. Carpool lanes (diamond lanes)

Columbus does not have carpool lanes because Columbus' traffic patterns are largely efficient and not as pressing an issue as in other cities. There may be a few select areas at select times that could potentially use carpool lanes such as I-670 during rush hour and stretches of I-270. One concern would be to ensure that the carpool lanes do not encourage single occupancy vehicles to simply reroute and carry the congestion problem to a different intersection or area. Another strategy to take cars off the road has been implemented in many South American countries like Brazil, where based on the last digit of one's license plate on a certain day of the week one cannot drive during rush hour (CET- Companhia de Engenharia de Tráfego 2011). This aims to encourage co-workers and others to carpool or use public transportation on such days; however, some individuals with two vehicles can simply use their other car on the prohibited day.

14. Alternatively fueled city vehicle program

The City of Columbus has many green initiatives planned to improve the efficiency and environmental friendliness of their fleet. Such efforts have been recognized by "100 Best Fleets in North America", an organization that lauds and rewards high performing fleet operations while encouraging ever greater performance through the sharing of best practices (Johnson 2011). In 2010, Columbus placed 16th overall and 7th for the Government Green Fleet Award. In 2009 Columbus resolved to reduce fuel use by 3% in 2010, petroleum use by 12%, and have all bulk diesel purchases be biodiesel blends of B20 or B5 depending on the season. Unfortunately only fuel and petroleum reductions of less than 1% have been realized as of the middle of 2010, short of the established goal, although bulk diesel purchases have been 66.5% biodiesel with biodiesel tank capacity growing in order to keep Columbus on track to accomplish its goal of 100% by the end of 2011 (City of Columbus 2010, Dept. of Finance).

15. Bicycle Ridership Program

Columbus has many characteristics, like a mostly flat terrain and a large student population, that lend themselves to bicycling being an extensive part of transportation in Columbus. The City of Columbus has invested heavily to realize its potential for increased bicycle ridership. This is evidenced by the many bicycle trails present in the area and the plans for growth. Beyond investing in physical infrastructure, Columbus employs public awareness campaigns to provide

detailed information about bicycle safety, routes (maps), and multi-modal travel through COTA's "Bike 'N Ride" program, which allows riders to take a bicycle with them on a rack on the front of the bus that carries up to two bicycles (Department of Public Service 2011). Columbus currently has 78.3 miles of bicycle routes and trails with an additional 94 miles planned (City of Columbus 2010).

Cities like Washington D.C. have introduced bike sharing programs that have bike stations strategically located throughout the city, allowing users to rent a bicycle after becoming a member via credit card registration. Washington D.C.'s program called "Capital Bikeshare" charges $75 for an annual membership and gives members access to 11,000 bicycles at 110 stations throughout the city with the first half hour of use free and an hourly rate charged thereafter. There may be potential for a similar system in Columbus (Capital Bikeshare 2011).

Pollution prevention and reduction efforts
16. Household solid waste recycling? NO
There is a plan from the mayor for a curbside recycling program to be implemented in 2012: http://mayor.columbus.gov/ As of right now, recycling is voluntary.

17. SWACO- Solid Waste Authority of Central Ohio is the main arbiter of industrial recycling projects in the city. They advise private businesses on how to conduct recycling audits and implement programs that will work for the private sector. They currently advise over 17 other private companies that specialize in recycling specific materials. Some of these companies include Rumpke and Bargain House Recycling. According to the activity on this topic, it seems that standard implementation for industrial recycling is nominal irrespective of the specific private recycling companies. Further, it would be extremely difficult to find the extent to which these companies are recycling.

18. Hazardous Waste Recycling:
Central Ohio Contractors offers recycling and waste disposal services. They provide roll off containers, semi-dump trucks, transfer trailers, and land fill services so garbage is conveniently transported and possibly recycled (depending on the specific product). Central Ohio Contractors accept several forms of hazardous waste, even including asbestos.
http://www.coc-inc.net/

19. Air pollution reduction program:
Emission Reduction Credit (ERC) Banking Program, verifiable by the Ohio EPA, ensures quantifiable air pollution reduction through the following program:
   ● Permanent shutdown of an existing air pollution source or facility

- Permanent curtailment in production or operating hours of an existing air pollution source or facility
- The installation and operation of air pollution control equipment
- New technologies, materials or processes or process equipment modifications
- Incidental emission reductions resulting from reductions of a collateral pollutant
- Mobile source reduction determined on a case-by-case basis.

http://www.epa.state.oh.us/dapc/ERC/deposit.aspx

20. Recycled product purchasing by city government:

The Department of Natural Resources reports that the State agencies purchase recycled products. They go on to say that "in fiscal years 2000 through 2006, state agencies purchased more than $11 million worth of recycled-content products." Examples of recycled products used by state agencies are: recycled-content copier paper, folders, labels, notebooks, computer paper, note pads, pencils, desk trays, paper towels, napkins and tissue, carpeting, wall covering, floor tile, trash bags, boxes and cartons, and recycled plastic lumber is made into outdoor benches, tables, barricades and fencing.
http://www.ohiodnr.com/Water/RecycleOhio/OhioGovernmentRecycles/StateAgencyRecycledContentProductPurchasing/tabid/18552/Default.aspx

21. Superfund site remediation:

Ohio's EPA oversees this program which identifies "National Priorities" and tries to redevelop them. These priorities may be old industrial sites leaking toxic gas, or other hazards to the environment and public health. Currently, there is a superfund site remediation project going on at Air Force Plant 85 in Ohio. They aim to rid the area of all contaminants, including hazardous substances and pollutants, but is it currently in the research stage.
http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0504928

22. Asbestos abatement program:

The Ohio Department of Health has a program to abate asbestos. This program hires those people directly involved with the asbestos abatement industry and licenses and certifies eligible companies. "The program regulates contractors performing asbestos removal projects, project supervisors, project designers, workers removing asbestos, persons inspecting buildings for asbestos-containing materials and developing plans to manage asbestos found in a facility, persons conducting air sampling for asbestos and the companies that provide required asbestos training." To avoid health-related problems, The Ohio Department of Health Asbestos program ensures the safety and quality of asbestos services by requiring persons to take approved training that is specific to the asbestos related activities in which they will be involved and by inspecting/auditing the activities of the program participants.
http://www.odh.ohio.gov/odhprograms/dspc/asbes1/asbestos1.aspx

23. Lead paint abatement program:
The Department of Health has a Lead Poisoning Prevention program. This program identifies several key specialists to assess the risk, treat those who have been exposed, and inspect and abate current affected sites. They also use their website as a medium to communicate the risks and measures one can take to avoid lead poisoning. They explain lead abatement laws and the possibility of borrowing a special subsidized vaccuum that collects lead in carpets.
http://www.odh.ohio.gov/odhprograms/dspc/lp_prev/lp_prev1.aspx

Energy and resource conservation / Efficiency initiatives
24. Columbus Green Building Forum. www.cgbf.org

25. Columbus does not use renewable energy for a majority of their needs simply because it is not available. They do, however, generate some power from renewable resources.

http://utilities.columbus.gov/Conservation/PDFs/webgreenpower06.pdf
http://www.renewableenergyworld.com/rea/news/article/2010/03/clearing-renewables-roadblocks-in-columbus

26. Yes, www.greenenergyohio.org, but mostly rhetoric. The website and the state are aware of the pressing need to pursue conservation programs, but the results listed on the website do not detail programs that are currently in place to address the needs in this area.

27. Columbus does provide alternative energy in certain cases but not to the general consumer. There is a hydro plant and a methane plant that provide energy to a limited number of consumers. A Columbus public high school also has solar panels installed on the roof which provide it with alternative energy.

28. Water conservation program? NO
Get green columbus proved helpful addressing a number of these questions and also mentions that the plan calls for a 30% reduction in use of water, however, it does not specify how this should be done.

Organization / administration / management / coordination / governance
29. There is not a single governmental/nonprofit agency responsible for implementing sustainability.

30. Part of a city-wide comprehensive plan?

It does not appear so. The get green Columbus plan is not, so far as I can tell, merged fully with the area plans; it appears to be independent of other city plans.

31. Involvement of City/County/Metropolitan Council
The City Council is involved in sustainability issues, although there appears to be a less concentrated effort when compared to the mayor's involvement. Initiatives include Protecting the Environment - Big Darby Watershed, Columbus Bikeway and Trail System, and Landscape Enhancement or Beautification in Public Spaces Grant Program. (City Council 2011).

32. Involvement of Mayor or Chief Executive Officer
Mayor Michael B. Coleman has been closely involved in Columbus's pursuit of sustainability. He launched the "Get Green Columbus" initiative in 2005 with six major concerns: "Collaborating with City Agencies & Community Leaders, Improving Recycling Efforts & Reducing Solid Waste, Addressing Outdoor & Indoor Air Quality, Protecting Our Water, Promoting Green Businesses, and Fostering the Greening of Columbus" (City of Columbus 2010).

33. The GreenSpot Program sponsored by the City of Columbus informs, organizes, and recognizes Columbus area homes, businesses, and non-profits that make a dedication to reducing, reusing, and recycling along with conserving water and energy.
http://www.columbusgreenspot.org/default.asp

34. There is a lot of public involvement in the form of neighborhood, bicyclist, and general environment groups in this movement for a sustainable Columbus. (See page 12 of MORPC's 2009 State of the Region for a list.

References

Big Belly Solar, 2009. "City of Philadelphia Case Study: Cost-Savings From Solar Powered Compactors for Trash and Recycling."
http://bigbellysolar.com/files/CaseStudy-Phila-06-09-ExecSumm.pdf (March 4, 2011).

Capital Bikeshare. 2011. "How it Works."
http://www.capitalbikeshare.com/how_it_works (February 19, 2011).

Central Ohio Contractors. 2011. "What We Do."
http://www.coc-inc.net/. (February 7, 2011).

CET - Compania de Engenharia de Tráfego. 2011. "A Operação Horário de Pico."
http://www.cetsp.com.br/ (February 11, 2011).

City Council, Columbus, Ohio. 2011. "Council Initiatives"
http://www.columbuscitycouncil.org/initiatives.aspx (February 8, 2011).

City of Austin. 1995. "The RMMA Redevelopment."
http://www.ci.austin.tx.us/mueller/vision.htm. (February 20, 2011).

City of Austin. 2009. "2009 Sustainability Achievements in Municipal Buildings and Infrastructure."
http://www.ci.austin.tx.us/publicworks/sustainability/developments.htm. (February 7, 2011).

City of Columbus, Department of Finance and Management, Division of Fleet Management. 2010. "Green Fleet Action Plan."
http://getgreencolumbus.com/PDFs/2010%20midyear%20update%20Green%20Fleet%20Action%20Plan.pdf (February 13, 2011).

City of Columbus, Michael B. Coleman, Mayor. 2010. "Get Green Columbus – A Summary of Progress 2005-2009."
http://getgreencolumbus.com/PDFs/Report05-09.pdf (February 8, 2011).

City of Columbus. 2008. "Columbus Bicentennial Bikeways Plan."
http://publicservice.columbus.gov/uploadedFiles/Public_Service/Transportation/Mobility/ColumbusBMPFinalApril2008cc.pdf (February 9, 2011).

City of Indianapolis, 2009. "City of Indianapolis Sustainability Report 2008/2009.
http://www.sustainindy.org/assets/uploads/Sustainability%20Report_Final1.pdf
(February 10, 2011).

City of Indianapolis, 2010.
http://www.sustainindy.org/about.cfm (February 10, 2011).

Clark-Madison, Mike. 2000. "The Facts So Far." *The Austin Chronicle,* 12 October 2000.

Columbus Research Partners. 2005-2011. "Strengthening Ohio's Communities through data,
information, and knowledge."
http://communityresearchpartners.org/15628.cfm. (February 19, 2011).

Department of Public Service, Official Website for the City of Columbus, Ohio. 2010. "Parking
Permit Information."
http://publicservice.columbus.gov/content.aspx?id=30973 (February 13, 2011).

Department of Public Service, Official Website for the City of Columbus, Ohio. 2011. "Public
Service Bicycle Home."
http://publicservice.columbus.gov/bike/ (February 13, 2011).

Department of Public Service, Official Website for the City of Columbus, Ohio. 2011. "Sharing
the Road Safely."
http://publicservice.columbus.gov/uploadedFiles/Public_Service/Transportation/Mobility
/Bikemapcompletec.pdf (February 13, 2011).

England, Nelson. 1995. "Planning a Compact City in the Midst of Urban Sprawl." *The Austin
Chronicle,* 22 December 1995.

Environmental Protection Agency. 2011. "Emission Reduction Credit (ERC) Banking Program -
Generation and Deposit."
http://www.epa.state.oh.us/dapc/ERC/deposit.aspx. (February 17, 2011).

Fitzgerald, Joan. 2010. *Emerald Cities: Urban Sustainability and Economic Development*. New
York: Oxford University Press, Inc.

Giblin, Jonathan 2011. "Northeast Ohio Sustainable Communities Regional Planning Grant (SCRP)."

http://www.noaca.org/scrpg.html. (January 30, 2011).

Johnson, Tom C. 2011. "What is the 100 Best Fleets Program."
http://www.the100bestfleets.com/100_best_about.htm (February 18, 2011).

Levy, Francesca. 2010. "America's Most Relaxed Cities."
http://www.forbes.com/2010/11/02/cities-stress-quality-of-life-lifestyle-real-estate-relaxed_print.html (February 18, 2011).

MORPC 2011. "Central Ohio Green Pact."
http://www.morpc.org/energy/communities/GreenPact.asp (February 22, 2011).

Ohio Department of Health. 2011. "Asbestos."
http://www.odh.ohio.gov/odhprograms/dspc/asbes1/asbestos1.aspx. (February 7, 2011).

Ohio Department of Health. 2011. "Lead Poisoning Prevention."
http://www.odh.ohio.gov/odhprograms/dspc/lp_prev/lp_prev1.aspx. (February 7, 2011).

Ohio Department of Natural Resources. 2011. "State Agencies Buy Recycled Products."
http://www.ohiodnr.com/Water/RecycleOhio/OhioGovernmentRecycles/StateAgencyRecycledContentProductPurchasing/tabid/18552/Default.aspx. (February 12, 2011).

Portney, Kent E. 2003. *Taking Sustainable Cities Seriously: Economic Development, the Environment, and Quality of Life in American Cities*. Cambridge, MA: The MIT Press

Seattle, City Of. 2011. "DPD -- Seattle's Comprehensive Plan: Comprehensive Plan."
<http://www.seattle.gov/DPD/Planning/Seattle_s_Comprehensive_Plan/ComprehensivePlan/default.asp> (February 8, 2011).

Seattle Office of Sustainability. 1995-2011. Creating Healthy Urban environments for All.
http://www.seattle.gov/environment. (February 8, 2011).

SWACO: Solid Waste Authority of Central Ohio. 2006-2011. Business Recycling Practices.
http://www.swaco.org/SmartBusinesses/BusinessRecycling.aspx. (February 12, 2011).

US Census Bureau. 2010.
http://quickfacts.census.gov/gfd/states/18/1836003.html (February 10, 2011).

US Environmental Protection Agency. 2011. "Superfund Information Systems."
http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0504928. (February 16, 2011).

Wear, Ben. 2010. "MetroRail to begin service March 22." *American-Statesman,* 5 March 2010.

Whetston, Brandi 2011. "Central Ohio Green Pact Implementation Resources."
http://www.morpc.org/calendarfiles01/GreenPactImp020911.pdf (February 22, 2011).