THE SUSTAINABLE CITY: A DISTANT REALITY IN ATLANTA?

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INTRODUCTION

Cities are physical artifacts inserted into a preexisting natural world. As nomadic societies began to systematically cultivate plants, cities began to sprout. Technical innovations, and the food surpluses they facilitated, gave rise to an urban revolution. Starting from innovations such as the plow or the potter's wheel, to copper metallurgy, all the way to intricate systems of writing, the city had become a complex social organization. These urban settlements served as marketplaces, government and judicial administrations, as well as places for social gatherings, entertainment, and religious observance. People came to cities seeking exchanges of ideas, cultures, values, and, of course, goods. The city “functioned as the specialized organ of social transmission.”

However, one often overlooks the natural resources required for that city to sprout and allow civilization to flourish. A healthy water supply, fertile soil, and natural transportation routes permitted early settlers to meet their present needs while ensuring an abundance of resources in the future. Unfortunately, this abundance has proven fugacious as human needs have continuously multiplied. As the industrial revolution swept the world, especially the United States, cities boomed with newcomers. New York's population of 313,000 in 1840 reached almost five million by 1910. During the same period, Chicago exploded from 4,000 to 2,185,000. As human exchanges increased, innovations began to pour forth. The telegraph and telephone revolutionized communication while trains and electric trolleys allowed the city to break its preexisting boundaries. The first central power plants began providing electrical power to urban areas, extending the day into the night. The city was yet again

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6 Ellis, supra note 1.
7 Id.
In the United States, many large cities began to outgrow their water supplies and began relying upon distant water sources rechanneled by elaborate systems of pipes and canals. Pollution, disease, and overcrowding created a desire to break away from the city center, and the automobile facilitated the escape. Massive migrations to the suburbs left the city center barren. As freeways were built, businesses left the restricted downtown areas and flourished in the wide open spaces of the suburbs. City residents were left unemployed and these neglected areas of urban America became plagued by “high crime, low income, deteriorating services, inadequate housing, and intractable social problems.”

The downtown was no longer the heart of the city.

Today, cities produce even more significant environmental impacts as their functionality is almost entirely dependents on the consumption of fossil fuels and materials at an increasing rate. This reliance is nothing new, as no resource is more crucial to human development than energy; however, population growth and increased consumption patterns have become an alarming concern. Energy “is a key ingredient of almost all aspects of human existence, from heating and lighting homes, to transporting materials and people, to creating the goods and technologies that humanity has come to rely on.” In order to continue our path of development, we must embrace sustainability by turning to resource conservation and renewal. Sustainability has been widely defined as the ability to meet our present needs responsibly without compromising the ability of future generations to meet their own needs. Now is the time for change, as technology is continuously enabling us to move beyond traditional energy sources. As a result, we hold the key to redefining our cities, resuscitating our downtowns, and restoring our communities.

8 Ellis, supra note 1.
This paper aims to outline the numerous ways sustainability can be achieved. It begins by identifying varying points of contention and continues by proposing possible solutions. Finally, the paper presents the various projects the city of Atlanta and the State of Georgia are implementing in their shift towards sustainability.

I. ENERGY EFFICIENCY AND RENEWAL

With the world facing energy shortages and climate change that demands less fossil fuel consumption and reduced carbon emission, there has been no better time to look toward energy efficiency, conservation, and renewal. The United States has become not only the largest per capita polluter in the world but also “a rogue nation that refuses to rein in its extravagant ways.”\(^{12}\) As a country, we consume 25% of the world's oil and emit 50% of all greenhouse gases discharged by automobiles. Yet, we only account for 5% of the world's population.\(^{13}\) To travel “one mile in the United States requires 37% more fuel than to travel one mile in Europe or Japan.”\(^{14}\) Our homes are 40% larger than 25 years ago and take up one-third more space than those in Western Europe.\(^{15}\) The average American uses twice the electricity of the average European and emits twice the carbon, even though both enjoy a similar standard of living.\(^{16}\)

So, how do we differ from Europeans? Our policies have focused on stimulating ineffective change, while continuously feeding our mentality of “bigger is better.” In 2009, the federal government made an attempt to lower reliance on foreign oil by setting the national mileage standard


for automobiles to 35.5 miles per gallon (mpg) to be reached by 2016 and 54.5 mpg by 2025.\textsuperscript{17} However, that led to insignificant change as European vehicles were already at 50 miles per gallon, followed closely by Japanese automobiles averaging 45 mpg.\textsuperscript{18} Therefore, only the few American manufactures that have not bankrupted can strive to reach these goals.

On the other hand, the U.S. has made major strides to reduce the nation's use of coal for the production of electricity.\textsuperscript{19} Instead of coal, the government has initiated the use of natural gas derived from fracking, an environmentally hazardous process with the potential of contaminating drinking water. Although carbon emissions have been reduces, natural gas emits methane, a greenhouse gas. Thus, we have decreased the amount of one pollutant by increasing the presence of another. Ineffective policy and regulatory actions only deter us from reaching sustainability. A clear vision of the city as a living organism is necessary to achieve a sustainable future.

\textit{A. Technological Innovations Allowing Energy Conservation and Renewal}

Sustainability has many forms, from conservation of resources to generation of power. Technological innovations, from small to grand, have opened the door to energy efficiency in all aspects of life. The residential sector is “the largest single consumer of energy worldwide, responsible for 25% of global energy demand; however, it has the largest potential for improving energy efficiency.”\textsuperscript{20} Adapting minor and cost-effective changes can lead to significant energy conservation. Water conservation in European homes is made easy by the standardized use of dual flush toilets, with one button releasing a low flush and the other a larger quantity of water. This simple upgrade results in

\textsuperscript{17} Hill, \textit{supra} note 12.
\textsuperscript{18} Id.
\textsuperscript{20} Hill, \textit{supra} note 12.
the use of 26% less water than that used with traditional apparatus.\footnote{GreenandSave.com, Remodeling, http://www.greenandsave.com/remodeling/bathrooms/dual_flush_toilets.html (last visited June 1, 2013).} Energy-efficient “tilt-and-turn” windows allow you to adjust precisely for cool air or precipitation by simply turning a latch that allows the window to open horizontally (traditional way) or vertically on the bottom hinges, reducing the need of air conditioning in varying weather conditions. Water tanks heated by solar energy allow homeowners to eliminate the use of electricity completely during summer month, reducing water heating bills by 75% annually.\footnote{Margot Roosevelt, \textit{Bill Heats Up Talk of Solar Water Systems}, L.A. Times, May 29, 2007.}

Public and commercial buildings have moved toward energy conservation as well. Utilizing technology that automatically turns electricity on or off when devices are not operating has led to a significant amount of energy preservation. For example, intermittent escalators and rotating doors that remain in stationary positions until tripped my motion sensors continuously save energy when not in use. Studies reveal that intermittent escalators have the potential of saving approximately $1,800 per year, per escalator as well as reducing maintenance costs as a result of less wear and tear.\footnote{The National Institute of Building Science, \textit{Intermittent Escalator Study} (2006).} Another upgrade with high potential of savings is the use of high-efficiency light bulbs turned on by motion sensors. These Compact Fluorescent (CFL) light bulbs are 70% more efficient than traditional incandescent bulbs and last ten times longer.\footnote{San Diego Environmental Services Department, \textit{Watts up? Energy saving tips}, http://www.sandiego.gov/environmental-services/energy/conservation/wattsup.shtml (last visited June 1, 2013).} A total switch to CFLs will lower worldwide electricity demand by 18%.\footnote{The Climate Group, \textit{In the Black: Growth of the Low Carbon Economy} 7, 12 (2007).} At present, the European Union government has successfully phased out incandescent bulbs by effectively advancing CFLs, reducing carbon emissions by 25 million tons per year.\footnote{Helena Spongenberg, \textit{EU Could Ban Incandescent Bulbs}, Bus. Wk., June 22, 2007.} In the United States, the change has been entirely left to consumer discretion, with insignificant attempts to promote the technology. Although seemingly small, these minor improvements could lead to thousands of dollars and watts in savings.
Turning to the major league of sustainability, renewable energy, with its minimal impact on the environment, is the all-time MVP batting for Europe. European nations have embraced wind and solar power, as well as harvesting energy from the sea. Advances in technology have led to the development of powerful, computer controlled wind turbines that stand as high as 20-story buildings and have the ability to tilt and turn to harness the wind optimally. Across Germany, thousands of windmills generate 8% of the country’s electricity, enough to power 10 million homes and save 42 million tons of CO₂.\(^{27}\) Denmark generates more than 25% of its energy from sustainable sources, and by combining those with extensive conservation efforts, it produces more renewable power than it can consume. Due to an inability to effectively preserve the power for future use, it has become an exporter of energy.\(^{28}\) Britain is constructing offshore wind farms, 12 miles off the coast, which are estimated to produce enough energy to power one-third of London's households.\(^{29}\) Although experts disagree on the exact amount of savings, all agree that CO₂ emissions are lowered by our ability to harness wind, a renewable source of energy with no toxic discharge.\(^{30}\)

Another notable source of renewable energy is solar power. It utilizes tracking technology that enables the panels to follow the sun, resulting in significantly more electricity production than is possible with stationary panels. Portugal, through its photovoltaic power plant, produces enough energy annually to heat and light 8,000 homes and saves more than 30,000 tons of CO₂ emissions per year.\(^{31}\) On a smaller scale, solar panel installations specifically designed for the needs of consumers are available for residential and commercial buildings.

Harnessing power from the sea is yet another renewable source with high potential.

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Technological innovations such as sea snakes and energy eels, which are “400-foot-long, floating cylinders that bob semi-submerged in water and convert wave motion to electricity,” have opened the door to an endless supply of energy. An even more impressive feat is Ireland's underwater tidal machines, which are similar to windmills immersed under the sea. These underwater “sea mills” consist of 35-foot-long turbines that generate energy from water currents by rotating 17.5 times per minute. All that is visible above the surface is a white and red-striped tower serving as a control center. Harnessing power from waves as opposed to wind may be a more alluring alternative as their density allows for higher energy generation.

Collectively, these technological advances are beyond impressive. The ingenuity of imitating aspects of nature to create a renewable source of energy that is virtually everlasting has the potential of forever altering human existence. However, these breakthroughs also pose challenges. Wind and solar developments consume large tracks of land, alter bio-diverse environments, and ruin wilderness sceneries. Many individuals support the development of these technologies but, for aesthetic reasons, do not want new developments in their communities. This so called, Not In My Backyard syndrome has the potential of preventing renewable energy sources from reaching cities as populated suburban areas are continuously expanding into rural regions that typically house these wind and solar developments. Despite these challenges, most developed countries have looked beyond the aesthetics to the wide range of benefits offered by renewable energy.

32 Hill, supra note 12.
While the United States is sitting on the bench, the rest of the developed world is playing ball. The U.S. is not only behind on conservation efforts but also renewable energy. In Europe, 13% of hot water generation is produced by solar energy, compared to just 2% in the United States. While the U.S. has four times Germany's population, it only generates 17% of Germany's solar capacity. Ironically, many European solar parks are built with the assistance of American companies such as PowerLight Corporation (now SunPower) and GE Energy, which transact more business in Europe than in the United States.

As it lags behind on creating renewable energy, the United States should firmly commit to energy conservation, as the majority of our power supply is still generated by the use of fossil fuels. Energy conservation requires more than just using less energy, it calls for energy productivity, a “more efficient use of energy with greater results from the same quantity of energy used.” Researchers from the McKinsey Global Institute have determined that given the present availability of technology, it will be fairly easy to reduce energy demand as well as carbon emissions without decreasing our standard of living. As 75% of global energy use occurs within the city, geographical compactness can aid the implementation of more efficient energy systems. Ensuring widespread availability and use of conservation technology holds the key to energy productivity.

As cities are the largest consumers of energy, they must also become the initiators of change. Europe's success in channeling renewable sources of energy into everyday energy consumption can be duplicated in the United States. To achieve this, the government must enact substantive policy changes that boost the propagation of wind and solar technologies by offering financial incentives. Cities can

36 Roosevelt, supra note 20.
37 Hill, supra note 12.
38 Id.
39 Farrell et al., supra note 14.
educate their residents of the benefits of renewable energy and provide low-interest credits to homeowners and businesses willing to invest in these improvements.\textsuperscript{40} To further improve present technology, federal and state governments can provide grants to stimulate research and development. In addition to societal benefits, implementation of this technology can lead to employment opportunities in rural areas, where job creation can be difficult. As a nation, we must take part in this technological era, as a new industrial revolution is on the rise.

\textit{C. Atlanta Energy Efficiency and Renewal Projects}

\textit{1. Energy Conservation}

The \textit{Better Buildings Challenge} is part of the Recovery Act introduced by President Obama in 2011.\textsuperscript{41} The initiative seeks to challenge the private and public sectors to make buildings 20\% more efficient by 2020. To make things interesting, the President dared cities to compete against each other to become a top-tier sustainable city by stimulating CEOs, University Presidents, and local government leaders to commit their organizations to environmental efficiency.

Atlanta took the challenge and is leading the way along with Los Angeles and Seattle as a first mover and national model. The Mayor's Office of Sustainability along with Central Atlanta Progress and the Atlanta Downtown Improvement District named the initiative the \textit{Atlanta Better Buildings Challenge} (Atlanta BBC).\textsuperscript{42} To everyone's surprise, many major businesses found an interest in the program and are now reaping the benefits. The \textit{Atlanta Better Buildings Challenge} is focused on alleviating some of the environmental stress caused by our continuously growing population. The focus of this initiative was placed on reducing 20\% of the energy and water consumption in commercial buildings throughout the city. This shift will not only boost natural resource management

\footnotesize{\textsuperscript{40} The Climate Group, \textit{supra} note 23.} \\
\footnotesize{\textsuperscript{41} U.S. Department of Energy, \textit{Better Buildings}, http://energy.gov/better-buildings (last visited June 1, 2013).} \\
\footnotesize{\textsuperscript{42} Atlanta Better Buildings Challenge, http://www.atlantabbc.com (last visited June 1, 2013).}
but will also stimulate new technology, create job opportunities, and ensure Atlanta’s competitiveness in a global economy.

The project has been underway for a little over a year, yet it has demonstrated impressive results. This undertaking uses a simple structure to assist its participants every step of the way. Atlanta BBC conducts building assessments that provide clear and concise summaries of potential savings opportunities and connects individual business owners with vendors who can execute the necessary changes. To further assist participants with the financial burden of implementing these improvements, Atlanta BBC identifies suitable financing opportunities as well as vendor donations. At present, sustainability grants cover 40% of retrofitting costs. Vendors have the chance to market their products at minimal expense by donating various equipment, all the while building a solid customer base. Furthermore, peer-to-peer support and training seminars have assured collaboration between vendors and building owners to better understand the opportunities and solutions available to each.

The results are just as impressive as the support network. The Georgia Technology Research Institute's Technology Square Research Building invested approximately $61,000 in upgrade costs; however, the annual savings are estimated at $100,000. The upgrade will pay for itself within a year while savings will continue to accrue. Another example is America’s Capital Partners’ retrofitted building located at 100 Peachtree Street. The 20% energy conservation will be enough to fully power 474 homes for one year while saving the company almost $250,000 annually. Some of the improvements include automated HVAC system controls, high-performance lighting as well as installation of low-flow plumbing fixtures and aerators. Currently, 70 buildings have joined forces with Atlanta BBC and 23 building assessments have been completed. If all 23 of these buildings implemented all recommendations, over $18 million dollars will be reinvested into our local economy.

44 Atlanta Better Buildings Challenge, supra note 40.
and over 3,000 jobs will be created. The *Atlanta Better Buildings Challenge* will assist the city in reaching its sustainability goals by significantly reducing energy waste, conserving water, and lowering CO\(_2\) emissions.

2. Energy Production

Renewable energy production is almost non-existent in Atlanta or the state of Georgia. However, the public and private sectors have recognized this void and are willing to implement the necessary changes to revitalize our cities and ensure that we remain competitive in a global economy. Currently, no large scale wind farms exist in Georgia. However, local homes and small businesses have the option of installing their own, private windmills. Companies such as Soenso Solar, based in Arizona, specialize in the installation of small wind turbines at the not-so-affordable price of $20,000 or more.\(^45\) Solar energy, although a step ahead of wind, is still quite primitive in Atlanta as compared with other metropolitan cities throughout the world. Georgia Power has become a community leader and taken the initiate of researching the various solar options. The company is using its own corporate rooftop to test seven photovoltaic systems to determine which are suitable for our weather and climate in Georgia.\(^46\) Still in its construction phase, the Georgia Power solar power plant in Dalton, Georgia consists of 3,100 fixed-tilt solar panels which generate approximately 700kW, enough to power less than 100 homes. These minor developments are evidence of the progress that is to come as the local government and community have embraced the possible benefits of renewable energy.

To facilitate further developments, the state of Georgia is offering various incentives and credits toward the installation of clean energy systems. The Georgia Clean Energy tax credit offers residents a

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35% credit toward the total cost of installation and equipment. The Residential Renewable Energy tax credit offers homeowners the option of reclaiming 30% of the cost of installing a certified residential system, such as solar water heaters and small wind-energy systems. This strong government support has shown that Atlanta and the state of Georgia are serious about creating a sustainable community for its residents.

II. MULTI-MODAL TRANSPORTATION

The cities of today entirely depend on motorized transportation for their proper functioning. Nevertheless, this dependence has led to a plethora of environmental issues ranging from global warming to ecosystem loss and fragmentation. Pursuing sustainable transportation will reduce energy waste, air and water deterioration, as well as noise pollution.

Transit sustainability calls upon a “system that allows the free movement of people and goods in perpetuity, without harm to human health or the environment, and without depletion of the resources upon which it or a healthy environment depend.” Yet, statistics reveal an increase in rates of driving and resource consumption, exposing unsustainable travel patterns. Reliance on motor vehicles for personal travel and freight movement is directly related to continued environmental deterioration at an increasing rate. There are over 200 million vehicles traveling more than five trillion miles per year in the United States. Personal vehicles are used for 95% of trips taken while 90% of goods are shipped using trucks. This high volume of automobile use has revealed even more troubling trends. The number of trips taken, as well as their length, is constantly increasing while there is a decline in the

48 DA Solar, supra note 47.
50 Id.
52 Benefield & Replodge, supra note 47.
average vehicle occupancy.  For the month of March, 2013, over 250 billion miles were traveled in the United States.\(^5^4\)

An increase in driving calls for an increase in highway infrastructure, leading to an endless cycle of environmental deterioration. Throwing money into “building more roads will not solve congestion, fuel economy, nor air pollution any better than buying bigger pants solves obesity.”\(^5^5\) For environmental change to occur, it must be initiated by the government and implemented by its citizens.

\textit{A. Federal Law and Policy}

Building, maintaining, and operating transportation systems requires an immense level of environmental and fiscal resources. Thus, a logical goal for transportation planning should be the abatement of transit costs. However, that is not the case. Throughout the years, the federal policy of “more is better” has generated a system of continued environmental detriment.

In 1934, the Federal Highway Act initiated a series of statewide highway planning surveys resulting in the first significant systematic planning effort.\(^5^6\) This planning effort quickly shifted to the construction of the Interstate Highway System. The design aimed to create a system “which best and most directly joins regions with regions and major city with major city.”\(^5^7\) The goal only sought to accommodate mobility by building more roads to be traveled instead of also increasing accessibility to a variety of transit option. How can sustainable transit be achieved, if it was never a concern?

Decades later, steps were taken toward sustainability, although never directly. The Federal-Aid Highway Act of 1962 was the first of its kind that conditioned the receipt of federal funds on the


\(^{55}\) Bartholomew, \textit{supra} note 4.


adoption of long-range transportation plans with a focus on multi-modal forms of transit. Despite these requirements, most funds continued to be invested into highway expansion. Yet another shot was taken toward sustainable travel in the 1970's with the implementation of a new government entity: the metropolitan planning organization (MPO). This led to a heightened concern over environmental issues; however, the initiative was short lived as the MPOs’ goal of increasing accessibility to different modes of transit while minimizing travel was restricted by conformity to local land use plans.

After decades of minor changes, the first major policy mandate targeted at transportation came as part of the Clean Air Act Amendments of 1990. Conformity provisions created an affirmative duty for transportation plans to further the aim of providing citizens with healthy air. Although the statute did not directly target modes of transpiration, it did create the link between excessive motorized vehicle use and environmental impacts. Shortly after, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 increased flexibility in federal fund spending while requiring planners to take into account the likely effect of transportation policy decisions on land use and development by demonstrating that road capacity expansions will not lead to “increased development in a manner that will frustrate the goal of expansion.” But once more, no major change occurred as many land use plans called for dispersed and isolated developments; thus, just providing enough roads to serve the mobility needs of that development met the requirements of the statute. In 1998, ISTEA was followed by the Transportation Equity Act for the 21st Century (TEA-21) which yet again brought no modifications; although, the Act was reauthorized multiple times. In 2005, Congress enacted the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-

61 Id. §7506(c)(2).
63 Bartholomew, supra note 4.
The Act required the consideration of projects and strategies that “protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.” This language is interpreted to encourage development; however, the vagueness of the statute does nothing more than set an amicable goal. Nowhere does it mention initiatives to reduce the need to travel or increase use of public transit. Ultimately, this Act was replaced with the Moving Ahead for Progress in the 21st Century Act (MAP-21) which reduced funding for bicycle and pedestrian transit and consolidated it into a broader program for transportation alternatives. Under this Act, funding will be split between MPOs and State agencies, which may choose to designate funds for other purposes besides multi-modal transit, such as expanding the national highway system. While collectively these reforms have been significant, they have proven insufficient to achieve sustainable transportation.

B. If You Build It, They Will Come

As stated by Author David Engwicht: “Cities are an invention to maximize exchanges and minimize travel.” Yet, we have continuously focused on building infrastructure which favors automobiles over people. To meet our basic mobility needs while maintaining the natural resources of our planet, a more holistic approach must be implemented to achieve a diverse mix of transport modes. One's choices are limited by the options presented. If the transportation infrastructure and land use policy provided by a community promote the use of automobiles, then citizens will choose the convenience of a car to meet their travel needs. If a community promotes walking and bicycle use by

68 Bruce Katz et al., TEA-21 Reauthorization: Getting Transportation Right for Metropolitan America 4 (Brookings Institute 2003).
implementing sidewalks, varied land use in close proximity, and safety, then residents will be prone to select an alternative to driving. For transportation sustainability to occur, alternatives must be provided. During the 1996 Olympic Games in Atlanta, morning traffic was reduced by 23% by temporarily increasing the number of public buses available and promoting alternatives to driving.\textsuperscript{70} However, even with clear results, policy change has been disappointing.

In addition to environmental impacts, lack of transit options has resulted in economic and social consequences. Loss of productivity due to congestion-related delays exceeds $100 billion dollars per year.\textsuperscript{71} It has been estimated that one of every eight waking hours is spent in an automobile.\textsuperscript{72} Investments have followed the transportation infrastructure leading to the suburbs, where cheap land and unlimited space has attracted countless companies. However, cheap suburban land equates to tremendous losses of employment opportunities for residents who are unable to drive. A study conducted in 2000 by the U.S. Census Bureau revealed that $33.9 million (12.3%) of the population had income below the poverty line, making the ownership and operation of a vehicle financially prohibitive.\textsuperscript{73} Furthermore, $60.2 million (21.4%) were too young to drive, $25.4 million (9%) were 70 or older and $21.1 million (7.5%) reported a physical disability. Thus, a significant portion of the population may have limited ability to drive. Lack of job opportunity and an inability to reach places of potential employment has had the effect of creating a disproportionate number of low income communities in downtown areas.

Various ways may be implemented to stimulate use of alternatives to driving. Increased tax on automobile ownership and use along with expanded subsidies for public transportation will provide a policy stimulating change. Furthermore, creating “congestion zones” within city centers where

\textsuperscript{70} Michael S. Friedman et al., Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma, JAMA, Feb. 21, 2001, at 897.
\textsuperscript{71} Tim Lomax & David Schrank, \textit{The 2001 Urban Mobility Report} (Texas Transportation Inst. 2001).
\textsuperscript{72} Id.
motorist are required to pay a fee to enter the area will eliminate traffic jams and decrease carbon emissions. Contributing the collected fees toward public transit will ensure a constant stream of revenue for future expansions. The city of London implemented such a system that began charging approximately $11 per day for any vehicle driving in the eight (8) square mile city core. Traffic in the area declined by 30%, approximately $200 million worth of fees are collected per year, and transit ridership has increased. Past policies have curtailed the travel choices available to residents; thus, making alternatives to driving unattractive or infeasible. However, in order to choose an alternative method, one must be available. Creating pedestrian zones, areas that completely prohibit motorized vehicle entry, around town squares and city centers has been proved to promote walking and cycling. As a destination in itself, the city center serves as a social outlet to many. Enhancing pedestrian access and movement through the use of walkways, bikeways, and public transit will enable Americans to embrace sustainable alternatives and motivate them to move back to our downtown areas.

C. Atlanta Transit Projects

The Atlanta region is one of the nation’s most sprawling, automobile-oriented, and polluted. After years of inactivity, the city finally decided to battle these issues by creating a comprehensive transportation plan called Connect Atlanta. This regional transit plan seeks to create a system of efficient, effective, and affordable transportation options. When envisioning what the project should achieve, planners created a list of goals which were presented in public forums and refined using input provided by residents and stakeholders. The design sought to shape Atlanta into a community which stimulates citizens to meet and mingle, discuss, and share ideas by providing the means of reaching these destinations. Presenting alternatives to the use of single-occupant automobiles such as bicycle, pedestrian, and transit networks will conserve resources, reduce vehicle emissions, and promote water

quality. The challenge of maintaining the quality of life desired by Atlantans while simultaneously accommodating growth will not be achieved unless the connection between land use and transportation is strengthened.

After an extensive analysis of the existing transportation system, the findings revealed why sustainable transit was a distant reality until now. Within the city, streets were designed to facilitate speed and thus, promoting the use of automobiles. As a result, bicycle and pedestrian use became inconceivable due to the danger created by fast-moving vehicles and lack of sidewalks. Furthermore, improper planning has led to an imbalance in infrastructure use. Some streets were built with more lanes than will be used, while others are plagued with congestion. Inner-city transit remains underused as lack of connectivity prohibits individuals from even considering it as a viable choice. The regional highway system serves regional travelers but not city residents as they make shorter trips and tend to utilize city routes. For sustainability to be achieved, change must be implemented.

Connect Atlanta proposes a comprehensive plan which will implement new technology while retrofitting present infrastructure. The project seeks to actualize ninety-five (95) miles of rail and high-frequency bus transit. Some of this will be achieved by extending already functioning MARTA rail lines. Also, the Atlanta Streetcar project, a complementary element of Connect Atlanta, will introduce light rail lines, mainly in the downtown area, which are predicted to reduce dependence on cars; thus, decreasing emissions impacting air quality and sustainability. Construction has begun on Auburn and Edgewood Avenues, and has reached the phase of installing rail. Furthermore, Connect Atlanta seeks to advance a network of pedestrian and bicycle facilities. Two-hundred (200) miles of bicycle lanes, strategically placed along key travel corridors, have been proposed. This network will be developed by incorporating bike lanes into new construction and street widening project as well as restriping existing

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streets. This initiative will connect neighborhoods, work places, and activity centers. Pedestrian amenities will be delivered by updating sidewalks and including guidelines for the location and design of future construction. Under the Atlanta Beltline project, another complementary element of Connect Atlanta, twenty-two (22) miles of historic railroad corridors will be turned into pedestrian friendly rail transit and thirty-three (33) miles of multi-use trails will directly connecting forty-five (45) Atlanta neighborhoods.\footnote{Atlanta Beltline, http://beltline.org/progress/planning/transit-planning (last visited June 1, 2013).} At present, three trail segments have been completed and four parks are open for public enjoyment. But as always, being faithful to tradition, Connect Atlanta includes plans for the formation of seventy-three (73) new streets and twenty-two (22) proposed road widenings to add more capacity and improve efficiency. It seems we cannot escape the past of “more is better”, but at least, we are slowly moving toward a sustainable future.

Connecting all these transit options will be the Georgia Multi-Modal Passenger Terminal (MMPT).\footnote{Ga. Dep’t of Transp., MultiModal Passenger Terminal, http://dot.ga.gov/doingbusiness/p3/projects/mmpt/Pages/default.aspx (last visited June 1, 2013).} This terminal promises to bring together the various ground and rail services into one, centralized location in downtown Atlanta. The project will create a central station which will give passenger the choice of selecting from a number of bus services, local light rail, and long-distance Amtrak trains. Also, the terminal will connect to pedestrian and bicycle networks allowing residents and visitors to quickly reach their destinations. The Georgia MMPT seeks to become more than a transportation hub; it seeks to be a destination. Bringing additional retail, commercial, and residential projects will encourage not only investment but will redefine Atlanta's downtown area into a vibrant community no longer barren from to suburb migration. Currently, the project is in its planning phase undergoing environmental impact assessment.

In order to achieve their goal of creating the most livable city in the United Stated by 2030, the Connect Atlanta project must not only be embraced by residents but also supported by the government.
Turning these projects into reality will require funding beyond what is annually budgeted for transportation. Funding has been obtained through various public-private partnerships for a limited segment of the development; however, creating sustainable transit will require extensive expansion. The completion of these multi-modal transit projects will ensure Atlanta's economic viability as well as a high quality of life for its residents. It will provide thousands of job opportunities and will promote investment into new residences, attractions, retailers, and business offices. Integrating mixed-use developments with multi-modal transpiration will bring us a step closer to becoming America's most livable city.

III. MIXED-USE ZONING

A sustainable city is one which meets all resident needs without overburdening the local environment. This idea can become a reality by the incorporation of mixed-use zoning. An industry-wide conference composed of authorities on the subject defined mixed used developments as “real estate projects with planned integration of some combination of retail, office, residential, hotel, recreation, or other function. It is pedestrian-oriented and contains elements of a live-work-play environment. It maximizes space usage, has amenities and architectural expression and tends to mitigate traffic and sprawl.” To achieve this sustainable way of life, we must incorporate mix-use principles of development into the rigid framework of single-use zoning ordinances.

A. Mixed-Use Zoning, a Historical Return

Throughout history, cities developed in a similar pattern, a city center tightly surrounded by housing, services, and various job opportunities. This form of organization provided the goods necessary for daily sustenance, minimized travel, spurred social interaction, and kept the city alive. Mixed-use development has been a ubiquitous characteristic of social evolution. However, the

79 Central Atlanta Progress, supra note 76.
adoption of the Standard Zoning Enabling Act (SZEA) dampened mixed-use planning and forever changed the formation of the American city.81 The act sought to segregate varying land uses into discrete commercial, industrial, and residential zones as some land uses were viewed as incompatible with others and “could create negative externalities to the detriment of individual landowners and the communities they comprise.”82 Although an amicable goal, the unexpected consequences of compartmentalizing society led not only to segregation of land uses, but also of communities.

Organized under a comprehensive master plan, the new zoning ordinances articulated a “shared vision on the future growth and development of a municipality.”83 The rise of the automobile facilitated the completion of the American dream - single family homes, on large tracks of land, located outside of the polluted and noise filled cities. In 1926, this vision of the future was canonized by the landmark Supreme Court decision in Village of Euclid v. Amber Realty Co. that affirmed the constitutionality of zoning.84 The rigidity of Euclidean zoning has encouraged horizontal, segregated growth and dispersed population density, resulting in a cycle of unsustainable use of resources. Today, a growing movement is on the rise to reinstate the traditional characteristics of per-industrial, American cities.85

B. A New Evolution of Land Use Policies

Environmental degradation, climate change, high energy prices, and exhaustion of traffic-filled commutes are a few of the factors that have motivated a new vision for the municipality. Through various enabling acts, states have begun rejecting policies which promote low density, single-use, and automobile reliant developments. Local governments are considering methods of “discouraging urban

82 Id.
83 Am. Planning Ass'n, Growing Smart Legislative Guidebook: Model Statutes for Planning and the Management of Change 7-76 (Stuart Meck ed. 2002).
84 City if Euclid v. Amber Realty Co., 272 U.S. 365 (1926).
sprawl, supporting energy-efficient development patterns, and reducing greenhouse gases through their land use elements.” More specifically, these statutes seek to encourage sustainability by the use of the following planning techniques:

1. **Mixed-Use and Transit-Oriented Developments**

Mixed-use developments enable similar uses, such as retail, office and residential, to be situated within close proximity. Imagine the streets of New York, vertical developments which house offices and residences while street level units house retail. Mixed-use developments utilize this vision while creating a pedestrian friendly environment which seeks to rein in urban sprawl. Another form of mixed-use incorporates a traditional neighborhood design that employs closely build homes that reduce car dependency. The compact design of these developments promotes natural resources and ecosystems preservation.

2. **Cluster Developments**

A cluster development is comprised of closely located structures huddled on a small portion of property leaving the rest as open space. Such mixed-use developments protect ecological diversity and promote the preservation of natural vegetation. Carbon emissions may also be lowered as the need of an automobile will be reduced in a closely developed community. The state of Colorado has adopted such a statute, requiring two-thirds of the property to be preserved. Georgia has also developed a model conservation subdivision regulation which seeks to promote “environmentally sensitive and efficient uses of land.” These uses will aim to preserve natural resources, promote continuous green spaces, and reduce infrastructure.

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C. Atlanta, the Next Live-Work-Play City

Atlanta is one of the prime examples of the consequences of the American dream. Untamed urban sprawl, terrible air quality, monotonous real estate, and isolated communities are a few of the ramifications of Euclidean zoning. Today, a variety of mixed-use projects have invigorated many long-forgotten industrial sites; so that tomorrow, Georgians can envision a new American dream, one with renewable energy, clean air, multi-modal transit, and above all, a sense of community.

1. Glenwood Park, a New Recyclable

Glenwood Park is a mixed-use project promoting the “new” American dream. This 28-acre brownfield redevelopment, formally a cement recycling facility, boasts almost 750,000 square feet of developed space, which includes 350 residential units, 20,000 square feet of office space and 50,000 square feet of retail space.\(^90\) This traditional neighborhood development is designed around a classical main street environment culminating in a town square surrounded by several story buildings. Pocket parks and tree lines-streets weave between single-family houses and condominiums.

While looking at the success of the finished product, one tends to underestimates the challenges of even initiating such a project. Often such communities are difficult to build, as they may be forced to compromise aspects of their visions due to zoning limitations. Glenwood Park is no exception. The pedestrian friendly design consisting of narrow streets did not conform to city standards.\(^91\) Only after the involvement of key elected officials, including former mayor Franklin, was a resolution was reached. The resolution came in the form of a new city ordinance allowing specific street dimensions for qualifying traditional neighborhood developments.\(^92\)

Glenwood Park is a manifestation of the vision set by developers Green Street Properties. In

\(^{90}\) Terrain.org, UnSprawl Case Study, http://www.terrain.org/unsprawl/17/ (last vistited June 1, 2013).

\(^{91}\) Id.

\(^{92}\) Id.
setting a goal of creating “a compact, new urbanism community characterized by fine-grained mix of uses with a diversity of building types positioned along sidewalks and streets that emphasize pedestrian comfort and safety,“ the creators successfully addressed unforeseen issues while staying true to their vision and ideals. At present, this community is thriving. Its proximity to public transit allows resident to efficiently commute to various downtown destinations in less than fifteen (15) minutes. Furthermore, the Atlanta Beltline project (upon completion) will directly connects with Glenwood Park, providing residents and visitors easy access to pedestrian and bicycle trails. Combined, these aspects will ensure continued sustainability. Glenwood Park has set the standard for the “new” American dream.

2. Atlantic Station, the Ole’ Mill

Atlantic Station is the epitome of a mixed-use development. Operating under the slogan Live, Work, and Play, this former brownfield is booming with entertainment, retail, offices, and various types of housing. Atlantic Station, named after its industrial predecessor Atlantic Steel, has gone a long distance from where it once was. Built in 1901, the Atlantic Steel Mill served the metal needs of the South for over ninety (90) years. Employing over 2,300 people and producing 750,000 tons of steel annually, the mill was more than a job for many of its workers. Clyde Dunn, an employee for over thirty-eight (38) years, says the mill provided a sense of community and purpose although its declining condition eventually resembled a junk yard. Industrial decline led to the permanent closing of the mill in 1998.

In 1999, Jacoby Development, along with partner AIG Global Real Estate, entered the premises with one thing in mind, creating a 138-acre site that will host the largest urban redevelopment in

93 Terrain, supra note 90.
America. At present, Atlantic Station provides homes for 10,000 people, employment opportunities for 30,000, and entertainment options for millions.\textsuperscript{96} The project sought to create an environment in which the Atlantan can escape his daily commute and find himself in a place that offers everything one needs.

Achieving this was no easy task. Rezoning challenges were overcome after extensive public meetings, group discussions, and a full public notice and review process. Various city and state agencies along with neighborhood organizations participated in the commotion of classifying Atlantic Station as a mixed-use zone. Furthermore, as the largest urban brownfield redevelopment in the United States, extensive environmental hazards had to be overcome. The remediation plan involved excavating 180,000 cubic yards of soil contaminated with lead, in addition to the demolition of multiple buildings containing asbestos. To prevent the migration of contaminants, a groundwater collection and treatment system was installed. The planting of 2,800 trees further reduced environmental pollutants.

A decade later, the development is booming, contributing over $50 million in tax revenues each year and providing thousands of job opportunities.\textsuperscript{97} Reduced travel, decreased carbon emissions, and a multitude of housing and economic opportunities, are some of the many changes benefiting local communities. Atlantic Station has become a national model for smart growth and sustainable development.

**CONCLUSION**

Cities are centers for economic growth and job creation, and thus, major consumers of resources. It has been estimated that cities are responsible for two-thirds of global energy consumption. This alarming rate is likely to continue to grow as our population is steadily increasing.

\textsuperscript{96} Atlantic Station, *About*, http://www.atlanticstation.com/about (last visited June 1, 2013).

\textsuperscript{97} Id.
At present, one million people are added to the urban population each week.\textsuperscript{98} By 2050, eight billion of the nine billion people in the world will live in cities.\textsuperscript{99} To maintain our current standard of living in coming years, we must turn to sustainable choices that ensure our ability to meet our present needs responsibly without compromising the ability of future generations to meet their own needs.\textsuperscript{100} In order to live well tomorrow, we need to think of today.

The challenge today is to implement a “model of urban living that can accommodate the projected overflow of people in a way that will not deplete the region's natural resources or contaminate the surrounding environment.”\textsuperscript{101} When cities favor sustainable modes of transportation, land use tends to cluster around them. This, in turn, will lead to conservation of energy. Working together, these elements of sustainability harness the available technological advances, as society marches ahead to embrace the change that is to come.

So let's kick back, relax, and enjoy the arrival of the new urban revolution.

\textsuperscript{99} Id.
\textsuperscript{100} United Nations, supra note 11.