

Greensburg, Kansas: Rebuilding a Green Town

by

Anna Bromberg

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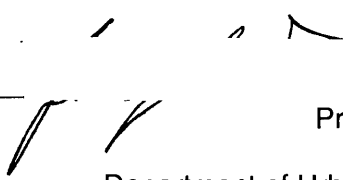
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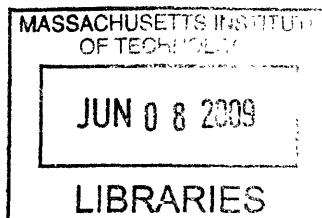

Department of Urban Studies and Planning
May 21, 2009

Certified by _____


Professor Lawrence Susskind
Department of Urban Studies and Planning
Thesis Supervisor

Accepted by _____


Professor Joseph Ferreira
Chair, MCP Committee
Department of Urban Studies and Planning



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Abstract

The tornado that hit Greensburg, Kansas, in May 2007, traveled down the center of Main Street at two hundred and five miles per hour and destroyed ninety-five percent of the town's built environment. The extensive damage was devastating to a town that was already struggling with job loss, depopulation, and economic decline. When Greensburg unexpectedly announced it would rebuild green, the town captured national attention as a symbol of a sustainable revitalization strategy. This thesis examines Greensburg's recovery with the hope of identifying how other cities can learn from its example.

For Greensburg, rebuilding green means creating a healthy future for the next generation. Greensburg interprets green to not only signify environmental conservation, but also, if not more importantly, a strategy for community development and economic stability. Greensburg is fortunate to have visionary leadership and outside financial assistance, but these factors alone would not have been enough to resurrect the town. Greensburg is rebuilding green for its community's future, but in order to rebuild at all, Greensburg first needed the support of its community.

Before the storm, the greater Greensburg community was not especially involved in civic affairs or environmental issues. The community became invested in its future and committed to green as a result of three key factors, all of which can be implemented elsewhere. The combination of the extensive environmental education efforts, the growing excitement for reversing the town's decline and the term '*green*'s ability to resonate with a wide range of interests, encouraged Greensburg residents and business owners to return to the town and inspired them to rebuild green.

Greensburg's strategic application of green planning is relevant not only to other small, rural towns, but also to any city that is considering revitalizing a neighborhood. Greensburg integrated green elements into almost every aspect of its recovery. By building weather-resistant, energy efficient buildings and renewable energy infrastructure, instituting new green building policies and pursuing green manufacturing businesses to provide employment opportunities, among many initiatives, Greensburg is using green to create a long-term plan for the town, in order to serve both its natural resources and its community.

Introduction: “Better, Stronger, Greener”

Greensburg, Kansas is a small town with a big dream. Immediately after a tornado destroyed ninety-five percent of its built environment in May 2007, Greensburg resolved that it would rebuild “better, stronger, and greener” with the aim of being the “greenest town in rural America” (*Greensburg, Kansas*; Carlson). Extreme weather events, like this tornado, can provide an opportunity to rethink how cities are designed and operated. The current patterns of development and consumption are revealed to be unsustainable as cities around the world struggle with natural resource depletion and increasing economic and social disparities. However, what to change and how to change it are not easy decisions for communities to agree on. Two years after the disaster, Greensburg not only has decided what it wants to change, it has begun implementing green policies never before tried in the United States. Its achievements have made it a pioneer in green (re)development and have garnered presidential recognition (Jordan).

Amidst the economic decline of rural America, the worldwide economic recession and the threat of climate change, Greensburg can be seen as a symbol of hope for communities that must also address these mounting pressures. Understanding the process of Greensburg’s quest for a more sustainable future is particularly well-timed as the entire nation faces many of the same challenges Greensburg is confronting, including the creation of renewable sources of energy and joblessness. While Greensburg received government

funding to help begin to implement its grand ideas, towns around the country will soon benefit from funding through the American Recovery and Reinvestment Act (ARRA) of 2009. ARRA specifically targets energy and jobs, with the goals of doubling the domestic capacity of renewable energy and creating 3.5 million jobs (*Recovery*). Already, cities anticipating stimulus funding are looking to Greensburg for direction on how to improve their neighborhoods.

The tornado has placed Greensburg in a “trans-historical metacommunity of victimized cities, places and people” (Vale). The relatively small number of cities destroyed by natural disasters throws their leaders into uncharted territory. Even if the disasters are not similar, the leadership can learn from previous examples how to best provide emergency support and how to address the later complications of recovery planning. Two years since the tornado hit Greensburg, city leadership has both received and given help to towns that have similarly been damaged by extreme weather events.

Four months after the tornado, eight Greensburg and Kiowa County leaders visited Louisiana and Mississippi to learn what recovery there looked like after the hurricanes of 2005. As reported in the *Kiowa County Signal*, when the group travelled from New Orleans to Biloxi, and then to a few 3,000 person towns in Jackson County, Mississippi, they saw that New Orleans hadn’t recovered as quickly as the smaller towns. Steve Hewitt, Greensburg’s city administrator remarked, “In Biloxi...some businesses have recovered, and some haven’t. But in all [the] towns we visited they kept telling us to make sure we use professional planners. We kept hearing that, and I don’t think we’ll forget it” (Anderson

“Katrina”). The stark comparison between cities of different sizes and political environments emphasized to the Greensburg visitors what was possible with the right “mindset”, and the “lingering wasteland” that was the alternative.

The group also stopped in Bolivar, Tennessee, a town of 5,800 located fifty miles west of Memphis. Free from any disaster, Bolivar was working to revitalize its downtown through voluntarily redesigning and reimagining a plan for the city. The Greensburg group knew that to recovery from the disaster it would have to persuade its residents to return and convince businesses to come back. As difficult as it might be to wait before allowing the community to rebuild, this trip helped make Greensburg’s leadership excited for “what planning can do” and illustrated the benefits that can arise from spending the time to create a thoughtful, strategic city plan (Anderson “Katrina”).

Now that two years have passed since the tornado, Greensburg has learned from its own experience with disaster and revitalization planning, so towns more recently damaged are requesting help with their recovery. For example, in November 2008, the U.S. Department of the Treasury asked Greensburg to form a three-year cooperative partnership with Mianzhu City in China. This county-level town was one of many impacted by the May 2008 Sichuan earthquake that registered 7.9 on the Richter scale and caused large scale devastation. More than 15 million people were displaced, many towns and cities were demolished, and it is estimated that 70,000 people were killed, including 10,000 children (“Sichuan Earthquake”). Greensburg leadership, along with six other groups, traveled Mianzhu to begin a partnership that is meant to

“exchange ideas on environmental impact, industrial waste, etc.” and the Mianzhu government leaders are in turn scheduled to visit Greensburg within the next year (Anderson “Hewitt”). Though the damage caused by the Sichuan earthquake is much more extensive than what happened to Greensburg, the Chinese, including a sustainable livelihoods organization coordinating youth volunteers in earthquake-affected rural areas called Future Generations China, are interested in Greensburg’s green planning and hope to learn from how to incorporate green practices into their rebuilding effort (*Future Generations China*). To further document what Greensburg has accomplished, this thesis explores the questions of why Greensburg’s leadership immediately decided to rebuild green as well as how the community came to embrace the green idea, and then discusses what the town’s experience can mean for other communities.

My research relies on a combination of in-person interviews, primary source documents, such as the city council’s meeting notes, and secondary source documents, such as the county’s weekly newspaper. The tornado and Greensburg’s recovery are also very well-documented through newspaper and magazine articles, video clips, including the reality television series *Planet Green*, and audio interviews and the town continues to receive extensive media attention.

What does green mean in Greensburg?

Although Greensburg is largely in the news because of the unprecedented green initiatives it has implemented, I argue that Greensburg’s emphasis has always been on its community. Rather than treat green ideas as separate or

secondary concerns from the pressing problems of housing, employment or utility services, Greensburg has integrated green practices into its rebuilding and revitalization work. This otherwise ordinary town has managed to introduce green options with almost every decision it considers because it recognizes the economic and social benefits of environmentalism and the interdependence between all three factors. For Greensburg, green planning is an economic development tool to revitalize the city and a way to ensure the city will be healthy and safe for future generations. Consequently, this thesis is not an evaluation of how sustainable Greensburg is. While the town has made great strides in its recovery, much of its vision for the future is still in the planning stages.

Rural individualism, community-building and Kansas

The Greensburg story is rooted in the greater history of small, historically agricultural towns across America. Rural communities figure prominently in the realization of the American Dream, which promises that an individual's hard work and free choice will lead to material prosperity and by extension, satisfaction. Codified in the Declaration of Independence as the "certain unalienable Right" for "Life, Liberty and the pursuit of Happiness," this Dream is what has made America "attractive and magnetic" to people who feel oppressed and who desire the freedom to change their destiny, often through property ownership (Kamp).

Founding father Thomas Jefferson had a vision of a nation of small, independent farmers. The appeal of owning a piece of property through the virtues of honesty, hard work and religious faith is at the core of how the United States sees itself (Wood). But, "the nation-state that derived its ideology from

individualism in fact derives its stability and power from the communities of which it is composed” (Cobb). The relationship between individual leaders and their community, or the multiple communities within which they are a member, has had one of the biggest impact in Greensburg’s success to remake itself green. While American culture is largely based on Hobbes’ political theory and Smith’s economic theory, which emphasize individual will and ignore community as a dominant force, the events in Greensburg are significant for their demonstration of another model. Through group effort, community spirit and the willingness to work together, Greensburg’s recovery has empowered its citizens and is building a town that will minimize its impact on the earth.

Most rural communities had their peak population between 1900 and 1950 (Wood). The technological improvements in agriculture and transportation hastened the decline of rural towns as people gravitated towards urban areas. The poverty rate in rural communities is almost twenty percent above the national average because fewer jobs are available when family farms are replaced by mechanized agriculture. In Kansas, 6,000 towns have disappeared since the state was founded in 1854, leaving only ghost towns in their wake (Fitzgerald). For rural communities that have more funerals than baptisms, the presence of schools and churches become essential for warding off the threat of decline. But as schools consolidate and more towns find themselves too small to support their own church or force their clergymen to ride circuits because single congregations can not afford one, a rural renaissance appears unlikely (Wood).

Kansas figures prominently in America's cultural heritage reinforced through movies, songs, books and radio. Standing as a surrogate for simpler times, fried chicken, the bang of screen doors on hot summer days, Kansas has the "amber waves of grain" that inspired the line in "America the Beautiful", and is the home where Dorothy fights to return, after being transported to the wonderful land of Oz (Frank). The state traces its American beginnings to the Homestead Act of 1862, which fueled the westward expansion of the United States by giving one hundred and sixty acres of free land to claimants, allowing nearly any man or woman a chance to live the American dream. It was in this climate of possibility and promised prosperity that Western Kansas was first settled by cattle ranchers, who banished the Native Americans and killed off buffalo in their quest for wealth. The boomtowns that sprouted up were full of hope and prayer. "If the Midwest is the Bible Belt, then Kansas is definitely the buckle" (Fitzgerald). Ever since the state was founded, religions of many denominations have played a dominant role in Kansas politics. Kansas was founded by abolitionists just before the Civil War, became the first state to prohibit alcoholic beverages---prohibition laws that were not repealed until 1948, witnessed a populist revolt in the late 1800s and electing a populist governor, was the first state to give women the vote in 1912 and then paved the way in 1954 for the unanimous Supreme Court declaration that separate educational facilities are inherently unequal in *Brown v. Board of Education*. Thomas Frank lauds the state's authenticity in *What's the Matter with Kansas?*, but as radically liberal as it has been religiously

conservative, Kansas is more open to new ideas than characterized by any one in particular.

Greensburg's destruction and subsequent resurrection takes place in a part of the country where distrust of government, suspicion of liberal agendas and the western frontier mentality to protect individual rights is paramount. The fact that Greensburg's decision to go green could attract support and interest within this particularly challenging context adds intrigue to an already unique story.



Figure 2: Map of Greensburg in United States
Source: Epodunk

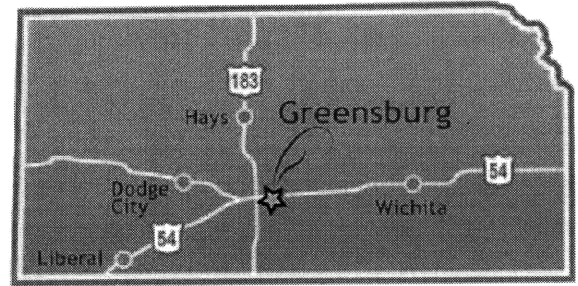


Figure 1: Map of Greensburg in Kansas
Source: Long-term plan

Greensburg history

The town of Greensburg is located in Kiowa County, a rural area of large cattle ranches and grain farms. Kiowa County is named after a nation of Native American Indians who are presently located Oklahoma, and Greensburg is named after the stagecoach driver D.R. "Cannonball" Green, who was instrumental in the organization of the town (Tanner). Greensburg was organized in 1874 and "traces its origins to homesteaders and settlers who sought land to farm and ranch" (Bazar). Originally a stagecoach stop, Greensburg became a railroad town in 1887, when work began on the Big Well which was built to accommodate the Atchinson, Topeka and Santa Fe rail line. With a diameter of twenty-four feet and a depth of one hundred and two feet, the Big Well is the largest hand-dug well in the world (Kansas State Historical Society). Today the Big Well was voted one of the eight wonders of Kansas, and together with the 1,000 pound meteorite, account for the main tourist attractions to Greensburg (*National Park Service*).

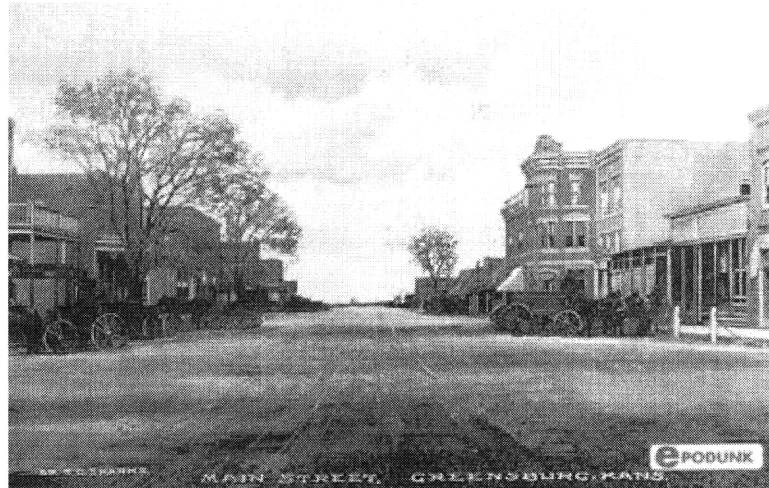


Figure 3: Historical photo of Main Street in Greensburg
Source: Epodunk

Greensburg before the tornado

Demographic profile

Like many small, rural towns, Greensburg’s population peaked in the 1960’s around 2,000 people and declined to 1,500 at the time of the 2000 U.S.

State of Kansas - Population Trends
Peak Year Census To 2000 Census

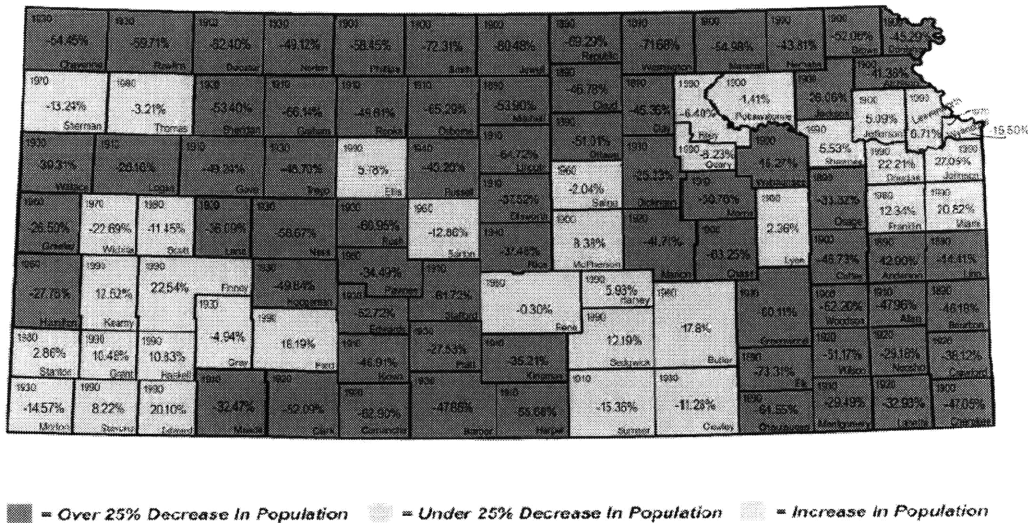


Figure 4: Map of population trends in Kansas
Source: Banks

Census as fewer people were needed to work in the agricultural and energy extractive industries, the two primary sources of the town's income (U.S. Census). The primarily crops are corn, wheat, soybeans, milo and cotton ("because farmers can't make it just on wheat"), but agricultural profits haven't provided the economic boost they had in previous generations (McCawley).

	Greensburg	KS	US
Population			
Average age	44.3	36.2	36.2
Male	47.6	49.4	49.1
Female	52.4	50.6	50.9
Race			
White (%)	97	86.1	75.1
Black (%)	0	5.7	12.3
Hispanic or Latino (%)	1.6	7	12.5
Asian (%)	0.1	1.7	3.6
Born in the same state (%)	73.8	59.5	60
Born in another state (%)	23.5	34.7	27.7
Foreign born, not US citizen (%)	1.5	3.3	6.6
Education			
High school (%)	31.7	29.8	28.6
Bachelor's degree (%)	12.1	17.1	15.5
Master's (%)	5.5	8.7	8.9
Median household income (\$)	28,438	40,624	41,994
Housing			
Median year built	1952	1966	1971
Median value (\$)	44,200	81,000	111,800
Renter-occupied units (%)	25.5	28.3	30.8
Owner-occupied units (%)	57	63.5	60.2

Figure 5: Census data comparing Greensburg to Kansas and U.S.

Source: U.S. Census, table created by author

Greensburg's median age of 46 is above the Kansas and United States average (U.S. Census). The town's aging population earned a low per capita income and as a result of its population decline, Greensburg was facing a loss of its economic base. Though the cost of living is low, compared to the U.S. average, its percentage of people living below the poverty line is slightly above the national and state average. The 2000 Census also found that compared to

the rest of Kansas and the United States, Greensburg was below average in its median household income, median house value, number of college students and percentage of population with a bachelor's degree. Greensburg's gamble on green was born of having possibly no other viable options.

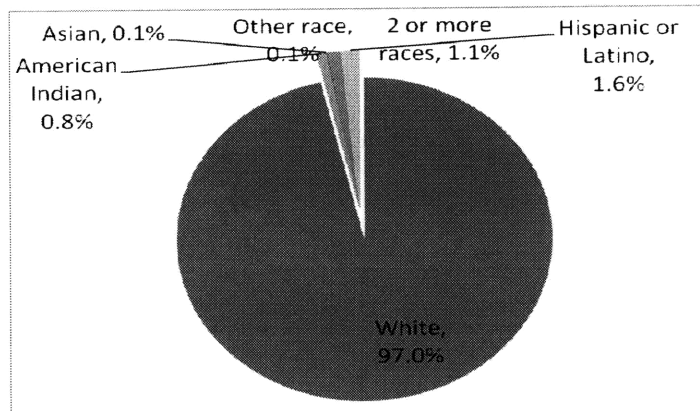


Figure 6: Chart of population by race in Greensburg
 Source: 2000 U.S. Census, chart created by author

Greensburg is predominantly Republican (80% voted for McCain in the 2008 U.S. election) and Protestant (“Election map”). There are eight churches in Greensburg, but the United Methodist Church and Christian Church (Disciples of Christ) have the biggest congregational adherents (Association of Religion Data Archives website).

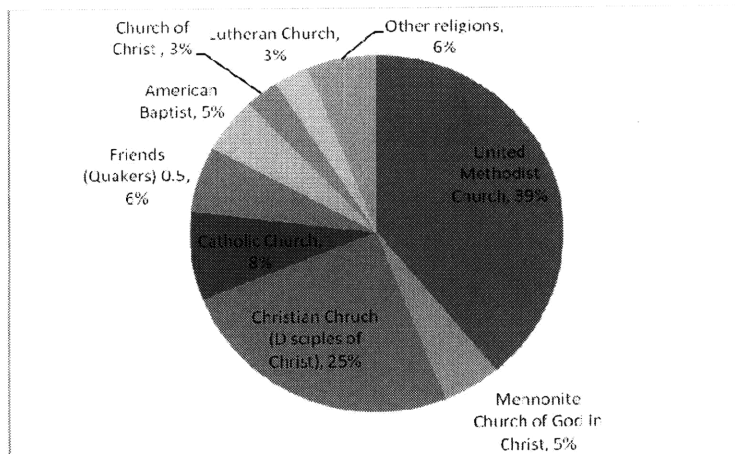


Figure 7: Chart of religious membership in Greensburg in 2000
 Source: Association of Religion Data Archives, chart created by author



Figure 8: Historic photo of Greensburg courthouse

Source: Epodunk

Government and budget

Greensburg's government before the tornado had eight elected positions: a mayor and seven council members. The city also hired a city manager to implement municipal policy and supervise the government .

In 2006, Greensburg had an approximately \$2.3 million operating budget. It raised revenues through taxes of \$400,000 and its revenue of electric and water utilities of \$1.8 million. City employee salaries accounted for about \$800,000 and it had \$2.1 million in long-term debt (*City Data*).

Six months before the storm, a new city administration was installed with Lonnie McCollum, the retired superintendent of Kansas' highway patrol, at the helm as the write-in mayor and his choice of city administrator, Steve Hewitt, as a young, enthusiastic problem solver. In January 2007, Greensburg's government was on a mission to make changes to improve and revitalize the town, together with the city council (City Council minutes). Hewitt explains Greensburg was "searching for economic development base that could put us on the map. We

want to be a strong bible community in the future” (*Greentown*). To that end, the city began changing Greensburg’s administration by looking for ways to streamline and improve its efficiency. For example, to give Greensburg more available cash, the city council voted to reduce their own salaries. Hewitt lowered the cost of the city’s insurance policy by finding a better deal with a different carrier (Anderson “Relief”). Discussions were under way about other economic development proposals, such as whether to increase Greensburg’s sales tax or its property taxes through a mill levy. The town was looking for a way to survive.

Recent regulation

Since they took office, the new mayor, Lonnie McCollum, and city administrator, Steve Hewitt, were working to revive the town. Greensburg had been in the process of approving the 2003 International Residential Building Codes since February 2007 as part of the city code update (City Council minutes). Originally, when the codes were adopted and there very little construction activity, it was not expected the town would be likely notice any change. However, after the disaster when every resident and business-owner needed to construct or repair a building, the new rules did incur the public’s protests and outrage (Anderson “Relief”). The building code’s stringent safety standards require additional expense, but Hewitt and the council were committed to “doing it right”. It is due to this prevalent attitude of thoughtful foresight and commitment in the face of criticism that prepared Greensburg for the green planning they would undertake after the tornado.

GREENSBURG HOUSING BREAKDOWN

	Pre-Disaster		Post-Disaster		Total Damage
	Housing Stock	Occupied Housing Units	Destroyed	Impacted	
OWNER (70% of the population)	621	585	462	72	534
very Low Income (25% of the population)	155	129	116	76	134
Low Income (22% of the population)	137	113	103	76	117
Moderate+ (53% of the population)	329	273	243	35	383
RENTERS (30%)	266	215	196	3	229
very Low Income	67	54	50	9	56
Low Income	59	47	43	7	50
Moderate+	140	114	103	16	123
City Total	887	730	660	83	763

Source: 7 Periodic Data Report August 2017

Figure 9: Table of housing data for Greensburg

Source: Long-term Plan

Built environment

Before the tornado, Greensburg had issued a total of six new house constructing building permits in the past eleven years. The average cost of these six homes was \$86,000 and most of the building stock was constructed in the mid-1900s (U.S. Census).

Boomtown USA by Jack Schultz, a proponent for small town development, states the importance of town ownership in two areas: financial institutions and newspapers, in order for towns to retaining their resiliency. Greensburg, Kansas has both of those in the Greensburg State Bank in operation since 1924, and the headquarters of the weekly Kiowa County Signal, the newspaper that covered the entire county. Greensburg was also fortunate to be the county seat, as well as the location of the only hospital within approximately thirty miles. Before the tornado, Greensburg owned a power plant that provided energy independence for the community and provided jobs for its residents. The town had a good



Figure 10: Photo of Richard Huckriede, Greensburg soda jerk in 2007
Source: Stephenson

school system and basketball team for both boys and girls, while the two other towns in the county shared one high school and middle school for their dwindling number of students. In addition, Greensburg benefits from Highway 54, one of the east-west corridors through the state that passes right through the town on Kansas Street and the still functioning railroad that put Greensburg on the map.

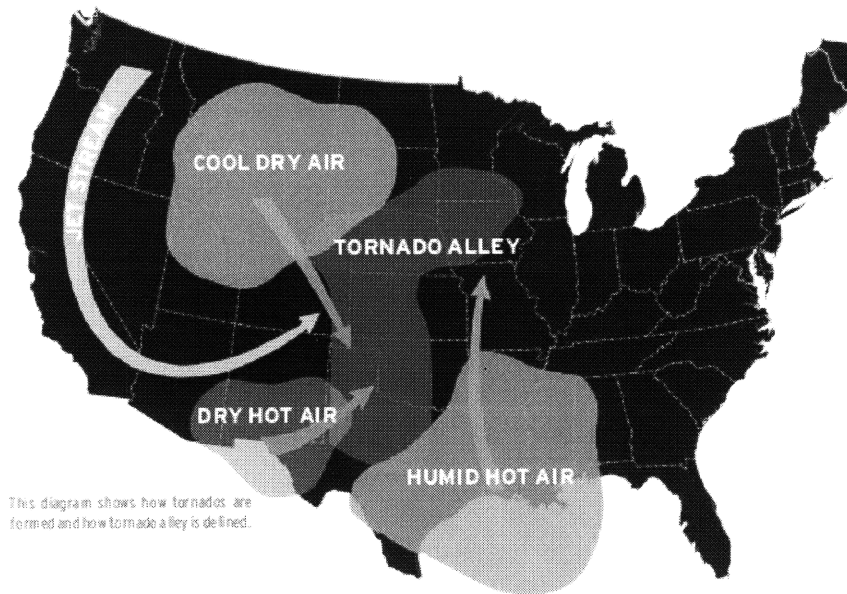


Figure 11: Map of tornado alley in the U.S.
Source: Comprehensive Plan

May 4, 2007: Tornado hits Greensburg

On May 4, 2007, a category E-5 tornado, the highest rating on the Fujitsu scale, hit Greensburg, Kansas. The tornado had winds of 205 miles per hour and landed in the center of town. With a diameter of 1.7 square miles, the tornado covered all 1.5 miles of the entire town (Smith). Nine hundred and sixty-one houses were destroyed, with 115 sustaining major damage and 110 businesses having major damage (*National Oceanic and Atmospheric Administration*). The total amount of damage in Greensburg was estimated to be about \$250 million which created 10 million cubic feet of debris (Harris).

However, the televised meteorological reports and continuous sounding of the town's siren, rather than the standard procedure of using the siren for only five minutes at a time, prevented catastrophe in terms of human lives, because residents were able to protect themselves in storm shelters. The early weather warnings also prepared emergency assistance of organizations such as the Red

Cross, Salvation Army, Kansas Division of Emergency Management, Kansas National Guard, Kansas Highway Patrol, Wichita Search and Rescue, to come to Greensburg immediately after the tornado. These groups braced themselves for the tragedy they thought they would find in Greensburg, but their speedy response decreased the number of casualties. For example, approximately thirty people were rescued from the local hospital with only minor injuries when the basement of the structure collapsed (“Response, recovery”). Still, the tornado left over 1,000 people — more than two-thirds of the town's population —homeless (Walsh). Though the town was spared in many ways, there was almost nothing left of Greensburg’s one hundred and thirty year history.

I drove out to Greensburg on January 21st, the day after Barack Obama was inaugurated United States President. Much of country had been inspired by his campaign message, “Yes we can!”, and was eagerly anticipating the changes President Obama promised. In this spirit of new beginnings, I wondered what I would learn in Greensburg, a town that had also inspired many with its hopeful message of recovery.

Used to the frigid, snowy Boston winter, and expecting Kansas ice storms, I was surprised to find the weather was unseasonably warm as I began my drive west from Wichita, listening to a classic country radio station. Along the straight two-lane highway, clear, bright sunlight lit up the dormant fields waiting to be plowed. Although I carefully noted the mile markers guiding me closer and

closer to the town, I did not need any signs to show me when I arrived. Unlike the fading storefronts and comfortably untidy yards I passed along the way, there were very few standing buildings by the side of the highway in Greensburg. A park sign was mangled and twisted, giving witness to the destruction a year and a half after storm. As I turned off the road to find the city government trailers, I saw no rubbish or debris littering the blocks. But my skin prickled with the emptiness of vacant lots and the deformed trees bent by the storm. At the same time, I could hear the sounds of construction and see the new homes, three or four to an eight plot block, surrounded by open concrete pits that were the basements of where houses used to be. Watching the Planet Green television series or seeing photographs did not prepare me for the extent of the destruction that still remained and I did not realize how much of the town was still waiting to be rebuilt.

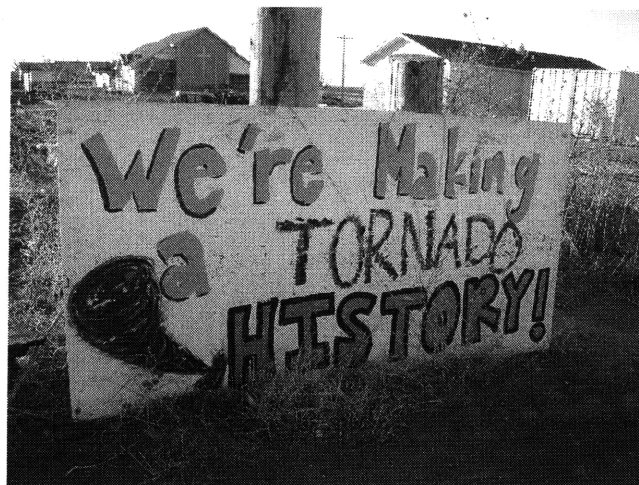


Figure 12: Photo of sign in Greensburg, off Highway 54
Source: Author

Greensburg was bigger than I expected, with street upon street of open space where homes used to be, but in the warm weather there were many people outside, busy with construction activity. I paused before getting out of my car to give myself time to adjust to the enormity of the community's recent experiences. I felt unsure how my research questions would be received. As a stranger, visiting Kansas for the first time, I did not know if people would make time to speak with me or if they would want to talk about what happened after the storm.

Greensburg today

Demographics in 2009

Greensburg today has about 800 people, half of the population that used to live in the town before the tornado. Families were reassured by school superintendent Derrin Headrick that the school would reopen on schedule in the fall, just 100 days after the disaster and he succeeded in finding the temporary buildings and staff to fulfill his promise (Anderson, "Town Hall"). While it was not surprising that many of the high school students returned so they could complete their junior or senior years, the 2008-2009 school year had twenty-five new students enrolled in Greensburg, the biggest influx the town had seen in years (Deam). The new residents include volunteers who decided to bring their children and stay, and others who cited the interest in Greensburg's green rebuilding effort as their motivation to move. However, many of the residents who were renters or hourly workers before the tornado are not able to afford living in

Greensburg. Although affordable units have been built and non-profits such as Habitat for Humanity and Mennonite Housing are providing different housing options, the lack of rental property and the loss of jobs since the tornado has displaced a segment of the population (Barnhart). Some of the elderly residents have also decided not to return. Although Greensburg's assisted living facility has also reopened, seniors who preferred to relocate closer to their children are now spread across the nearby states (Carpenter).

Changes in Greensburg's government and budget

Greensburg's elected government has decreased since 2007 to five city council members, where there were seven before the tornado, to try and simplify official proceedings ("Rebuilding Greensburg"). However, the amount of construction, permitting and city business has required additional employees, so Greensburg is now staffed with twenty-six people, up from fifteen two years ago. The new hires include a zoning manager, an assistant city administrator, a full-time building inspector and a building clerk, "who provide a consistent face for residents and a more efficient permitting process" (Hall). The city's power plant is now closed, so the plant's three city employees are now reassigned to other departments (Reeves).

The Greensburg budget is now higher than before the tornado. Expenditures have increased almost \$1.5 million dollars to a total of \$3.7 million for the 2009 fiscal year. Payments for contractual services are projected to be higher in 2009 than for the two previous years; these services are highest in electric and water service production, since Greensburg presumably expects to

build new facilities. The town's budget only mentions debt financing, FEMA and state assistance as sources of outside receipts, so it is unclear how private donations or other government funding figures in to the town's management. These financial issues are further discussed in the section 'Future questions'.

New regulations

Two weeks following the disaster, the city council and mayor decided to put a moratorium on building permits to give the state time to decide where they would relocate Highway 54, a long-discussed major project that would greatly impact where the town should rebuild (City Council minutes). The Kiowa County Signal reported in June 2007 that FEMA encouraged Greensburg to take "time to plan a well-conceived effort". The paper referenced two southwest Missouri towns that were hit by a tornado in 2003: Stockton and Pierce City. Pierce City rebuilt immediately, creating a haphazard effect, and Stockton "put together a comprehensive plan for the building's appearance and specs" which made it more attractive because they thought about how they wanted things to look years down the road. As difficult as it was telling the community they couldn't immediately start reconstructing their lives, the city leaders wanted to learn from the Missouri towns and think about Greensburg's future before rushing to action. Many residents and the business community resented any imposition on their desire to start rebuilding, especially in addition to the new residential building codes the city council approved during the winter. The moratorium was soon lifted when the highway plans were finalized, though almost six months would

pass before the city would have an official comprehensive plan. By choosing to pause before rebuilding, through enforcing the moratorium and hiring professional planners, Greensburg was both following the pattern of operation it began when McCollum and Hewitt assumed office and learning from the advice of the Mississippi and Louisiana towns affected by Katrina, Stockton and Pierce City in Missouri, and the FEMA representatives, who all recommended that initial patience and preparation was well-worth the short-term inconvenience.

Greensburg's goal before the tornado and afterwards was to make the town better for future generations (Jackson). When the town decided to be green after the storm (a decision that is detailed in more depth in the subsequent section, "Origin of the Green Decision"), Greensburg was assisted by the Department of Energy's National Renewable Energy Laboratory (NREL), U.S. Green Building Council (USGBC) and Berkebile Nelson Immenschuh McDowell Architects (BNIM) to adopt a resolution that city buildings greater than 4,000 feet will be Leadership in Energy and Environmental Design (LEED) platinum, a rating category that indicates a certain level of environmental construction (*BNIM; NREL*). The legislation was passed in December 2007 and is the first of its kind in the United States. There is no similar regulation for residential or commercial buildings, though many families have decided to build energy efficiently. City administrator Hewitt explains his reason for supporting the measure, "It would have been easy just to slap buildings up, but we're making sure that Greensburg will be better for future generations" (Jackson). Green buildings fulfill this aim by using resources more efficiently and providing cleaner indoor air quality.

For further energy efficiency, NREL helped Greensburg develop four ordinances to prepare the city to use renewable energy. The ordinances for an interconnection agreement, net billing tariff, wind and solar were adopted by Greensburg to modify the city code (Billman). Less binding than a regulation, ordinances allow Greensburg to be ready to use renewable sources of energy when funding and construction is complete. The city worked pro-actively to begin the long process of using alternative sources of energy and used the help and encouragement NREL offered to gain technical knowledge. While not all towns will have direct assistance like Greensburg, once precedents are established, other towns can modify existing models to their own context and request information and resources to fill any gaps.

“Greenest town in rural America”

The tornado presented Greensburg with the opportunity to re-imagine itself. Many of the new regulations and environmental initiatives completed so far are the first of their kind in the United States.

Green buildings

The LEED platinum regulation, for example, is a landmark policy. Although business owners and residents originally objected to stringent building codes, since the regulation applies only to city and county buildings, it was able to get passed. While still in construction, institutional structures like the business incubator, new school and Kiowa County Memorial Hospital, are aiming for LEED platinum certification, while smaller buildings make efforts to feature green technologies such as salvaged or local materials, renewable energy sources, and

grey water irrigation. Non-profit buildings also incorporate green design, including the first LEED platinum building in Kansas, the 5.4.7 Arts building, the twelve planned demonstration Greensburg Greentown eco-homes, which will open to the public as a living science museum, and ultra the energy efficient churches (“Sustainable Building database”).

524	Total building or repair permits
181	New homes
71	Permanent commercial structures
25	RVs

Figure 13: Table of new buildings permits in Greensburg
Source: *Greensburg, KS*

In total, as of April 3, 2009, there have been 524 building permits submitted to the city of Greensburg (*Greensburg, KS*). The chart above breaks down that number further, since permits are also required for accessory structures and there can be multiple permits per structure. The average cost of single-family new house construction permits is \$152,800, up from the \$86,000 average cost of a single-family house over the last ten years (*City Data*). The expense of shipping materials makes the cost of building more expensive than what the price of buying or insuring a home in Greensburg was before the storm when the median value of a house was \$40,000 according to the 2000 U.S. Census.

By taking the initiative and rebuilding with resource conservation and weatherization technologies, the city is showing home and business owners the benefits of green building. This demonstration, in coordination with the educational seminars run by organizations like Greensburg Greentown and



Figure 14: Photo of 5.4.7 Arts Center in Greensburg, KS

Source: Author

NREL, has motivated many in the community to voluntarily rebuild green, while still allowing them the ability to choose what to construct. Since insurance and FEMA money does not fully cover the expense of building green, the fact that the community is using their own savings to pay the higher upfront costs indicates how strongly they believe green(er) buildings are the best option.

But LEEDs is not the only sustainable building rating system. The town also uses the home energy rating system (HERS), a scoring index that analyzes energy efficiency in residential buildings. Of the 180 new homes permitted after the tornado and before March 2009, 106 single family and townhome units were

voluntarily submitted for a HERS rating. These 106 were found to use on average 41% less energy than the standard construction (Billman).

Starting in September 2008, Greensburg has also been working with the Environmental Protection Agency, NREL and Integrated Building and Construction Solutions (IBACOS), a Pittsburg, PA-based residential systems integration company, on establishing its own green building codes. Greensburg is now in the process of finalizing its Green Building Standard with the National Association of Home Builders and the Kansas Building Industries Association and establishing a Greensburg GreenHome and GreenBusiness certification program (Billman).

Greensburg has been fortunate to forge these important partnerships and to take advantage of the momentum surrounding green building in the community to push for formalized standards. Now that residents are informed about the energy savings and weather resistance green buildings can offer, Greensburg is likely to face less resistance when it introduces new building code legislation.

LED streetlights

Besides the LEED platinum resolution and the renewable energy ordinances, Greensburg is the first city to install light-emitting diode (LED) bulbs in all its streetlights in January 2009 (*Greentown*). LED bulbs use 40% less energy than traditional fixtures, require less maintenance and produce less light pollution. In Greensburg, the LED bulbs were 100% financed with outside funding from FEMA, Kansas Department of Emergency Management, Economic

Development Administration, and Community Development Block Grant (*Greentown*). Though this certainly made it easier for Greensburg to implement, it was again the town's ability to coordinate the funding sources and pursue this project that other cities can emulate in their revitalization efforts.

Renewable energy sources

Many of the new homes and businesses in Greensburg have built windmills and solar panels to supply their own use, though none are yet connected to the grid. As part of the renewable energy initiative, the city of Greensburg also commissioned feasibility and business studies from an advisory team to determine the practicality of installing wind near the town. The advisory team included Greensburg leadership, the state energy office, NREL, representatives from two rural cooperatives, wind expertise by Wind Utility Consulting, financial expertise from Mason Holdings and electrical engineering expertise from Professional Engineering Consultants (Billman). Kansas has the third highest wind potential in the country and there is poetic justice for Greensburg to harness the wind that caused so much destruction for a positive purpose ("Kansas Energy Summary"). Having completed research supporting the economic and environmental viability of installing a wind farm, Greensburg announced on Earth Day 2009 that it would build wind mills to pursue the town's goal for "100% renewable 100% of the time" (*John Deere*).

In partnership with the Kansas Power Pool, the municipal energy agency , and John Deere Renewables, Greensburg is planning to build ten windmills, supplying 12.5 MW, that will be able to supply all the city's energy needs, which

is estimated to peak at 4 MW, as well as generate additional energy to return to the grid¹ (Billman). Commercial operation is slated to begin as early as 2010. As city administrator Hewitt describes, “This model will serve as an example of how communities can meet their sustainable goals through collaboration. Our efforts to be a green community hinge on our energy model” (*John Deere*).

This wind farm is one of the lynchpins of Greensburg’s green. No other city in America has yet derived all of its energy from renewable sources. Since Greensburg’s coal power plant was destroyed in the tornado and would have needed to be rebuilt anyway, the town did have that advantage in its proposal to construct a wind farm. With the rising cost of oil and Kansas’ Governor Sibelius stance against coal, Greensburg was even better positioned to secure support for wind power. Again, however, it was the city leadership’s task to bring the interested governmental agencies, private companies and financiers together and find innovative, creative solutions to the complexities of utility service provision to make the vision a reality.

Green economic development

Bucklin Tractor and Implement Equipment (BTI) is a Kansas-based John Deere dealership owned by the Greensburg residents, the Estes brothers. The BTI-John Deere dealership is rebuilding LEED platinum and contributing financing to the wind farm. Since the tornado, BTI Equipment also became the

¹ As a result of John Deere’s involvement with the wind farm, its construction of a soon-to-be-certified LEED platinum Greensburg dealership, and the simultaneous transition away from the agriculture industry in America over the past fifty years, the John Deere company joined the Commercial Building Energy Alliance, a Department of Energy (DOE) initiative that “helps guide research and encourages industry to move toward energy-efficient design and strategies” (*Commercial Building Energy Alliance*)

first North American distributor of a Canadian wind turbine manufacturer. As reported by NREL, “in their first nine months of business, they built a North American Dealer network across 32 states and four Canadian provinces, resulting in 120 new wind-related North American jobs (mostly U.S., including wind specialists, service technicians, and installers), and nearly 300 existing sales representatives who are learning the new business of wind energy” (Billman). Forming a whole new line of business in the renewable energy sector and creating over 400 jobs in nine months is a formidable feat. Transitions like this reinforce the strong links between agriculture and the renewable energy industry.

Greensburg’s Future

Vision statement

What does the future hold for Greensburg? After the tornado hit, Greensburg needed to create a recovery plan and a more technical and comprehensive plan for the town’s future. With input from the Greensburg community, FEMA produced a Long-Term Recovery Plan by August 2007 and BNIM produced Phase I of a Sustainable Comprehensive Master Plan in January 2008 and a completed Plan in May 2008 (*Greensburg, KS*).

Guiding both plans was Greensburg’s new vision statement. The formal visioning process was organized by FEMA as a one-day retreat on August 1, 2007, attended by the Public Steering Committee which resulted in the following statement, “Blessed with a unique opportunity, to create a strong community,

devoted to family, fostering business, working together, for future growth”² (Long-term Plan). It is worth noting that although Greensburg is now famous for its green planning, the vision statement implies, but does not explicitly mention the environment. “Strong communities” and “future growth” rely on a healthy, stable ecosystem for their continued existence, but by emphasizing the human resources in Greensburg’s vision statement, green becomes more of a means than an end in itself. The Long-term Plan recognizes this distinction in its statement, “Sustainable or ‘green’ development creates livable, inspirational, and enduring places where the quality of life and the long-term quality of the community will be enhanced rather than depleted”. I believe that prioritizing community and using green initiatives for that purpose is a key factor in Greensburg’s accomplishments and represents a different approach than planning to optimize environmental benefits.

Greensburg’s planning documents

In addition to the visioning workshop, extended community input informed the creation of both plans. The FEMA Long-Term Recovery Plan was based on twelve weeks of community involvement. Participation took the form of a Public Square processes (discussed at more length in the section ‘Outside Leadership’), which included 43 one-on-one interviews, four community meetings with an average attendance of 400 people, a two-day community Design Workshop with attendance of about 50 people, a three-day community Rebuilding Fair, group

² The Sustainable Comprehensive Plan uses ‘generations’ as the last word of Greensburg’s vision statement, not ‘growth’. I don’t know if that was an intentional change at the request of the community or an inadvertent typo.

interviews and e-mails (Long-term Plan). The Long-term Plan is “an action-oriented menu of key projects intended to be used for making critical funding and resource allocation decisions”. It provides a framework for rebuilding by listing specific directives for Greensburg to follow in four categories: Sustainable (green) development, Housing, Economy and Business, and Community Facilities and Infrastructure. Almost all the projects described have already begun or are in various stages of completion, from ‘Create a Business Incubator’, which resulted in a waiting to be certified, LEED platinum, 9,500 square foot building that opened in late April 2009, to ‘Explore Feasibility of Consolidating City/County Government’, which is a contentious subject under discussion.

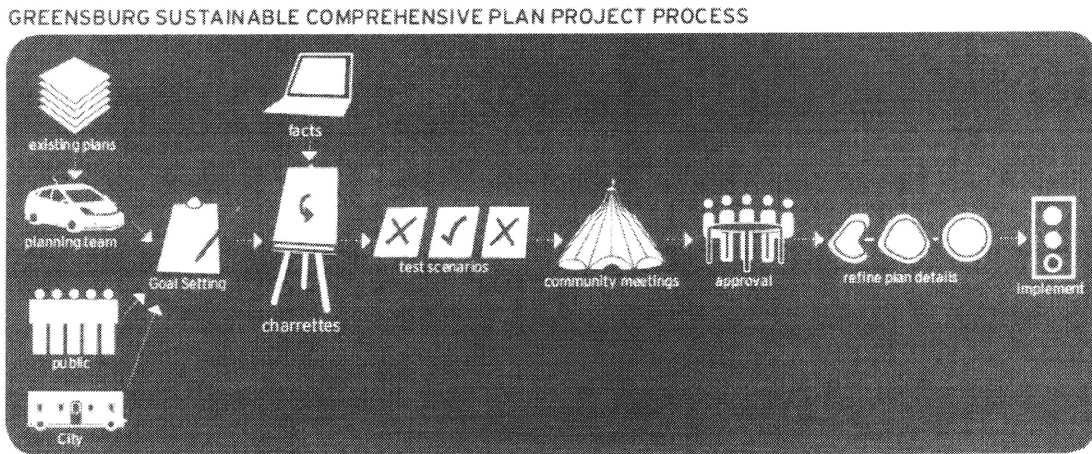


Figure 15: Greensburg’s Sustainable Comprehensive Plan’s Planning Process

Source: Comprehensive Plan

BNIM’s Sustainable Comprehensive Plan, which was commissioned in October 2007, built off of the community input collected by FEMA and has won awards such as the 2008 Sustainable Cities Award and the American Planning Association Burnham Award. The plan emphasizes “a sustainable future based

in common Kansan values”, again embedding environmental objectives within Greensburg’s vision for a strong community. The plan was derived from its work with a collection of stakeholders including: a planning team established by the city, the Public Square Steering Committee who continue to meet two years after the tornado, the Business Redevelopment Group, made up of Greensburg citizens, Greensburg Greentown, the newly established green community non-profit, the City Council and the expertise of many, including John Picard, a sustainable consultant and liaison to the corporate sector, NREL, specializing in energy issues, the U.S. Department of Agriculture, to coordinate rural development, and the Kansas Housing Resources Office. BNIM also held two community meetings, with an estimated attendance of 300 people, for each stage of its plan to gather feedback. The Comprehensive Master Plan states, “It is important to note that every recommendation within the Plan came from the citizens of Greensburg. There are no recommendations that were not supported or promoted by the larger community”. The plan uses eleven goals as guiding principles for Greensburg’s development, such as “balancing growth with maintenance and improvement of environment”, “welcoming new residents without diminishing lifestyle of current residents”, “durable, healthy and efficient new development”; all underlining the town’s commitment to long-lasting community. Like the Long-Term Recovery Plan, the Comprehensive Plan reiterates, “At its heart, this vision is about constantly improving and strengthening community. It is a powerful statement that memorializes generational thinking as a guiding philosophy” and states its commitment “to find

the most cost effective combination of sustainable development concepts to meet the needs of the community and use technology and traditional design in a small town to reduce long-term cost and increase energy efficiency”. Greensburg’s Comprehensive Plan does not present a radical shift away from the pre-tornado Greensburg. The Plan states it will keep the town’s physical layout intact, maintain the town’s priority of pursuing of employment opportunities (further discussed in the section “Timeline of green in Greensburg”) and preserve its small-town identity, as directed by the community. Rather than proposing a new design for the rural town, the Plan maintains the main characteristics of pre-tornado Greensburg while interjecting suggestions to decrease the town’s carbon footprint. More drastic changes were proposed (by ex-Mayors McCollum, Janssen), but were rejected in community meetings (Anderson “Though out of office”). While Greensburg has begun building back its homes and institutional buildings, other elements of its Comprehensive Plan are still in the visioning phase.

Affordable housing

Before the tornado, thirty percent of Greensburg’s residents were renters, not house-owners (U.S. Census). But, the high cost and long time required to rebuild has prevented the replacement of rentable properties. A recent May 2009 Kansas City Star article cites city administrator Hewitt stating the problem, “...There are clerks at the new Dillons grocery commuting from 50 miles away because there is no place for a \$10-an-hour worker to live, even with a \$300

signing bonus. ‘The biggest issue we face today is affordable housing’” (Barnhart). The Comprehensive Plan acknowledges that “housing issues in Greensburg are perhaps the most difficult rebuilding challenge... [since] people who have jobs in Greensburg have difficulty affording new homes, and others who want to build new homes do not have adequate employment”. New funding partnerships are forming to create affordable ownership options, but there are not the same opportunities to create rental property yet in Greensburg. For example, ten homes have been built and fifty more planned in the “first-ever partnership between USDA Rural Development, Kansas Housing Resources Corporation (KHRC) and United Way of the Plains, [a] cooperative funding arrangement [that] allows the City of Greensburg, working with Mennonite Housing Rehabilitation Services, to oversee the construction of affordable and energy-efficient, single-family homes” (“Sweat Equity”). The value of these homes is between \$120,000 to \$150,000, but with volunteer labor, the selling price is around \$50,000. Greensburg’s goal is to have a range of housing options, including employer-assisted workforce housing, so residents still living in FEMA trailers and others can afford to stay in the town, but these projects have not started and without rental properties, housing remains a problem.

Job opportunities

By destroying the built environment, the May 2007 tornado also destroyed many of the existing small businesses in Greensburg. Even before the tornado, the town was pursuing new employers who might locate in Greensburg, but had not yet succeeded in securing any promises. Greensburg’s Comprehensive Plan

expects that “a green Greensburg provides a significant competitive advantage” and includes potential grant and loan opportunities for reestablishing local businesses and attracting green industries, such as manufacturing startups.

To provide space for small businesses, in April 2009, Greensburg opened its soon-to-be-LEED-platinum certified SunChips Business Incubator, a 9,600 square foot space with five retail shops on its ground floor and nine offices on its upper floor (*Greensburg Grows*). For outside industries, in addition to providing future carbon-free energy, Greensburg can promote the “availability of agricultural wastes... and proximity of an active rail line” (Comprehensive Plan). Greensburg is planning to develop an eco-industrial park on the site of its underutilized airport, which is in close proximity to Highway 54 and the rail line. The Plan envisions that “complimentary businesses with operating principles... would locate near each other in a synergistic relationship” (Comprehensive Plan). However, the two companies that expressed interest in opening a manufacturing plant in Greensburg are unable to do so as a result of the nation-wide recession. In late 2008, California-based home builder, XtremeHomes went bankrupt, and plans for the location of a biodiesel company, Torsten Energy “is on a wait and see basis” (Anderson “Xtreme”; Anderson “Biodiesel”). Though Greensburg intends to strengthen its tourism using the “heritage management firm”, Herbeling and Associates who will deliver a tourism plan in October 2009, the town will not survive without new employment opportunities (Anderson “Tourism”).

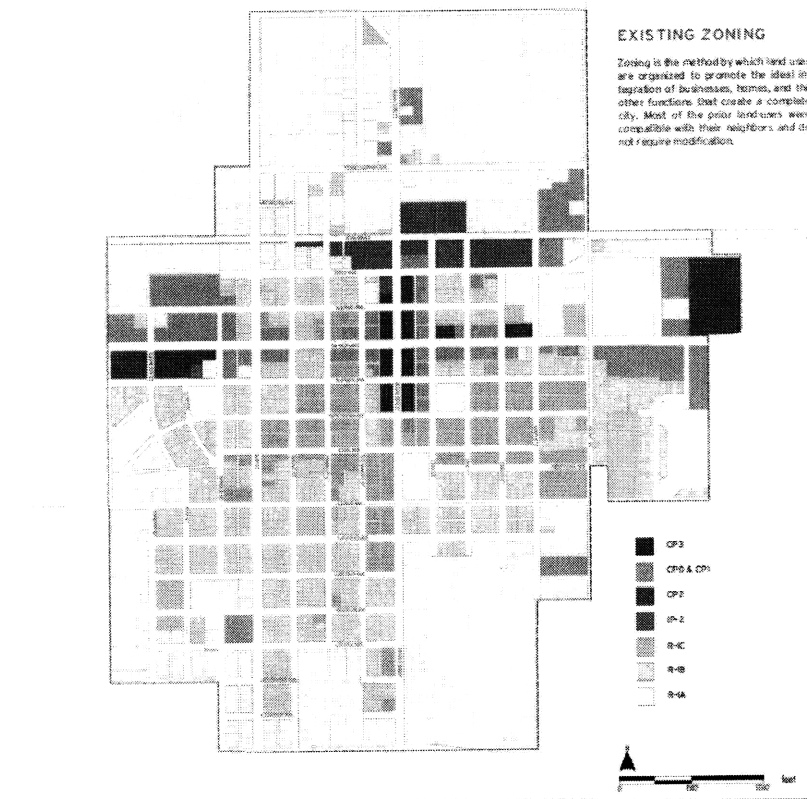


Figure 16: Map of land use plan in Greensburg before tornado
Source: Greensburg Atlas

Reduced environmental impact

Greensburg's environmental goals are context-specific and try to modify the town's post-tornado existing design to be as environmentally friendly as possible. Whereas prior to the tornado, land in Greensburg was not specifically zoned, which allowed citizens to do what they liked on their own property, the land use plan in the Comprehensive Plan does not propose any major changes, largely because of the necessity of working with the existing block structure and infrastructure. Though Greensburg was interested in burying its electric and telecommunication lines underground, they were not able to afford this significant undertaking (McCollum).

The BNIM plan does modify the land use slightly by suggesting that the previously residential blocks should be separated into two types of housing densities: residential and village residential areas, to create a more walkable town. Similarly, the land use plan proposes shifting commercial property formerly located in the middle of a residential area to either to the east or west of Greensburg's downtown area in order to establish a more uniform land use pattern. In addition, a new park block is created where there was once residential land and on either side of the park are institutional buildings, which also replace a formerly residential area. These alternations have displaced a few residents and businesses, but do not represent a major change from the pre-tornado land use.

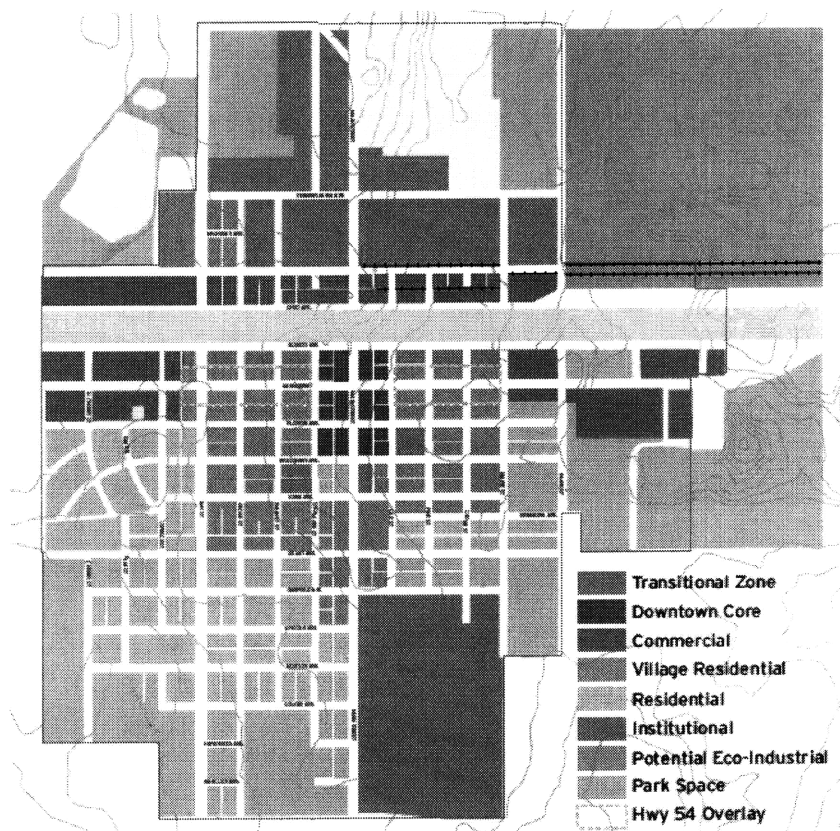


Figure 17: Map of proposed land use plan for Greensburg

Source: Comprehensive Plan

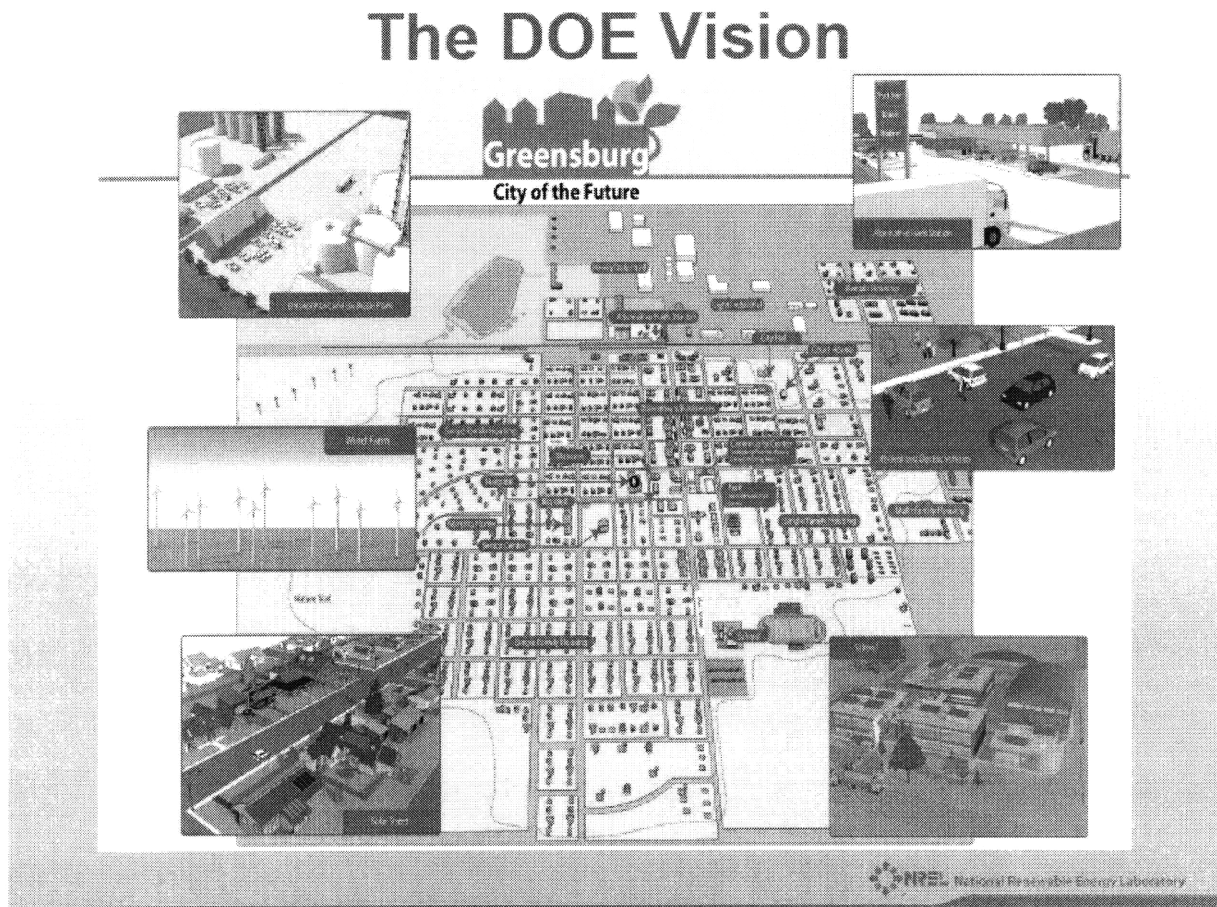


Figure 18: DOE Vision for Greensburg's future
Source: Billman "Greensburg"

In anticipation of funding, the Plan advocates for applying well-established ways to decrease the town's environmental impact such as: increasing walkability, creating green corridors through the town's grid, "treating each drop of water as a precious resource" by managing storm water and wastewater in an integrated system, providing alternative transportation options besides gas-fueled cars (such as electric or biodiesel vehicles or shuttle services) and recycling 80-85% of its waste (Comprehensive Plan). To help the town quantify its pre-tornado environmental impact, NREL estimated Greensburg's total carbon emissions by calculating the electricity, natural gas and transportation use in 2006. Greensburg

used 10,876 tons of CO₂, split almost equally between these three sources. The Plan suggests Greensburg can cut emissions by half by receiving 100% of its electricity from renewable sources, converting natural gas heaters to electric systems, and improve average fuel efficiency from 20.7 mpg to 25 mpg or reduce vehicle miles traveled by similar percentage (Comprehensive Plan).

Though most of these projects have yet to be begun, Greensburg continues to look for opportunities to implement them and progress towards a fully rebuilt town.

For all my trepidation of coming in as an outsider and failing to find anyone to talk to me, from the first meeting I had in Greensburg, I was able to quickly make contact with people and have long, informative conversations about what had happened in Greensburg. To my surprise, visiting the town was like being in a familiar place. Partly because of my experience having lived in the Midwest for six years, but mostly because of the kind, welcoming people I met. Invited into folks' homes and listening to the personal stories of recovering from the disaster, I began to understand how difficult the previous year and a half had been. The families in Greensburg who returned to rebuild, often constructing their house with their own two hands, were surrounded by evidence of the tragedy. While immediate efforts to restore electricity and clear debris were completed within the first six months, the people of Greensburg lived without a supermarket or restaurant within fifteen miles for more than a year. The conveniences of mail delivery or garbage collection that are so easily taken for granted also took time

to be restored. Away from my school life and comfortable routines and among the town's ruins and repair, I was greatly moved by the generosity, spirit and unflagging hope of people who risked so much to re-establish their community.

Origin of the green decision

Timeline of green in Greensburg

Greensburg is certainly not the first town where disaster has struck, and not the first town that has tried to implement an idealistic vision. Successful examples of towns that have resurrected themselves through teamwork and commitment after a natural disaster include the area surrounding Mount St. Helena after the volcano exploded in 1980 and the towns in Minnesota, Wisconsin, Iowa, Illinois and Missouri, affected by the Mississippi River Flood in 1993 that rallied together. Another success story is Soldiers' Gove, Wisconsin, a town that was flooded in 1978 during the national energy crisis (Vierthaler). Relocating their city above the two-hundred year floodplain, Soldiers' Grove initiated the first 'solar village', passing ordinances stipulating that the new buildings be built to specific thermal performance standards twice as stringent as those require by state law at the time (Becker). Today, the city has escaped damage from recent flooding, due to their relocation, and continues to derive much of their energy from the sun. But Chapman, KS, hit by a tornado in 2008, was not in the news for following Greensburg's lead or making green a priority. What was it that made Greensburg (a) decide to rebuild and (b) decide to rebuild with never-before-tried green policies?

As many sources have noted, the inspiration to go green occurred to several people simultaneously. Rarely mentioned in the coverage of Greensburg's recovery is its history of environmental initiatives. For a rural town, especially in an area of the country so frequently the recipient of extreme weather, awareness of the environment is always present. Within a culture of self-reliance and homemade problem-solving, precedents for green innovation include local entrepreneurs, such as energy consultant Doug Rye whose business advises people how to make their homes more energy efficient, and Dr. Scott Brantley, CEO of West Wind Energy who refurbishes and installs wind generators (McCawley). The mayor at the time of the tornado, Mayor McCollum, describes his attitude about green,

There's nothing better than bashing an aluminum can to make a car bumper out of it. It doesn't get any better—Recycling will save our nation. It worries me that a whole section of our country don't know how to survive. We've built such a fragile society here. If I pick up a rock, than that rock owns me, I don't own that rock. That the sort of things that I learned. You know if you're going to look at the economy in a kindly way, how can you do that and not look at each other in a kindly way.

Am I not letting my oil not go on my yard? I'm not only doing that for me, I'm doing that for my neighbor. Those are the things we need to talk about. . I heard on the radio that there's no such thing as global warming. I don't care whether there's global warming or not. That makes no impact on the way I think about green. It's simply the right thing to do. Forgive me, I don't have a God given right to waste. It's not my God given right. Know what we need is – somewhere along the line we need some people to stand up for the right things for the right reasons. Yes it's nothing but dreaming and idealism...

For those in the Greensburg community who have grown up hearing stories about the Depression and were raised re-using and saving everything, green was

not a new concept. Going green in 2007 was merely returning to a way of life that they were already familiar with.

Greensburg began its municipal recycling program in the 1980s. Driving this effort was Bob Mosier, a man of many hats, who served at various points in time as Greensburg's school superintendent, city council, county commissioner, creator of the Greensburg Development Board and president of the Sunflower Resource Conservation District. He recounts that when he saw trash piling up that he realized could be usable, he wanted to do something with it. The recycling program started after he began collecting the recyclables himself and bringing them in his truck to Wichita. Although the money that the recyclables brought was not much, Mosier saw the benefit in keeping trash out of the landfill. Constructing the landfill was valuable and the more time it could be kept in operation, the less expense Greensburg would have. With the help of volunteers, such as the 4H club, Boy Scouts and women's clubs, the recycling program began to expand. Eventually, the Iroquois Center for Human Development, a non-profit community mental health center, funded a number of jobs for the disabled to collect and sort Greensburg's recyclables³.

Meanwhile, the Greensburg Business Development Board was trying to attract businesses, such as renewable energy companies and the dairy or cattle farms that were looking to move away from the encroaching suburbs in states like California and Pennsylvania, to locate in Greensburg. The town's need for

³ Unfortunately, for all their effort, the landfill was completely filled from debris cleanup in the aftermath of the tornado.

new sources of jobs motivated the Board to work towards bringing in new industries and help existing business. Although no commitments were made before the tornado, this groundwork gave Greensburg familiarity with wind and solar companies and the possibilities of green development. The city council was also discussing the potential of alternative energy production back in 2006, as reported by the Kiowa County Signal who wrote that Eileen Smith addressed the city council about the possibility of solar and photovoltaic energy creating 100 kw in each county.

Vision of revitalization, the precursor to green rebuilding

At the same time, the economic development group and the Greensburg city government were working on a more general strategy to revitalize the town. Mayor McCollum explained, "I've went and looked at other towns and we are behind. I would like to go in one direction; however I need the council's help to know which way". At the end of December 2006, approximately five months before the disaster, the city council unanimously decided to approve a vision statement for the town that read, "Be a progressive community including revitalizing downtown and keep 'Quality of Life' the focus. Focus on economic development, beautification, and etc. as well as streets, utilities, and all aspects of the community" (City council minutes). Though the new city administration was determined to rejuvenate Greensburg and entice more people to move to town, they were constrained by the lack of city revenues and the general apathy of the town's population. Without the ability to execute bold transformations,

Greensburg's efforts focused on beautifying the town to increase tourism. With beautification in mind, Greensburg also set in motion a proposal to enact the 2003 International Residence Building Codes in February 2007 and begins searching to see if it was possible to hire a full time code officer. These codes were approved in March 2007, two months before the tornado (City Council minutes). By cleaning up the streets and improving the appearance of town assets, such as the Big Well and meteorite tourist attractions, Greensburg was moving forward, but still was not able to settle on a more ambitious economic strategy.

Further references to environmental considerations appear throughout the Kiowa County Signal, Greensburg's weekly paper. Columns by the Natural Resource Conservation Service, which had an office in Greensburg, kept the community attuned to topics like energy conservation, while articles on ethanol production, the carbon credit market, and "How to go green in your office" were printed long before the tornado struck.

Although Greensburg was not a place where environment stewardship was necessarily prioritized before the storm, there was a baseline awareness of environmental issues, and a concerted effort by the recently elected city administration to do something new to revitalize the town.

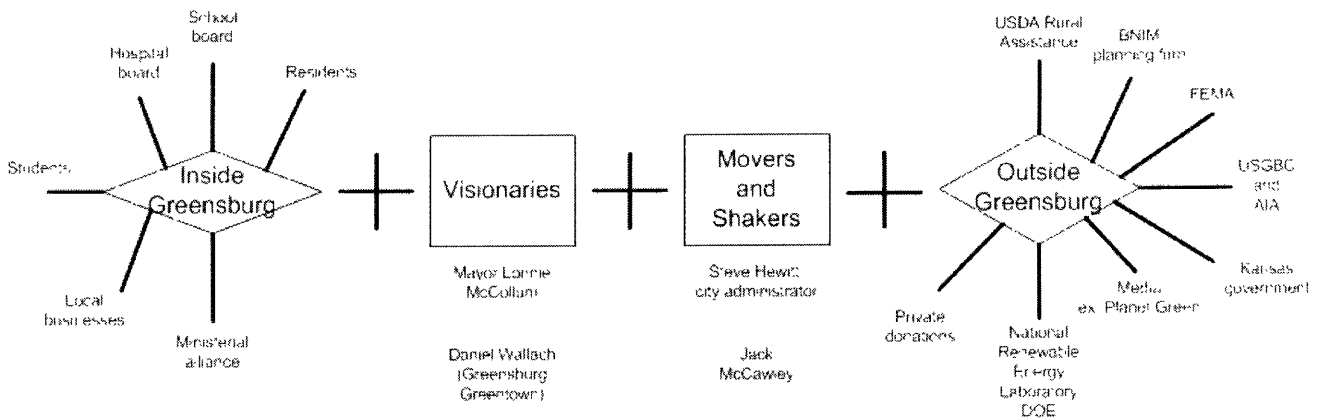


Figure19: Map of leaders in Greensburg after the tornado
Source: Author

Greensburg’s recovery can be attributed in large part to the committed leaders that devoted themselves to bringing the community back together. Between Greensburg’s city government and active citizens, the state and federal agencies who dedicated time and resources to help Greensburg rebuild, and the private and non-profit interest and donations that supported Greensburg’s dream, the town has benefitted from the many different leaders that have merged forces. The decision to rebuild green was first voiced by Mayor McCollum when he was pushed to speak in front of the television cameras, but understanding what green would mean for Greensburg was the collective work of many individuals and agencies over a much longer period of time.

Local Leadership

Rising to the occasion in the chaos of the first few weeks after the disaster, Greensburg’s local, forward-thinking leaders showed themselves to be prepared and vastly capable. The strengths of idealistic visionaries, such as

Mayor McCollum and Daniel Wallach, and the facilitating expertise of Steve Hewitt and Jack McCawley, combined to the town's advantage. The desire to revitalize Greensburg and build it even better than it was before, spurred these men to work tirelessly. McCollum, Hewitt and the Greensburg city council had been hatching small scale plans before the tornado, which turned into grand possibilities in the wake of the tornado's destruction. An intimate group of city activists had been mulling over ideas for reviving the town and McCollum's offhanded announcement that the town would rebuild green was both premeditated and open-ended. While the mayor did not have specific policies in mind, he had been considering ideas like using golf carts instead of cars around town to reduce emissions, dividing blocks into smaller parcels to create a more communal, senior-friendly neighborhood, and reconfiguring the electric and sewer infrastructure, for a long time. Although many of his plans were not carried out, the disaster allowed all four to bypass usual procedures and expedited change in the town (McCollum). Greensburg's inhabitability also created a power vacuum since residents were scattered all over the state (Janssen). This opportunity for unimpeded leadership allowed the town to quickly decide to adopt green as their theme.

Turning green into something tangible required logistical finesse of city administrator Hewitt. But before green work could begin, Greensburg's government had to navigate the unfamiliar bureaucracy of required federal and state emergency response procedures. Eventually learning to push back on federal agency's advice, after seeing that the timeline the agencies outlined was

slower than if he took matters into their own hands, Hewitt got the electricity turned on and the roads repaired faster than FEMA said would be possible. Some even thought FEMA set the town back a few months with their planning processes. Hewitt recognized Greensburg's dilemma, "We can't compete with other cities to the north and south of us. We cannot attract traditional industry. By going to green, being a sustainable community we're looking for green collar jobs, something that sets us apart from everybody else" ("Greentown"). The economic motivations to apply green planning to Greensburg's recovery came from the cost-savings as well as the potential for finding a brand for the town. The ability of green concepts to appeal to people on multiple levels greatly increased its acceptance by diverse interests within the community.

After the disaster hit, Mayor McCollum was immersed in coordinating the assessment and restoration efforts. But when his friend, Jack McCawley, a retired resident in the nearby town of Pratt came to Greensburg two days after the storm to give him a hand, McCollum told McCawley, "I want you to see that this town comes back green". All volunteers were issued badges so they could be identified by rescue workers and the security officers who were watching out for looters. On McCawley's badge under his picture, was the title 'Green Coordinator'.

Six months before the tornado, McCawley had seen Amory Lovins of the Rocky Mountain Institute on Charlie Rose's television program and was mesmerized by what he heard. As a military man, he remembered Boeing's new Dreamrider that was built of composite materials making it twenty percent more

efficient than the competition, able to be twenty percent faster and haul more load. He learned on the program how houses could be built so they're almost energy free, and about the technology that made hybrid and electric cars. Impressed with what he saw, on the Monday after the tornado hit Greensburg, McCawley called the Rocky Mountain Institute to ask what the town should do. Through the Rocky Mountain Institute he was connected to local U.S. Green Building Council (USGBC) chapters in nearby Oklahoma and Missouri (since Kansas did not have its own chapter). With their help, McCawley organized a large meeting on May 10th, six days after the storm. A group of forty-nine people gathered in the Pratt City Hall to brainstorm about a green recovery. The only Greensburg resident present was Mayor Lonnie McCollum. All the others were outsiders from groups such as the American Institute of Architects (of the Topeka and Wichita chapters), FEMA, building industry product representatives, and renewable energy product representatives. Leading the meeting were the USGBC chairs from Oklahoma and Missouri. As a result of that meeting, the National Renewable Energy Lab (NREL) was contacted and decided to establish an office in Greensburg to advise and educate the town about the possibilities of renewable energy. The tirelessly work McCawley did to make connections between everyone that might possibly help Greensburg, and to campaign on the town's behalf, greatly helped Greensburg find the resources it needed. While city administration needed to concentrate on emergency management, McCawley was able to focus on green possibilities so the town could be prepared to consider green after the worst of the disaster was addressed.

Fifty miles away, Daniel Wallach, a non-profit organizer from Colorado and owner of a local food cooperative for the past two and a half years, imagined what Greensburg would be like if it rebuilt in a green way. Inspired to draft a concept paper to present to the city council, Wallach wondered what reaction the city would have to this unusual idea.

Right after the tornado it occurred to me that Greensburg was ill and turned upside down and I saw a parallel between what we went through for 10 years [he and his wife were diagnosed with life threatening illnesses] and what Greensburg had just been through and was facing. I also saw a parallel between our experience with different healers and the agencies I saw coming into Greensburg right after the storm to help. Some came in and said, "You can be fine and we're here to help you help yourselves. You have everything it takes to be whole again and we want to partner with you in that endeavor." [The others] were the worst, just like the worst healers we dealt with. They came into Greensburg and said, "We're here to fix you and make you better if you do as we say." It was, you know, a real patronizing attitude rather than empowering approach.

If someone's sick, one of the best things you can do is show them wellness, give them something to visualize something to set their sights on and creativity will take them there.

When Wallach visited the Greensburg city council with his proposal to be a liaison between the city and the state and federal offices in order to apply environmental principles to the rebuilding process one month after the storm, he was surprised how well-received his idea was. Wallach signed an agreement with the city and founded a non-profit called Greensburg Greentown to coordinate green planning in June 2007. Using land donated by Mayor McCollum, Greensburg Greentown built one of the first buildings after the storm, a small one room information center. The group began creating a network for

sustainability resources and aimed to find the “common sense that we’ve lost in the age of cheap energy” (“Greentown”). Wallach’s sensitive approach to green in Greensburg, acknowledging the community’s tremendous loss and providing a non-threatening, non-imposing perspective on green, made it possible for the community to learn at their own pace what green could do and to understand green in their own way. As discussed more in the section, “Culturally sensitive advocacy...”, this method of education was intended to remove preconceived notions of overly liberal, environmental stereotypes and instead position green as a practical choice for rebuilding and a more sustainable lifestyle.

Outside leadership

At the state level, Kansas leadership was also interested in initiating greener policies and Kansas had several programs in place to give financial assistance for weatherization retrofitting and energy efficiency projects. State organizations took more of a supportive role in Greensburg’s recovery than the pro-active work of the local leaders. Rather than just providing helpful resources to a town in need, the state groups have also gained knowledge and experience from their work in Greensburg. Greensburg’s initiatives and use of new technologies have given state groups a greater understanding of how to create a green community, skills that the state groups can then potentially share with the other towns they work in.

Governor Sibelius entered office in 2003 with a platform of independent leadership. Recognizing the benefit the clean energy sector could have on

Kansas employment and economy, she declared her mission to make ten percent of Kansas' electricity to come from renewable sources by 2010 and twenty percent by 2020 (*EPA*). She repeatedly vetoed bills to construct coal powered plants, and is considered the first in the country to cite climate change concerns as the basis of these decisions. Her stance on coal plants is not widely approved across the state, as demonstrated in a poll taken in 2009 showing twice as many voters support coal plants for their potential for job creation than oppose it (51 to 26 percent)(“Kansas Governor”). However, the idea of rebuilding Greensburg as the “greenest town in rural America” as Sibelius proclaimed after the storm, fits well within her mission (Heeren). For example, Sibelius created the Kansas Energy and Environmental Planning Advisory Group (KEEP) “to identify opportunities for Kansas to respond to the challenges of global climate change while becoming more energy efficient, more energy independent and spurring economic development” (Center for Climate Studies). One of KEEP's programs is to provide interest free loans to qualified Kansas homeowners to make improvements to their homes to increase energy efficiency.

Sibelius coordinated the Greensburg disaster assistance through Steve Weatherford, president of the Kansas Development Finance Authority, an agency whose subsidiary is the Kansas Housing Resource Corporation. The Kansas Housing Resource Corporation administers the thirty-two year old Department of Energy Weatherization Assistance Program and had been advocating for tax credits for green building for the past few years. Though typically not a primary part of an emergency response team, these two organizations became much

more involved in Greensburg because the tornado damage was so extensive that the temporary housing and business arrangements usually made were inadequate. As the first appointment of this kind in disaster management in Kansas, Weatherford helped the community by troubleshooting problems and listening to how Greensburg wanted to rebuild. When the local government began talking about green issues, Weatherford noticed that not all residents were immediately supportive, but as more of the town's institutions started agreeing with a green recovery plan, the state encouraged the greater community to consider the benefits. Since the disaster, Weatherford commented that the Kansas Housing Resource Corporation has become more knowledgeable about and gained experience with managing green building projects (Weatherford).

Sibelius also asked Kansas Communities LLC, a community development organization in Kansas, to help Greensburg. Using a range of participatory exercises, the organization applies the concept of public squares to revitalize towns or counties using a systematic process over a period of three years. Like the state's public agencies, this organization functioned as an enabler, working with the Greensburg community to establish five goals for its future and assisting the city to build leadership capacity, engage its citizens and foster partnerships between business, education, health/human service and government. Kansas Communities continues to hold meetings in Greensburg and part of its method is establish a sister city where Greensburg will share its experiences and become a mentor. In this way, lessons from Greensburg can be passed on around the state.

The state chapter of the American Association of Architects was also involved in Greensburg after the tornado. Like Wallach, as soon as AIA Wichita chapter president, Chris Kliewer, heard about the destruction from the Greensburg tornado, he too, imagined that Greensburg could be built back green. He wrote a letter to the governor, printed t-shirts with the 'Top 10 reasons to go green', and eventually was interviewed by newspapers and NPR's All Things Considered, and became a conduit to direct green resources and donations to the town (Lyden). This publicity also brought in the state level AIA office which dedicated their 105th anniversary funding to bring educational seminars and product fairs about green building to Greensburg. In January 2007, AIA Kansas enlisted the support of the state's Department of Commerce and introduced the Kansas Design Team initiative to members of the state legislature. The Kansas Design Team is a framework developed by AIA Kansas to assist communities large and small with challenges of growth and development. The mission of the Team was to increase awareness of the benefits of quality design, preserve community identity and inspire community-based development (*AIA Kansas*). "It's going to be their project and their design when we get done," says Michael Vieux, AIA, Kansas's treasurer and chair of the Greensburg effort (*AIA Kansas*).

Kliewer's observation was that Greensburg was able to be much more of a risk taker than the bigger city of Wichita, where he lived. He also credits Greensburg for giving legitimacy to green concepts that the Wichita general public had previously thought of as a passing fad. Greensburg was fortunate to have the state's support in its vision for a green future and the state, in turn,

gained much experience with green planning through Greensburg's willingness to pioneer new policies and technologies.

Federal government

Initially, at the federal level, environmental issues were subsidiary to the immediate needs of responding to the tornado. FEMA worked to coordinate basic services, bringing in temporary trailers for people to live in and conducting meetings to write up a recovery plan so that Greensburg could have a guide for its massive rebuilding effort. Of high priority was the rerouting of US 54, the major east-west highway running through Greensburg, and how changes in the highway would affect the town. Once the emergency management was addressed, and after the city decided to be green, federal level assistance came in the form of educational and financial resource for green development.

As a rural, agricultural community, Greensburg worked closely with the U.S. Department of Agriculture (USDA) and the Department of Energy. The local National Resources Conservation Service (NRCS) field office was located in the Greensburg because the town was the county seat. Before the tornado, USDA officials wrote columns in the weekly Kiowa County Signal, and worked to hold many educational seminars in Greensburg about new agricultural methods as well as economic development opportunities. The NRCS was invested in the future of historically agricultural towns like Greensburg, even as agriculture was ceasing to be a major base of its economy. Through the USDA's role in rural development, Greensburg was able to receive additional financial aid to the town, further allowing it to pursue its vision of a green town.

The U.S. Department of Energy has two programs actively working in Greensburg. The Building America Program (BAP) is an “industry-led, cost-shared partnership program that uses a systems engineering approach to reduce energy use, utility bills, construction time, and construction waste” (*Building America*). The BAP provided workshops, architectural and engineering support and educational resources about energy efficiency to the town. Meanwhile, NREL founded an office in Greensburg staffed with personnel experienced with buildings, wind energy, solar energy, alternative transportation, and analysis. Its work includes “designing energy efficiency strategies for commercial, city and county buildings, evaluating options for renewable generation and fuels, developing sustainable community strategies and leading the development of a wind energy system for the municipal utility” (Hicks). NREL provided educational resources, energy modeling expertise and participation in all aspects of the town’s recovery and was an invaluable source of support for Greensburg.

The national green building advocate group, the U.S. Green Building Council (USGBC), was also heavily involved in Greensburg’s recovery. Aware of the scale of the tornado’s destruction and the community’s need for new buildings, the USGBC was interested in how much of the reconstruction could be energy efficient and employ green technologies. John Picard, an architect, entrepreneur and building efficiency expert, who was one of the founding members of the USGBC, waived his consulting fee to work with Greensburg. Able to offer occasional advice rather than participating in the town’s daily decision-making, Picard promoted green buildings and was influential in

Greensburg's decision to approve its LEED platinum resolution. Through Picard's work as a green corporate strategist, Greensburg gained sponsorship connections and publicity.

Barriers to green rebuilding in Greensburg

Once Mayor McCollum proclaimed a green Greensburg and the idea was taken up by Governor Sibelius and environmental advocates, the town still had to define what green would mean and begin acting on this green idea. For as many idealistic visions proposed by charismatic leaders, there are stories of obstacles, incompleteness, and failure. Ideas like the utopian Biosphere 2, the widely acclaimed Dongtan eco-city and the experimental Arcosanti all tried to forge a new relationship between humans and their environment, but were not able to reach the targets they set for themselves. Greensburg's leadership not only had to convince residents to return to a town that did not have a bright future before the tornado, but once residents came back, also explain the green idea and how it might impact their rebuilding.

Bureaucratic disagreements and aversion to change

While big cities often assume small towns can easily make changes, in fact, politics in close-knit communities are often very complex. The familiarity of the community with one another can be problematic for objective decision-making. Part of the entertainment value of the *Planet Green* television series comes exactly from the drama of these conflicts. For example, in the two years

since the tornado struck, Greensburg's community has communicated its dislike of too much change by causing Mayor McCollum to resign, voting out Mayor Janssen, and finally electing Mayor Dixon. There is no individual willfully imposing any idea on Greensburg --- for Greensburg to be green, the community had to be convinced it was in their best interest and to influence how green would be implemented in their town.

Uncertainty whether Greensburg could survive

Even with Greensburg's many dedicated leaders, the reality of rebuilding Greensburg would not have come to pass without the approval of Greensburg's community and the Greensburg community was by no means automatically intending to return in the first place. The decision whether to rebuild in Greensburg was a difficult choice for many families. "Why go back? There's nothing to go back to" (Deam). Walking among the debris where there were once grand old houses and green lawns, it was clear that it would take a long time for Greensburg to replace all that was destroyed. Furthermore, Greensburg's struggle with depopulation and job loss did not bode well for a future renaissance. Even if the town could resurrect what it used to be, how could the city reverse its economic decline? If all resources were directed to disaster recovery, what would be left for revitalizing the economy?

Residents had many other reasons for not wanting to risk rebuilding in Greensburg. Living through the tornado was a traumatic experience, and the thought of staying in Tornado Alley with the threat of future storms and extreme

weather, convinced some families not to come back. As mentioned previously, older residents welcomed the chance to move closer to their children or grandchildren or thought of returning to their hometowns to retire. Families found they could take their insurance and FEMA money and buy a house in the Wichita suburbs for less cost than it would take to rebuild in Greensburg (“Single-family data”). Others, either without home insurance, or renters, would not be getting the same financial assistance home owners received, and were not financially able to move back.

Resistance to rebuilding green

For community members who decided to risk the threat of another tornado, who believed that the town would revive, and who could afford to rebuild, there was initially little thought of spending more money for what were expensive, untested, unnecessary technologies. As the city government tried to enforce the new building codes and talked about changing to a greener town, residents became “tired of hearing the word green: and some were “angry because city [prevented building] on the original lot because new plot calls for it to be open space” (“Greentown”). Not knowing what the green idea would do to their town, residents were wary of the added expenses and rules. Many of the faith organizations in Greensburg did not approve of attempting to interfere with God’s work. By putting life in God’s hands, some religious followers believe they are not meant to change the way the world is working. Furthermore, the link

between environmental issues and liberal sociopolitical agendas was an additional barrier for green projects to be accepted in Greensburg.

Journey of rebuilding green

Disaster recovery

The tornado brought the eyes of the nation on Greensburg. Meteorologists not only warned the town of the path of the tornado, but alerted all who watched that Greensburg would be in trouble (Smith). The first responders who arrived from nearby towns were soon followed by search and rescue teams, Red Cross and Salvation Army volunteers, and church groups from all over the country (“Response, recovery”). As Greensburg began its recovery, the disaster brought many resources along with widespread public goodwill to the town.

While the disaster gave Greensburg a national platform, other towns will not be able to gain interest in so short a timeframe. However much the disaster might have initially helped the town, almost nobody in the community would have wished it to happen. Other towns do not need such a devastating event and can use the four conditions described in the next section to create the interest and build capacity that Greensburg maintained long after the tornado became old news, without undergoing Greensburg’s destruction.

Novelty and media coverage

Greensburg’s leadership sustained news coverage when they publicized their innovative approach to recovery. The community’s claims of being the

greenest town in rural America were especially noteworthy because of increasing nationwide global concern about environmental issues. From the groundbreaking ceremonies for the LED street lighting and the LEED platinum arts center, to visits by celebrities or politicians such as Kirstie Allen, Kansas State Treasurer Dennis McKinney, a Greensburg native, and presidential visits, Greensburg maintains its profile in the public eye. The recovery story is even more poignant because of Greensburg's struggle with economic hardship and the unlikeliness of what is perceived to be a big city undertaking happening in the rural Midwest, a part of the United States that often exists under the radar of glitzy Hollywood or dramatic urban centers.

The ability to tap into the vast reaches of the global media in this news-hungry age was a great boon to Greensburg's redevelopment. The attention of Planet Green, the Discovery Channel's new environmental channel, who requested Greensburg be their flagship program, gave the town prolonged exposure after the immediate news of the disaster had passed. Funded by Leonardo DiCaprio, one of the highest paid American actors, who also promotes a green lifestyle, this nationally broadcast program gives viewers a glimpse of the grand ideas Greensburg proposed. But, unlike other reality shows, rebuilding Greensburg's could not happen in a few months to produce a happy ending. Instead the series focuses on the immense challenges the town faces, the setbacks, and the slow process of rebuilding, making each triumph all the more welcome, while revealing what a long time it takes to make a green town.

Still, the television coverage keeps Greensburg on the media's radar. Greensburg has been featured on national television stations, such as CBS who donated a playground to Greensburg on its one year anniversary after the storm and continues to check back on the town, magazine and newspaper articles in sources as diverse as the *Wall Street Journal* and *Good Housekeeping*, academic researchers, such as Jack Rozdilsky, an emergency administration professor at the University of North Texas who is writing a book about the disaster, as well as architecture studios from the University of Kansas, University of Colorado, Kansas State University, and Wichita State University, who have designed and built the LEED platinum art center, and donated prize-winning solar homes among many projects. This attention serves Greensburg well as much as it does the investigators who bring the news to their audiences. By continuing to appear on environmental news websites, human interest articles and technology industry publications, Greensburg is able to capture the attention of national companies who are interested in environmental philanthropy and offer donations, grants and more publicity.

Though the tornado gave Greensburg the opportunity to create a new town and though the green idea made a great story for the media, it was the interest and commitment of the Greensburg community that has allowed the town to implement its green plans. In order for the Greensburg community to overcome their concerns about returning to town and their hesitation about what green would require, two key factors were required in addition to the skilled leadership described in the section, "Origin of the Green Decision". The two

factors were finding sources of funding and building community support for both the rebuilding and green idea.

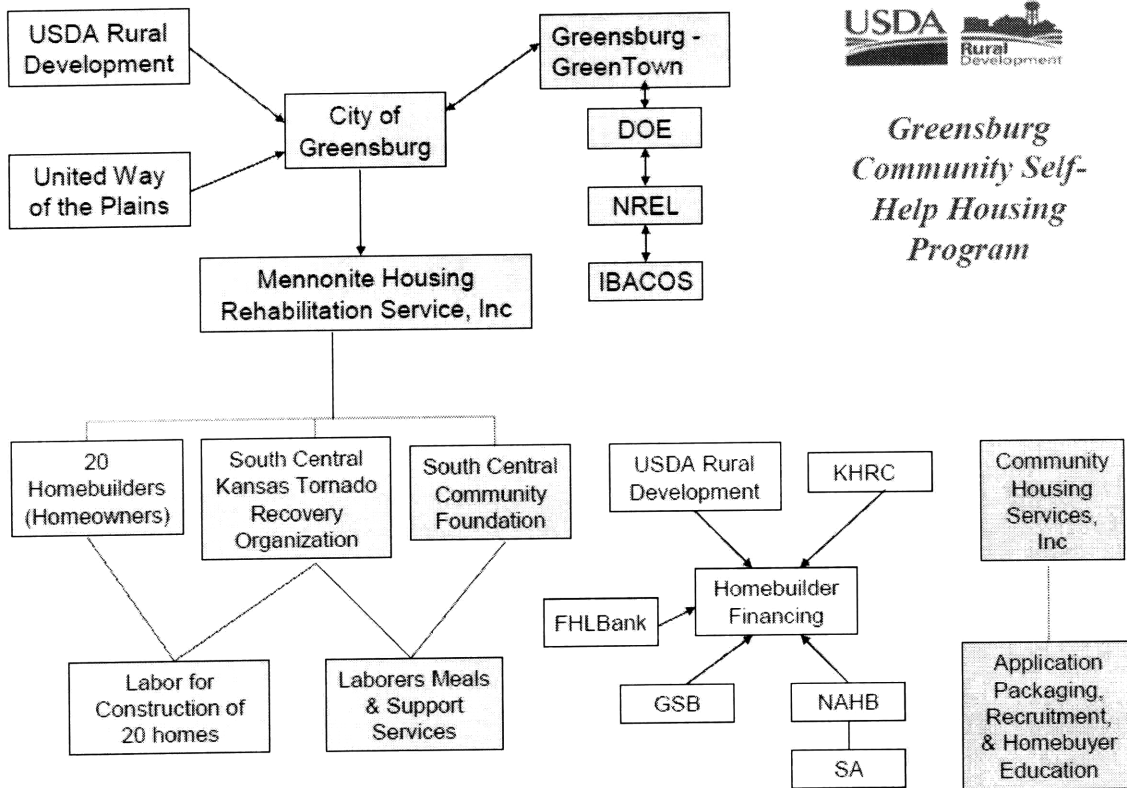


Figure 18: Selection of organizations involved in rebuilding housing in Greensburg
Source: Banks

Creating partnerships and financial support

Greensburg would not have been able to finance its green ideas without the partners it found that shared its vision. The town’s recovery effort was aided by many groups who agreed that success depended on coordinated effort. The Shawnee county commissioner who came down to Greensburg to help after the tornado explains that “Public health is more than immunizations. [It is necessary to] go above and beyond that. Even starting with clean water, clean air and going

to physical health, nutrition and including environmental health. Public health [requires a] holistic approach: physical, mental, emotional, religious or spiritual care for the person work in harmony for folks to heal. [Greensburg benefitted from] regional cooperation of nearby counties” (“Public Health Response”). Greensburg’s almost total destruction required the contributions of many aid organizations. The town’s leadership made great effort to reach out to as many public, private, non-profit and faith-based groups that could help. Through this proactive work, the town has gained funding and resources that might not otherwise have been available.

Even before the tornado, Greensburg was trying to seek sources of funding to revitalize itself. In the last city council meeting before the storm, Ranson Financial Consultants presented a report of the possible sources for funding projects from agencies like USDA, KDHE, CDBG, KDOT and the state revolving loan funds (City Council minutes). After the tornado hit, Greensburg received funds from many of these exact sources.

Though estimates of the total cost of damage in Greensburg to be about \$250 million, LEED buildings can cost at least five percent more than standard construction because of the increased price of materials and additional certification required (Jackson). For other towns looking for guidance on incorporate green strategies into their revitalization, availability of funding is one of the most important factors to implementation.

Public sources

The revitalization Greensburg had been waiting for became possible with governmental disaster assistance and private interest in the prospect of a green recovery. After the tornado, tax credits, governmental funding, philanthropic grants and donations, as well as volunteers from around the world came to Greensburg. Greensburg leadership took risks in going forward with projects without completely securing full funding. Believing that the money would come through and finding it more important to start building to demonstrate the seriousness of the recovery effort, the money did appear. This approach would not work for all and is probably unwise to follow often. But the determination and commitment it demonstrates is noteworthy.

Much of the funding for Greensburg's ambitious projects is from government sources like FEMA, who will reimburse home-owners and businesses 75% of the pre-disaster value, and the state of Kansas, who reimburses 15% of the pre-disaster value. But in Greensburg's case, since the cost of rebuilding is much higher (by two or three times) the value of the pre-disaster building, funding from the USDA's rural development program, NREL energy efficiency grants and city or personal savings have been tapped to make up the difference. Reporting on the two-year anniversary of the tornado, CBS estimates that Greensburg has received \$100 million from the federal government alone (Glor).

Private sources

Greensburg's city infrastructure and buildings receive funding from private corporations. Planet Green's website lists major donors as Chlorax, General Motors-Chevrolet division, Frito Lay's Sun Chips (\$1,000,000), and Dupont (\$750,000). Leonardo DiCaprio personally contributed funding for the business incubator and the 2009 Earth Day announcement of the wind farm construction has brought additional support from companies as Stonyfield Farms yogurt and John Deere.

<p>Building finance</p> <p>LEED platinum city buildings are funded through a combination of sources. City Hall, for example, will cost a little less than \$3,000,000, which will be paid through:</p> <p>\$1,200,000 – FEMA</p> <p>\$900,000 – USDA Community Facilities Program</p> <p>\$400,000 – Kansas Division of Emergency Management</p> <p>\$280,000 – insurance</p> <p>\$186,000 – city contribution</p>
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Figure 19: Example building finance from multiple sources
Source: *Greentown*

Only by combining money from non-profits, government agencies and private funds, could Greensburg afford its green recovery. The total cost of rebuilding the town was first estimated at \$45-60 million, but in all likelihood this figure will increase as projects get delayed or require additional resources (Swirbul).

Building community support for green rebuilding

For all Greensburg's talented leadership, the town would not be able to implement anything green without the community's support of the vision the leaders proposed. Although meetings and calls for public participation are one way of obtaining this support, people I spoke to commented that, "No one has time for meetings except the unemployed" and "A lot of people that didn't feel like they were communicated with or questioned or interviewed or anything. The whole thing drawing on white boards and having everybody getting exactly what they want, spend a whole bunch of money and we end up with nothing, it's just wasteful, it's just paper. Public participation was window dressing." Through balancing compromise and strong leadership and approaching Greensburg with culturally sensitive advocacy, the community began approving of the green recovery and has started finding its own version of green.

Culturally sensitive advocacy and environmental educational

The extensive efforts of many individuals and organizations to teach Greensburg about the possibilities open to them were critical to obtain the community's support. The local leadership, especially Daniel Wallach and Greensburg Greentown, and the government agencies, especially NREL, were extremely valuable in approaching residents after their recent trauma. Within two weeks of the tornado, AIA helped organize a seminar about energy efficient building techniques and asked people to consider how their decisions would affect their children and children's children. The office the National Renewable Energy Lab that was set up in Greensburg helped assure the residents of a

stable resource for financing and ownership options to produce or procure renewable energy technologies, Sustainability consultant, John Picard, encouraged the community, “If you build back conventional, it’ll be just that. Building to code is just one step above breaking the law” (Anderson “Big city”). These days, a local AM radio program called Greentalk Radio, gives updates on green news around town.

The students of Greensburg were very much a part of the community rebuilding process. Not only did they begin to participate in town meetings to discuss the new community plans that were being drawn up, but upon learning about the green movement, they started a high school Green Club. John Picard helped these students interested in green to attend the USGBC Conferences of 2007 and 2008. NREL has worked with Greensburg K-12 students on “hands-on projects to build working wind turbine models, solar-powered cars, solar-powered circuitry, and paper wind mills for the youngest grades” and reports that Greensburg’s school “has embraced sustainability as a major focus. The school is expanding its curricula on energy and green technologies, and the new school campus and building has been designed to LEED Platinum standards with hands-on educational experiences for the students to understand the real world of energy and sustainability” (Billman).

The tornado has made these students realize how important their hometown is and to think about returning to the town and working there after college graduation instead of perpetuating the pattern of automatically leaving Greensburg for good once they left for college. Stemming the exodus of younger

generations is one of the most challenging and critical things a town can do. The current mayor, Bob Dixon, often says, “The biggest export from our communities has been our youth” (“Greentown”). With the renewed interest of Greensburg’s young people and their desire to maintain the community and improve it, Greensburg might be able to slow its brain drain.

Just as an understanding of environmental issues empowered Greensburg’s youth who gained familiarity with subjects like building technologies, renewable energy systems and product life cycles, the environmental education also empowered the greater community. Becoming informed about the technological choices as they rebuilt their homes, Greensburg residents grew increasingly familiar with the importance of environmental considerations in their decision-making. This knowledge, along with the growing notoriety the town has garnered through magazine articles, television appearance and special attention both from President Bush who visited the town twice and President Obama who mentioned the town in his first address to congress, has reinforced the community’s sense of self-worth and produced community pride in being green pioneers.

Although advocacy is often associated with insistent, unrelenting promotion of a certain idea, the environmental proponents in Greensburg approached the town as educators, with more interest in finding a good fit for green within Greensburg, than a need to impose any one fixed green philosophy on the community. Advocates described their intentions,

We want to make sure there’s enough time between this thing happened and when rebuilding starts and we’d go out there and

start marketing ourselves because we don't want to seem like sharks coming in and trying to benefit... I've met enough people pushing their own agenda that I decided I'm not going to be one of those people.

Though outside environmental educators came to Greensburg equipped with promotional materials, demonstration products, and convincing arguments for going green, they understood that alienating the community with an inflexible stance or ignoring the social or economic barriers to implementation would not encourage the city to adopt green principles.

It's your intention first of all. Your focus is not first and foremost on making green. It's being of service, creating something of value and beauty and to do that it takes time. It doesn't meet the corporate model very well. Because the corporate model is about the bottom line and efficiency.

Explaining environmentalism in a tangible, straight-forward manner and focusing on how environmental actions can best serve the community, rather than turning the town into a Disney-fied showcase or promising unrealistic results, allowed the community to learn for themselves what green was and trust the environmentalists in their midst.

Why Build an Energy Efficient Home?.....

It Saves You Money!

	Upgraded Energy Savings Levels		
For a Typical 2,000 SqFt Home:	Base Efficiency	High Efficiency	Premium Efficiency
Savings on Monthly Utility Bill ¹	\$60.25	\$76.58	\$96.83
Increase in Monthly Mortgage Payment ²	\$17.58	\$34.25	\$58.83
Net Monthly Savings	\$42.67	\$42.33	\$38.00

¹ Evaluated relative to current Building Code - IECC 2003.

² Based on a 30 year mortgage at 7% APR with an increase in loan value of \$4,000 for the 30% option, \$7,000 for the 40% option, and \$13,000 for the 50% option.

You also get:

- Increased Durability
- Increased Comfort



Figure 20: NREL educational material
Source: Billman

NREL also “gave training sessions for builders in Greensburg in July and December 2007... Besides information already available for the Greensburg climate, NREL and its subcontractors developed a series of fact sheets on improving the energy efficiency of specific components of the house system specifically for Greensburg” (Billman).

Inspirational narrative

As Lawrence Vale documents in his book, *The Resilient City*, the narrative of disaster has a profound effect on how a place is reconstructed after a traumatic experience. The “narrative imagination” that helps Americans conceive of disasters as instruments progress and “the cultural expectation that shape[s] the ways that the calamities were seen and interpreted” is crucial to a city’s recovery (Vale). Greensburg’s leadership framed the disaster as an opportunity for the town to have a better future. In doing so, they raised a collective feeling of the spiritual or the miraculous in the town’s citizens, giving the community a sense of hope and pride. There were few lives lost, and though property was destroyed, the community thought of itself as lucky to be safe. In Greensburg, one of the motives residents keep bringing up to explain why they chose to return and rebuild green is, “their belief in a higher purpose. They say their search for meaning in the face of disaster has led to their resolution to be better stewards of this world” (Heeren).

After the tornado, when the community began hearing more about what ‘rebuilding green’ would mean, the excitement of being the first town in the nation to undertake such a formidable project began scintillating people’s imagination. Finding the silver lining in the disaster helped give the community more confidence in the town’s future. The green vision became more defined, as people began imagining what they could do with their town’s blank slate. The interest of the Discovery Channel, and the whole nation, demonstrated to the community that what they were doing in Greensburg was valued and special.

The vision of a new Greensburg, a greener future, touched resident's emotions.

One told me,

I had just about made up my mind to move and then I kept feeling, I'm not supposed to do that. I was meant to be a part of this regrowth, rebuilding. Because of the people here. There was excitement here about rebuilding. We're going to do it. Everybody was getting fired up about rebuilding. I wanted to be a part of it.

Another says,

The only other part of it, and it may even have been the bigger part for me, was kind of just values and beliefs, kind of my spiritual side. I think stewardship is something that I believe in... It's not just the en vogue thing to do, it's something that we should have been doing forever. [Greensburg] wanted something to look forward to or something to get excited about and that was really what kept driving me too.

Marshall Ganz emphasizes the importance of this emotional response in his article, "Why stories matter: the art craft of social change". He writes,

How do organizers master urgency to break through inertia? When anxiety hits and you're down in despair, then fear hits... But if you're up in hope or enthusiasm, you're more likely to ask questions and learn what you need to learn to deal with the unexpected.... Hope is what allows us to deal with problems creatively. In order to deal with fear, we have to mobilize hope.

Greensburg's leadership was visionary after the tornado. Looking upon the miles of destruction, they imagined big changes and great possibilities. It was their talk of the dream they had of a newly vibrant town that began replacing the community's sadness and anger with enthusiasm and excitement. Ganz continues,

Leadership is about enabling others to achieve purpose in the face of uncertainty. When there's certainty, when you know what to do, you don't need leadership. It's when you don't know what to do

that the art and creativity of leadership matters. It matters even more in enabling others to work together to achieve a common purpose in the face of uncertainty.

Unprepared for catastrophe, and thrust into the position of making long-lasting and critical decisions affecting the entire community, Greensburg's mayor and city administration rose to the occasion like "cream on milk".

Interestingly, the power of hope and positive thinking was acknowledged by former Mayor McCollum before the storm. After hearing that there was nothing to do in Greensburg and no reason for tourists to visit, McCollum had proposed that the town make a pact that everyone would promise to go for a year without saying anything bad about the town. He believed that positive thoughts could revive civic pride and community spirit. If outsiders were passing through and heard only pleasant comments about the town, they might be persuaded to drive beyond the Kwik Stop gas station to take a tour around the landmarks, stay for a meal or even visit for a night. McCollum believed fiercely in Greensburg and was determined to bring life back into the town. His goal before the storm was to persuade the rest of the community to feel the same way, so that together, they could change Greensburg's future.

In Greensburg, a town that had minimal civic activism, where the mayor was a write-in candidate who did not intend to run, the disaster created a renewed sense of community and of positive energy, which was not present before the storm. In the "largest election in recent memory" the 2008 election brought in a new mayor and three new city council members (Hall,

“Greensburg”). Concerned about pragmatic details, such as new zoning regulations, or the future location of the new highway, residents were forced to participate in community meetings, to speak up when they wanted change and to learn more about the people and processes involved in local government. The crises inspired the community to take ownership in the town’s future; interested and realizing the difference they could make, fifteen citizens ran for city council in February 2008, more candidates than had ever before taken part in city elections.

With or without a disaster, most cities do face significant obstacles in the realization of their vision. Whether it is a factory relocation, population decline, an increase in crime or any other community problem, the urgent message for change can be crafted. Greensburg’s leadership had good reason to speak passionately about their need for green, but that is true for many other places. Hope and faith reassured citizens that their future prospects were bright, even in the midst of misfortune.

Balance of compromise and strong leadership

Though seemingly opposites, compromise and strong leadership were employed in Greensburg to modify the first statement of a green recovery to a more realistic plan for how the town could implement green building. The initial idea for green could have represented a whole new way of life. McCollum states his intent,

I think it would have been a revelation in this country, unparalleled, to recover from the disaster in a green way. From absolutely the get go. The fact of Mother Nature of what it does, it nearly sinks

everybody eventually. Let's profit from that. We got an old building and we don't want to heat out the roof, we replace it with energy efficient. The great rollover. We do it because we're forced into it. If we would start this process because you know there's going to be towns leveled this spring.

Though key people in Greensburg noted, "two or three people can wreck plans", that "compromise is not leadership", and,

We learned that you don't talk about great things that you want to do because the sooth sayers they have a feeding frenzy. And I just told, we created this little, he and I called it the rat pack and it was just people that I knew that could think and could talk and we could agree to disagree and some things like that and make progress. My thing was, we don't have to do it great big, but let's do it right.

without community support, Greensburg would not have residents or businesses come back. The ability of the leadership to work with the community, whether guided by FEMA, the BNIM planning consultants, or the Kansas Communities organization, and in city council or community meetings without any outsiders, increased the communication between the city government and the residents and helped everyone find a middle ground that acceptable to all.

Fitting green into community values

As Greensburg residents talked to the many environmental advocates that came to town, they began to relate green to what they found personally significant. The environmentalists in Greensburg hoped to disassociate environmentalism with "tree-hugging liberals" and instead presented it as actions that were relevant and indeed, already part of Greensburg's history. The connection between the environment and the agricultural community has meant

that 'green' issues could begin to separate from other, more problematic elements of the liberal agenda. Current Mayor Dixon explains, "We in rural America were the first green people. We knew that if we took care of the land it would take care of you. So when we're wiped out and we have nothing left, what better time to build back as renewable and as sustainable as possible" ("Greentown"). Going green wasn't just about climate change or saving the polar bears, it was about cutting waste and saving on rising fuel bills, building a stronger and more resilient town with a sustainable economy. Those arguments made sense even in one of the reddest states of the U.S. "Our old church sometimes cost up to \$1,000 a month to heat," says [Pastor] George, who plans to build back his church to the highest green standards. "Now, I'm not a tree-hugger by any means. But we have to be responsible for how we use natural resources, and be prepared for a future where energy costs are only going up" (Walsh).

This allowed Greensburg, a politically conservative town, to adopt green tenets. As Wallach, one of the leading advocate for green development, realized, "We're conservatives, conservatives conserve. We don't waste. It's human nature." Depoliticizing the environmental issue greatly helped it to be accepted. The idea of living with respect to the earth and with aware of the effect human actions would have was not new to a rural community.

Extending the term 'environmentalism' from a quest to save the trees, towards a movement of preserving the trees for the next generation, or of saving money, were arguments that resonated well with the community. On an individual

level, people were hearing that “green makes economic sense” and “green is what you have in your wallet” because installing energy and water efficient systems give cost savings compared to standard appliances. Because of these financial considerations, and without any legislative requirement, individuals are deciding to pay the difference in upfront costs to install green building products. Financing the construction often without adequate insurance (since homes were insured for the purchase price, not for the cost it would take to rebuild), people are compelled to dig into their savings. They take this risk because of the hope that these new buildings will withstand Kansas weather, the trust they have in the city government’s promise of new, green jobs, and from their faith in the future of Greensburg. At the same time, any new construction is likely to be much more energy efficient than any existing hundred year old buildings, so even if people don’t go to the environmental extreme, their homes will still be ‘greener’ than before the disaster. “When we can afford it,” one residents says, “we’ll be able to put solar on the south part of the house and retrofit that. Technology is changing so fast right now, and the prices are coming down all the time” (Heeren).

Future Questions

The Greensburg story also provokes further questions. While it is unclear how best to measure success, the benefits and threats Greensburg is presented with may be useful for towns who find themselves in similar situations.

How to maintain or increase social equity through green planning?

As Rozdilsky points out in his assessment of the disaster recovery work, Greensburg's social reconstruction is as important as its physical reconstruction. His class' report identifies that "elements such as an inclusive recovery process, reconstruction of housing for all, support of key community facilities (schools, parks, churches), and resisting gentrification, will avoid social fracture and strengthen the community. Greensburg is very aware that the availability of jobs and affordable housing remain central to the town's success in sustaining its community and for any growth that might occur. Though plans for attracting new businesses and building an array of housing choices is detailed in the Comprehensive Plan, the jobs especially are yet to materialize. Without a stable economic base, Greensburg will not be able to support itself.

In addition, environmentalism is often questioned as being elitist though its proponents point to green jobs and energy efficient cost savings to demonstrate its affordability. Through the disaster relief funding and corporate and individual donations, Greensburg was able to build what it couldn't otherwise pay for. Still, there were community members who can not afford to rebuild at all, whose jobs disappeared after the storm or who require more assistance than what is available. The exclusion of certain demographic groups would not be a result of green that should be replicated. Further analysis into the future effects of Greensburg's green building should be studied and focus should be made on eliminating obstacles to the unequal distribution of resources or opportunities.

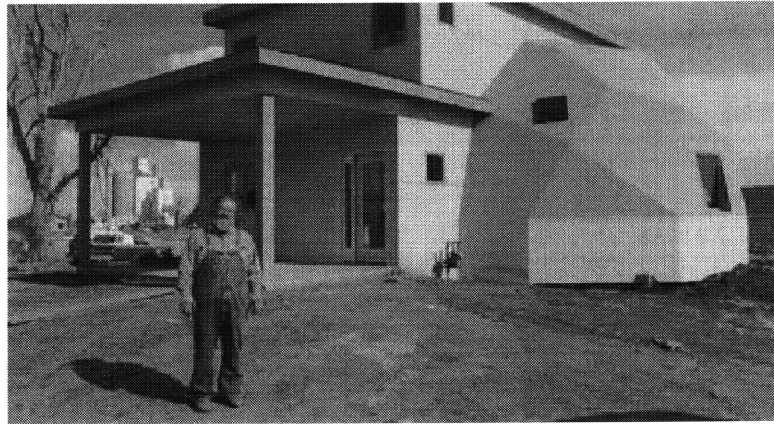


Figure 21: Photo of geodesic dome home in Greensburg
Source: Heeren

What is the total cost of rebuilding Greensburg?

Although research reveals the amounts of individual funding sources, there has yet to be a detailed analysis of what the cost of rebuilding has been so far. Odd dollar amounts are reported, but there is no comprehensive accounting of all the money that has been spent in Greensburg's recovery and rebuilding. In the first year after the tornado, the Small Business Administration provided \$30.7 million in loans to residents and business owners (Fagan). In the past two years, FEMA has reimbursed local and state agencies \$13.7 million for the cost of clearing debris and other emergency protective measures in Greensburg and Kiowa County, made \$78 million available to public and non-profit entities to rebuild vital infrastructure such as schools, hospitals, and city buildings, distributed \$1.8 million in housing assistance funds to Kiowa County residents and given an additional \$970,000 was provided to households for other disaster-related needs such as uninsured property losses, transportation needs, and medical expenses (*FEMA*). Especially with large number of donations, and the different types such as cash, materials, or labor, the final figure will be difficult to

calculate. However, this figure will be of great significance in helping other towns determine what they can expect similar projects to cost and how much they might be able to fund through government programs.

If, for a rough example, Greensburg spends \$250 million, the sum that represents the insurance estimate for the cost of the approximately 1,000 homes and businesses destroyed or damaged was, to rebuild for a town of 1,500 (the size Greensburg was before the tornado), it will mean that the rebuilding will cost about \$166,700 per resident (Fagan). But, since \$250 million is the pre-tornado insurance value and all the new buildings are built to higher standards, the final amount will surely be higher. It would be very useful to compare the per capita costs to other rebuilding projects or service provision to see how Greensburg's use of the funds measures up. Additional economic analysis should also be conducted so other towns to see what green projects Greensburg funded, how they decided to install the features they did and by what criteria they weighed future cost savings against higher up-front costs.

How does the new Greensburg related to the old Greensburg?

The Greensburg of today is different from pre-tornado Greensburg. The very act of applying a comprehensive plan to a town and imposing stricter building regulations, as Greensburg did after the disaster, prevents the incremental, organic development that is a trademark of the western United States. Unless a concerted effort is made, the green, modern town Greensburg is building will not be connected to the home that was important to so many

residents. Even with continued effort to seek local input during the redevelopment process, with a relatively unmodified land use plan, and an effort to maintain the feel of the pre-tornado Greensburg, reconstructing a city from the ground up renders it almost unrecognizable. Some of the new LEED-platinum buildings are meant to look like existing buildings, but others take pride in introducing a new character to the town. Though Greensburg intends to build a monument to its history, possibly in the form of a museum, and to the weather that changed the town completely, it would be important in future research to study how (or if) adopting green has changed Greensburg's spirit and what such revitalization might do to other towns who want to green themselves.

Conclusion: How can other towns learn from Greensburg?

In some ways, Greensburg work to go green is dependent on the unusual circumstances surrounding the town's history and leadership. As the *Wall Street Journal* noticed, "Greensburg is the first media generated greentown. It tapped that part of the American spirit that can turn adversity into altruism, but also monetary opportunity" (Jordan). The atmosphere of emergency and the novelty of the green idea, certainly helped the town quickly achieve many milestones, but should not be required for other communities looking to green their town. This is because it was not these unique conditions, nor Greensburg's leadership, the disaster, or any particular environmental or activist proclivities on the part of its residents that have allowed Greensburg to implement so many innovative projects. For Greensburg to recover, it needed the support and faith of its

community. Greensburg had been trying to improve itself since before the tornado hit, and the green idea fit within the community's longstanding desire to provide for future generations. By framing a vision of urgency, building community ownership of the vision through outreach and education, and actively working to secure political and financial partnerships, green planning proponents can inspire optimism and motivate people to commit themselves to a more sustainable future.

Today, the Greensburg community is more informed about environmental problems, more participatory in civic affairs and more committed to Greensburg's future, than before the tornado. With the community's support, Greensburg integrated green practices throughout the recovery effort and it is this integration that can be adopted and replicated in other towns, big or small, recovering from a disaster or not. Greensburg's Sustainable Comprehensive Master Plan was not intended to build fancy green buildings or reduce the town's carbon footprint as a marketing ploy, but was meant to give the town's residents a healthy, hopeful future. Rather than create an eco-utopia, Greensburg's dream has always been to bring new employment opportunities, increase tourism and attract new residents. Though it was not simple, easy, or cheap, rebuilding green was the most logical, practical, and realistic way it could accomplish that dream.

The process and outcomes of green planning in Greensburg are not likely to be exactly replicated by any other community. But, key conditions integral to Greensburg's success, and not contingent on the town's disaster or the extensive media coverage, can be applied to other communities interested in green,

regardless of their circumstances. What Greensburg did, unlike many other disaster stricken or blighted towns, is assimilate green ideas into the community's existing value system. Greensburg's residents were not extremely green before the tornado, but they did place great value on their families and on making decisions based on future generations. These values are not strictly a rural or small town phenomenon --- communities of all sizes and in diverse locations can relate and understand the necessity of incorporating green practices when planning for the next one hundred years. By waiting to decide on a long-term vision before rebuilding and considering green options throughout its recovery process, Greensburg has given itself the best chance for reaching its goal for an economically and environmentally strong town.

Integrate green into all aspects of city management

The planning and environmental experts introduced Greensburg to the many ways in which the town could integrate green elements into their rebuilding and redesigning work. From the possibility of green jobs or a wind farm, which the town had been pursuing before the storm, to new options like the Insulated Concrete Forms (ICF) widely used in Greensburg's new buildings, which are energy efficient (requiring approximately 30% less energy to heat or cool) and can withstand severe storms, or biomass production, which is not yet happening, Greensburg has been able to consider a wide range of ways to pursue its primary interest in economic development through green strategies (*ICF Homes*; Billman). Greensburg understood the benefits presented by using green projects

as a tool for revitalization and disaster recovery. Its example provides a starting point for other towns to build off its initiatives and continue experimenting with incorporating green into all aspects of planning. For example, although Greensburg was not able to arrange this, sorting through the wreckage after the tornado, instead of trying to clear the area as quickly as possible, could reduce waste and produce recyclable, usable materials. By imagining how each step of the recovery or revitalization process can be greener, asking how can this action lessen its impact on the environment and decrease expense in the long run, thoughtful planning can make the difference between temporary solutions and more lasting procedures.

Apply long-term visioning to disaster recovery and revitalization planning

Greensburg's generational philosophy lends itself to green planning. Even while in the chaos of a disaster or responding to the urgent needs of revitalization, other towns can recognize that long-term planning can help determine what to prioritize to create the best future of the community. Adding green elements to projects often increases up-front costs with the expectation that savings will come through lower energy bills or extended use. Even when funding is scarce or decisions need to be made immediately, the ability to consider future scenarios, such as increased costs of fuel or climate change, and find lasting resolutions will certainly reap great rewards when towns can avoid revisiting these problems again. Quick fixes are often more expensive for towns in the long run, so if towns understand how green planning contributes to the

community's overall sustainability, whether applied to physical reconstruction projects or social service provision, they will be better positioned to make informed decisions.

Beyond Greensburg: Planning on a community scale, rather than individual scale

Greensburg's recovery represents the beginning for green planning. The many green projects it has implemented are great steps forward for the United States, but they are just a starting point for green recovery and revitalization. As some of Greensburg's leadership recognized, rather than building the town along the same block grid or constructing predominately single-family infrastructure, the town could have been re-imagined on a community scale. The constraints of the infrastructure that remained after the tornado and current property boundaries, made it economically unfeasible for Greensburg to attempt drastic changes, but when other towns consider green planning, the ideas Greensburg's leaders had, including splitting blocks into smaller plots or creating more communal services such as a grocery shuttle for seniors, might become more practical.

"If we could really have started from scratch,' says [Greensburg's City Planner Mike] Gurnee, 'if we could have erased property lines, I'd have liked to have tried geothermal or wind turbine or solar system on a block and have the cost shared by all the houses.' ...But, according to Gurnee, when the town expands and a developer subdivides new lots, 'I want to make sure that there's a provision in our subdivision regulations so that the lots can be situated so that alternative energy sources can be shared among people on the block'" (Heeren).

Exchanging the nation's focus on the individual for a more group-centric development pattern, would not only allow green projects to be more affordable, but would also strengthen human connections and each town's sense of community.

Link between urban and rural green planning

Greensburg is a small, rural town, but the green innovations it has accomplished are not limited to small, rural towns. Not only can the general conditions as described above be applied to urban centers, but the specific green projects it has implemented are equally relevant and possibly more easily adaptable, to urban areas. Greensburg does not have the dense housing or economic diversity that is already present in bigger cities. Apartment buildings, smaller property lot sizes and mixed-use development can better accommodate communal services, such as alternative energy provision, and intrinsically encourage transportation alternatives other than cars. While some constraints on sustainability apply more to urban environments, like food production, there is much common ground between communities thinking about green planning.

Kansas City: Following Greensburg's example

For example, as recently as on April 25, 2009, U.S. Congressman Emanuel Cleaver brought a busload of people from Kansas City, Missouri to Greensburg to talk to the town's leaders and tour several green buildings. Congressman Cleaver wanted to learn what he could extract from Greensburg's experience to apply to his proposal for a 'Green Impact Zone', a 150-square

block section of the urban core which he wants to improve using federal stimulus money. This neighborhood has many low-income residents, and his ideas include providing job training, improving transit, building energy efficient affordable housing and a green sewer demonstration project to revive the central city (“Cleaver”; Barnhart). The project is in the initial stage, but it demonstrates the opportunities in urban areas, not contingent on natural disasters, where Greensburg’s work can be of service. The funding packages Greensburg put together to finance new buildings, the community’s satisfaction with different green technologies and the knowledge Greensburg now has about coordinating complex, cross-sectoral initiatives will certainly help other towns apply green planning to their own context.

On the one hand, Greensburg is not yet rebuilt. The progress it has made in the past two years has allowed about half the residents to move back and continues to attract the attention of the national media, but it does not represent a fully completed town. While city buildings greater than 4,000 square feet are required to be built to LEED platinum levels, there are no similar regulations for residential housing. This gives citizens more control over the homes they are paying for, but dissipates the ‘greenness’ of the city by allowing buildings of varying levels of ‘green’.

On the other hand, very few communities will be facing the blank slate the Greensburg was able to begin with. As I was often told, there was no reason to think about green buildings or green infrastructure in Greensburg before the

tornado because there would have been no reason to destroy what was currently in place, and no money to replace anything that was not broken just to make it greener. Although Greensburg was fortunate to have very capable leaders, its community was no more interested in green than any other when the tornado struck. After the disaster, if it weren't for its devoted leadership and the education outreach that built community support, along with the availability of funding, Greensburg would never have become the example of green planning it is today. As more time passes, and Greensburg continues to rebuild its town, hopefully other communities around the world will become inspired by this story and driven to enact change in their home.

I feel like I am now part of the Greensburg story. Forever associated with the town in cyberspace, due to a Pratt newspaper interview posted on-line, I happened on this topic almost by chance. Only afterwards have I realized that the themes presented by the Greensburg story are a perfect way for me to conclude my time in planning school. My apprehension about how to guide communities as a professional planner, how to interact with local people to gain trust and learn their interests, and how to reconcile my own opinions with a community's view, was assuaged after completing my fieldwork in Greensburg. Meeting the generous people who had experienced such tragedy, listening to them recount that day and what they've done since to support the town that means so much to them, I witnessed what a strong community can do. To hear from residents what they liked and did not like about their experience working

with planners was extremely helpful in preparing me for future practice. In the little time I was in Greensburg, I cooked for potlucks, took a bike tour, watched a high school basketball game, attended a church service and jammed with a bluegrass group in the 5.4.7 Arts Center. I was drawn into the Greensburg dream and inspired by all that was already completed, while motivated to help the town fulfill more of its goals. The message of hope and possibility Greensburg gives the world makes this town very special, both for my personal development and the future of green planning.

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Interviews:

Kim Alderfer: Assistant to the City Administrator of Greensburg

Mark Anderson: Editor of the Kiowa County Signal, the newspaper for Greensburg

Sheldon Carpenter: Director of the Iroquois Center for Human Development, a mental health facility in Greensburg

Mike Gurnee: City Planner for Greensburg

John Janssen: Mayor of Greensburg right after the tornado hit, former member of the City Council

Chris Kliever: President of the American Institute of Architect Wichita chapter at the time of the tornado

Jack McCawley: Greensburg's Green Coordinator in the weeks after the tornado,

Lonnie McCollum: Mayor of Greensburg before the tornado, and for two weeks afterwards

Bob Mosier: Former Greensburg school superintendent, former member of Greensburg's City Council, former Kiowa County Commissioner, creator of the Greensburg Development Board and president of the Sunflower Resource Conservation District

Pam Reeves: City Treasurer of Greensburg

Daniel Wallach: Founder and Director of nonprofit Greensburg Greentown

Steve Weatherford: President of the Kansas Development Finance Authority and the Kansas Housing Resources Corporation. He was the point person for Governor Sibelius to coordinate aid from state agencies to Greensburg.

Appendix I: After the tornado: Community feedback on disaster management

When talking to many of the key people involved in Greensburg, I heard some concerns and suggestions that might be helpful for other towns facing an emergency. Among the many ideas described were (a) converting all oil wells into geothermal wells, (b) building back only to 500 and make it such a wonderful place for those 500, that more start to come (rather than trying to build a city for 1,500 immediately after the storm) and (c) creating parkland out of a greater percentage of the town's land to catch the eye of people passing through western Kansas. Though these plans were not accepted by the community, the accompanying comments about disaster management might help other towns who are recovering from a disaster.

Greensburg's leadership acknowledged the cycle of natural disasters and the impermanence of the built environment. They realized the benefit of having a plan in place in a town to organize the response effort. McCollum lamented the lack of coordination between federal agencies, the lack of accessibility to the responding team, and the opacity of the long-term institutional processes when it was not made clear how local efforts would fit in. Confusion over the timing of service restoration and the difficulty of communication in the weeks after the storm also stymied an efficient, effective response. The suggestions included:

Tell people what to expect

Give them something to do and explain what the federal or state government is able to help with. In their distress, many families made rash purchases right after the storm, of multiple cars, of mobile homes, of houses in new towns, and regretted the impulse. Although community tent meetings were meant to help calm people, they didn't prevent them from hasty decisions. Even in the process of removing debris, speed was prioritized above thoughtfulness. If materials could have been salvaged (especially the antique woodwork) or parts of homes restored, rather than having to be completely rebuilt, there would have been less landfill and less waste.

Coordinate emergency response

Similarly, if immediate needs could be coordinated, individuals might have avoided much duplicated effort and regret. If residents were told, "we're going to put up this house and these volunteers are going to be here, they're going to put up these houses and we don't care if you live there one year, two years or the rest of your life", people would be assured of shelter, and could wait to see what their best options were going forward. Another example of coordination would be if the government could organize a car company to loan the community rental cars or allow them to buy older vehicles, families could put off purchasing a new car immediately and take their time to think about what they really needed. It was also mentioned that there should be a better system of coordination between

FEMA, Red Cross and other aid agencies to prevent multiple orders on requests (ex. ordering multiple pallet of cough drops).

Let community back into town

The cordoning off of Greensburg after the storm was to prevent health risks, prevent people from seeing dead bodies and prevent looting. But for three days, residents were not allowed back to their homes. During that time, rains ruined exposed houses, people were not able to collect their belongings or in some cases, even learn who had survived. Residents observed,

These people are farmers and they've used to making it on their own. You're worried about them seeing a dead body. That ain't, they've slaughtered cows. They just want to fix the problem. We had enough policeman there, firemen and policeman. Why not take the police and say, this is your two blocks. You're in charge of this, and these people are your people. If they come to you, if they find a body, if they got questions or anything, they come *to you*.

By assigning police two or three blocks to patrol, rather than summarily forbidding residents to enter the town, the community could be assured of help if they found anything dangerous, while still being able to start piecing their lives back together instead of worrying and waiting for the right permissions.

Improve accessibility to federal and state agencies

Top decision-makers assigned to Greensburg were only available in the morning, so if an issue didn't reach them, nothing could be done until the next day.