Embracing a New Future:

Toward Sustainability in Greensburg, KS

Casey Cassias, FAIA

BNIM Architects

Year	Population
2006	1,389
2000	1,574
1990	1,792
1980	1,885
1970	1,907
1960	1,988
1950	1,723
1940	1,417
1930	1,338
1920	1,215
1910	1,199
1900	343

Greensburg – May 3, 2007

May 4th, 2007


Greensburg
© 2007 Europa Technologies
©2006 Google™
Pointer 37°36'12.75" N 99°17'35.77" W elev 2231 ft
Streaming 100%
Eye alt 8314 ft

The New York Times

THIS LAND

Fears That Nature Performed a Coup de Grâce on Kansas Town

Angel Franco/The New York Times

More Photos >

By DAN BARRY
Published: June 24, 2007

GREENSBURG, Kan.

Multimedia

A Tornado's Aftermath

It is morning in Greensburg, population uncertain. The sun rises from the flat-line horizon to cast light upon the tidy curbside piles of debris that had been homes, the untidy piles of brick that had been downtown, the denuded trees that now look like pale hands reaching skyward.

In the context of Kansas, the violent thunderstorm that

- Public Square Steering Committee
- Recovery Action Team
- Business Sector
- Planning Commission
- City Council
- City Planning Staff
- Community-Wide Meetings

Sustainable design "meets the needs of the present without compromising the ability of future generations to meet their own needs."

- World Commission on the Environment and Development

*Blessed with a unique **opportunity***
*To create a **strong community***
*Devoted to **family**,*
Fostering business,
*working **together** for future **generations**.*

COMMUNITY ★
A progressive community that offers urban services within the unassuming feel of a rural, Midwestern community.

FAMILY
A community that provides opportunities for its young people in the way of jobs, education and recreation as reasons to stay in Greensburg.

PROSPERITY
A community where entrepreneurial spirit, customer service, and a sustainable economy permeate the business sector and where residents, travelers, and tourists enjoy a full line of locally owned businesses that provide jobs and services to an exceptional example of smalltown America.

ENVIRONMENT
A community that recognizes the importance of the natural environment and balances the need for growth and economic development with the maintenance and improvement of the environment.

AFFORDABILITY
An up-to-date, affordable rural community where housing plans and strategies incorporate energy-efficient design and materials and serve as a regional and national model for integrating residents of all ages and needs with services of all kinds.

GROWTH
A community that opens its doors to new residents and visitors without affecting the values and lifestyles of its current residents.

RENEWAL ★
A community that Makes proactive decisions that use this opportunity to reverse the decline of the community and build a progressive city with a strong future.

WATER ★
Treat each drop of water as a precious resource.

HEALTH
Improve quality of life by promoting a healthy and active lifestyle.

ENERGY ★
Promote a high level of efficiency in new construction and look to renewable options for generation.

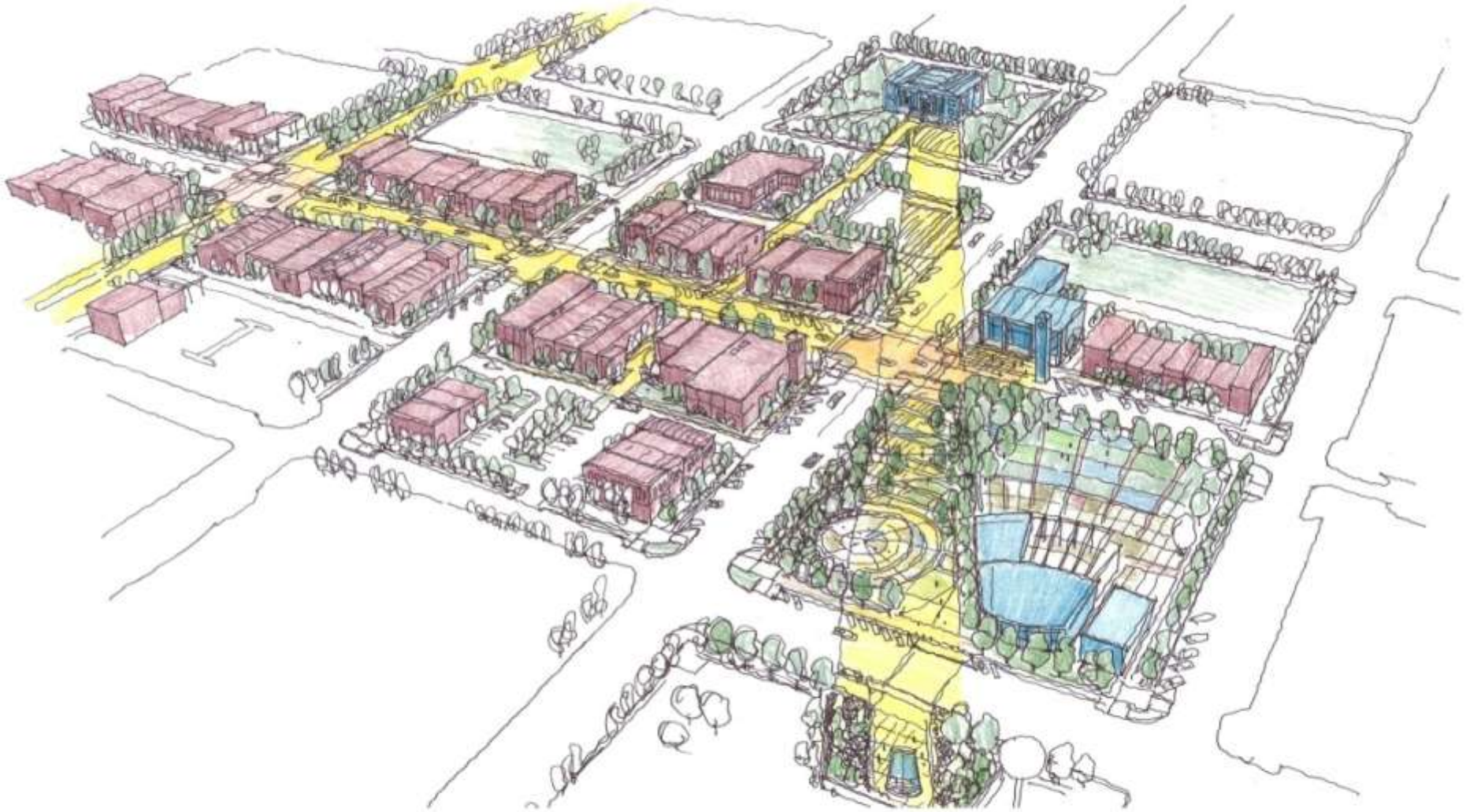
WIND ★
Greensburg's vast wind resources are part of an emerging economy and should be harvested.

BUILT ENVIRONMENT ★
Build a town that encourages interaction between residents, welcomes guests and serves as a model community. New development should be durable, healthy, and efficient. City projects will lead the way by becoming examples of green practices that are built to last.

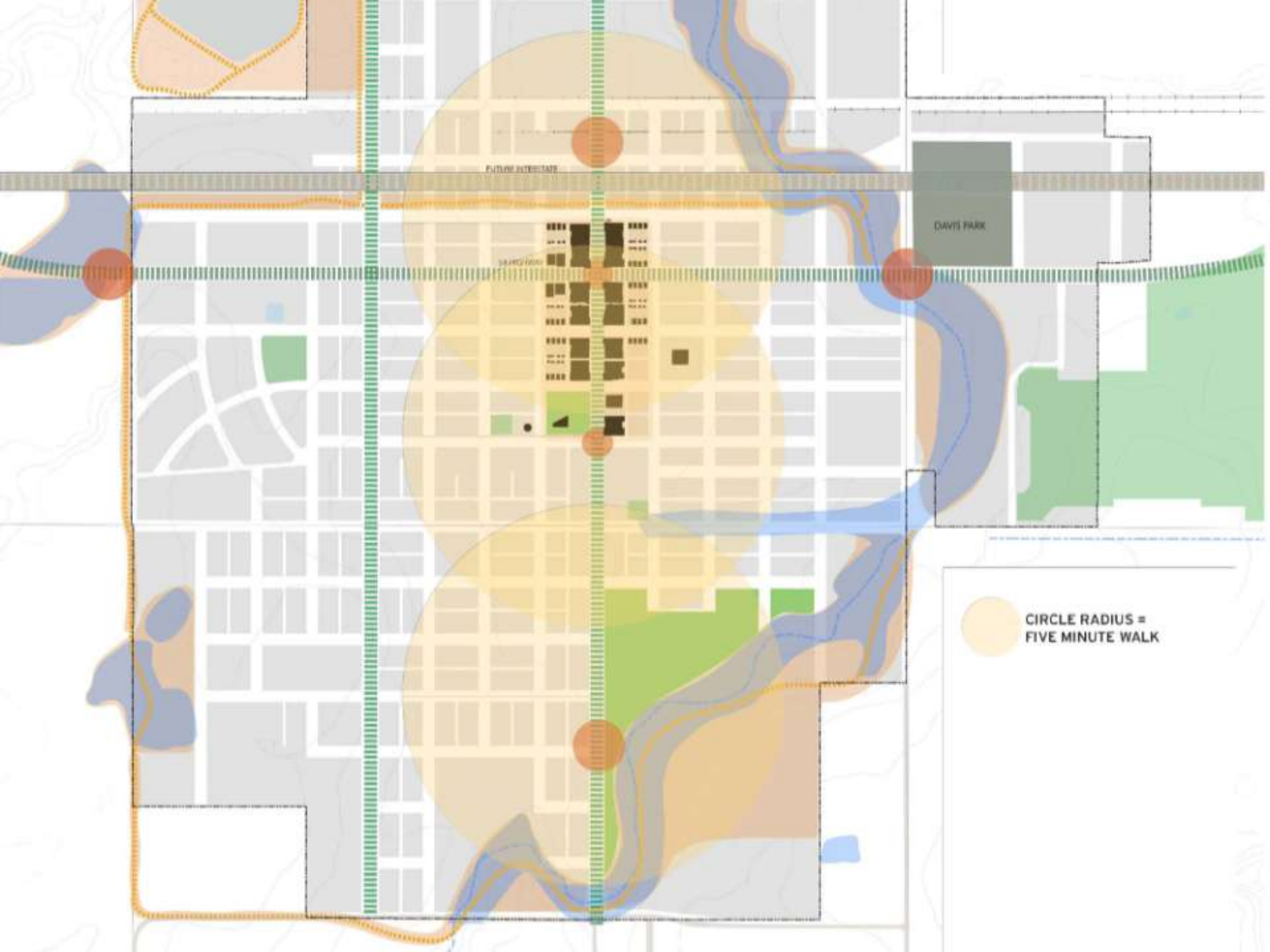
1. Business Incubator
2. Main Street Streetscape
3. Theater
4. City Hall
5. Kiowa County Court-house
6. Farmer's market
7. Memorial Park
8. Big Well Museum
9. 5-4-7 Art Center
10. Restored native landscape zone
11. Greensburg trail net-work
12. Kiowa County Fair-grounds
13. Greensburg School
14. The Chain of Homes / Model Green Bed and Breakfasts
15. Wind Turbines
16. CO-OP
17. Hospital

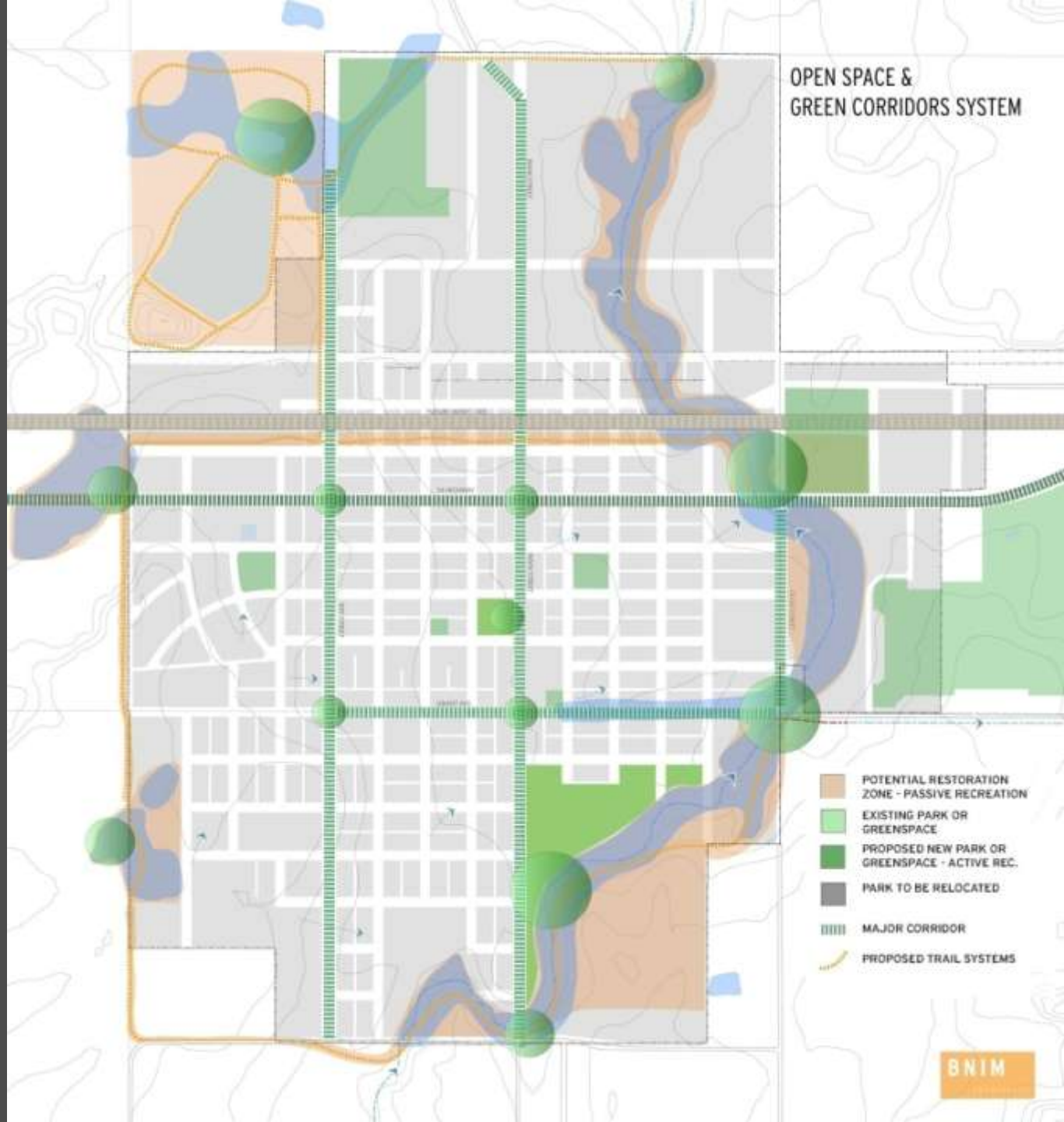
Community

A progressive town that offers urban services with the unassuming feel of a rural Midwestern community.



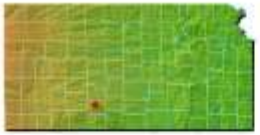
WALKABILITY


DAVIS PARK
CIRCLE RADIUS =
FIVE MINUTE WALK


OPEN SPACE &
GREEN CORRIDORS SYSTEM
POTENTIAL RESTORATION ZONE - PASSIVE RECREATION
EXISTING PARK OR GREENSPACE
PROPOSED NEW PARK OR GREENSPACE - ACTIVE REC.
PARK TO BE RELOCATED
MAJOR CORRIDOR
PROPOSED TRAIL SYSTEMS
BNIM

Water

Treat each drop of water as a precious resource.



GREENSBURG, KANSAS

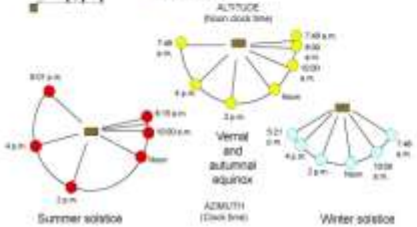
37.61 N LAT. -99.3 W LONG. ELEVATION 787'

SOLAR

Sun extremes

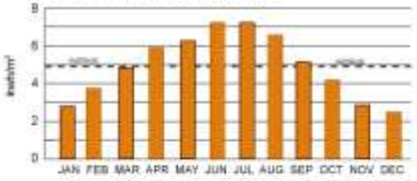
Greensburg's high sun angles in the summer months suggest shading devices that would protect the building in the summer and allow solar penetration in the winter.

Summer solstice
Equinox
Winter solstice



Average daily horizontal solar insolation

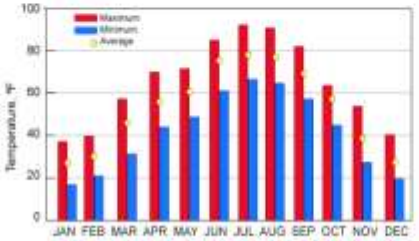
Amount of electromagnetic energy (solar radiation) incident on the surface of the earth. In Greensburg, May through September are the best months for effective solar collection but with the high annual average of 4.93 kwH/m2, solar collection is good throughout the year.



TEMPERATURE

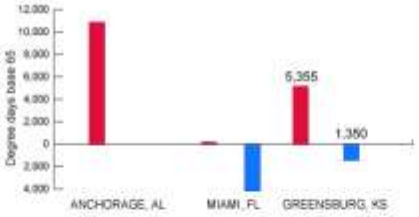
Average minimum, maximum and monthly temperatures

Greensburg's is in a cold, humid climate zone. Temperatures vary from high summer temperatures in June, July and August to frigid numbers in December, January and February. The average diurnal swing is 24 degrees.

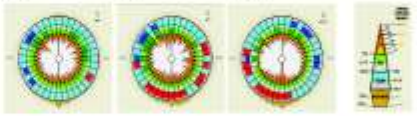


Heating and cooling degree days

Heating and cooling degree days are represented by units that represent one degree of difference between a given point (65°) in the mean daily outdoor temperature. Space heating is more of a concern than space cooling.



WIND

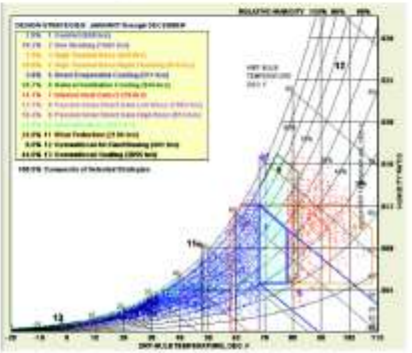


Average wind speed

Greensburg is situated in not only one of the windiest parts of Kansas but of the United States. Wind speed averages remain consistently high throughout the year but spring brings the highest gusts. The summer months of June, July and August, with south winds and comfortable temperatures, offer times when natural ventilation can be used to cool buildings and offer fresh air. Harvesting wind energy is a viable option.

PSYCHROMETRIC DATA

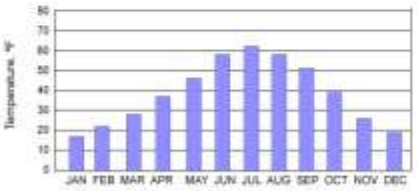
Humidification in dry winter months, wind protection and sunshading in summer are the top three strategies that will help achieve comfort in Greensburg.



MOISTURE

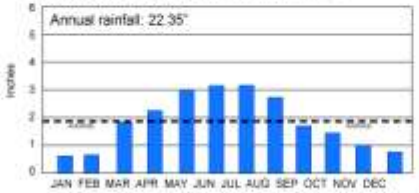
Average dew point

Envelope design should address condensation due to high humidity in the summer months. Winter months are relatively dry.

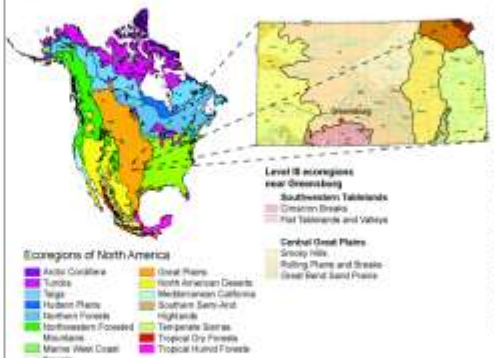


Average monthly rainfall

Greensburg's low rainfall indicates that rainwater harvesting and reuse cannot meet the water requirements. Water becomes an even more precious resource that must be used conservatively and recycled wherever possible.



ECOSYSTEMS



Indigenous plant and animal species

Forbs and Wildflowers
Aster, Sunflower
Black-Eyed Susan
Blanket Flower
Butterfly Milkweed
Compass Plant
Prairie Lumaspur
Heath Aster
Hoary Puccoon
Indian Paint Brush
New England Aster
Prairie Coneflower
Curled Dock
Purple Prairie Clover
Rocky Mountain Zinnia
Rose Verbena
Spiderwort
Stiff Goldenrod
Giant Goldenrod
Thickspike Gayfeather
Big Flower Coreopsis
Wild Hyacinth
White Beardtongue
White Wild Indigo

Grasses and Sedges
Big Bluestem
Blue Grama
Bottlebrush Sedge
Buffalo Grass
Sun Road Sedge
Bunches Sedge
Canada Wild Rye
Fox Sedge
Great Plains
Hoidedge
Frost Manatgrass
Indian Grass
Leavenworth's Sedge
Little Bluestem
Prairie Cordgrass
Prairie Dropseed
Porcupine Sedge
Rattlesnake Grass
Rice Cutgrass
Side-Oats Grama
Switch Grass
Common Reed Grass

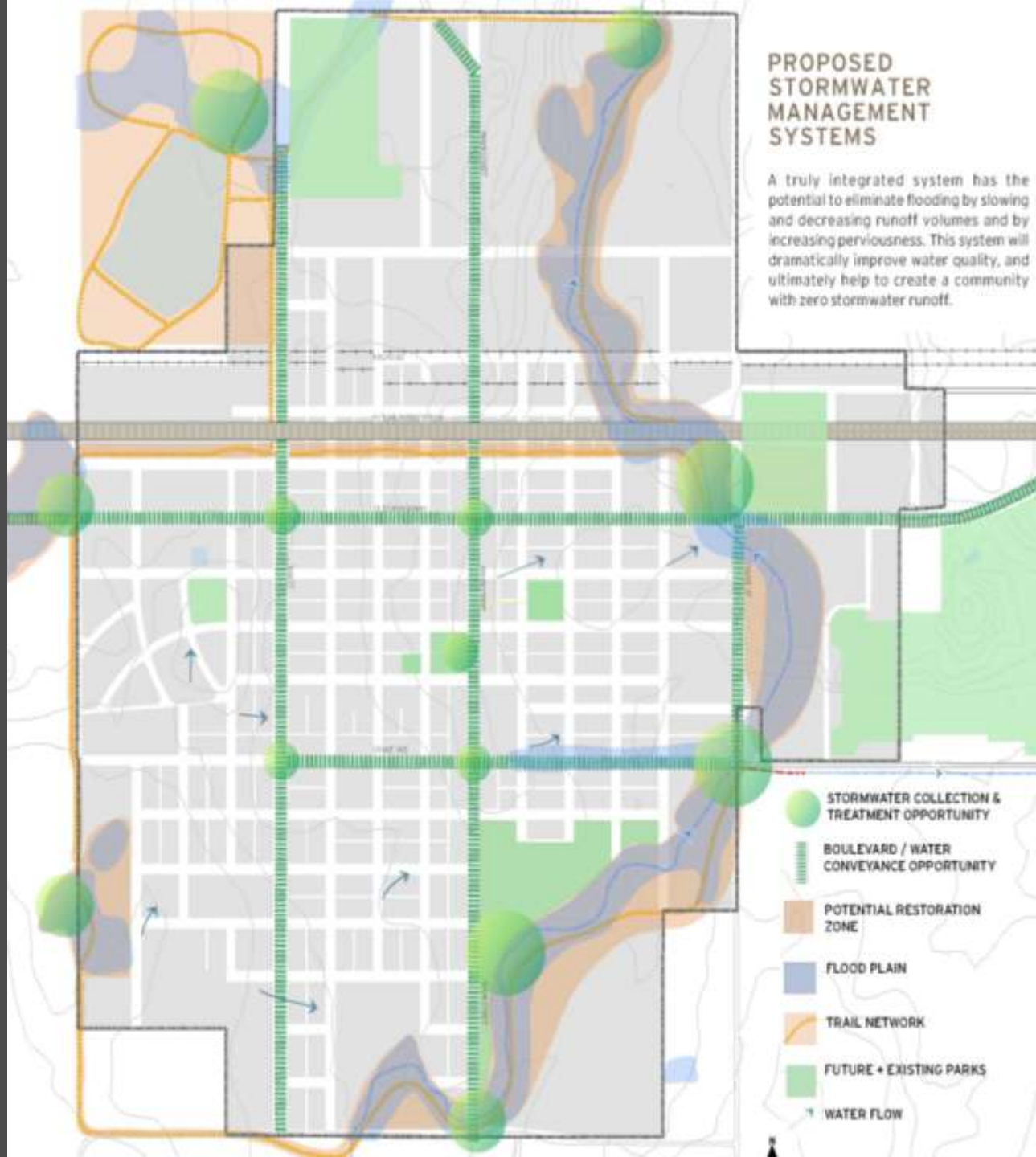
Shrubs and Trees
Aromatic Sumac
Ash
Black Jack Oak
Bur Oak
Chinquapin Oak
Dogwood
Eastern Cottonwood
Hackberry
Kentucky Coffee Tree
Lead Plant
New Jersey Tea
Osage Orange
Pawpaw
Pin Oak
Redbud
Red Cedar
Sand Sagebrush
Sycamore
Walnut
Yucca

Wildlife
American kestrel
Armadillo
Badger
Beaver
Black-billed magpie
Black-tailed prairie dog
Bobcat
Collared lizard
Coyote
Great Plains toad
Kangaroo rats
Lesser prairie chicken
Mule deer
Northern flicker
Northern oriole
Prairie leopard frog
Porcupine
Prairie lizard
Pronghorn antelope
Red-headed woodpecker
Roadrunner
Swainson's hawk
Tarantula
Texas horned lizard
Thirteen-lined ground squirrel
Western kingbird
Western rattlesnake
White-tailed deer
Wild turkey

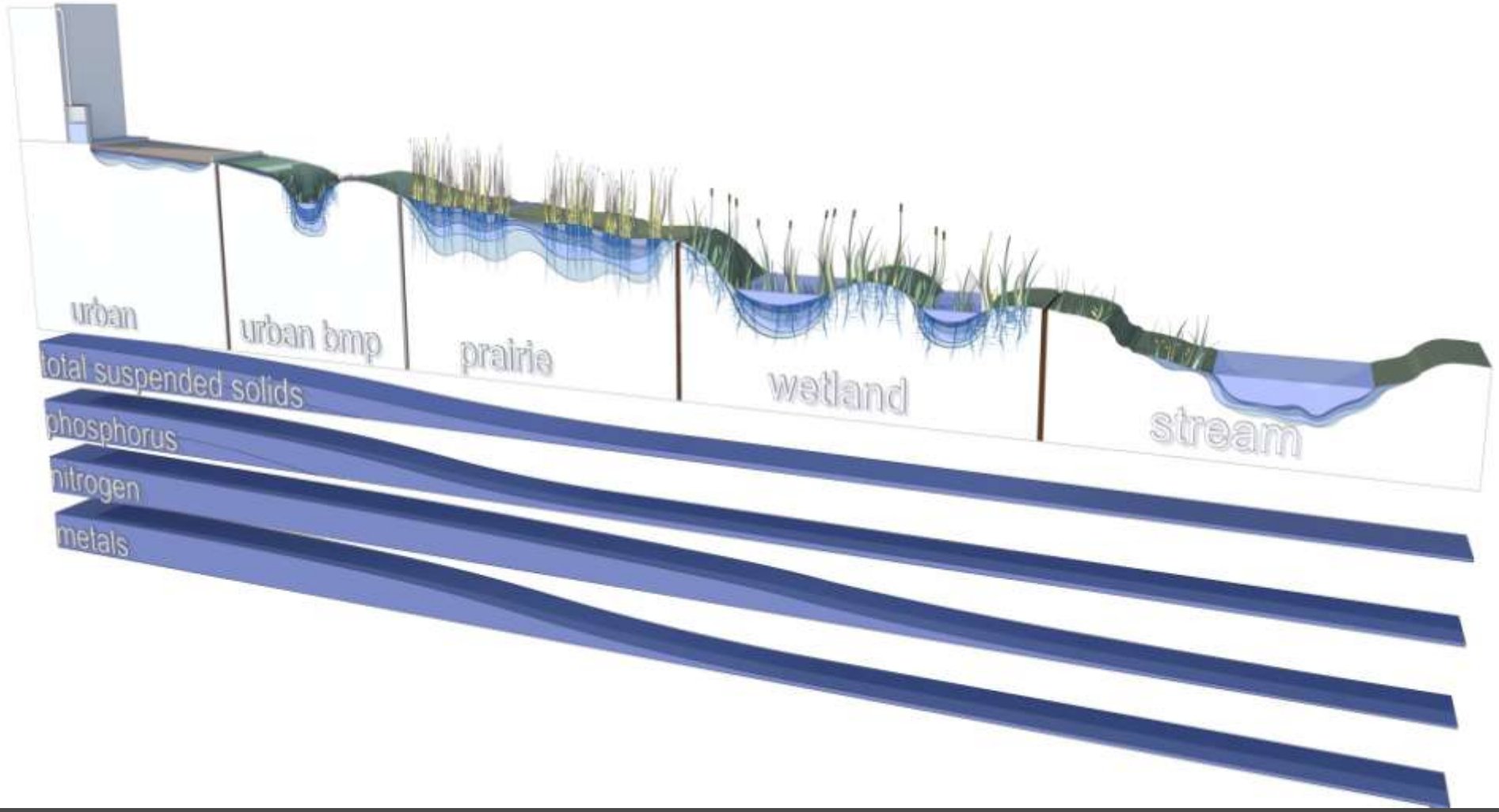
Climatology Data

SOLAR: Photovoltaics in the Built Environment, DOE/GO-10097-496, Sept 1997 U. S. Department of Energy, and National Renewable Energy Laboratory
TEMPERATURE, WIND: http://www.weatherbase.com/weather/weatherall.php3?s=0 3227&refer=&units=
RAIN: http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlpcp.txt
PSYCHROMETRIC: WeatherMaker, v1.0, Nov 29, 1998 U. S. Department of Energy, Sustainable Buildings Industries Council, and National Renewable Energy Laboratory (NREL)
ECOSYSTEMS: Chapman, S.S., Abella, S.R., Crowder, J.M., Yuk, T.L., and Bursey, E.G., 2004, Ecoregions of Nebraska and Kansas (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey
WIND: Climatic Atlas of the United States, 1983, U. S. Department of Commerce, National Oceanic and Atmospheric Administration, and National Environmental Satellite, Data, and Information Service

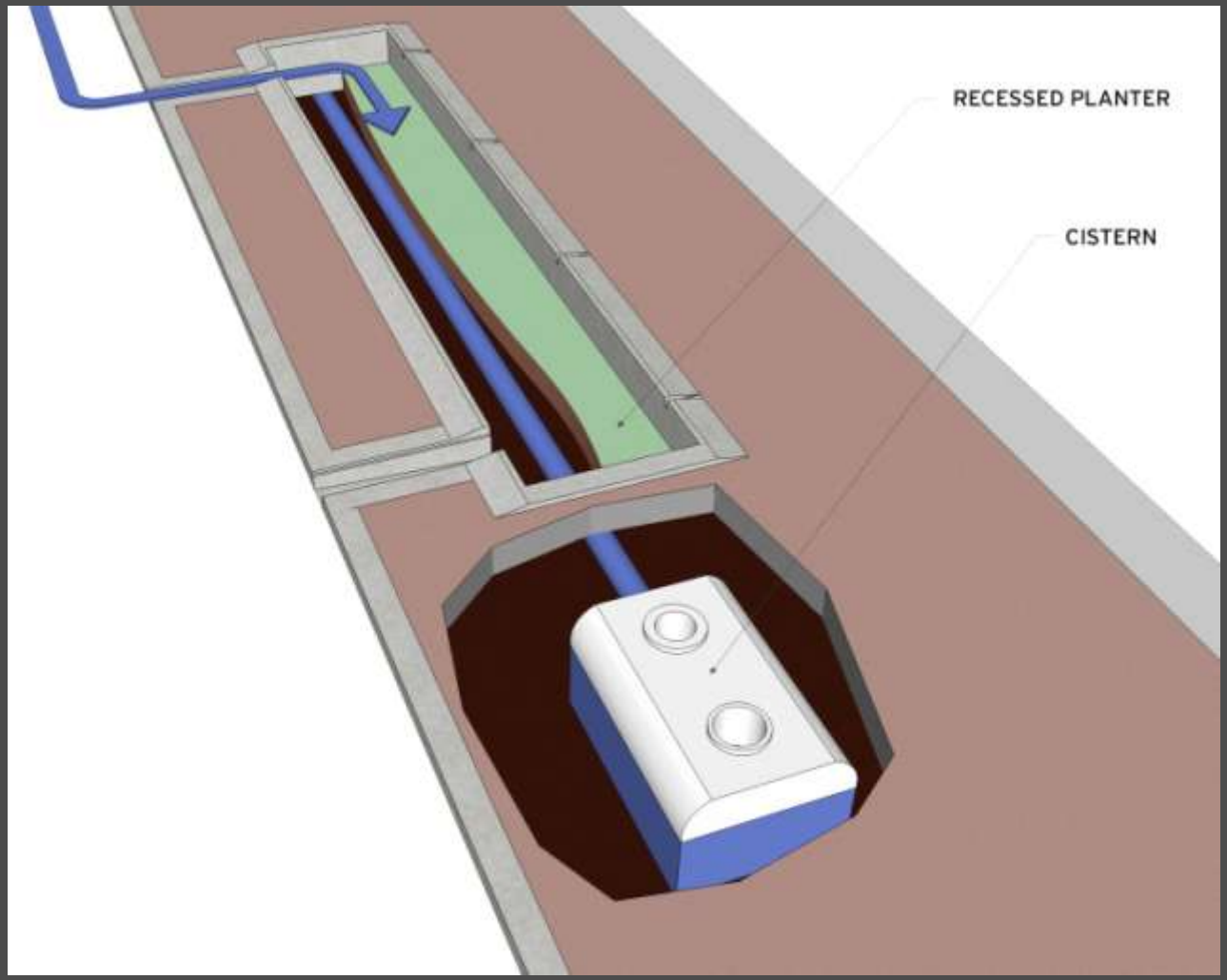
BNIM Architects / Elements
1430 St. 14th St.
Suite 200
Kansas City, MO
64105
October 2007


PROPOSED STORMWATER MANAGEMENT SYSTEMS
A truly integrated system has the potential to eliminate flooding by slowing and decreasing runoff volumes and by increasing perviousness. This system will dramatically improve water quality, and ultimately help to create a community with zero stormwater runoff.
STORMWATER COLLECTION & TREATMENT OPPORTUNITY
BOULEVARD / WATER CONVEYANCE OPPORTUNITY
POTENTIAL RESTORATION ZONE
FLOOD PLAIN
TRAIL NETWORK
FUTURE + EXISTING PARKS
WATER FLOW

GREENSBURG DOWNTOWN STREETSCAPE


urban
urban bmp
prairie
wetland
stream
total suspended solids
phosphorus
nitrogen
metals

GREENSBURG DOWNTOWN STREETSCAPE


RECESSED PLANTER
CISTERN

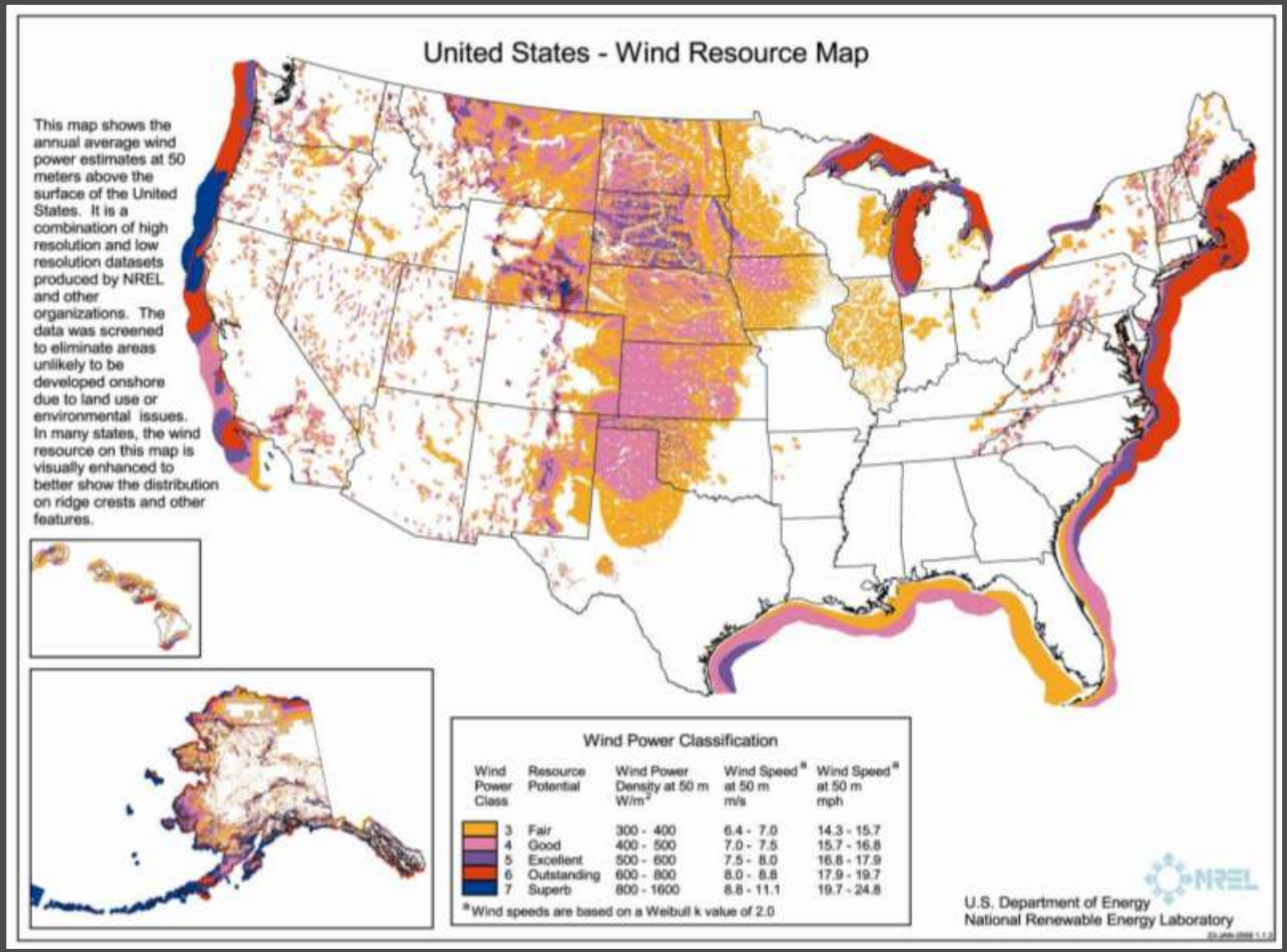
Energy

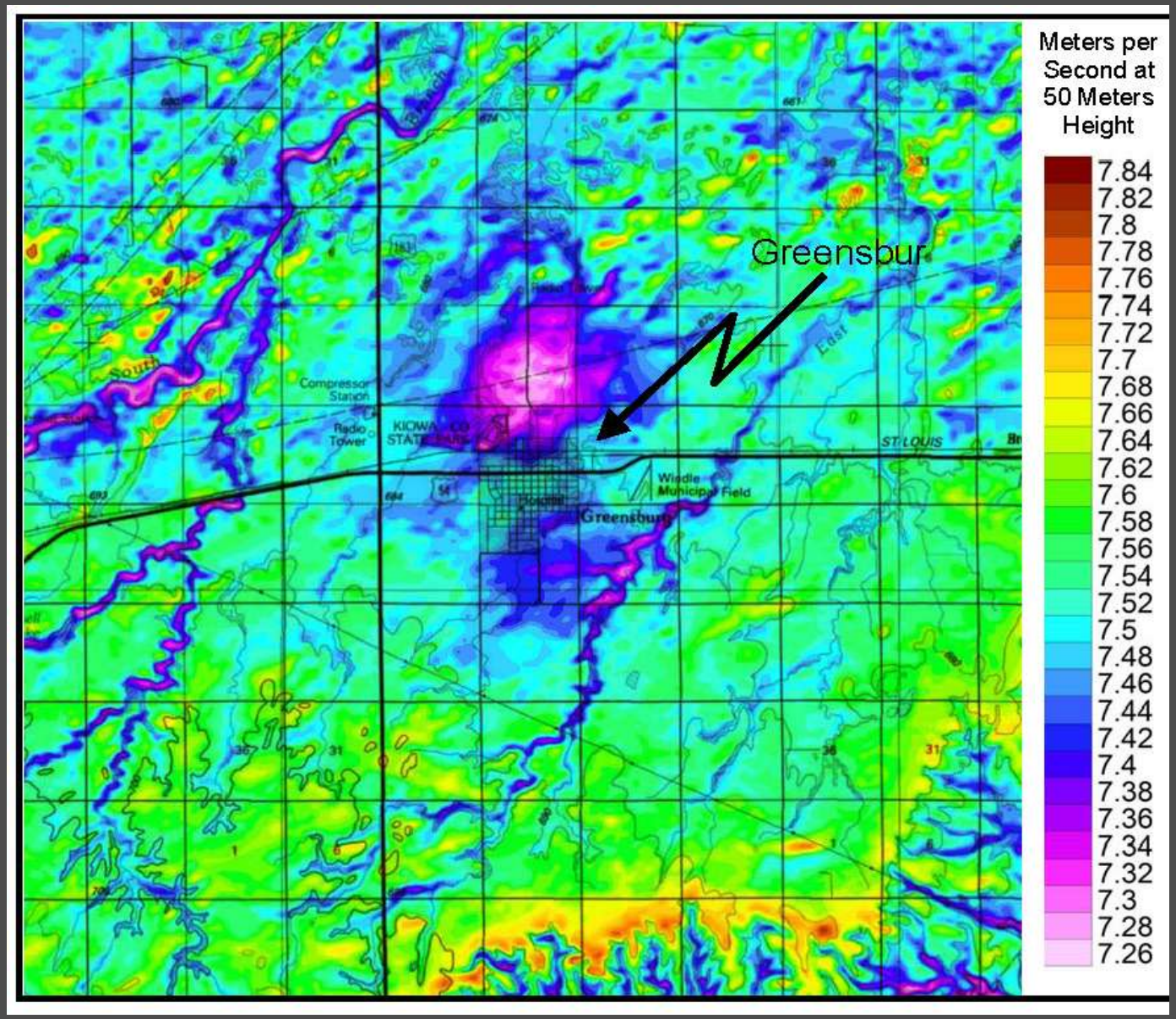
Promote a high level of efficiency in new construction and look to renewable options for generation.

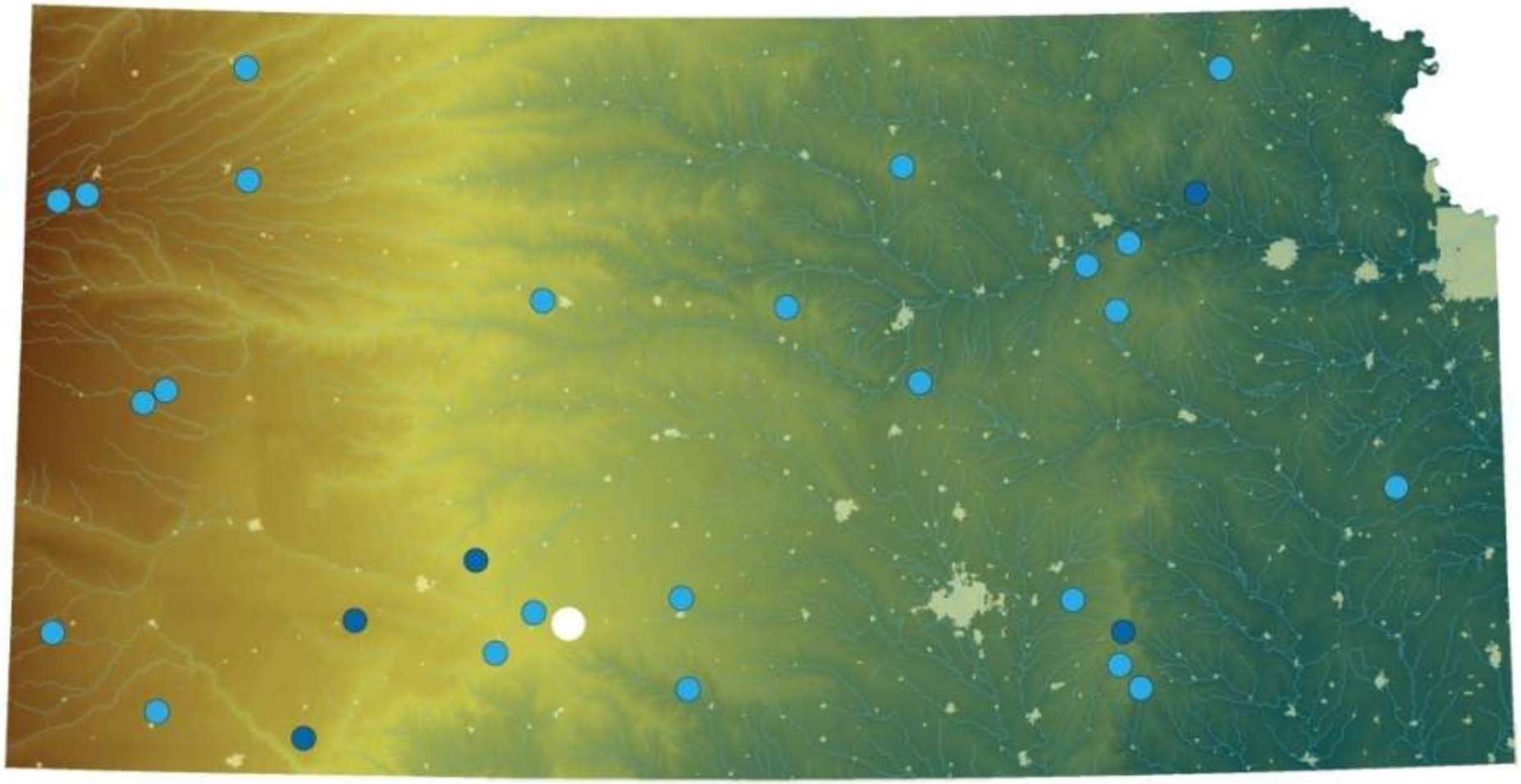
New homes average ~43% energy cost savings compared to code (HERS ratings*)

Wind

Greensburg’s vast wind resources are part of an emerging economy and should be harvested.


United States - Wind Resource Map
This map shows the annual average wind power estimates at 50 meters above the surface of the United States. It is a combination of high resolution and low resolution datasets produced by NREL and other organizations. The data was screened to eliminate areas unlikely to be developed onshore due to land use or environmental issues. In many states, the wind resource on this map is visually enhanced to better show the distribution on ridge crests and other features.
Wind Power Classification
Wind Power Class
Resource Potential
Wind Power Density at 50 m W/m²
Wind Speed[a] at 50 m m/s
Wind Speed[a] at 50 m mph
3 Fair 300 - 400 6.4 - 7.0 14.3 - 15.7
4 Good 400 - 500 7.0 - 7.5 15.7 - 16.8
5 Excellent 500 - 600 7.5 - 8.0 16.8 - 17.9
6 Outstanding 600 - 800 8.0 - 8.8 17.9 - 19.7
7 Superb 800 - 1600 8.8 - 11.1 19.7 - 24.8
[a] Wind speeds are based on a Weibull k value of 2.0
NREL
U.S. Department of Energy
National Renewable Energy Laboratory

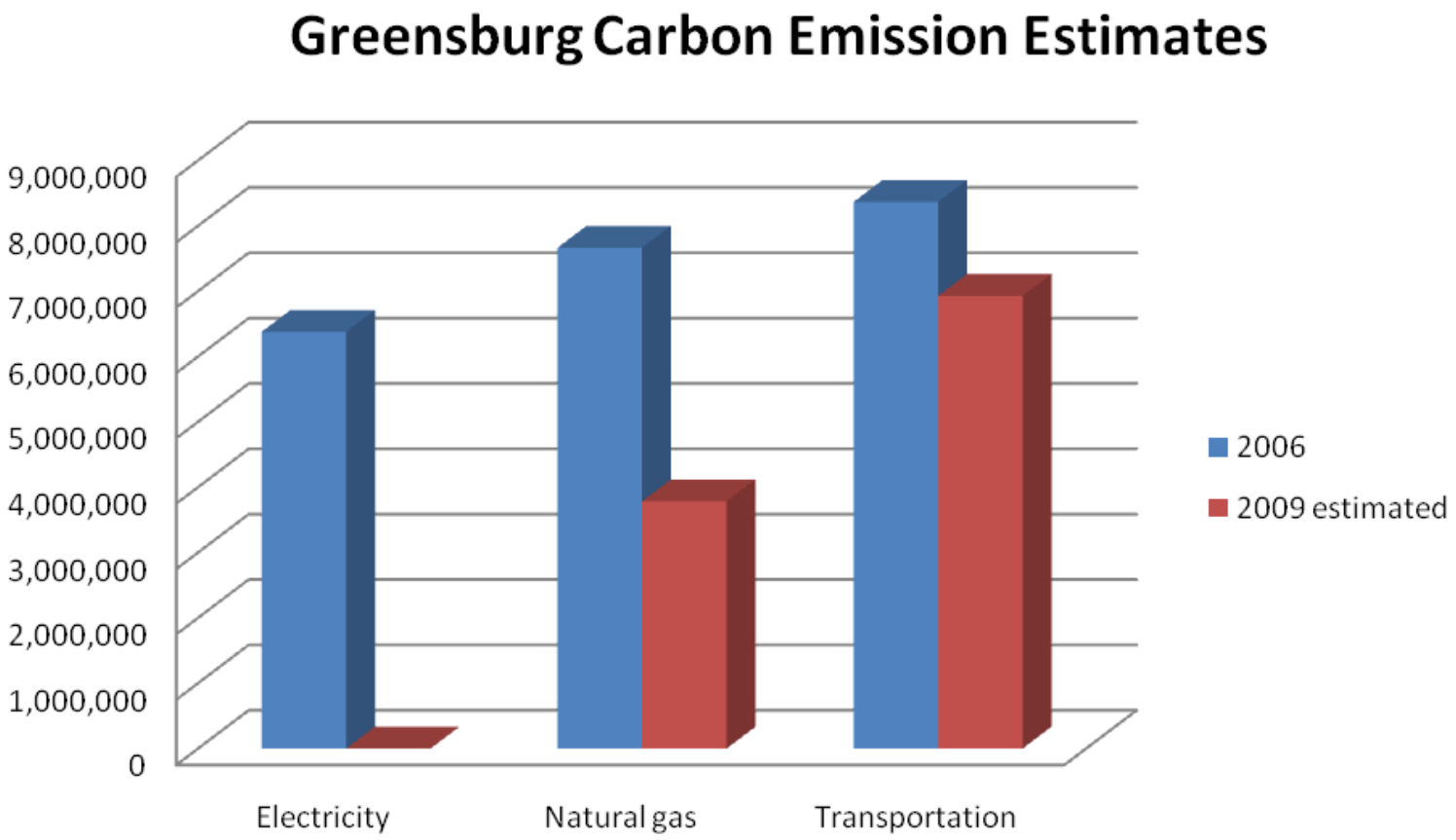

Meters per Second at 50 Meters Height
7.84
7.82
7.8
7.78
7.76
7.74
7.72
7.7
7.68
7.66
7.64
7.62
7.6
7.58
7.56
7.54
7.52
7.5
7.48
7.46
7.44
7.42
7.4
7.38
7.36
7.34
7.32
7.3
7.28
7.26
Greensbur
South
East
Compressor Station
Radio Tower
ST LOUIS
Wiedle Municipal Field
Greensburg


Existing Farms
Engineered Sites
ENERGY

GREENSBURG TARGET CARBON REDUCTIONS 2010

ELECTRICITY	100% Renewable Sources
NATURAL GAS	50% of Residents go to Electric Heating
TRANSPORTATION	Every Resident Improves by 5mpg
TOTAL	10,708,560 pounds 5,354.28 tons

Total Reductions: 5,800 tons



Total Savings = 5,800 Tons of CO_2

Built Environment

New development should be durable, healthy, and efficient. City projects will lead the way by becoming examples of green practices that are built to last.

December, 17TH 2007

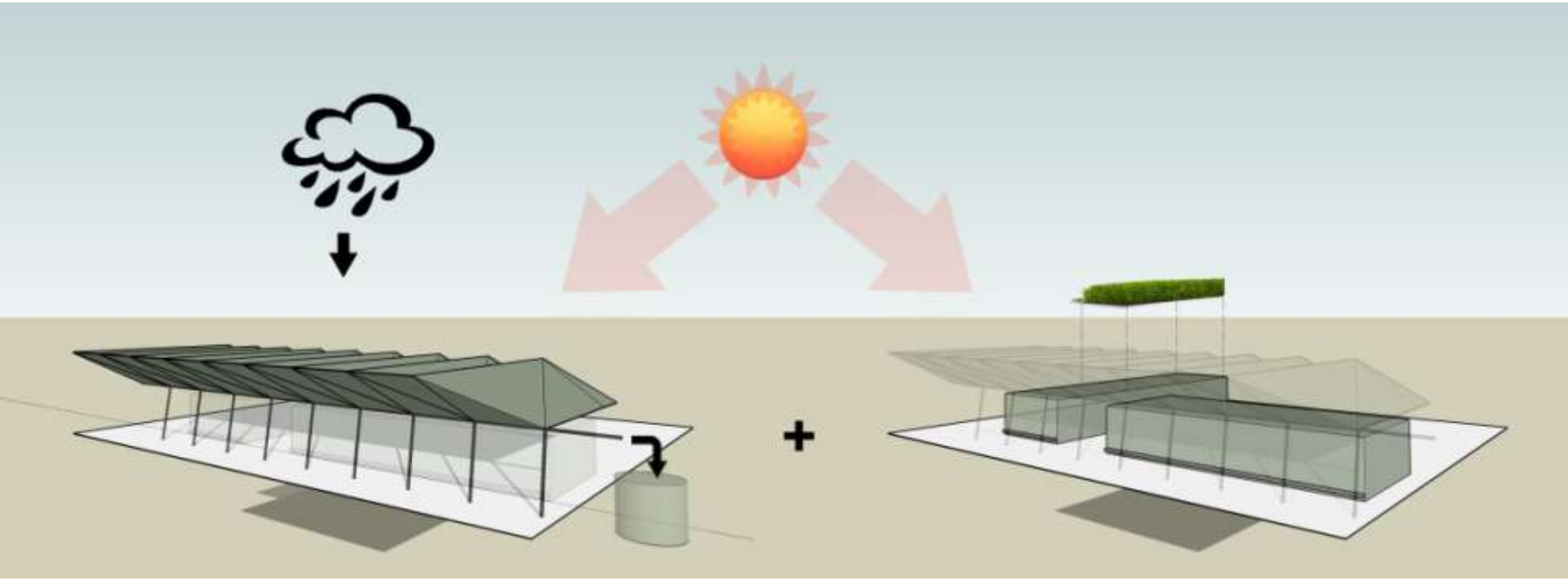
- Greensburg City Council adopted a resolution that all city projects would be built to LEED Platinum standards and would exceed the baseline code for energy efficiency by 42%.

5.4.7 Arts Center
University of Kansas, Studio 804

First LEED Platinum Building in the State

CITY HALL


FUTURE MUSEUM
FUTURE MEMORIAL PARK
MAIN STREET
CITY HALL
MAIN ST.
THREAD CITY HALL INTO NEW DOWNTOWN CONTEXT

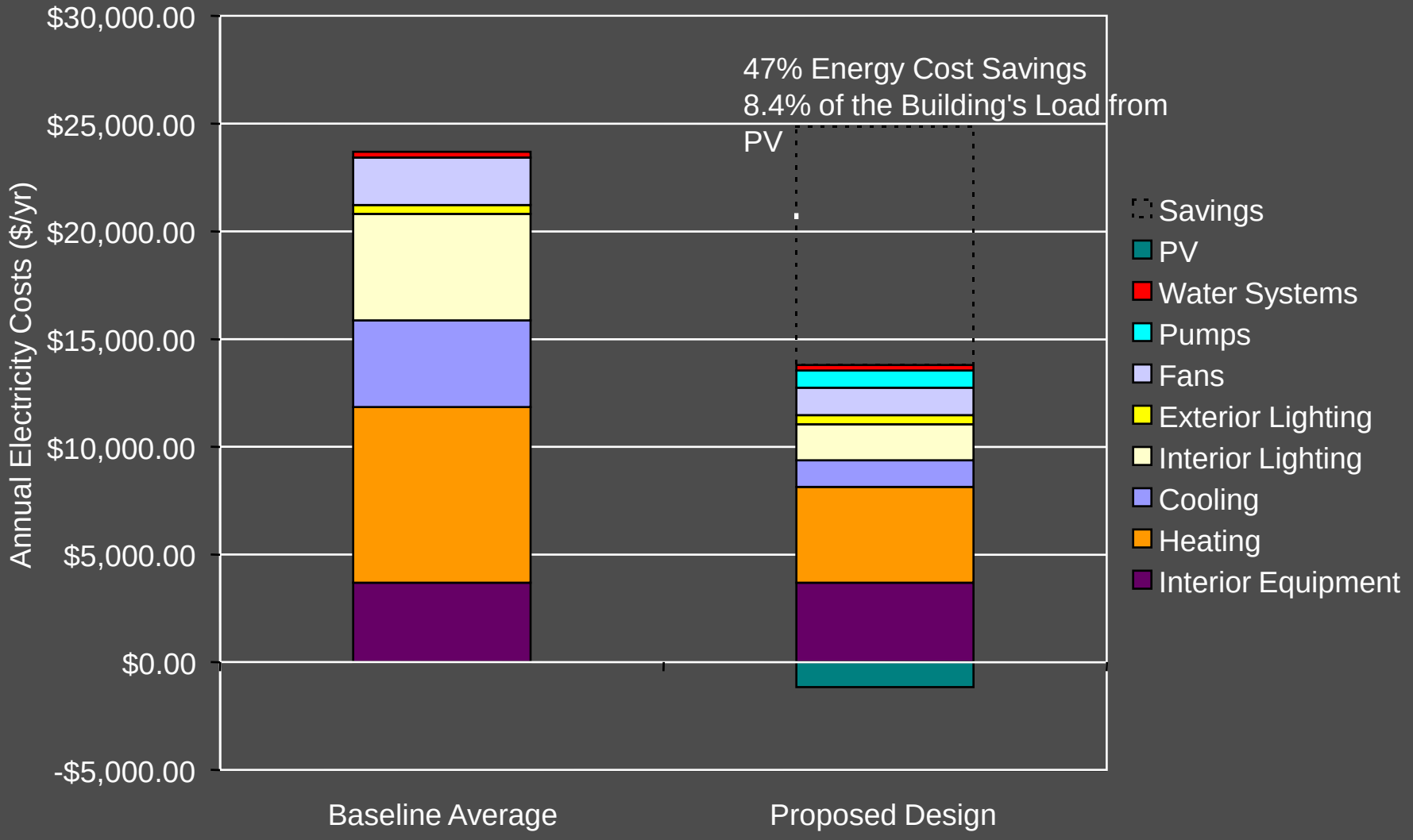


FRONT PORCH

Greensburg Business Incubator

MVP & BNIM

Business Incubator Energy Cost Savings (NREL)



Renewal

A community that makes proactive decisions to use this opportunity to reverse decline and build a progressive city with a strong future.

Leverage the vision of a green Greensburg to create jobs and economic growth.


The Next Big Environmental David-and-Goliath Trial by William Langewiesche
VANITY FAIR
EXCLUSIVE!
SNEAK PREVIEW OF
LEONARDO
DICAPRIO'S
NEW DOCUMENTARY FILM, THE 11TH HOUR
• THE WHITE HOUSE'S DIRTY HANDS
BY ROBERT F. KENNEDY JR.
• THE GASPING AMAZON
BY ALEX SHOUMATOFF
OUR 2ND ANNUAL
GREEN ISSUE
• THE BATTLE FOR THE WORLD'S DRINKING WATER
BY CHARLES C. MANN
• SOUPED-UP ELECTRIC SPORTS CARS
BY MICHAEL SHNAYERSON
PLUS:
UNSEEN OSCAR-PARTY PHOTOS
THE PRIVATE-EQUITY EXPLOSION
THE KISSINGER PRESIDENCY


HYBRID
E85
ETHANOL

Planet Green

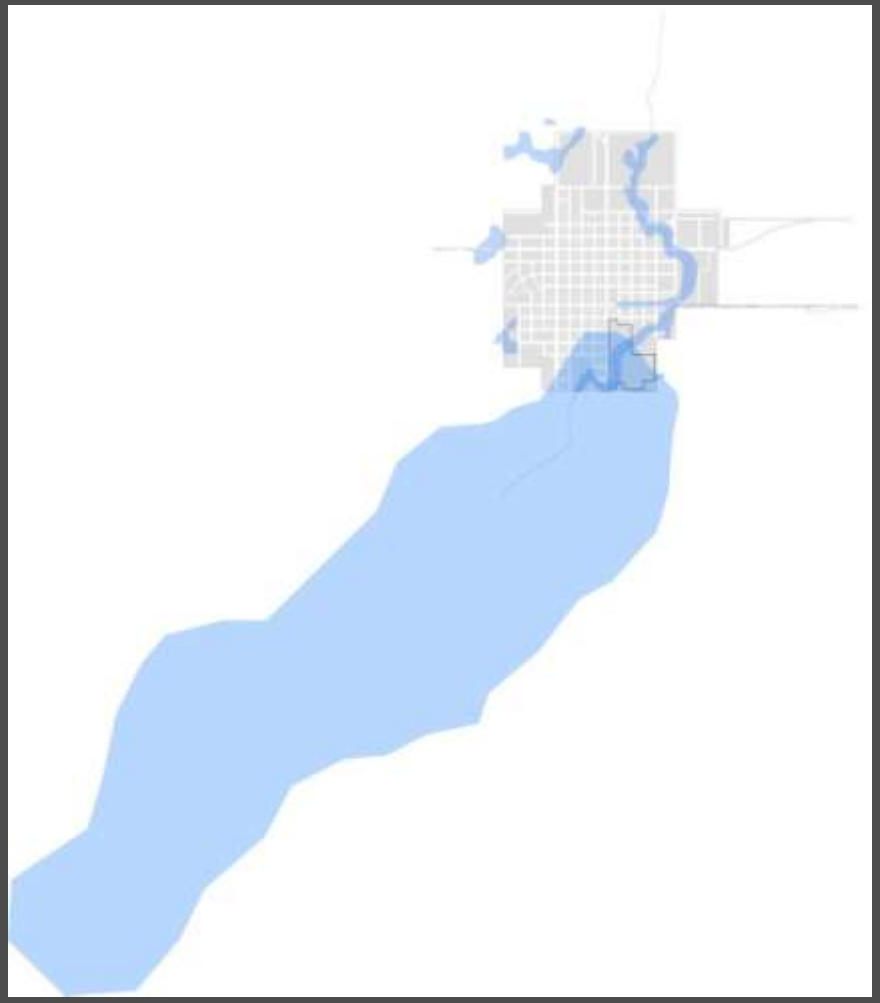
- Planet Green, a new Discovery channel, will air the thirteen part series, GREENSBURG a documentary about the sustainable rebuild of Greensburg Kansas. Season two is now being filmed – following their progress.

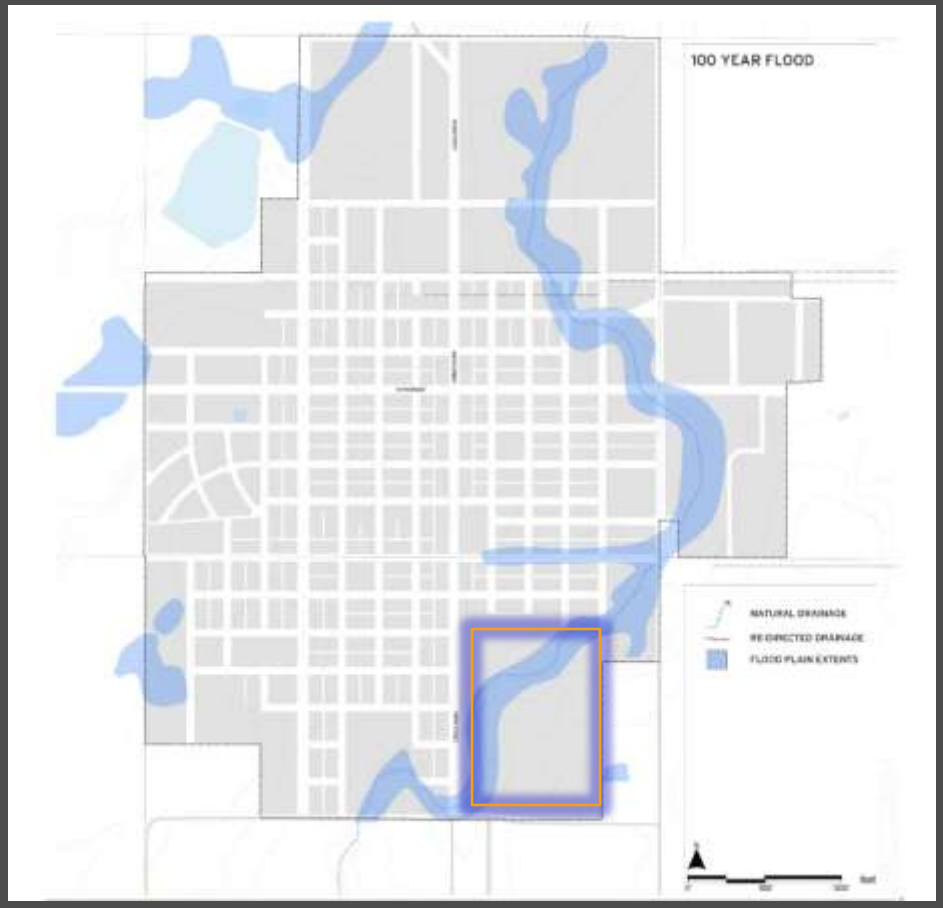
Greensburg School

School Site looking North

School Site looking Southeast (from existing football bleachers)

Floodplain & Watershed

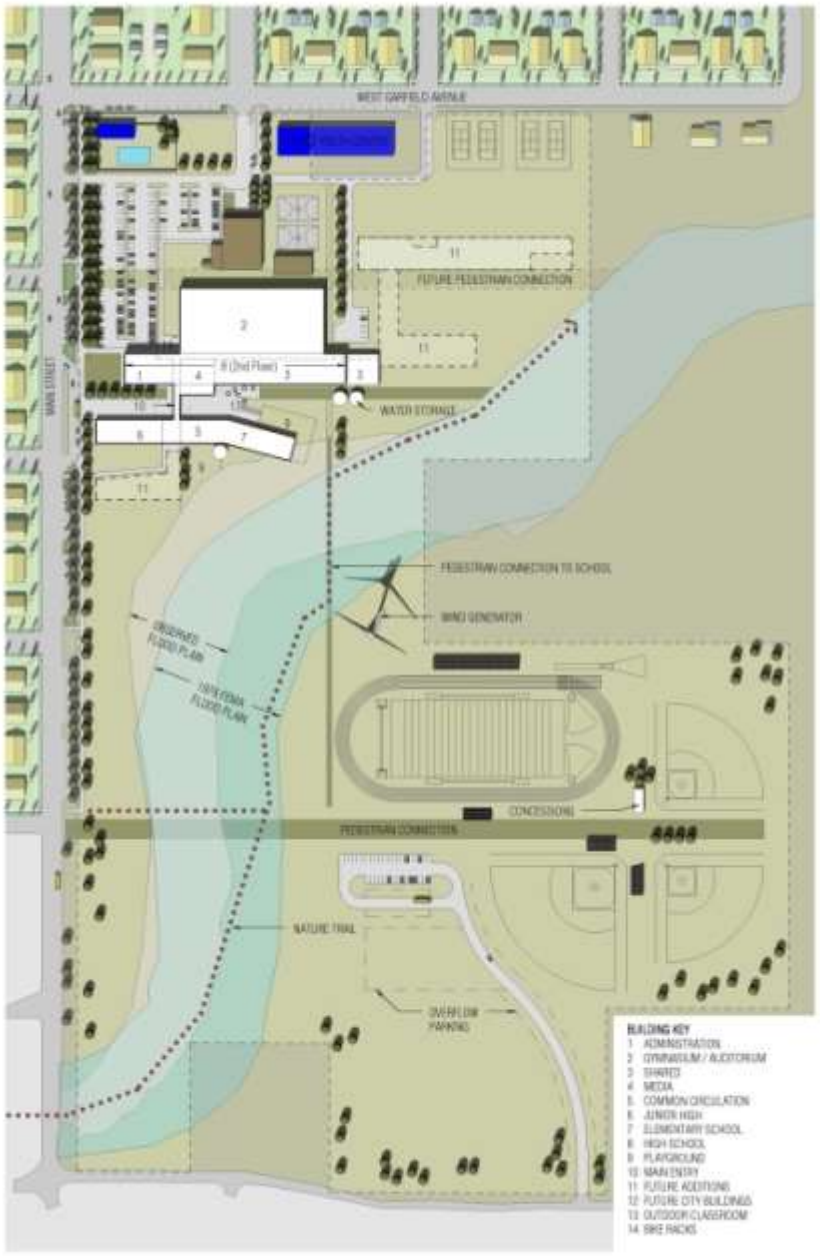




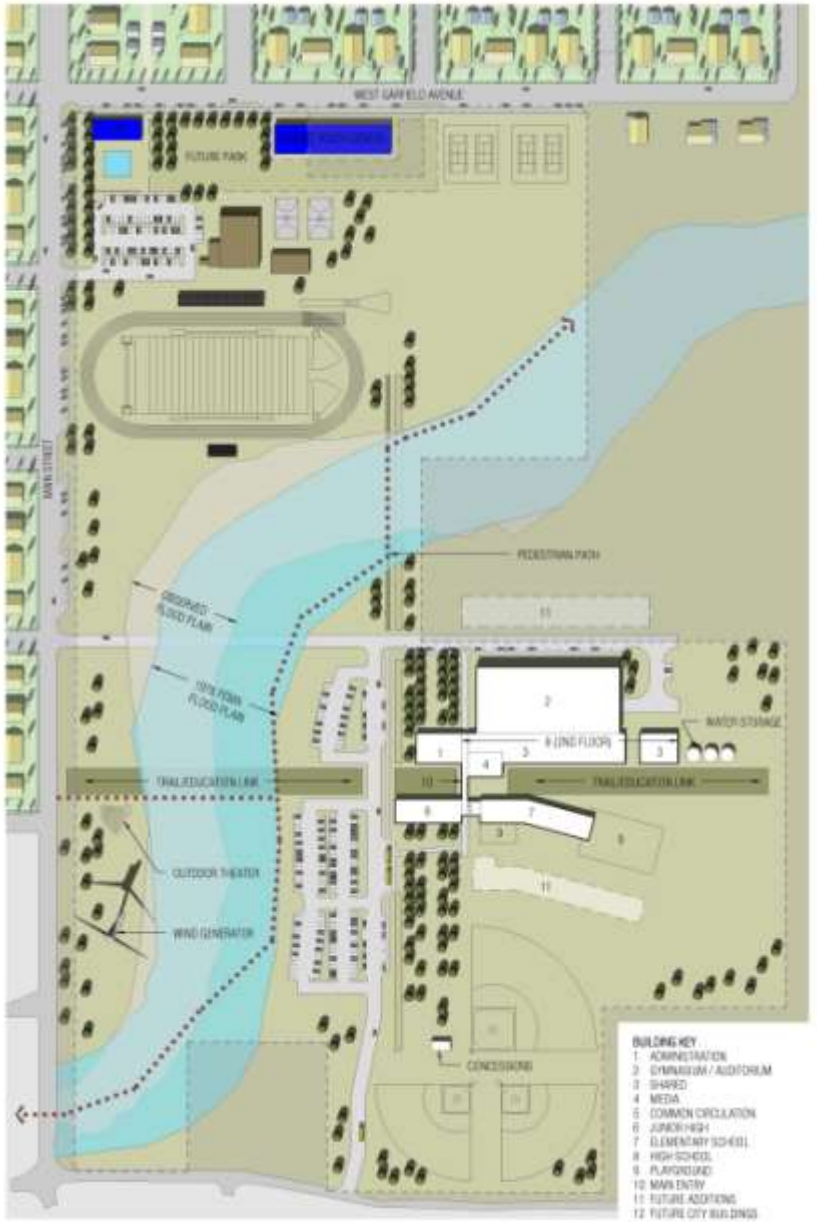
Floodplain Bisecting School Site

Student-Focused Sustainable Learning Environment

- Education of the Children of Greensburg
- Campus Approach
- Celebrate the Prairie Ecosystem
- Rainwater Harvesting
- Energy Efficiency
- Smart Materials (reclaimed, regional, low chemical content)
- Natural Daylight

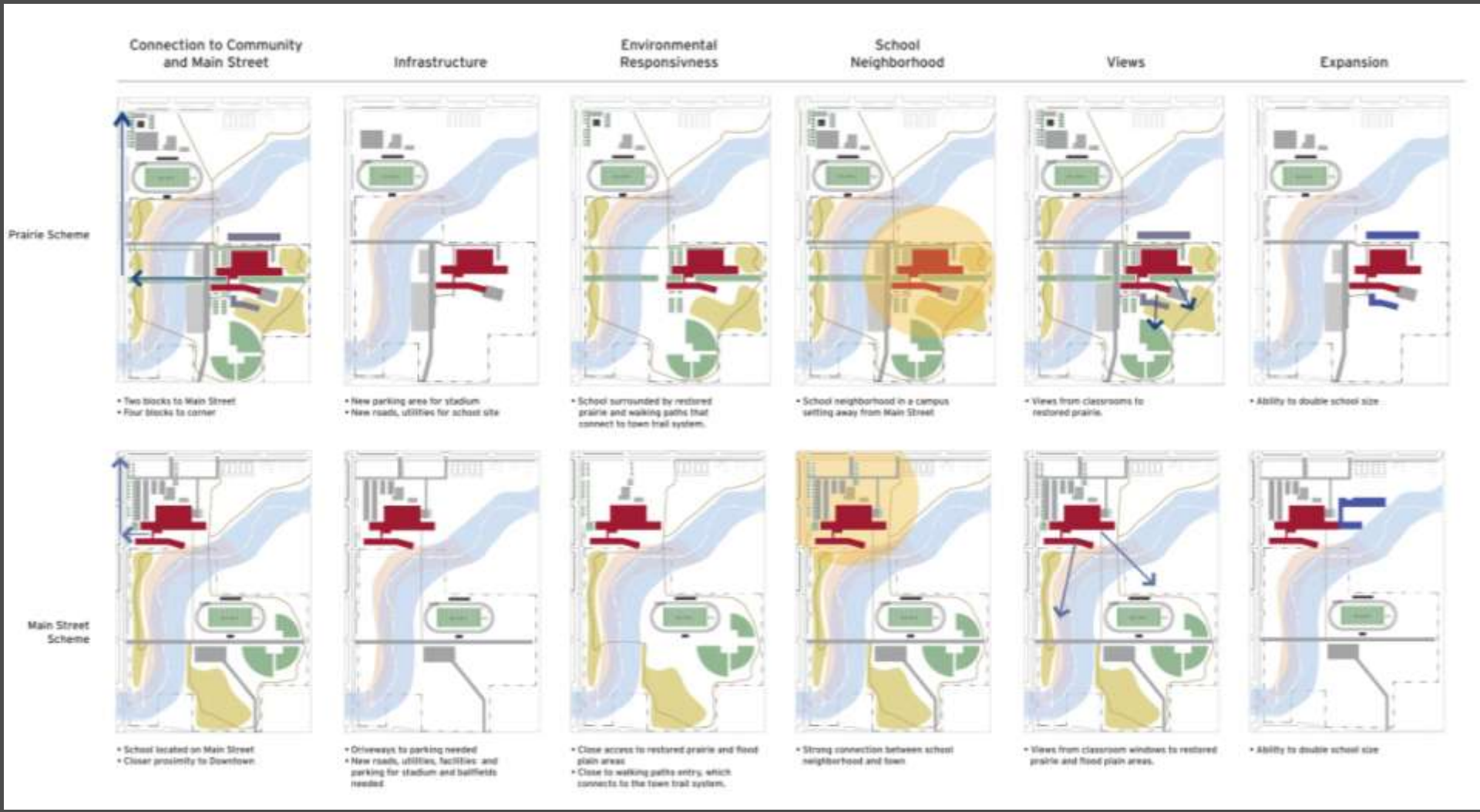

WEST GARFIELD AVENUE
MAIN STREET
FUTURE PEDESTRIAN CONNECTION
WATER STORAGE
PEDESTRIAN CONNECTION TO SCHOOL
WIND GENERATOR
OBSERVED FLOOD PLAIN
100 YR FEMA FLOOD PLAIN
CONCESSIONS
PEDESTRIAN CONNECTION
NATURE TRAIL
OVERFLOW PARKING
BUILDING KEY
1 ADMINISTRATION
2 GYMNASIUM / AUDITORIUM
3 SHARED
4 MEDIA
5 COMMON CIRCULATION
6 JUNIOR HIGH
7 ELEMENTARY SCHOOL
8 HIGH SCHOOL
9 PLAYGROUND
10 MAIN ENTRY
11 FUTURE ADDITIONS
12 FUTURE CITY BUILDINGS
13 OUTDOOR CLASSROOM
14 BIKE RACKS

1 Site


WEST GARFIELD AVENUE
FUTURE PARK
MAIN STREET
PEDESTRIAN PATH
OBSERVED FLOOD PLAIN
100 YR FEMA FLOOD PLAIN
WATER STORAGE
TRAIL/EDUCATION LINK
TRAIL/EDUCATION LINK
OUTDOOR THEATER
WIND GENERATOR
CONCESSIONS
BUILDING KEY
1 ADMINISTRATION
2 GYMNASIUM / AUDITORIUM
3 SHARED
4 MEDIA
5 COMMON CIRCULATION
6 JUNIOR HIGH
7 ELEMENTARY SCHOOL
8 HIGH SCHOOL
9 PLAYGROUND
10 MAIN ENTRY
11 FUTURE ADDITIONS
12 FUTURE CITY BUILDINGS

1 Site

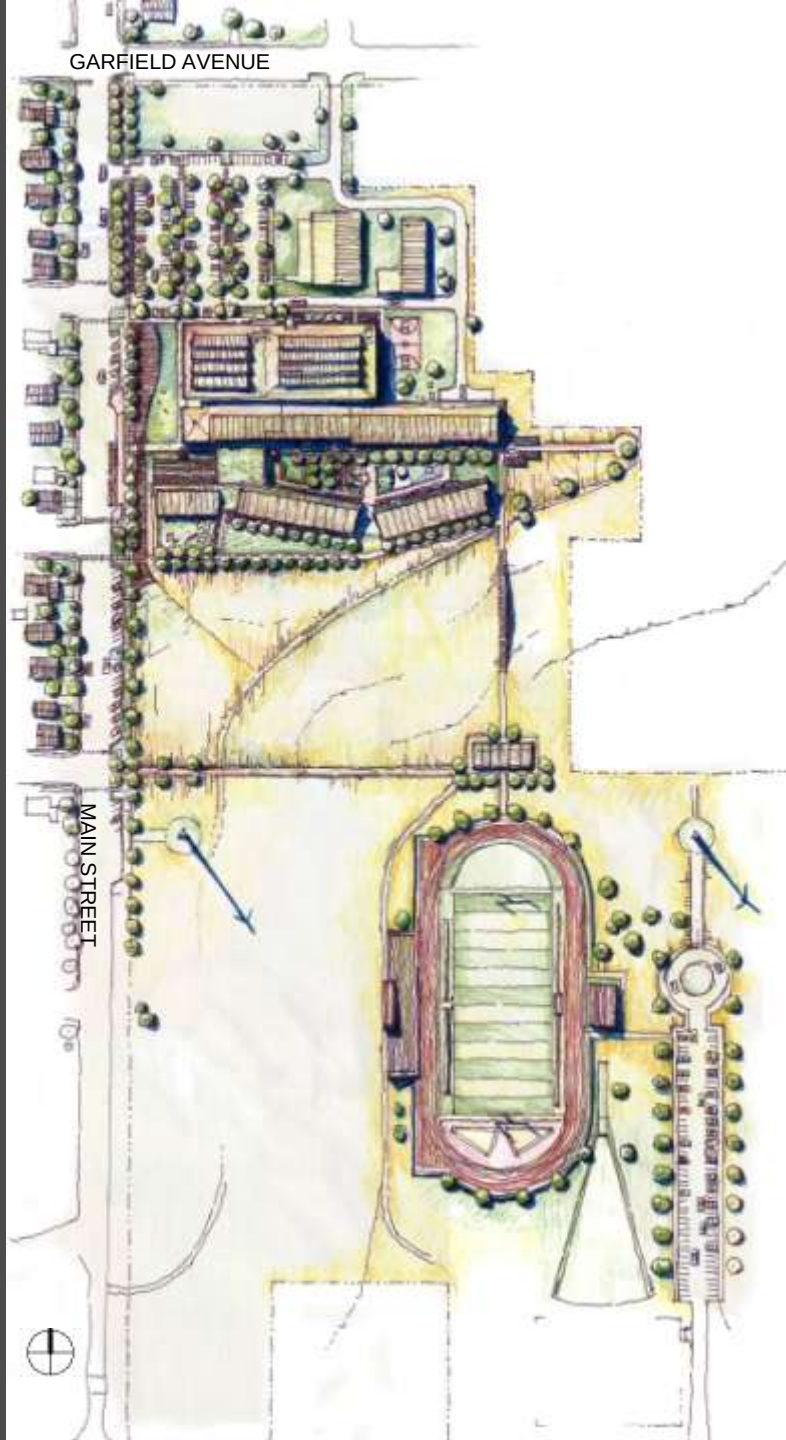
Site Studies: Prairie & Main Street Schemes



Main Street Aerial

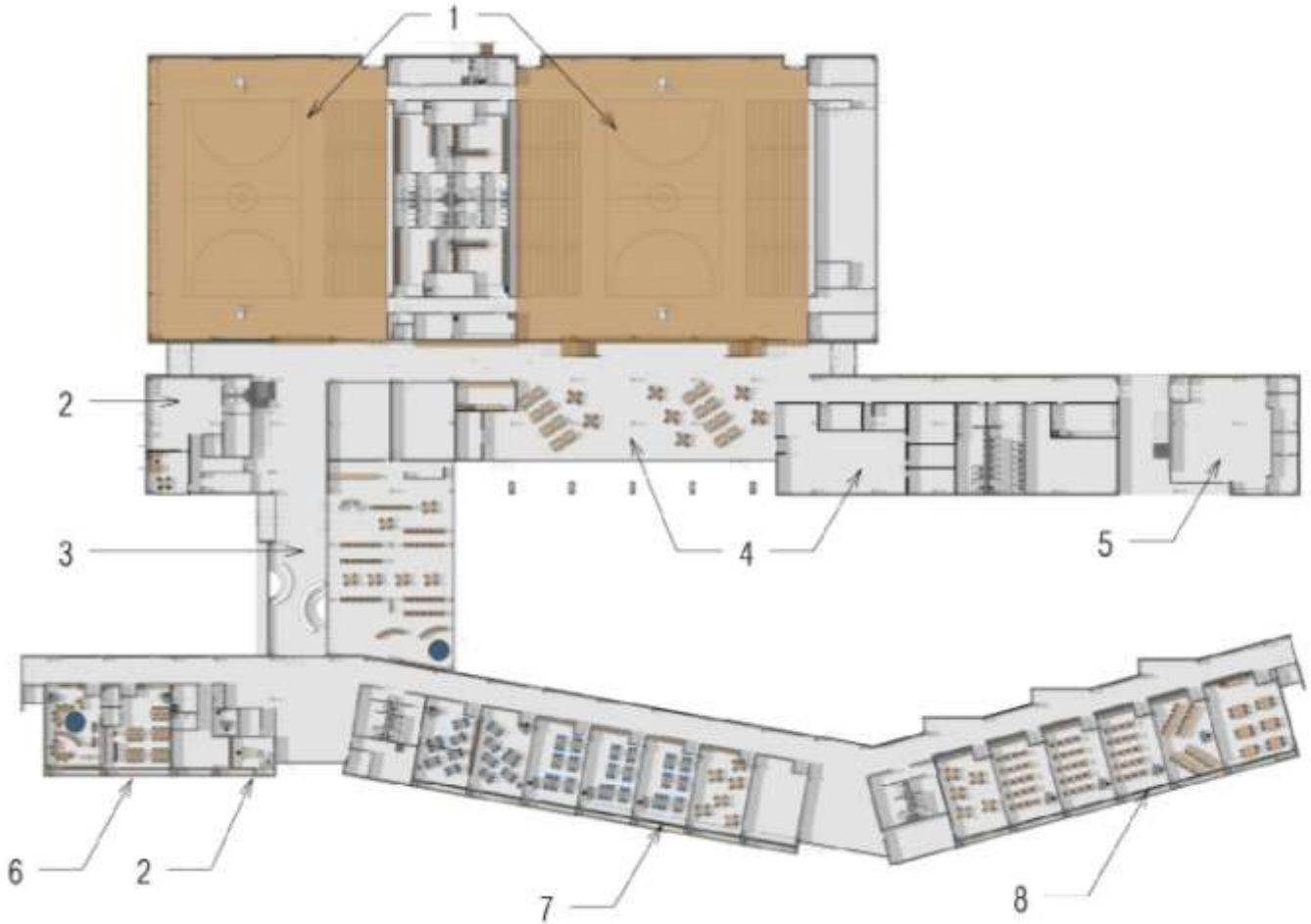
Site Plan

- Direct connection of school to community (school should harbor public space).
- Building situated between Main Street and floodplain.
- Floodplain utilized as site amenity and should be restored to natural state.
- Future building additions to branch out along the floodplain.
- Building footprint does not infringe upon temporary school structures.
- Existing gym and industrial arts building to remain (in some functional capacity).
- Possible future link to community park space at north portion of site.
- Possible future link to community trail system along floodplain.
- School and community athletic fields combined on the south portion of site.
- Proposed onsite integration of renewable energy sources – wind turbine(s), photovoltaic systems, constructed wetlands (onsite wastewater treatment).
- Onsite water collection.
- Native Landscaping (xeriscape)




LEGEND
1) NEW PARKING LOT
2) EXISTING GYM
3) EXISTING INDUSTRIAL ARTS
4) GYMNASIUM
5) ADMINISTRATION
6) LEVEL 1 PUBLIC / LEVEL 2 HIGH SCHOOL
7) MAIN ENTRY MEDIA CENTER
8) ADMINISTRATION / PRE-K / KINDERGARTEN
9) ELEMENTARY SCHOOL
10) MIDDLE SCHOOL
11) CENTRAL COURTYARD / PLAYGROUND
12) PRE-K / KINDERGARTEN PLAYGROUND
13) PEDESTRIAN BRIDGE
MAIN STREET
1
2
3
4
5
6
7
8
9
10
11
12
13

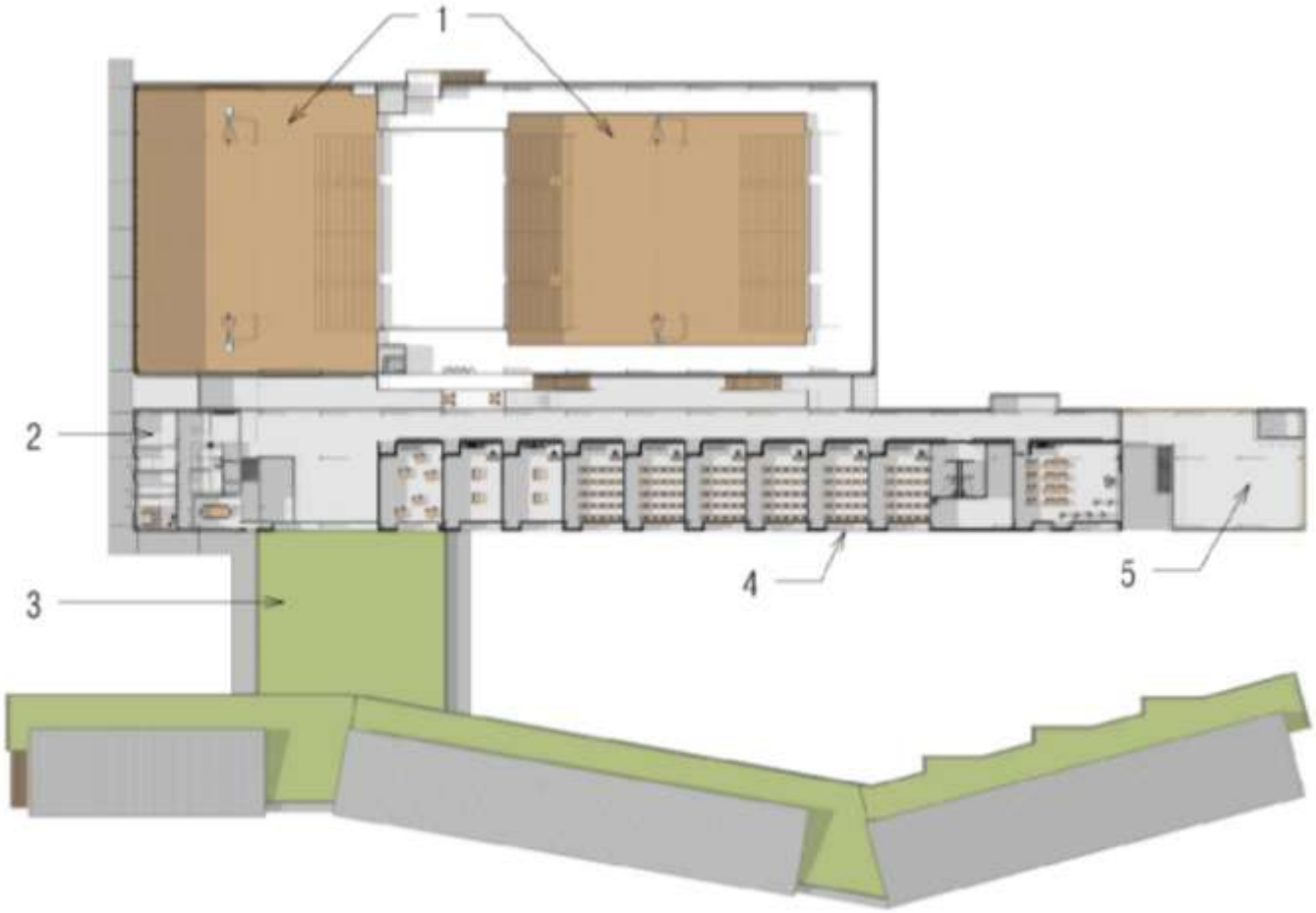
Floor Plan – Level 1



LEGEND

1) GYMNASIUM
2) ADMINISTRATION
3) MAIN ENTRY/MEDIA CENTER
4) PUBLIC/SHARED SPACES
5) MUSIC ROOM
6) PRE-SCHOOL/KINDERGARTEN
7) ELEMENTARY
8) JUNIOR HIGH

Floor Plan – Level 2



LEGEND

1) GYMNASIUM
2) ADMINISTRATION
3) GREEN ROOF
4) HIGH SCHOOL
5) OUTDOOR TERRACE

SITE

The natural prairie site on the south edge of Greensburg presents an opportunity to create an ecological outdoor classroom, a shared facilities situation with the adjacent recreational complex and a town edge that greets visitors as they enter Greensburg.

» **Orient buildings** to take advantage of sunlight for daylighting and solar gain in winter.

» Take advantage of large, open site to locate a **wind turbine** to generate electricity

» **Use natural site systems**, including stream running through property and adjacent prairies to create an educational tool

» Use **adjacency** to create a new stadium and recreational complex south of the school.

» Locate buildings **close to Main Street** to sustain a town edge and also an entry and exit to Greensburg on the north-south highway.

ENERGY

Create an energy efficient facility.

» Use **renewable energy onsite** with:

Wind: One 50 kW turbine to meet part of the electrical load.

Geothermal heat pumps

» Use natural **daylighting** as much as possible to lessen need for artificial light and to create a higher quality interior experience with **views** to the outdoors.

» Use **efficient lighting** with occupancy sensors

» Use **efficient equipment**

» **Commission** the building

BUILDING

- Create a **unified campus** for pre-school through 12.
- Design for **flexilbity and growth**
- Design for **beauty, durability and timelessness.**
- Create a **tight building envelope**
- Insulation values:

  Walls R-19

  Roof R-38
- Use **high-efficiency glazing** with 1" insulated low-e argon filled units (VLT 70%, SHGC .29 U-value of .37) and FSC wood frames.
- Include **operable windows** for natural ventilation
- **Incorporate:**

  Light shelves

  Sun shades
- Create **connections to the outdoors** with views and other visual portals.
- Incorporate **common areas** that can be used by all students and faculty.
- Provide a **hardened room -- the locker rooms --** for emergencies.
- Create opportunities to **engage students' working memory and cognitive systems** by allowing them to interact with their surroundings. Preserve the institutional memory of Greensburg.

WATER

Rainfall amounts in low in Greensburg, making **water a precious resource**. It should be conserved and reused as much as possible.

- Capture **rainwater** for landscaping
- Use **low- or no-flow fixtures** in showers, faucets and toilets
- Use **pervious paving** to control stormwater runoff and heat island effect

MATERIALS

Use materials:

- That have recycled content
- Contain or are made of FSC-approved wood
- Have low- or no- VOC-content
- Are regionally extracted and manufactured
- Contain salvaged material
- Are durable and easy to maintain

LANDSCAPING

- Use native plants and trees
- Restore native prairie
- Create an ecological outdoor classroom for students
- Use pervious paving for parking, driveways and walkways.

LEED Platinum

LEED Schools Scorecard as of 10/14/2008

Yes	?	No	Total Project Score	Possible Points 79
63	6	9		

Certified: 29-36 points, **Silver:** 37-43 points, **Gold:** 44-57 points, **Platinum:** 58-79 points

Project Address: Greensburg School

Yes	?	No	Sustainable Sites	16
12	1	3		
Y			Prereq 1 **Construction Activity Pollution Prevention**	Required
Y			Prereq 2 **Environmental Site Assessment**	Required
		1	Credit 1 **Site Selection**	1
		1	Credit 2 **Development Density & Community Connectivity**	1
		1	Credit 3 **Brownfield Redevelopment**	1
	1		Credit 4.1 **Alternative Transportation**, Public Transportation Access	1
1			Credit 4.2 **Alternative Transportation**, Bicycle Use	1
1			Credit 4.3 **Alternative Transportation**, Low-Emitting & Fuel-Efficient Vehicles	1
1			Credit 4.4 **Alternative Transportation**, Parking Capacity	1
1			Credit 5.1 **Site Development,** Protect or Restore Habitat	1
1			Credit 5.2 **Site Development,** Maximize Open Space	1
1			Credit 6.1 **Stormwater Design,** Quantity Control	1
1			Credit 6.2 **Stormwater Design,** Quality Control	1
1			Credit 7.1 **Heat Island Effect,** Non-Roof	1
1			Credit 7.2 **Heat Island Effect,** Roof	1
1			Credit 8 **Light Pollution Reduction**	1
1			Credit 9 **Site Master Plan**	1
1			Credit 10 **Joint Use of Facilities**	1

Y	?	N	Water Efficiency	Possible Points 7
6	1	0		
1			Credit 1.1 **Water Efficient Landscaping**, Reduce by 50%	1
1			Credit 1.2 **Water Efficient Landscaping**, No Potable Use or No Irrigation	1
	1		Credit 2 **Innovative Wastewater Technologies**	1
1			Credit 3.1 **Water Use Reduction**, 20% Reduction	1
1			Credit 3.2 **Water Use Reduction**, 30% Reduction	1
1			Credit 3.3 **Water Use Reduction,** 40% Reduction	1
1			Credit 4 **Process Water Use Reduction,** 20% Reduction	1

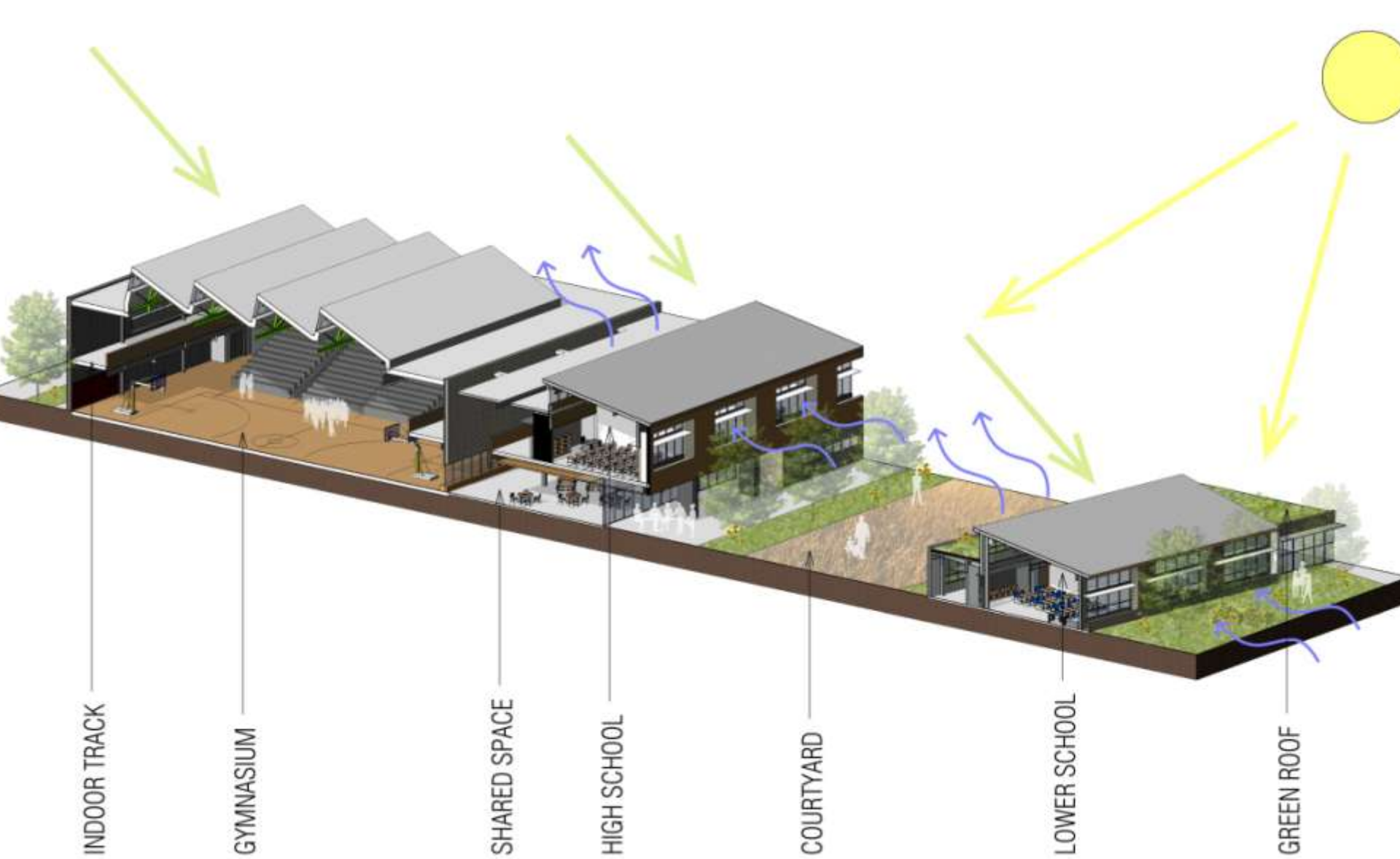
Y	?	N	Energy & Atmosphere	Possible Points 17
15	1	0		
Y			Prereq 1 **Fundamental Commissioning of the Building Energy Systems**	Required
Y			Prereq 2 **Minimum Energy Performance**	Required
Y			Prereq 3 **Fundamental Refrigerant Management**	Required
10			Credit 1 **Optimize Energy Performance (2 pt minimum)**	2 to 10
			14% New Buildings or 7% Existing Building Renovations	2
			17.5% New Buildings or 10.5% Existing Building Renovations	3
			21% New Buildings or 14% Existing Building Renovations	4
			24.5% New Buildings or 17.5% Existing Building Renovations	5
			28% New Buildings or 21% Existing Building Renovations	6
			31.5% New Buildings or 24.5% Existing Building Renovations	7
			35% New Buildings or 28% Existing Building Renovations	8
			38.5% New Buildings or 31.5% Existing Building Renovations	9
		10	42% New Buildings or 35% Existing Building Renovations	10
2			Credit 2 **On-Site Renewable Energy**	1 to 3
			2.5% Renewable Energy	1
		2	7.5% Renewable Energy	2
			12.5% Renewable Energy	3
1			Credit 3 **Enhanced Commissioning**	1
1			Credit 4 **Enhanced Refrigerant Management**	1
	1		Credit 5 **Measurement & Verification**	1
1			Credit 6 **Green Power**	1

Yes	?	No	Materials & Resources	Possible Points 13
5	3	5		
Y			Prereq 1 **Storage & Collection of Recyclables**	Required
		1	Credit 1.1 **Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
		1	Credit 1.2 **Building Reuse**, Maintain 95% of Existing Walls, Floors & Roof	1
		1	Credit 1.3 **Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2.1 **Construction Waste Management**, Divert 50% from Disposal	1
	1		Credit 2.2 **Construction Waste Management**, Divert 75% from Disposal	1
	1		Credit 3.1 **Materials Reuse**, 5%	1
		1	Credit 3.2 **Materials Reuse**,10%	1
1			Credit 4.1 **Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
1			Credit 4.2 **Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
1			Credit 5.1 **Regional Materials**, 10% Extracted, Processed & Manufactured Regionally	1
	1		Credit 5.2 **Regional Materials**, 20% Extracted, Processed & Manufactured Regionally	1
		1	Credit 6 **Rapidly Renewable Materials**	1
1			Credit 7 **Certified Wood**	1

Yes	?	No	Indoor Environmental Quality	Possible Points 20
19	0	1		
Y			Prereq 1 **Minimum IAQ Performance**	Required
Y			Prereq 2 **Environmental Tobacco Smoke (ETS) Control**	Required
Y			Prereq 3 **Minimum Acoustical Performance**	Required
1			Credit 1 **Outdoor Air Delivery Monitoring**	1
		1	Credit 2 **Increased Ventilation**	1
1			Credit 3.1 **Construction IAQ Management Plan**, During Construction	1
1			Credit 3.2 **Construction IAQ Management Plan**, Before Occupancy	1
4			Credit 4 **Low-Emitting Materials**	1 to 4
1			Credit 5 **Indoor Chemical & Pollutant Source Control**	1
1			Credit 6.1 **Lighting System Design & Controllability**	1
1			Credit 6.2 **Thermal Comfort,** Controllability	1
1			Credit 7.1 **Thermal Comfort**, Design	1
1			Credit 7.2 **Thermal Comfort**, Verification	1
3	0	0	Credit 8.1 **Daylight & Views,** Daylighting	1 to 3
		1	75% of classrooms (*required for either points below*)	1
		1	90% of classrooms	2
		1	75% of other spaces	3
1			Credit 8.2 **Daylight & Views**, Views for 90% of Spaces	1
2			Credit 9 **Enhanced Acoustical Performance**	1 to 2
1			Credit 10 **Mold Prevention**	1

Yes	?	No	Innovation and Design	Possible Points 6
6	0	0		
1			Credit 1.1 **Innovation in Design**: Community Partnership	1
1			Credit 1.2 **Innovation in Design**: Renewable Energy Mix	1
1			Credit 1.3 **Innovation in Design**: Green Cleaning	1
1			Credit 1.4 **Innovation in Design**: Waste Food Generation	1
1			Credit 2 **LEED® Accredited Professional**	1
1			Credit 3 **School as a Teaching Tool**	1

Building Diagram



Building Entry - West

Central Courtyard – Looking West

Elevations

West

South

View at Atrium / Cafeteria – Looking West

Main Gym – Looking Northeast


RANGERS

The New York Times

Playing a Leading Role in the Ruins of a Tornado

Angel Franco/The New York Times

Part of the debris left by a tornado that plowed into the town of Greensburg, Kan., last year. More Photos >

By KATHRYN SHATTUCK
Published: June 10, 2008

Today Greensburg is unfurling like spring growth on the prairie, an oasis of environmental awareness and sustainability in the early phases of reconstruction whose residents are striving to build the nation's first Platinum city, the highest certification green design can attain. Beginning Sunday at 9 p.m. "Greensburg," the series, will chronicle the town's resurrection in 13 episodes on Discovery Communications' latest offshoot, Planet Green.

"We're starting from the beginning," Steve Hewitt, Greensburg's city administrator, said in February in what would become a mantra. "We're creating a town and building it energy-efficient and building it green."