COMMUNITY + RESILIENCE
Z SMITH, ESKEW+DUMEZ+RIPPLE
WHO WE ARE

Z Smith  PHD, AIA, LEED AP BD+C
Principal | Dir. of Sustainability & Performance

Z Smith has been involved in nationally published sustainability research and design for the past ten years. He has served as a Project Architect for carbon neutral, net-zero energy and net-zero water use buildings, and taught sustainable design courses at universities in the U.S. and Canada.

With training and experience in the fields of architecture, physics, information technology, and renewable energy, Smith now serves as our studio’s Director of Sustainability & Building Performance. He integrates his broad range of skills in service of lowering the environmental footprint of each of our buildings, while continuing to help us deliver projects on time and on budget. He brings an approach of scientific rigor to green design in our studio’s wide array of community, educational, and institutional projects, and brings tremendous added value to our Clients through the reduction of energy consumption, and subsequently the reduction of energy bills.

Marissa Campos
Research Fellow

Marissa Campos is the 2013-2014 Eskew+Dumez+Ripple Research Fellow and came to New Orleans from Cincinnati after completing her Masters Degree in Architecture. A native of San Antonio, TX, Marissa has earned multiple degrees from Smith College, American University, and the University of Cincinnati, and has worked in the several architectural firms across the country. She embodies a great commitment to community and public service—including 3 years as a Teach for America Corps Member in Washington, DC. A winner of multiple scholarships and design awards, she has also seen her work published in architectural research journals.

A resident of the Faubourg Marigny, Marissa never misses an opportunity to partake in the city’s whirl of activity and enjoys exploring on her bike and playing Rugby for the New Orleans Halfmoons.

mcampos@eskewedzeugripel.com
RESILIENCE:

RESILIENCE IS THE **PRESERVATION OF COMMUNITIES** THROUGH ONGOING PLANNING FOR THE CAPACITY TO **LEARN, ADAPT, AND CHANGE** IN THE FACE OF PRESENT-DAY AND FUTURE THREATS, BOTH PREDICTABLE AND UNKNOWN.

"Resilience without community is just survivalism"
RESILIENCE IS THE **PRESERVATION OF COMMUNITIES** THROUGH ONGOING PLANNING FOR THE CAPACITY TO **LEARN, ADAPT, AND CHANGE** IN THE FACE OF PRESENT-DAY AND FUTURE THREATS, BOTH PREDICTABLE AND UNKNOWN.

WE ARE DRAWING FROM THE FOLLOWING 3 DEFINITIONS OF RESILIENCE; SPECIFICALLY BY THE SCALE AT WHICH THEY FOCUS:

**GLOBAL**

**LOCAL**
RESILIENCE IS THE **PRESERVATION OF COMMUNITIES** THROUGH ONGOING PLANNING FOR THE CAPACITY TO **LEARN, ADAPT, AND CHANGE** IN THE FACE OF PRESENT-DAY AND FUTURE THREATS, BOTH PREDICTABLE AND UNKNOWN.

WE ARE DRAWING FROM THE FOLLOWING 3 DEFINITIONS OF RESILIENCE; SPECIFICALLY BY THE SCALE AT WHICH THEY FOCUS:

**THE ROCKEFELLER FOUNDATION:**
- **CONSTANT LEARNING:** Ability to internalize past experiences linked with robust feedback loops that sense, provide foresight and allow new solutions.
- **RAPID REBOUND:** Capacity to re-establish function, re-organize and avoid long-term disruptions.
- **LIMITED OR “SAFE” FAILURE:** Prevents failures from rippling across systems.
- **FLEXIBILITY:** Ability to change, evolve, and adapt to alternative strategies in the face of disaster.
- **SPARE CAPACITY:** Ensures that there is a back-up or alternative available when a vital component of a system fails.
DEFINITIONS

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- design to **adapt** to changing conditions and to **maintain or regain functionality and vitality** in the face of disturbance.
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- design to *adapt* to changing conditions and to *maintain or regain* functionality and vitality in the face of disturbance

THE NEW ORLEANS MASTER PLAN:
- the *capacity to cope with and recover from* present-day risks and the capacity to adapt to changing conditions, including uncertain, unknown, or unpredictable risks, encouraging communities to *learn, adapt and change*
RESILIENCE + SUSTAINABILITY

- DEPLETION
- SUSTAINABILITY
- REGENERATION
- RESTORATION

- CAPITAL STOCKS
- BIODIVERSITY
- LIFE SPAN
- MATERIALS
- DESIGN
- CONSERVATION
- COMFORT
- HARDENING
- ADAPTATION
- GRACEFUL FAILURE

TIME
RESILIENCE + SUSTAINABILITY
RESILIENCE + SUSTAINABILITY

CONDITIONS

TIME
COMMUNITY + RESILIENCE

RESILIENCE + SUSTAINABILITY

SUSTAINABILITY

DESIGN

LIFE SPAN
CONSERVATION
COMFORT
MATERIALS

X
RESILIENCE + SUSTAINABILITY

DESIGN

LIFE SPAN
CONSERVATION
COMFORT
MATERIALS

SUSTAINABILITY

RESILIENCE

LIFE SPAN
CONSERVATION
COMFORT
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COMMUNITY + RESILIENCE
COMMUNITY + RESILIENCE

RESILIENCE + SUSTAINABILITY

SUSTAINABILITY

RESILIENCE

DESIGN

LIFE SPAN

CONSERVATION

COMFORT

MATERIALS

LIFE SPAN +

GRACEFUL FAILURE

CONSERVATION +

REDUNDANCY

COMFORT +

ADAPTATION

MATERIALS +

HARDENING
SUSTAINABILITY
Sustainability envisions the enduring prosperity of all living things.

RESILIENCE
Resilience envisions the enduring prosperity of communities by planning for the capacity to learn, adapt, and change.
ST. LOUIS + NEW ORLEANS: POPULATION

- St. Louis: Approximately 300,000
- New Orleans: Approximately 700,000
ST. LOUIS + NEW ORLEANS: PER CAPITA INCOME

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<th>Per Capita Income</th>
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ST. LOUIS + NEW ORLEANS: HOUSE PRICES

- St. Louis: $0
- New Orleans: $200,000
ST. LOUIS + NEW ORLEANS: CRIME

Murder rate per 100,000 residents

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ST. LOUIS + NEW ORLEANS: NUMBER OF SONGS WRITTEN ABOUT THE CITY

![Bar chart comparing the number of songs written about St. Louis and New Orleans. New Orleans has significantly more songs than St. Louis.]

- St. Louis: Few songs
- New Orleans: Many songs
NEW ORLEANS: HEAT AND HUMIDITY
NEW ORLEANS: WHOLE LOTTA RAIN DOWN HERE

Peak rainfall events - New Orleans

Rain event duration (hours)

Rain event (inches)

2-year return period (50% probability of occurring once any given year)

100-year return period (1% probability of occurring once any given year)
NEW ORLEANS: WATER
Katrina Comeback Makes New Orleans Fastest-Growing City

By Frank Bass - Jun 27, 2012 11:00 PM CT

Customers at the Café Du Monde in the French Quarter in New Orleans.

New Orleans, in danger seven years ago of being reduced to a "Siren by the River," grew faster than any other major U.S. city in the 12 months after the 2010 decennial headcount, the U.S. Census Bureau announced today.
NEW ORLEANS: REBIRTH

Why New Orleans Is the Coolest Start-up City in America

Idea Village, a New Orleans-based not-for-profit that helps support local entrepreneurs, is helping rebuild its city's economic devastation by organizing a series of workshops and competitions involving MBA students from the nation's top business schools.

Everyone in New Orleans has a Katrina story, and the tales are typically tinged with loss, frustration, and grief. Five years after the storm, you still see evidence of the devastation that killed over 1,800 people and left more than one million homeless. But Katrina gave New Orleans a chance to be reborn.

Recently, Under30CEO ran a poll to find out what the best cities in the United States were for young entrepreneurs. The poll asked the Under30CEO readers to place their vote or submit the city of their choice if it wasn’t listed. We asked everyone to not only think about the business climate and resources but also consider the social scenes and even weather. Young entrepreneurs want to run a successful business but they also take into consideration their lifestyle and where they can find both personal and business happiness. The results are below for the top cities for young entrepreneurs in 2011.

1. New Orleans

New Orleans tops the list with a surge in entrepreneurial activity in recent years. The city has seen numerous incubators and events catering to aspiring entrepreneurs come to town which has boosted the resources the city has available. We also know that New Orleans has an amazing, vibrant and inspiring culture that attracts the creative entrepreneur types. But the main driver for young entrepreneurs may really be that for all of this the cost of living in the city is extremely low especially when compared to places like New York, Boston or Chicago.

2. Kansas City
NEW ORLEANS, 1841
NATIVE RESIDENTS BY STATE

1. Louisiana 78.8%
2. Michigan 76.6%
3. Ohio 75.1%
4. Pennsylvania 74%
5. Wisconsin 72.1%
6. Mississippi 71.9%
7. Iowa 71.7%
8. West Virginia 71.1%
9. Kentucky 70.3%
10. Alabama 70%
Detroit Population, 1900 to 2010

Source: Census Bureau

1927

Present
NEW ORLEANS POPULATION: PRE-, POST-KATRINA

ORLEANS PARISH

Pre-Katrina: 455,188

Post-Katrina: 208,548

200,000

300,000

400,000

500,000

CENTUS DATA CHART AREA’S UPS, DOWNS
New Orleans, St. Bernard populations sink

REGION
2000
2010
ST. JOHN THE BAPTIST
43,044
45,924
11%
ST. CHARLES
48,072
52,780
7%
JEFFERSON
455,466
432,552
5%
ORLEANS
484,674
343,829
29%
ST. TAMMANY
191,263
233,740
22%
PLAQUEMINES
26,757
23,042
14%
ST. BERNARD
67,229
35,897
47%

GREATER NEW ORLEANS POPULATION, PRE-, POST-KATRINA
HURRICANE KATRINA FLOODING DEPTH
NEW ORLEANS, 1841

SHOWING AREA BUILT IN 1841.
The fainter lines show Streets of 1880.
Approximate areas that were proposed to become parks and green space
“I don’t know you, but, Mr. Canizaro, I hate you.”
Post-Katrina Gentrification Hot Spots, New Orleans

From Bienville’s Dilemma: A Historical Geography of New Orleans, by Richard Campanella, richcampanella.com

Every dot represents five residents distributed evenly within census blocks.
- Whites
- Blacks
- Hispanics
- Asians

Analysis by Richard Campanella based on 2000 Census data.
POPULATION CHANGE BY NEIGHBORHOOD

Percent Change in Population by Neighborhood in New Orleans, 2000-2010

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<tr>
<th>Decrease</th>
<th>Increase</th>
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<tr>
<td>0 - 14.99%</td>
<td>0 - 9.99%</td>
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<td>15 - 24.99%</td>
<td>10 - 29.99%</td>
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<td>25 - 34.99%</td>
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<td>35 - 49.99%</td>
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<td>50 - 99.6%</td>
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Source: GNO Community Data Center analysis of data from Censuses 2000 and 2010.
A TALE OF TWO NEIGHBORHOODS: LOWER 9TH WARD, 2005 AND NOW
COMMUNITY + RESILIENCE

A TALE OF TWO NEIGHBORHOODS: LAKEVIEW, 2005 AND NOW
COMMUNITY + RESILIENCE

COST PER SF OF HOME SALES BY ZIP CODE

MAP KEY
Price per square foot, undamaged or repaired single-family homes

$000 2012
$000 Before Katrina

Increase in price
Decrease in price
HURRICANE KATRINA FLOODING: 2005

Levee breaches from Katrina's monster surge left the city under more than 10 feet of floodwater in some neighborhoods. A look at the maximum standing water depths at the height of the flood, when Lake Pontchartrain leveled off with New Orleans:

Most East Jefferson flooding was caused by Lake Pontchartrain water backing up through an unstaffed pumping system.

Parts of the West Bank within levee system had minor flooding due to an unstaffed pumping system.

Source: C&G Technologies Survey Services,staff research

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<th>APPROXIMATE STANDING FLOODWATER DEPTHS</th>
<th>Over 10 feet</th>
<th>8-10 feet</th>
<th>6-8 feet</th>
<th>4-6 feet</th>
<th>2-4 feet</th>
<th>0-2 feet</th>
<th>Levees/floodwalls</th>
<th>Breached or compromised levees</th>
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500-YEAR STORM FLOODING: TODAY

Potential flooding from overtopping and rainfall resulting from a hurricane with a 0.2 percent chance of occurring in any year; a so-called 500-year storm. The flooding is the maximum possible from a suite of 152 possible storms, not a single storm. Flood depths assume 100 percent of area pump stations are operating.

Source: Army Corps of Engineers

APPROXIMATE STANDING FLOODWATER DEPTHS
- Over 10 feet
- 8–10 feet
- 6–8 feet
- 4–6 feet
- 2–4 feet
- 0–2 feet

Levees/floodwalls
Breached or compromised

Planned St. Charles Parish West Bank levee
Outfall canals now closed off by floodgates and equipped with pumps
New Lake Borgne surge barrier
New West Bank surge gate and pumping station
COMMUNITY + RESILIENCE

STRUCTURAL PROTECTION SYSTEM, TODAY
COMMUNITY + RESILIENCE

STRUCTURAL PROTECTION SYSTEM, TODAY
1995 CHICAGO HEAT WAVE, AN EMERGENCY IN SLOW MOTION

NORTH LAWNDALE
94% African-American

Chicago Population: 33% African-American

SOUTH LAWNDALE
84% Hispanic

Chicago Population: 25% African-American
1995 CHICAGO HEAT WAVE, AN EMERGENCY IN SLOW MOTION

NORTH LAWNDALE
94% African-American

Chicago Population: 33% African-American
1995 Heat Wave Deaths: 49% African-American

SOUTH LAWNDALE
84% Hispanic

Chicago Population: 25% African-American
1995 Heat Wave Deaths: 2% Hispanic
SOCIAL AID AND PLEASURE CLUBS, ZULU
SOCIAL AID AND PLEASURE CLUBS, PERFECT GENTLEMEN S&P, SUDAN
JUMP START CIVIC PROJECTS: SAENGER THEATER + NEW ORLEANS EAST LIBRARY
JUMP START CIVIC PROJECTS: MUSICIANS VILLAGE
JUMP START CIVIC PROJECTS: LANDRY HIGH SCHOOL
### The Resilient Design Principles:

1. Resilience transcends scales.
2. Resilient systems provide for basic human needs.
3. Diverse and redundant systems are inherently more resilient.
4. Simple, passive, and flexible systems are more resilient.
5. Durability strengthens resilience.
6. Locally available, renewable, or reclaimed resources are more resilient.
7. Resilience anticipates interruptions and a dynamic future.
8. Find and promote resilience in nature.
9. Social equity and community contribute to resilience.
10. Resilience is not absolute.
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Approximate areas that were proposed to become parks and green space.
# Project Resiliency Framework + Guide

## Case Study: Rosa F. Keller Library + Community Center

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BROADMOOR: KELLER LIBRARY
The historic building took on 3” of water during the storm. Foundation work was done and the historic building was raised to prevent future flooding.

The 1993 addition was at a different level than the historic building, causing visitors to have to navigate stairs to get from one half of the library to the other and did not allow for any sightlines. Because of the extensive damage, an entirely new addition was built. The addition was built on the same level as the historic building to protect against future flooding as well as provide for a seamless flow.

Prior to Hurricane Katrina, the mechanical equipment was at ground level, both inside and along the exterior, and was destroyed. To prevent this in the future, the mechanical equipment for both the historic building and the new addition was moved to the roof.

A major component of the stormwater management strategy for this project is stormwater detention. This detention aids in flood prevention by handling and delaying stormwater on site rather than allowing it to drain directly into the city’s storm sewer system.

Water is diverted into bioswales by using the slope of the existing parking lot and disconnected downspouts. With this system, water is not retained at all times, but rather, a wet-dry condition is created. When it rains, water is retained for 6-12 hours, while slowly percolating back into the ground.
Approximate areas that were proposed to become parks and green space

COMMUNITY + RESILIENCE

GREEN DOT MAP
## CASE STUDY:
### PROJECT LEGACY: VA HOSPITAL

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COMMUNITY + RESILIENCE

PROJECT RESILIENCY FRAMEWORK + GUIDE

FLEXIBILITY
1. All single-occupancy rooms can be converted to double-occupancy in an emergency.

HARDENING
2. The glass, metal, and concrete building envelope can withstand at least a Category 3 storm.

ELEVATION
3. Mission-critical components, including the emergency department, are at least 21 feet above flood elevation.
4. Primary utility distribution is on the fourth level to avoid flood damage.

BACKUP RESOURCES
5. A million-gallon rainwater storage tank operates cooling systems and reduces city water dependency.
6. The central energy plant stores 320,000 gallons of fuel, enough to generate one week of power.

SUPPLY STORAGE
7. An 6,000-square-foot warehouse stores food, water, and emergency supplies.

EMERGENCY ACCESS
8. The emergency department ramp doubles as a boat launch in the event of flooding.
9. The parking garage can accommodate Blackhawk-class helicopters.
# PROJECT RESILIENCY FRAMEWORK + GUIDE

## CASE STUDY:
**LOUISIANA SPCA**

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LOUISIANA SPCA
PROJECT RESILIENCY FRAMEWORK + GUIDE
## Project Resiliency Framework + Guide

<table>
<thead>
<tr>
<th>Building</th>
<th>Campus</th>
<th>City</th>
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<tr>
<td>1</td>
<td>Regional/Contextual Efforts</td>
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<td>Community Connections and Preservation</td>
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<td>Critical Resources, Community Assets, and Economic Continuity</td>
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<td>4</td>
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<td>5</td>
<td>Past, Present, and Future Climatic Analysis/Risk Assessment</td>
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<td>6</td>
<td>Site Response</td>
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