The APA Sustainable Communities Division supports planners who are committed to planning for sustainable communities by integrating all aspects of sustainability into our work through the combined economic, social, and ecological factors that shape our communities.
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Division Contact Information

- **Official Website:** planning.org/divisions/sustainable
- **Blog (sign up for e-bulletin):** www.sustainableplanning.net
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Today – Regenerative Urbanism Rising: Next-Generation Practice

• Scott T. Edmondson, AICP – Strategic Sustainability Planner–Economist, San Francisco Planning Department, CA

• Joshua Foss – President at The Ecalal Group, Minneapolis, MN

• Charles Kelley, AIA – Associate Partner at Zimmer Gunsul Frasca (ZGF) Architects, LLP, Portland, OR

SUSTAINABLE COMMUNITIES DIVISION
Agenda

- Introduction
- The Necessary Sustainability “Pivot”
- Planning Restorative, High-Performance Places
- Implications for Planning
- Discussion
Team

Scott T. Edmondson, AICP  |  SF Planning
- A strategic sustainability planner-economist
- Planning urban systems sustainability

Joshua Foss  |  The Ecala Group
- A restorative urban development strategist
- “Making” a market to go beyond best-practices

Charles Kelley  |  ZGF Architects LLP
- An architect and urban design innovator
- 30-year pioneer designing high performance districts
National—Sustaining Places Initiative

- Context
- Focus: Sustainable “Comp” Plans
  - PAS 578 — Best Practices

Sustainable Communities Division (SCD)

- Members? Join!
- SCD’s Mission: An Integrative Approach
  - Planning “as” sustainability, not a separate silo
  - Need to develop that Integrative Framework
Today we hope to illuminate...

**The Challenge** | Restore the planet *AND* prosper

**The Need** | “Pivot” from “less bad” to “good”

**Planning’s** emerging “regenerative” response

**Our Method** | Recognize, Pivot, Amplify!

**Our Value Proposition—Leapfrog to sustainability**

- Lead sustainability with better places, *what people value*
- Enabled by and paid for with regenerative design
- The built environment as key part of sustainable economy
This session arose . . .

From a search for effective approaches for SF Options were limited:

- Codifications of traditional planning/good enviro.
- Ad-hoc greening, often focused on strategic econ de vel
- One Planet Framework
- Living Building Challenge
- Living Cities Green Roof/Walls
- The Natural Step’s ICSP & Neighborhoods programs
- The *exploding* EcoDistricts approach.

Found Josh and Charles work, recognized the theme of regeneration, and started exploring the potential.

Invite you into that exploration with this session.
THE NECESSARY SUSTAINABILITY PLANNING “PIVOT”

From Net Negative Mitigation to Net Positive Regeneration
Reality is Clear
FACING END-OF-INDUSTRIAL AGE CHALLENGE

Deepening Deficit Trajectories
5 Key Trends
END-OF-INDUSTRIAL AGE CHALLENGE

1. Unprecedented Population Growth & Level
   - 50% in 50 years
   - 6B to 9B+ by 2050
   - Current economy supports only 20%

2. An Economy in Ecological “Overshoot”
   - 1.5 earths now
   - 3 by 2050
   - Can’t happen
5 Key Trends
END-OF-INDUSTRIAL AGE CHALLENGE

3 Crashing Global Ecosystems
  • Liquidating Natural Capital calling it net profit

4 Catastrophic BAU Climate Trajectory
  • +0.3–4.8° global warming by 2100+

5 Fraying Society & Growing Inequality

These trends will affect all local communities directly or indirectly.
Therefore, need to respond, prepare.
Trends Cannot Continue
WITHOUT CRASHING THE BIOSPHERE

What to do? Address the **SOURCE** of the problem!

Need to **INVENT** an ecological economy

- In 20 years
- x5+ greater productivity
- Environmentally decoupled
- No negative impacts
- Abundance for all

New minimum standards?

Change Course!

Pivot to net positive!

There’s a role for everyone.

What is Planning’s Role?
Planning’s Role
LEADERSHIP TO CAPTURE THE NEW VALUE

With innovation for regenerative urbanism
that is also a key component of an ecological economy
AND, more importantly, the TRANSITION to it.

A new "integration" moment
- Nature + nurture
- Planning + (built) enviro. + economy
  EQUALS a new “eco”-prosperity!

Merge 4.8B years of nature’s learning
+ 7,000 years of human learning

From unintentional to intentional

Create better great places, communities and “eco”-prosperity through regenerative planning & design that also creates the new ecological econ.

PLANNERS ROLE: Enable this invention—the tools and approaches—and convene new conversations.
Planning’s End-of-IA Agenda

Create regenerative urban systems as a core component of creating the ecological economy & sustainability.

- Build 1 new “regenerative” city of 1M/week for 50+ years
- Restore aging infrastructure
- Re-sculpt existing land use patterns for sustainability
- Refashion, enhance, activate great urban places
- Create Oases: “Harden(?!)” “regenerative” cities for new climate-extreme "normal“ (comms., econ., built enviro.)
- Catalyze ecological (e.g., “regenerative”) economic development & economy through planning
- Restore (invest in) natural capital (nature) lost over 200 years of industrialization and 10,000 years of agriculture.
But How to “do” it? To Respond?
LOTS OF INNOVATION, IDEAS & FRAMEWORKS

Confusing?
Which to choose?
Why?
Definition Matters

MANY DEFINITIONS IN USE

- Always present—implicit/explicit
- Defines ("frames") the problem & solution
- Unexamined, may not lead to sustainability
- Therefore, know which definition is in play
- Develop the definition you need!
<table>
<thead>
<tr>
<th>PERVALENT APPROACH</th>
<th>EMERGING APPROACH</th>
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<tbody>
<tr>
<td>Net negative (pathogenic)</td>
<td>Net Positive (salutogenic)</td>
</tr>
<tr>
<td>Do less damage</td>
<td>Do “good”</td>
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<tr>
<td>Reduce Negative; CONTINUES increasing systematically</td>
<td>Eliminate Negative; STOPs systematic increase</td>
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<tr>
<td>Tinker with “end-of-pipe”</td>
<td>Design out “upstream” at source</td>
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<td>Efficiency</td>
<td>Effectiveness</td>
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<td>Subsystem Optimization</td>
<td>Whole Systems Optimization</td>
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<td>“Siloed” Planning &amp; Design</td>
<td>Integrated Planning &amp; Design</td>
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<tr>
<td>Physics Model</td>
<td>Biology “Ecosystems” Model</td>
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<tr>
<td>“False-Positive” Prosperity Scenario</td>
<td>Authentic Prosperity Scenario</td>
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</tbody>
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**DEGENERATIVE**
- On Auto Pilot

**REGENERATIVE**
- Requires Invention
How to choose?
MATCH DEFINITION & METHOD TO PURPOSE

• Understand your definition?

• Which definition for regenerative urbanism?

• What are you trying to accomplish?

• Does definition point in the right direction?

• Does it lead to a flexible platform for future?

• Is the “SYSTEMS” ROI > than the “SILO” ROI?
Theme of Regeneration Emerging
ACROSS THE PLANNING, DESIGN, AND BUILD PROFESSIONS

Planning | High-performance EcoDistricts, Cities, and Regions; Biophilic Design & Planning, Health & Land Use

Urban Design | Add water and habitat for next-generation place making (biophilia)


Landscape Architecture | From ornamentalism to habitat cultivation (Biodiversity)

Utilities | Shift from gray to green is underway, and even to living infrastructure, new concept of urban metabolism
Theme of Regeneration Emerging
ACROSS THE PLANNING, DESIGN, AND BUILD PROFESSIONS

Hidden CROSS-SILO Potential

- Passive House energy efficiency standard (80-90%)
- Enables on-site renewables
- Enables no carbon economy when scaled
- Adds 2\textsuperscript{nd} function to the built environment
  - energy production
- Dramatically enhances the value of building energy efficiency.
- Dramatically changes the value proposition
- Won’t choose without it being visible.
What are the Prospects
FOR A REGENERATIVE URBAN PLANNING?

Not fully formed

Emerging theme has many threads

Needs to be invented

Will we enable it?

We explore two “threads,” or cases today that pivot from net negative to net positive.
As you listen, think about...
ADVANCING THIS “WORK IN PROGRESS”

The challenge of pivoting?

The theme of regeneration in your city?

What’s do-able and what’s not (why & when)?

How we could do the “impossible”?

What would you like to do?
PLANNING & DESIGNING RESTORATIVE, HIGH-PERFORMANCE PLACES

Practice Cases

1. Restorative Urban Development
   Josh Foss | The Ecala Group

2. High-Performance Districts
   Charles Kelley | ZGF Architects
Engage—and LEAD—this “work in progress”

- Learn.
- Do our regulatory “business” differently.
- Raise the bar.
- Enable “routine” innovation for regeneration
  - as “routine,” expected part of project development, review, approval.
- Convene the new conversations.
PLANNING’S ROLE – Leadership
CREATE NEW VALUE & NEW “REGENERATIVE” ECONOMY

1. Understand regenerative system performance imperatives & establish related goals.
2. Develop policy support for regenerative performance.
3. Convene cross sector collaboration as needed.
4. Identify “investment” opportunities with high public regenerative development value.
5. Innovate routinely with research & demo projects.
1. Prepare a strategic city action plan figure out how to achieve restorative whole city system performance.

2. Reflect regenerative principles in RFPs/RFQs.

3. Approve projects based on regenerative performance, not prescriptive standards.

4. Create higher value by working across multiple scales.

5. Use the off-the-shelf innovations proved elsewhere.
Buy Off-the-Shelf Sustainability?
Today **DID** we illuminate...

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**Our Method** | Recognize, Pivot, Amplify!

**Our Value Proposition—Leapfrog to sustainability**
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- Enabled by and paid for with regenerative design
- The built environment as key part of sustainable economy
Discussion Ideas
VISION: ECO-PROSPECTIVITY?

1. Resonate? (how or why not)?
2. Your experience of “regenerative” urbanism?
3. Degree of interest & engagement?
4. Key opportunities, barriers, “moves?”
5. What do differently “back at the office?”
6. How could we/APA/SCD support you?
THANK YOU | CONTACT

APA SCD WEBSITE for follow up and resources
- https://apascd.wordpress.com/
- http://norcalapa.org/sustainability-blog/regenerative-urbanism-rising/

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PIVOT PRACTICE CASE No. 1

Restorative Urban Development
JOSHUA FOSS, THE ECALA GROUP

Public Interest Mission: Shifting urban innovation from net-negative incremental greening to net-positive transformational regeneration

Approach: Systems-based, integrated, circular, and distributed for high performance, restorative communities
Ellen MacArthur Foundation CE100
MISSION: Accelerate the transition to a Circular Economy

EMF invited Ecala to be a CE100 Program Emerging Innovator.

A Circular Economy (CE) is:
• Restorative and regenerative *by design*
• Keeps materials at their highest value at all times
• Distinguishes between technical and biological cycles

The CE100 Program: A pre-competitive incubation and collaboration program to accelerate innovation.
A Turnkey Approach to
RESTORATIVE CITY PLANNING, DEVELOPMENT & FINANCE

Design, Build & Operate

nexus™
UTILITY HUB

Finance

+ Restorative Infrastructure Fund™

Plan & Manage

+ Integrated Utility System

ecala Insights™
Nexus Integrated Utility Hub (IUH)
A NEIGHBORHOOD SUSTAINABILITY CENTER

**Inputs = Waste**
1. Municipal solid waste
2. Wastewater
3. Agriculture waste

**Outputs = Resilience**
1. Pure drinking water
2. Renewable energies
3. Ultra-fresh seafood & veg
4. Nutrient-rich fertilizer
5. Recycled materials
6. High quality urban places
Nexus Integrated Utility Hub (IUH)
TECHNOLOGIES ENHANCE PERFORMANCE

Tech Vetted Per:

1. Integration
   • Work within closed-loop, circular model

2. Performance
   • Industry leading
   • Market-tested

3. Siting
   • Urban core/mixed use
   • Small footprint, zero pollution
Nexus Integrated Utility Hub (IUH)
A 21st Century Infrastructure Business Model

Single facility integrates multiple processes to produce greater benefits than BAU

- Recycling center & transfer stations
- Organic waste processing facility
- Wastewater treatment plant
- Water supply & treatment plant
- Power station
- Vegetable farm
- Ocean fishing vessel
- Food market, offices, labs
The HUB + GRID = IUS (Integrated Utility System)

OPTIMIZING VALUE AT A DISTRICT SCALE

- Connects Nexus to local grid
- Optimizes energy, water, waste, IT & mobility at district scale
- Powers Smart City
- Coordinated installation and management
- Resilience & systems-wide cost savings
Pivoting From the Conventional Model
A FAILING INFRASTRUCTURE BUSINESS MODEL

CHARACTERISTICS

- Linear ‘take, make, waste’ resource management
- Single-function & dispersed utilities
- ‘Siloed’ city management
- Sunk costs / depleting capital

City converts natural resources into waste
Pivoting Towards a Restorative Model
INTEGRATED, CIRCULAR & NET POSITIVE

CHARACTERISTICS

- Circular resource management
- Distributed, localized and integrated utilities
- Strong public-private partnerships
- Quality of life / place based

City is resource secure and resilient
Financing Restorative Infrastructure Projects

THE RESTORATIVE INFRASTRUCTURE FUND

- Public/Private equity fund
- Federal loan guarantee program
- EB-5 Centers
- Carbon markets, RECs, stormwater credits
- Leverages local, state and federal grants and incentives
- 40% Capex reduction
ECALA INSIGHTS
A Restorative City Planning Platform

Benchmarking | Assessment | Strategy | Management

- Assesses a city’s ability to become restorative
- Provides custom implementation pathways
- Manages long-term progress
The Restorative City Standard
PROVIDING NET POSITIVE VISION & IMPERATIVES

The Restorative City Standard™
Providing the goals and vision of net-positive urban development

ENERGY
A restorative city produces a surplus of renewable, emissions-free energy for local use, storage, and export.

Definition
A restorative city manages and restores the city's energy in a manner that promotes efficiency, quality, and resilience, and delivers significant economic, social, and environmental benefits. It adopts strategies to optimize energy use, reduce waste, and mitigate impacts on the environment and public health.

Impact
Achieves a net surplus of energy production to supply the city's energy needs.

Performance Indicators
- Energy efficiency
- Renewable energy utilization
- Energy conservation efforts

Integration Opportunities
- Integration with public transportation systems
- Integration with local economic development

Creating a Virtuous Cycle
- Resources and Assets
- Management of Assets
- Quality of Life
- Identity of Place
Performance Benchmarking & Analysis
BRIDGING CURRENT PERFORMANCE & RESTORATIVE GOALS

![Performance Benchmarking Chart]

District/City Performance Scorecard

- Thrivable: Beneficial Impact
- Restorative: Neutral Impact
- Sustainable: Neutral Impact
- Green: Beneficial Impact
- Conventional: Detrimental Impact
- Exploitive: Detrimental Impact

Current Score: -30
Integrated Reporting & Implementation
CUSTOMIZED ROADMAPS FOR RESTORATIVE SUCCESS

State of the City | 2015
Denver
An integrated report on Denver's environmental, social, economic, and brand performance

District / City

Restorative City

February, 2015
Mayor of
City of
CASE STUDY: Central SoMa EcoDistrict
San Francisco, CA

Insights Assessment + Customized Nexus Hub

Restorative District Development at Central SoMa

260-acre district on edge of downtown

By 2040, will support:
- 20,000 new residents
- 80,000 new jobs

GOAL: Be the first regenerative neighborhood in San Francisco
Central SoMa Performance

BASELINE PERFORMANCE SCORE

ENERGY
Overview: Central SoMa’s energy is part of a citywide grid that is derived from 40% renewable sources (including large hydro) with the remaining 60% a combination of nuclear, fossil fuels, and additional market purchases. The vast majority of energy for the transport sector is petroleum and gas, and majority of energy is generated and processed in centralized facilities 50-500+ miles away. Energy costs are high (42% above national average), yet efficiency codes and ordinances help reduce energy consumption across all sectors. There is very little renewable production, energy storage, or integration of energy with waste, water, and IT within the district.

Preliminary Score: -35

WATER
Overview: All of Central SoMa’s water is sourced from serpentine and collected within a regional reservoir system that is at 34% of capacity (as of May 2015). Water and sewer rates are high (27% more than average major US city) and are expected to more than double over the next 10 years to pay for system upgrades. Strong conservation and efficiency measures enable SF residents and businesses to have the lowest water use in CA. There is little to no water storage or reclamation within Central SoMa. All wastewater is collected within a combined sewer system, treated locally at the Southeast Treatment Plant, and discharged into the Bay.

Preliminary Score: -33

SOLID WASTE
Overview: Central SoMa currently generates 43k tons of solid waste a year. Waste is collected within a citywide three-cart system that is supported by a mandatory recycling and composting ordinance. All waste is managed regionally by a sole entity, Recology. The average family household spends $408 a year for waste collection (1.75x the national average), while waste tipping fees are $147/tou (3x the national average). Across its entire waste stream, SF’s landfill diversion rate is 62%, and waste not recycled or composted is sent to a landfill 50+ miles outside of the city.

Preliminary Score: -28

MATERIALS
Overview: Central SoMa does not employ specific material procurement policies, yet falls within city and statewide programs that promote responsible material sourcing. San Francisco enforces an Environmentally Preferable Purchasing (EPP) Ordinance across its 80 departments that must purchase commodities from an Approved Alternatives List. A state Safer Consumer Products (SCP) program has banned several harmful chemicals, while the vast majority of products on the market are permitted. Within the built environment, the city has adopted a Green Building Ordinance that mandates low-emitting materials.

Preliminary Score: -35

FOOD
Overview: There is very little food production within Central SoMa, and access to affordable, healthy food within the district is low. According to the SF Department of Public Health, the index of unhealthy healthy food sources is 82% to 88% in the South of Market neighborhood and none of the food stores meet the Neighborhood Food Store Quality standards. 22% of residents within District 6 (of which Central SoMa is within) are at the highest risk for food insecurity based on income below 100% of the poverty level. A citywide Healthy and Sustainable Food Directive is advancing nutrition standards, urban agriculture, farmers markets, food security, and local food businesses.

Preliminary Score: -42

IT
Overview: There are several IT providers within Central SoMa offering numerous performance and pricing options. The average cost for residential internet (15Mbps, unlimited data, cable/ADSL) is $47.40/month, which is slightly above the national average of $46.95. 80Mbps speed for business customers average $150/month. Free wi-fi hotspots are offered in public parks, plazas, and open spaces, and all parking meters in Central SoMa are smart, as are digital water meters for homes and businesses. In addition, electric and gas SmartMeters are provided for all PG&E residential and business customers within Central SoMa.

Preliminary Score: -35
Central SoMa Performance
BASELINE PERFORMANCE SCORE

ACCESS + MOBILITY
Overview: More than 4 out of 5 trips within Central SoMa are made by walking, biking, or using a transit system that includes BART, Caltrain, Muni Metro, and numerous bus lines. Pedestrian infrastructure is poor as most sidewalks in the district do not meet minimum city standards, marked crosswalks are few, and many crosswalks at major intersections are closed to pedestrians. Additionally, there are few transit-only lanes on Central SoMa streets, and the ratio of bike path and lane miles to all road miles is .37. Numerous electric vehicle charging stations are provided within the district either for free as a city-run service or at a cost when offered privately.

Preliminary Score: -28

LAND USE + PLANNING
Overview: Central SoMa features a diverse mix of building typologies, uses, and densities. Housing, offices, industry, retail, and cultural institutions are located within close proximity of each other, with no single use predominating. Land use however is dominated by impervious surfaces (90% of district footprint), and the tree canopy in Central SoMa is one of the lowest in San Francisco. Only 4.7% of land cover is open space, natural, or green, compared to 22.8% throughout San Francisco. Ecosystem services and habitat function are therefore low, placing significant strain on a combined sewer system that manages stormwater runoff.

Preliminary Score: -36

MGMT + GOVERNANCE
Overview: District planners and city government leaders have established aggressive goals for resource use, emissions reduction, and land use in Central SoMa and San Francisco, yet existing policies are only moderately capable of delivering determined goals. Conventional development and management approaches remain default options while cross-sectoral collaboration, public-private partnerships, and systems-level, integrated planning strategies are not effectively employed. City data, laws, and performance is reported within SF Open Data Portal, a publicly accessible website that improves government services and transparency.

Preliminary Score: -21

ECONOMY
Overview: Central SoMa’s economy is booming through new construction and a high-tech sector in SF that has grown 43% since 2010. Subsequently, increasing density and higher real estate values are generating strong tax revenues for the city. This economic boom however is not all-inclusive, as District 6 has the lowest median income by household in SF and highest rates of residents in poverty. To afford a market rate 1 bedroom apartment in Central SoMa, one would have to earn $35/hr, which is 2.87x higher than the current minimum wage ($12.25). Central SoMa however retains 94% employment, and contains 15% of city’s minority and women owned local businesses.

Preliminary Score: -27

HEALTH + WELLBEING
Overview: Due to poor land use planning, unsafe pedestrian infrastructure, and socio-economic disparity, Central SoMa is not supportive of many core health and wellbeing indicators. In addition to high levels of poverty and resource insecurity, 97% of the district’s population is exposed to average outdoor noise levels above 60dB and 13% to unsafe levels of suspended particle pollution. There are 70 severe/fatal traffic accidents per 100 roadway miles compared to an average of 21 throughout San Francisco, and the lack of green and open spaces prohibit residents and visitors from realizing biophilic and recreational benefits.

Preliminary Score: -41

CULTURE + IDENTITY
Overview: Central SoMa has an eclectic mix of commerce, industry, residential, and civic spaces. Within the district, there are several historic and cultural landmarks on preservation lists, as well as modern institutions that anchor San Francisco’s $10+ billion a year tourism industry (Moscone Center, SFMOMA). New development and high tech industry presence in Central SoMa are shaping a 21st century district identity that is attractive for density, housing, jobs, and investment opportunities. This identity however is in flux with a diverse socio-economic population (48% residents white, 33% Asian, and 9% black) that is increasingly at risk of being displaced.

Preliminary Score: -18
Central SoMa Performance
BASELINE PERFORMANCE SCORE

Central SoMa Performance Scorecard

Current Score: -32

Score

Thrivable
Restorative
Sustainable
Green
Conventional
Exploitive

Score

Energy
Culture + Identity
Health + Wellbeing
Economy
Management + Governance
Land Use + Planning
Information Technology
Access + Mobility
Food
Materials
Solid Waste
Water
Central SoMa Nexus Hub
CUSTOMIZED FOR COMMUNITY’S UNIQUE NEEDS

Optimized for District Water
- 5MGD treatment and supply

Supplemented w Organic Solids
- 150 tons/day

Renewable Energy Generation
- 12MW clean electricity
- Generates H2 for 7.5k vehicles

Local Food Production
- 1M lbs/seafood & 4M heads/lettuce

Public Amenities
- Incorporates food market + offices & exhibition spaces

Sited on 2 acres (or within mixed-used development)
Central SoMa Nexus Hub
FINANCIALS

STRONG ROI THROUGH CIRCULAR RESOURCE MANAGEMENT

System Cost | $183M

Accumulated Profits | Year 10 - $60 Million
Year 20 - $377 Million

*Amortized in 10 years
**Grants and incentives not included

Component Cost Breakdown

BUILDING $20M
BIODIGESTER $15.5M
GENSET $17.2M
HYDROGEN $20.5M
WATER $53M
FOOD $11.5M
Central SoMa IUS Opportunities
EXTENDING VALUE THROUGHOUT DISTRICT

- Street Repair Program over next 20 years
- Purple recycled water pipes already connected to many district buildings
- Regenerative neighborhood planning framework and zoning under development
Ecala’s Pivot Contributions
SUMMARY

A New Multiple-Benefit Profitable Utility Business Model (repl. current failing BAU)
- Nexus Hub as a Neighborhood Center
- IUS as smart, renewable, resilient, ‘good’ grid
- Makes aggressive development goals achievable with less effort

Net Positive Change Management Platform
- **Insights** platform uniquely designed to guide communities to restorative success

Off the Shelf and Ready for Primetime!
- Pilot next-generation circular planning and development model at little risk or cost
- Seeking partner cities and developments
Planning & Designing High-Performance Districts
CHARLES KELLEY, ZGF ARCHITECTS

Leading with great places that people want, enabled by and paid for with regenerative design.
High-Performance Districts
INTEGRATED DESIGN

ECO nomy

X

ECO logy
Regenerative
MANAGING THE UNSEEN FORCES

PORTLAND

LIFESTYLE / CULTURE
COMMUNITY SERVICES

TECHNOLOGY
INFRASTRUCTURE
REAL ESTATE

Visible
Invisible

Goals Configurations Governance
Catharsis: New Goals
Improving Air and Water Quality through Redevelopment

SW 6th & Main
4:00pm, Fall 1970
Enable New Configuration
FIXING THE PROBLEM

Implementing a Central City Plan & Building the Transit Mall

By 1972
Enable New Configurations
BUILDING WHERE CARS WERE

Removing the Harbor Freeway & Building Waterfront Park
Establish a Governance Structure
BUSINESS ORGANIZATIONS
District Scale Planning
LEVERAGING INVISIBLE & VISIBLE STRATEGIES

Goals (BHAGs)
Set Big Hairy and Audacious Goals

Configurations
High Performance with Visual Benefit

Governance
Cost Sharing

COST
BENEFICIARIES = DESIRABLE CHANGE
GOALS

Common to All Successful Neighborhoods

**Foundational Tools:** Community Engagement

**New Tools:** Complete Streets

**Regenerative Tools:** Jobs to Housing Ratio
Foundational: Community Engagement
INTEGRATED DESIGN

Public Relations  Public Involvement  Public Engagement
New: Complete Street (Smart Street)
10TH STREET SW—From Low to High Performance Street
Regenerative: Occupant Based
4:1 JOBS TO HOUSING—Balance Day/Night Loads

OPTION 3: GREENWAYS

INDICATORS
Like Option 2, Option 3 has a mix of office and residential uses having the capacity to manage parking demand on-site and reducing the impact on the surrounding traffic system. It also has the ability to catalyze and expand a low temperature energy and recycled water system. The mix of uses creates a balance in jobs to housing, supporting day and evening use of community-oriented services.

ENERGY BALANCE

WATER BALANCE: 52 M GAL/YEAR
Relatively higher demand for potable water. Non-potable water demand can be met by recycled wastewater.
GOVERNANCE

Community Stewardship

Foundational Tools: Sharing Costs
New Tools: Scale Jumping
Regenerative Tools: Internet Technology
Foundational: Sharing Costs
FINDING VALUE BY SHARING COSTS

Costs
- Additional Public Contribution
- Land Value (Residential, Office, Retail)
- Tax Increment Financing

Benefits
- Open Space
- Affordable Housing (FAR & Subsidy)
- Infrastructure
- Site Acquisition
New: Scale Jumping
MORE THAN SINGLE BUILDINGS
New: Scale Jumping
GREEN STREET FLOW-THROUGH PLANTERS
New: Scale Jumping
OPEN SPACE & HABITAT CORRIDORS

ZIMMER-GUNSUL-FRASCA ARCHITECTS
New: Scale Jumping
PURPLE PIPE NON-POTABLE REUSE SYSTEM

ZIMMER•CUNNINGHAM ARCHITECTS• LLP
Information must be applied at a scale that makes the most impact.
CONFIGURATION

Integrated Design

**Foundational Tools : Pearl**  
(Public Private / Partnership)

**New Tools : SWECO (SW Ecodistrict Wash. DC)**  
(High Performance District)

**Regenerative Tools : Kashiwa-no-ha**  
Resilience Planning
Foundational: Public Private Partnership
MORE ALTERNATIVE MODES

Northwest
Light Rail 1982
Rezone
RIVER (PEARL) DISTRICT 1994
Street Car 2001
Hoyt Street Properties

1980s–2010

OHSU

Tram 2006

Transit Mall
Downtown

Rezone

Foundational: Public Private Partnership
MORE ALTERNATIVE MODES
Foundational: Public Private Partnership

PEARL DISTRICT PLAN

ILLUSTRATIVE VISION PLAN
The River District

Old Railyard

(1 Job / 3.5 Resident)

SIZE: 100,000 SM
USES: 85% RESIDENTIAL
      10% COMMERCIAL & RETAIL
      5% COMMUNITY SERVICES
Partnerships and Agreements

Developer Contribution (131 Du/Acre, Land Dedication, and participation in LID)
Existing Zone
Removal of the Love Joy Ramp
Construction of First Neighborhood Park
Street Car

From 14 Du/Acre
to 87 Du/Acre
to 109 Du/Acre
to 131 Du/Acre

City Contribution
($150,000,000 in Tax Increment Financing and Urban Renewal District Grants)
High Performance
Focus Areas for Community Activities

Pearl District Master Plan, Portland, OR
New: SW ECODISTRICT WASHINGTON D.C.
National Capital Planning Commission

Federal Leadership in Environmental, Energy, and Economic Performance
Executive Order 13514

(15 Jobs / 1 Resident)
SIZE: 1,400,000 SM
USES: 15% RESIDENTIAL
77% COMMERCIAL & RETAIL
8% COMMUNITY SERVICES
New: SW Ecodistrict Washington, D.C.
THE PATH TO SUSTAINABILITY
New: SW Ecodistrict Washington, D.C.

MULTIPLE DEVELOPMENT STRATEGIES

<table>
<thead>
<tr>
<th>Building Strategy</th>
<th>Light Rehab</th>
<th>Full Rehab</th>
<th>Repurpose</th>
<th>Infill</th>
<th>Redevelop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
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<tr>
<td>Tenant Improvement</td>
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<tr>
<td>Lighting System Upgrade</td>
<td>X</td>
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<tr>
<td>Plug Load Reduction</td>
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<tr>
<td>Sustainable and Certified Materials</td>
<td>X</td>
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<tr>
<td>Radiant Heating and Cooling</td>
<td>X</td>
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<tr>
<td>Low Volume Air Distribution</td>
<td>X</td>
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<tr>
<td>Core Shell</td>
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<tr>
<td>Upgrades to building systems during natural cycle of obsolescence</td>
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<tr>
<td>New Mechanical and Electrical System - Hydronic thermal energy distribution</td>
<td>X</td>
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<tr>
<td>High performance building envelope</td>
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<tr>
<td>Maximize the use of renewable energy resources (PV) and shamsi energy technology</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Maximize building energy use efficiency</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Capitalize on Ground Source Heat Below Building Site</td>
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<td>Water</td>
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<td>Replace plumbing existing fixtures with high efficiency fixtures</td>
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<tr>
<td>Install high efficiency fixtures</td>
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<tr>
<td>Collect rainwater</td>
<td>X</td>
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<tr>
<td>Install non-potable water system</td>
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<tr>
<td>Waste</td>
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<tr>
<td>Provide waste sorting stations at point of use locations</td>
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<tr>
<td>Redact, recycle, and compost the majority of waste (solid and organic) generated within the area</td>
<td>X</td>
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</tbody>
</table>

Decrease in Energy Use

LIGHT REHAB: 47%
FULL REHAB / REDEV: 72%

- Light Rehab
- Full Rehab
- Repurpose
- Infill
- Redevelopment

Solar Canopy
Central Utility Plant
Park Space
New: SW Ecodistrict Washington, D.C.

Setting goals to achieve results.

- 62% Reduction in energy use
- 70% Reduction in potable water use
- 80% Reduction in waste to landfill
- 75% Reduction in carbon emissions

- 33% Increase in daily population: Employees & Residents
- 7% Increase in new peak hour trips: New Metro & Auto Trips
- 21% Increase in mixed use development: In GSF, including new residential, hotel, cultural and commercial
New: SW Ecodistrict Washington, D.C.
10TH STREET SW — A HIGH-PERFORMANCE STREET
New: SW Ecodistrict Washington, D.C.
10TH STREET SW — A HIGH-PERFORMANCE STREET

10th Street Water Resources

Treating Waters to Close the Gap:
Meeting a 30% Municipal Water Target
Regeneration: Kashiwa-no-ha
SMART CITY NEIGHBORHOOD/INNOVATION CAMPUS

Best in class area energy management system with internet communication technology.

(2 Jobs / 1 Resident)

SIZE: 365,000 SM
USES: 25% RESIDENTIAL
13% RESEARCH
50% COMMERCIAL & RETAIL
12% COMMUNITY SERVICES
Regeneration: Area Energy Management
CONNECTING DISTRICT AREA RESOURCES

AEMS (Area Energy Management System)

Park City Kashiwa-no-ha
Campus Ichibangai
and Nibangai Districts
Condominiums

GATE SQUARE
hotel and
residential facilities

The University of Tokyo
Kashiwa-no-ha Campus
Station Satellite

LaLaport
KASHIWANOHA
Commercial facilities

Existing
energy
infrastructure

Detached
housing

Electric
vehicles

Commercial facilities
and office buildings

Storage battery facilities

Large-scale
solar power
plant
Generating
genrenewable
energy on
large scale

Wind power generation
Generating
genrenewable
energy on
large scale

AEMS: Area Energy Management System
BEMS: Building energy management system
HEMS: Home Energy Management System
Regeneration: Resilience
SOCIAL COHESION

Kashiwa-no-ha HEMS/ Screen image

Kashiwa-no-ha HEMS visualization of energy usage overview

- City environmental advice
- Electricity consumption advice
- Electricity consumption forecasts
- Weather advisory

Visualization of consumer electronics displays
- TV
- Refrigerators
- Cookers
- Air conditioners
- Lighting
- IH cookers
- Washing machines
- Bathroom dryers
- Washlet toilet seats

UTFC Information Signage

Stadium Exit for Route 1
Regeneration: PUBLIC ENGAGEMENT
Kashiwa-no-ha Urban Design Center (UDCK)

Drawing Ideas for the Community
Regeneration: New Equation
PROPOSED NEW LIFESTYLE SETTING

New Kashiwanoha LIFESTYLE = NATURE x URBAN
Community and Business Interests
Regeneration: Passive Urban Design
GROUND LEVEL ACTIVITIES

Proposed New Lifestyle Setting
Regeneration: Mixed-Use
CONTINUITY

Residential  Lab & Office  Commercial

20 Ha
Regeneration: Diverse Neighborhoods

CHARACTER
Regeneration: Connecting Communities
CONNECTIONS
Regeneration: Connecting Communities

CONNECTIONS

- Town
- Common
- Garden

Station

イノベーションキャンパス 20 Ha

Detention Pond

LOOP
Regeneration: Activities on the Streets
PARKWAY
Regeneration: Activities on the Streets

LINK
Meaningful Benefits
WE BUILD GREEN CITIES

MAKING VISIBLE BENEFITS

90%

Community Organizations
Tenants/Residents
Unique Cost Sharing Opportunities

PUBLIC-PRIVATE PARTNERSHIPS

Business Districts
Utilities
Public Safety

Goals
Configurations
Governance

LIFESTYLE / CULTURE
COMMUNITY SERVICES

TECHNOLOGY
INFRASTRUCTURE
REAL ESTATE
Sustainability ideas have the greatest value when they provide a visible transformative benefit to the community being served.