IN LATE AUGUST OF 2007, SOM SAN FRANCISCO SPONSORED THE REGENERATIVE URBAN ECOLOGY FORUM, A TWO-DAY SESSION FOCUSING ON DENSIFICATION, CLIMATE CHANGE, AND LIVABLE CITIES THROUGH THE LENS OF REAL MARKETPLACE ECONOMICS AND DESIGN EXCELLENCE. LEADERS FROM VARIOUS SOM PRACTICES, MEMBERS OF SAN FRANCISCO’S CITY GOVERNMENT, CONSULTING GROUPS, THINK TANKS, AND ACADEMICS DISCUSSED THE OPPORTUNITY FOR SAN FRANCISCO TO BECOME A GLOBAL PRECEDENT FOR REGENERATIVE URBAN ENVIRONMENTS. THE FOLLOWING WHITE PAPER REPRESENTS SOME OF THE STRATEGIES PROPOSED TO REALIZE THIS GOAL.

Rethinking the Urban Environment

By Jared Blumenfeld,
Director of the San Francisco Department of the Environment
CITY BECOMES ENVIRONMENT: SAN FRANCISCO IS A FANTASTIC CITY RECOGNIZED AROUND THE WORLD FOR ITS INNOVATIONS. THE CITY IS KNOWN FOR GOOGLE AND APPLE AND ALL THE THINGS THAT HAPPENED IN SAN FRANCISCO DURING THE DOT-COM AND BIO-TECH REVOLUTIONS. THE NEXT REVOLUTION IS IN GREEN TECHNOLOGY AND DESIGN.

Two years ago, for the first time in human history, more people lived in cities than in rural areas. Between now and the year 2020, one million people per week will move to cities. So, cities can either be an icon of the tourist industry—places that people will want to visit—or they can end up like Jakarta—places that are virtually uninhabitable quagmires of pollution, poverty, and inequality. We are in a race against time to work out which is going to win this battle. But, with this huge demographic shift, urban planners, mayors, and cities have become focal points for the environmental movement.

We used to think of the environment as somewhere else. Here in San Francisco, we think of Muir Woods or Yosemite as the environment and San Francisco as the city. But with this big shift, the city is now our environment. And all the services and infrastructure that are provided—from water to power, housing, public transportation, and beyond—all relate directly to the environment. If we do not get these things right, we will harm the environment just like we are harming it elsewhere. Look at China for example. The majority of China’s emissions at the moment are not because of their own affluence. We, the United States, are a consumer-driven society. Most of our consumption is manufactured in China. Seventy percent of our gross domestic product is from buying products manufactured in China. In comparison, Norway is about a 41% consumer-driven economy. We are the reason pollution is happening in China and we should not forget that.
A PERFECT STORM: WE ARE IN A GEOLOGICAL PERFECT STORM WHERE WE HAVE JUST ENOUGH OIL TO CAUSE CATASTROPHIC CLIMATE CHANGE, BUT NOT ENOUGH OIL SO THAT WE CAN RELY ON IT TO POWER OUR CITIES INTO THE FUTURE.

Many people do not understand the effects of oil on climate change. But if you explain to them that oil is running out and getting increasingly expensive, and that we need to design systems that are not reliant on oil, they understand. And if people still do not understand, they understand that insurance losses are going up dramatically every year. We are experiencing economic loss due to Hurricane Dean right now; the insurance industry is estimating five or six billion dollars of losses. There will be a time when the insurance industry says “we are not going to insure your house.” When that time comes, the financial world will have to react because you cannot get a mortgage if you do not have insurance. So buildings will not be built in places where climate events are expected to happen.

The other kind of perfect storm metaphor was Hurricane Katrina. We all saw impacts of what a climate event could do on a large scale to a misty area where most people thought everything was perfect. Suddenly, overnight, there was total chaos.
embracing the truth: people are thinking about the environment and are moving it to the political fore.

The lack of leadership at the federal level is part of the reason we decided to take leadership to the local level; at the federal level, change is slow, and at the local level people want to take action. The Inconvenient Truth has galvanized this movement. People are really starting to think about the environment and are moving it to the political fore. This is what we are doing in San Francisco through the Department of the Environment. We held an event here in San Francisco, called Environment Day in 2005 where we brought together 70 mayors and other thought leaders to attempt to define the urban environmental agenda. The lack of leadership at the federal level is part of the reason we decided to take leadership to the local level; at the federal level, change is slow, and at the local level people want to take action. We developed an agenda for change. This plan includes 21 actions to look at how we can save the planet. And now 102 cities have signed up to implement this plan, from Addis Ababa to Mumbai to Nairobi to London, Moscow, and Kyoto.

leading change: san francisco is one of only ten cities to have a department of the environment.

The SF Department of the Environment has about 70 people. We believe that if you set goals for the entire city and work with everyone; the private sector, the public sector, residents, schoolchildren; you can actually move toward that goal. Our goal is to reduce greenhouse gas emissions 20% below 1990 baseline levels by the year 2012. This equates to a 2.5 million ton reduction. By comparison, Kyoto’s goal is 7% below 1990 baseline by 2012, so our goal is significantly beyond Kyoto.

The country of Ireland, in order to meet Kyoto, has to reduce emissions by 4 million tons, so in terms of magnitude, our goal of a 2.5-million-ton reduction is quite large. It brings up a number of issues that relate to the Architecture/Engineering/Construction industry. How do you actually measure greenhouse gas emissions from your building? It is an incredibly complicated analysis and you can spend literally years doing it. We spent two years and about $200,000 just working out where we were in 1990 in order to develop an accurate baseline. We measured emissions using the California Private Action Registry, which is the gold standard in the industry. We were the first city to use this tool. What we learned is that San Francisco’s emissions are comprised of the transportation industry (49%) and buildings/building energy (51%).
The San Francisco climate action plan has been developed to reduce greenhouse gas emissions by 20% below 1990 levels by 2012. The Kyoto protocol’s goal is only 7% below 1990 baseline levels by 2012.

San Francisco Greenhouse Gas Emissions (eCO₂)

1990 Baseline Greenhouse Gas Emissions, Total = 9.1 million tons eCO₂ per year.

- Residential: 19%
- Commercial: 16%
- Municipal: 13%
- Industrial: 10%
- Intraregional Road Vehicles: 24%
- San Francisco Road Vehicles: 23%
- Rail (BART, Caltrain) and Ferry: 4%
- Muni Buses and Rail: 1%
- Municipal Fleet: 1%
- San Francisco has taken a leading role in the development and implementation of green building standards. In addition to requiring that all city-owned buildings achieve LEED® Silver certification, the city is creating incentives for private developments to achieve LEED® Gold.

Below left: Biodiesel fuels are better for the environment than purely petroleum-based products as they are biodegradable and nontoxic, and do not contribute to greenhouse gases.

Below right: San Francisco will be a 100% zero-emission fleet by 2020.

Policies and legislation have been developed to achieve the SF Climate Action Plan goals, which stipulate that all city-owned, municipal buildings must achieve LEED® Silver certification. Also, all LEED® Gold buildings will receive expedited permit processing and will be assigned a planner within two weeks instead of the average 11-month waiting time. We are in the process of exploring a move toward requiring LEED® Gold certification for all city-owned buildings. Other examples of policies that have been developed or are being developed include:

- Transit First Policy. As mentioned earlier, 49% of San Francisco’s emissions are from vehicles. With our huge network of public transportation, we have embraced a transit-first policy whereby public transit must come before all other forms of movement. By the year 2020, San Francisco will have a 100% zero-emission fleet. Currently the program is 60% of the way there. Biodiesel fuels from yellow grease and tallow are being explored. San Francisco spends about 15 million dollars a year unclogging the drain system due to grease. So, we are looking at funding the free collection of fat, oil, and grease from restaurants and homes and then turning them into biodiesel.

- Title 24 Energy Efficiency. This is the least expensive way to reduce CO₂ emissions. Efficiency pays for itself. In the last five years, a 24 MW peak demand savings, enough energy to power 24,000 homes, has been achieved through Title 24 energy efficiency requirements. The city will not finance solar on the roofs of homes unless they have first performed energy efficiency measures. We are a national leader of solar energy with 2 MW of solar panels installed on the roofs of homes in San Francisco.

Policies are now in place.
Some colab

Power plants, waste water treatment facilities, shipyards, and underground storage tanks throughout the United States are constructed in low-income communities, exposing the residents to poor air quality.

- "Environment justice," in which low-income communities and minority communities are environmentally equitable, is also an issue we have been dealing with. Typically, disproportionate burdens of negative environmental consequences have been imposed on the low-income communities. Power plants, waste water treatment facilities, shipyards, and underground storage tanks throughout the United States are constructed in low-income communities, exposing the residents to poor air quality. The city had two power plants, which most people did not know. And educating them to understand that when you have your lights on you are causing asthma for a child four miles away was important. We closed Hunter’s Point Power Plant in May 2006 and are moving toward renewable energy.

- Renewable energy. We received a $13 million grant to train low-income former drug dealers with the skills to install solar systems. This enables the low-income community to be in a position to take advantage of a growing industry in the green technology revolution. The program was started about five years ago, and all of the individuals trained are still employed installing solar panels.

- Another renewable energy source we are currently studying is capturing energy from tidal currents under the Golden Gate Bridge.
SAN FRANCISCO HAS THE HIGHEST RECYCLING RATE OF ANY CITY IN THE NATION WITH 69% OF ALL OUR WASTE BEING RECYCLED. OUR GOAL IS TO INCREASE THIS RATE TO 75% BY THE YEAR 2010 AND ACHIEVE ZERO-WASTE BY THE YEAR 2020.

• In San Francisco, the buildings require three chutes: one for garbage, one for recyclables, and a third for compostables. The green bin for compostables is closing the loop on our waste reduction goals. Three hundred thousand tons per day of food scraps are collected and turned into organic compost. This is the largest food scrap collection program in the United States, and it represents a huge percentage of our waste stream. If all food scraps could be collected, our waste reduction would increase from 69% to 78%.

• Banning plastic bags. This is a radical action, but San Francisco spends about $60 million to clean up the hundred and eighty million bags that are given out. Currently, 29 cities across the US have banned them.

• Bottled water is the next challenge. As a planet, we spend $100 billion on water bottles. If we were going to meet the U.N. development goals set in Johannesburg—to reduce the number of people that don’t have access to clean drinking water—we would spend $15 billion dollars a year. So, just a small fraction of what we spend on bottled water could be put into public infrastructure. It takes 47 million gallons of oil per year to produce plastic water bottles. That does not even include the energy it takes to transport the water from Fiji and Norway.

• San Francisco is not constructing any additional parking facilities. The cost of parking is currently 25 cents for six minutes. These measures are designed to discourage parking in San Francisco.

IF YOU CONSTRUCT A BUILDING WITH NATIVE GRASSES ON THE ROOF, IT CHANGES YOUR PERCEPTION OF WHAT IS POSSIBLE AND WHAT YOU EXPECT THE NEXT BUILDING TO LOOK LIKE. SAN FRANCISCO HAS SOME ANSWERS TO HOW REDUCTIONS CAN BE ACHIEVED IN BUILDINGS.

These projects show what is possible. People need to be inspired. Our obligation is to set the bar very high and do things other people come to see and say “It is an incredibly beautiful, stunning building.” This is the reaction we anticipate when the California Academy of Sciences building, designed by Renzo Piano Building Workshop and Chong Partners Architecture, opens in October 2007. An after they appreciate how the building looks, we can explain that 100 percent of the construction waste and demolition waste materials were reused in the building, making it a zero-waste project. If you construct a building with native grasses on the roof, it changes your perception of what is possible and what you expect the next building to look like. The building is seeking LEED® Platinum certification. LEED® is not the only tool available. It has many benefits but it also has many disadvantages. Our perspective is to focus on our priorities.
DESIGNED BY SKIDMORE, OWINGS & MERRILL, TREASURE ISLAND WILL BE THE MOST SUSTAINABLE PROJECT IN THE BAY AREA, AND A MODEL OF REGENERATIVE URBAN ECOLOGY. THIS SENDS A STRONG MESSAGE TO THE REST OF THE STATE AND COUNTRY THAT SUSTAINABILITY IS POSSIBLE AND EVEN DESIRABLE.

Treasure Island will be a pedestrian-friendly, transit-based neighborhood that balances dense, environmentally-responsible, mixed-use development with open space dedicated to recreation and natural preservation. The project’s overarching theme is to implement the most sustainable design and construction practices while taking advantage of the powerful appeal of island life, breathtaking views of the San Francisco skyline, and the physical and emotional connection to the City.

This is the marketing shift that promises to make sustainable cities a reality. In general, the environmental movement has done an appalling job of selling sustainability. Their message has been “You are destroying the planet. You are bad people. Do less and you should be sorry for what you have done.” The goal is to make sustainability something that consumers want, rather than something they are forced to do.

People want to live in San Francisco because it is a desirable community with beautiful vistas and abundant open space. We must continue to do things the right way, to make decisions that enhance our built environment and our lives, today and tomorrow.