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Green City Practices

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Urban Sustainability

Brownfield Restoration and Sewage Treatment in Arcata, Northern California

The City of Arcata's approach to sewage treatment straddles the worlds of landscape restoration and urban sustainability. Derelict and abandoned areas near Humboldt Bay were restored to a number of secondary waste treatment wetlands and water quality enhancement marshes.

After primary waste treatment, wastes are routed through the wetlands and marshes further cleansing them before entering Humboldt Bay. The wetlands and marshes, while providing additional sewage treatment, also create wildlife habitats and walking trails (appropriately named the Arcata Marsh and Wildlife Sanctuary).

Construction of the entire project was substantially completed in 1986. Refinements continue though, based on experience, as to the better design of the ecological side of the waste treatment process. This learning process, now taking place over decades, guide a holistic approach to meeting Arcata's basic need for water treatment. Why not include landscape restoration and habitat conservation directly into our thinking about infrastructure building and repair? Especially when it turns out to be more energy efficient and fiscally prudent while encouraging placed based associations with the natural surround.

Interestingly enough, the lines dividing the physical Arcata Waterwater Treatment Plant and the biological Arcata Marsh and Wildlife Sanctuary are fading yielding not only clean water but a design process that integrates the human with the ecological in practical terms.

Green Infrastructure: Swales on Yale Street

Green infrastructure has become a viable alternative, to conventional hard infrastructure stormwater management, by resting upon a basic premise: imitate local hydrology and aquatic ecosystems rather than reordering them. It accomplishes this by employing an equally elementary and trustworthy approach: reduce paved over areas and then allow rainwater to enter soils slowly, as it normally would.

Seattle Public Utilities is investing in green infrastructure to increase the overall health of Lake Union, and, downstream, to Puget Sound by reducing the many pollutants that enter them via stormwater (the usual suspects, among others, range from motor oil to pesticides to heavy metals).

Their attention is on the Capitol Hill neighborhood in Seattle where yearly, not thousands but, millions of gallons of stormwater collect and then travel off the impervious surfaces of sidewalks and streets into Lake Union. Seattle Public Utilities will be putting to good use a time tested and trustworthy low-impact development approach called a biofilitration swale. The Capital Hill design calls for vegetated swales which are about 270 feet long and 13 feet wide. They will slow down runoff from the impervious surfaces so pollutants can settle out rather than be carried to Lake Union.

What separates this effort from others like it is its scale. This is a neighborhood wide effort that acts upon the stormwater from about 435 acres of Capitol Hill streets and sidewalks.

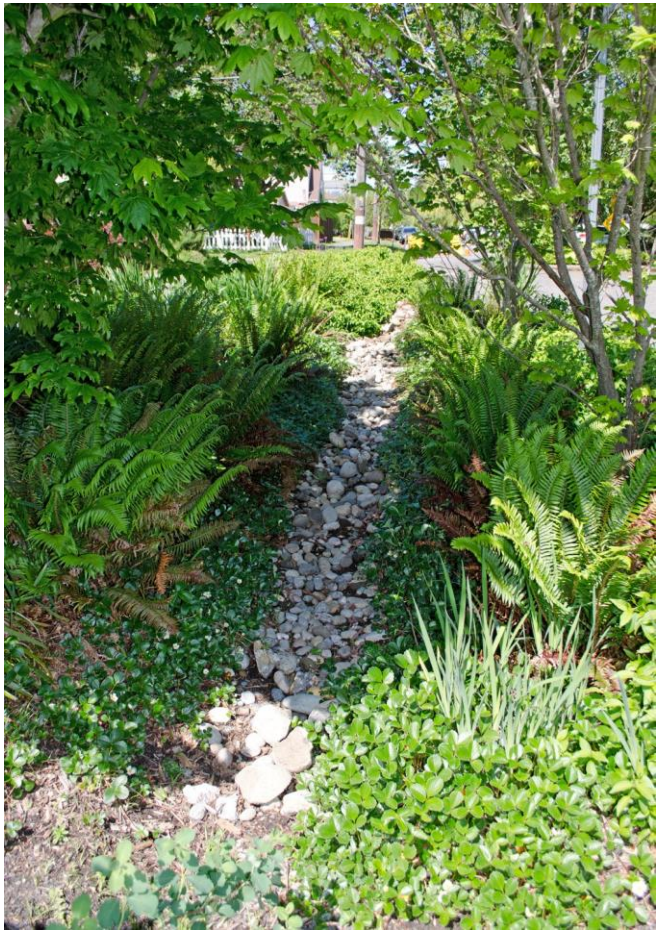
Green Infrastructure: Ballard Corners Park

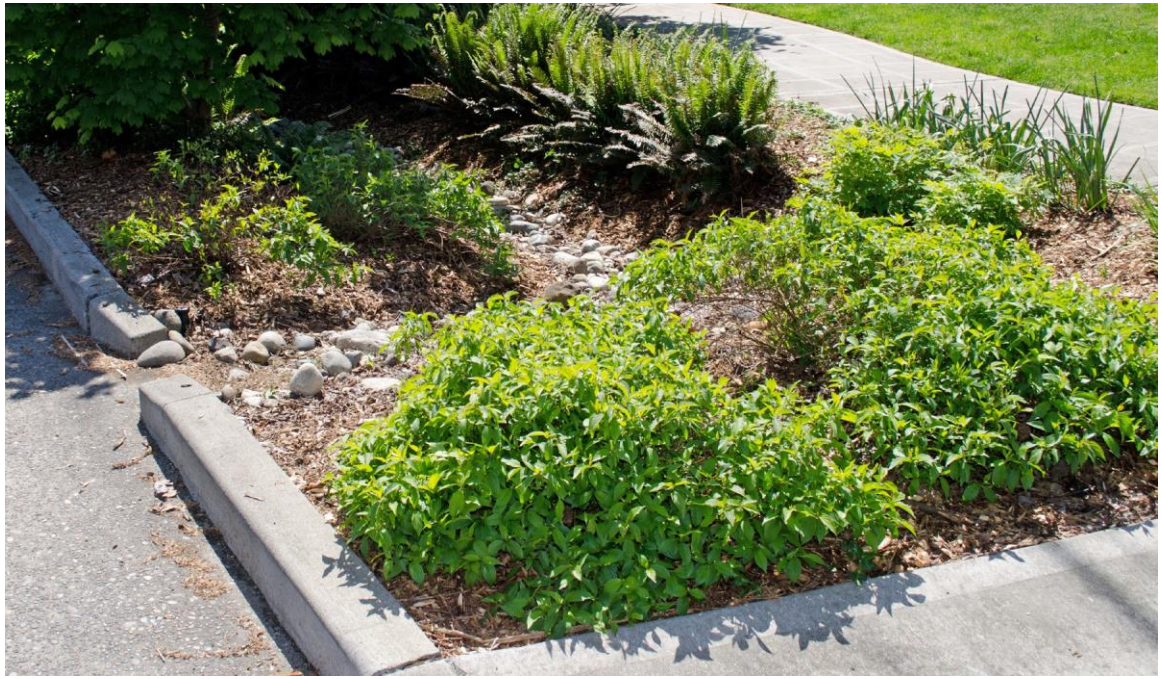
Green infrastructure is a suite of ecologically grounded landscape choices that address stormwater management. It is also often used to describe an interconnected open space system, from the local to the bioregional, which includes parks, urban forests and public and private green spaces laced together with vegetated and riparian corridors. The benefits of this “core and corridor” approach to open space planning extend to the entire life community: biodiversity conservation; flood hazard reduction; cleaner water and air and peace and quiet.

Local neighborhood parks can help with stormwater management while adding to the vitality of bioregional open space networks. Ballard Corners Park, in Seattle, demonstrates how well this double service is performed.

A street side green space illustrates this. It serves as a “rain garden” (more formally known as a bio-retention area) which slows down storm water so it can be soil filtered and cleansed before entering underlying groundwater. The improvement to local water quality has a same radiating effect to the watershed and bioregion: in this case to Salmon Bay and Puget Sound.

The rain garden also softens the roadway activity and noise so the interior Park area is more quiet and private. Children can play without being distracted by traffic. Native plants and fruit and nut trees can better thrive and





Green Infrastructure: Belltown's Vine Street

Public street art can also serve as green infrastructure. That is the promise of the visionary work of "Growing Vine Street", the name of an art project and neighborhood organization in Seattle, Washington.

Vine Street neighbors describe their work in the following way:

> The goal from the earliest time has been to turn the entire length of Vine Street into a street park—a parade of art and nature.
>
> One of the principal design features of the Growing Vine Street project involves capturing the local runoff and allowing the water to follow the course of the natural watershed. Since urban runoff contains a variety of pollutants, some filtering is mandatory before this water is released into local streams, rivers, lakes, and bays. Growing Vine Street proposes to treat stormwater through biofiltration, the science of filtering water-borne pollutants with plants and other organisms. Growing Vine Street thus becomes a test project for urban neighborhoods, demonstrating the double benefit of reclaiming problem storm runoff while also creating a desirable, living green space.

Some principles that guide the Vine Street design process:

- Nature should serve as an analogy.
- The green street is a laboratory for urban rejuvenation.
- Green streets are not just green in color. They are green politically, ecologically, and socially.
- The green street is an environmental model for bringing our neighborhood into balance with ecological concerns.
- Provide a laboratory that explores the dynamic tension between natural and man-made elements, creating a mix and experimenting with a seamless blending of the two.
- Give open space and green space priority over parking.
- Contrast with the built environment by creating as many opportunities for greenery as possible and minimizing paving and hardscape.
- Find ways to embrace our weather: When it rains, it pours, it spins, it spits, it gets mossy. Embrace storm water by integrating it into the landscape in an ecological useful manner (i.e., biofiltration, irrigation for gardening, and landscaping).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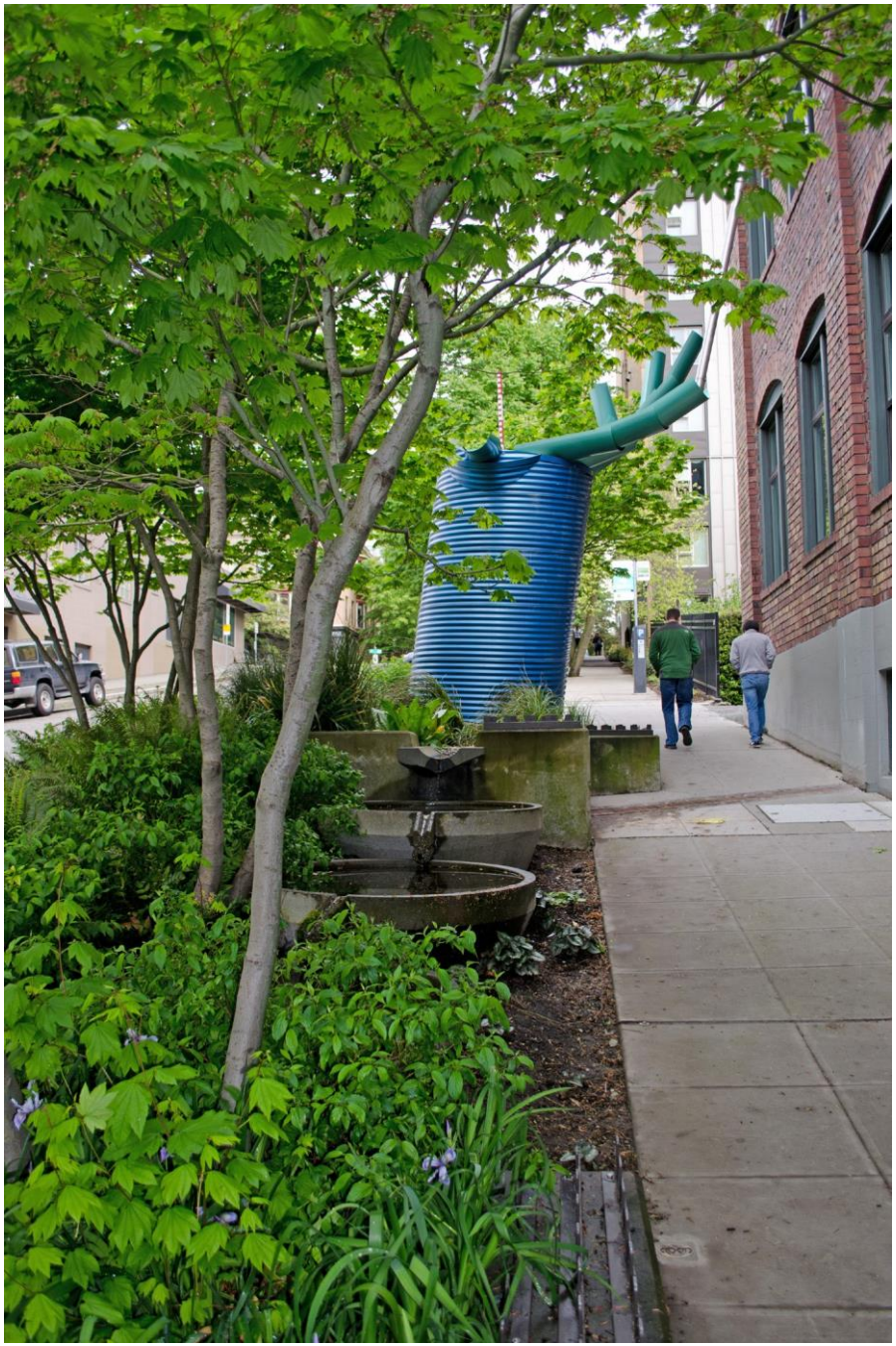


Bioregional Prosperity

Bioregional Utilities for the Generation of Electricity

Historically, the logic of growth employed by most utility companies has resulted in remote, large-scale, capital intensive electrical generation coupled to large service districts. The natural resource base of many communities has been and continues to taxed, if not destroyed, by the exporting of "fuels" to distant locations and the importing of toxic by-products that result from the energy conversion processes. Coal mining, hydraulic fracturing and nuclear power are the clearest examples.

This industrial mode for supplying power, with its technological and financial capabilities, is reinforced socially due to the public perception of utility companies as the only organizations capable of supplying energy at present levels.

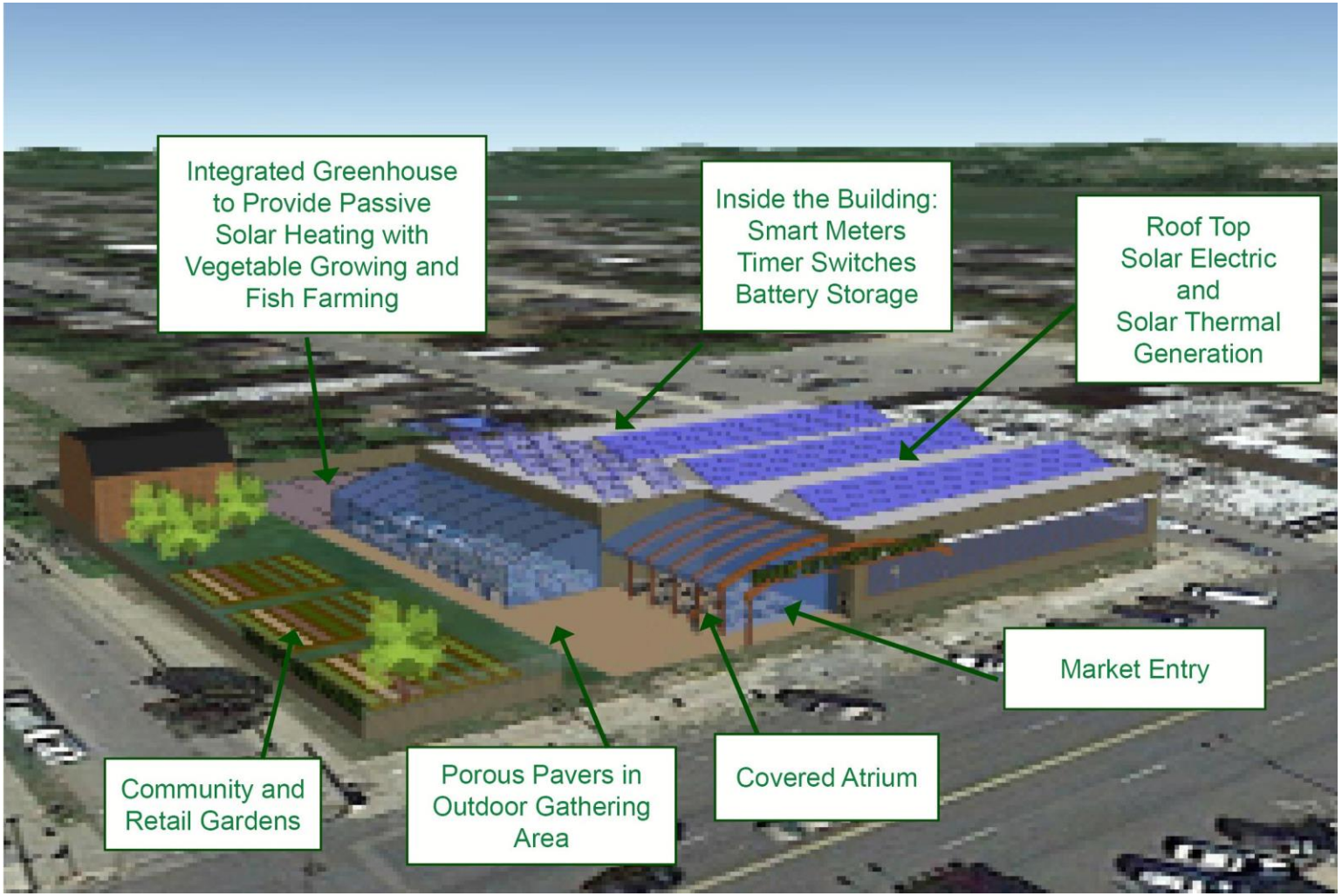
Culturally, the availability of constant surges of high quality energy in the form of power has created a pattern of energy use and waste indicative of a people which consumes heavily without regard to long term effects and flexibility.

Contrast this with the notion of a bioregional utility: an organization responsible for supplying power for necessary services while maintaining the bioregion through a soft and distributed supply system embodied in reinhabitory practices. Scaled to local ecosystems and direct observation and reaction by local inhabitants, a bioregional utility is the attempt to satisfy certain basic human requirements, lighting and refrigeration for example, while safeguarding the health of local watersheds and their populations in the delivery of services to the human community.

A new social contract is needed between communities and suppliers and manager s of energy. Under the current contract, public utilities are assured a rate of profit in return for a guaranteed level of service. Implicit to this understanding and institutional arrangement is the acceptance of the marketplace as the mediator between consumer and supplier.

A shift is necessary from the present agreement to one involving a bioregional utility on one hand and many generators and consumers of electricity on the other. As the caretaker of the wider community, the bioregional utility would attempt to balance human service requirements with the well-being of the life place. This shift does not mean that the important questions of cost effectiveness are ignored or forgotten, but rather that they are placed within a different context: bioregional worth (cultural values to regenerate life-places) has replaced economism and market place priorities.

The Green Market as Smart Building



The Green Market is a standalone public market that provides a building and home for small farms, farm to table operations and related cottage industries including regional artisans to sell their wares with an emphasis on offering and celebrating nutritious food.

Complementing the essential community roles of the public market, it can also be designed and built as a Smart Building.

A Smart Building can be understood as a distributed renewable energy system that is designed to conserve, best use and generate electricity and can be a home, commercial or industrial building. Smart Buildings, when taken together, can be the foundation for a local MicroGrid that benefits the owners and wider community.

Examples of the practical effects of this institutional change could be tying the scale of the utility to watershed conditions—for example, Smart Buildings and Microgrids designed for neighborhoods or villages—and in redefining the role of the utility company within the community. No longer a simple generator and distributor, the utility would now assume the important social responsibility for an energy efficient and reliable network linking a large number of decentralized power producers to a large number of consumers.

What, then, would be some essential goals of the watershed utility?

- Community prosperity with a low energy focus that complements local ecosystems and the bioregion.
- To decrease or minimize extra-regional energy imports.
- To support local inhabitants in the supply of electricity to the general community.
- An appropriate technology "small is beautiful" approach to supply and infrastructure technologies.

Changing the existing situation will mean the elaboration of strategies—adaptive tactics (extending from cities through the suburbs to rural areas) so the design and delivery of electricity becomes interwoven with energy democracy: the decentralized conditions that allow the alignment of power generation with bioregional worth navigating towards smaller scale generation and local ownership.

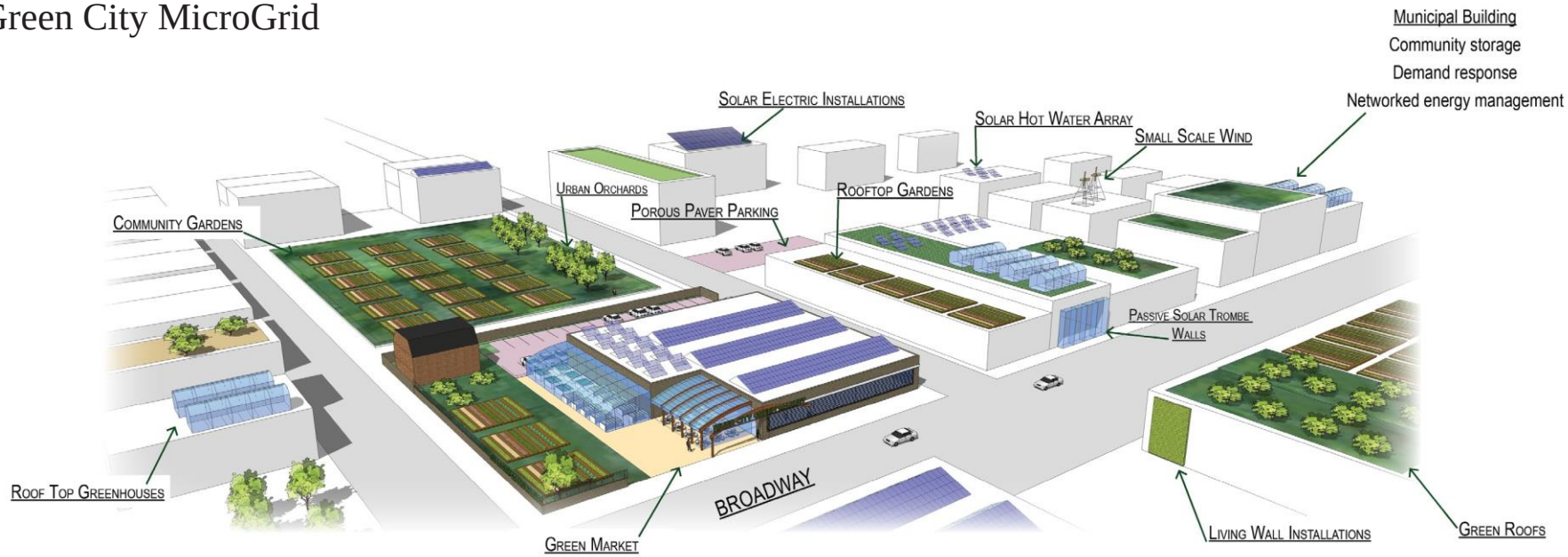
This essential possibility is already underway. Homes, designed to be convivial and energy conserving, can also become (along with commercial and industrial buildings) small-scaled power plants contributing, with other neighbors, to satisfying community-wide electrical needs (with technologies like photovoltaic systems and battery storage).

Efforts at the neighborhood or village scale translate into community owned generation facilities like solar farms and solar parking lots which are shared solar arrays. Simple and proven approaches to supporting energy democracy extend from sensible financing choices for installing renewable sources of energy to the streamlining of local permitting for solar installations.

Underlying these diverse activities is a common intention: replace blind consumption of electricity with the inclusion of power generation and electrical use as reinhabitory practices.

Whether a bioregional utility exists as an organization or an ensemble of activities and institutional niches, it will eliminate the present diseconomies of scale which are in the self-interest of the investor-owned utility's rate of profit. They will be replaced by the benefits which are in the interest of a bioregional utility: preservation of a life-place; support for reinhabitation; a power delivery system which is anchored in solar income and reliable service; and amenable to various pathways for creative undertakings.

A Green City MicroGrid



Smart Microgrids, like centralized grids, generate and distribute electricity but does so at a more local level. As an alternative to centralized fossil fuel based electricity generation, Smart Microgrids can enable the use and integration of renewable energy with a simplified connection and management process.

Localization can encourage communities to more consciously define their energy needs and goals (for example, reliability and carbon emission reduction) and builds upon a diversification of distributed energy sources and conservation while shifting control to the community level. An example of this would be a smaller municipality or larger neighborhood operating its own Smart Microgrid to encourage the use of renewable sources of energy.

The “Small is Beautiful” Benefits of Green City Microgrids:

- Creates livelihoods and keeps money circulating in the community.
- Reduces air pollution that damages human health and the global climate.
- Smaller projects are easier to plan for and finance and less complicated to build.
- Dramatically reduces costs of upgrading electrical infrastructure while lowering transmission and distribution costs.
- Reliability and management improves by having the grid segmented into smaller microgrids.

The Eros of Cities

How can we breathe street life into urban design so city ways remain hospitable, tender and grounded in everyday basics and not in the sanitized spaces built for recreational buying? The creative acts of imagination and possibility to realize urban living-in-place—the marriage of vibrant neighborhood life and bioregional ecology—can be called the “Eros of Cities”. Eros is most familiar as the ancient Greek god of love but its more modern usage can be as an underlying instinct towards life with aspirations for preservation and union and as a hedge against self-interest driven by envy and domination. The culture enhancing Eros reinvigorates community well-being (with its connotations of intimacy) by affirming commitments to neighborliness, real places and the felt specifics of bioregions. And how their fates are interlocked.

Neighborhoods are the basic social unit and physical building block so let’s put them back in the center of city life and allow Eros to speak in myriad ways as cradle of culture and human drama. Alive neighborhoods do not happen by chance or accident. They result from the accumulated social and design wisdom of distinct cultures over long periods of time, ever evolving and refining itself into local knowledge. Shared local knowledge, by its nature time-tested and practical, allows for the maturation and protection of neighborhoods knowing that collective effort will result in a coherent and organic whole. This is the underlying premise for urban sustainability and restoration.

Eros understands that those who build cities should be city lovers. How could it otherwise? What opens up when city builders are guided by the Eros of Cities and not narcissism and greed? That’s the space that Lewis Mumford was trying to fill when he talked about how ecological thinking could influence architecture and planning to reinforce balance and wholeness in cities and their ties to bioregions. Ecological thinking is not only about our place in the natural world. As importantly, it is locating community decision making in the complex of reinhabitory and biological interrelationships that is its appropriate context.

While Mumford never really specifically defines organic planning as an orderly methodology, the results he is looking for are: the cultural diversity and vitality of the city combined with the best of what we associate with village life—social intimacy and reciprocity, stability, and mutual aid.

Mumford would be on the side of many contemporary practitioners of Smart Growth and Transit Oriented Development (TOD). This is especially so when the emphasis is on local and regional alternatives to car dependent development. Let’s try to put ourselves in Mumford’s shoes and be presumptuous enough to offer an example of what could embody his intentions.

We are living in the beginning years of global warming and extreme weather so the shift away from the fossil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fuel based generation of electricity is imperative. As climate change looms, most would agree that the energy infrastructure of a city is its most important as the unavailability of electricity, over time, erodes all other aspects of city living. An energy infrastructure that is reliable, resilient and responsive to change is necessary for city living but does make not living in the city the life affirming experience it can be. That comes from the day to day interactions with family, friends and at work and which need to be supported in as many local and social ways as possible.

How can we align Eros based neighborhood and ecological commitments that furthers urban sustainability? One practical alternative is to integrate Smart Growth, TOD and Smart Microgrids.

Over the last twenty-five years, Smart Growth and TOD planning have gained proven currency in building strong local economies, neighborhoods and towns. They have done so by establishing compact traditional mixed use neighborhoods and alternatives to car driving. Key are pedestrian friendly streets, public spaces and businesses (where locals can shop close to home while bumping into their neighbors), public transport (connecting to local and regional destinations), and a livable density of housing types and costs (encouraging a community with different backgrounds and incomes).

Smart Microgrids originated with engineers who foresaw applying information and communication technologies to the improved management and reliability of the local electrical grid. This possibility soon opened up other, more important, ones including the safe integration of distributed and renewable energy resources into the traditional centralized grid, for example household PV systems, green buildings and nearby solar and wind farms.

Smart Microgrids also allows for how local electrical generation can serve community defined needs and goals (for example, a lower carbon footprint) while building upon a large array of energy sources, energy storage and cost reductions. An example of this would be a smaller municipality or larger neighborhood owning and operating its own Smart Microgrid(s) anchoring energy democracy and self sufficiency.

Smart Growth and Transit Oriented Development, on one hand, and Smart MicroGrids, on the other, are not usually spoken about together as complimentary partners. That they are reveals Eros at work drawing sustenance from the cultural values of reinhabitation that invite all community members into the life-place for fuller lives.

Let’s end with insights from two who were intimate with the Eros of Cities: Jane Jacobs when she observes that “The city has something to offer to everyone, since it is created by everyone.” and “Designing a dream city is easy, rebuilding a living one takes imagination.” And, as Lewis Mumford liked to say, “Life is better than utopia”.


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