SEATTLE CARBON NEUTRALITY INITIATIVE

CARBON-NEUTRAL LAND USE PATTERNS

Recommendations to City Council from the Land Use Advisory Committee, September 2010

Introduction

Land use patterns—the spatial arrangement of the places in which we spend our daily lives—have a profound impact on the production of greenhouse gases. Efficient urban land use patterns comprising a compact mix of housing, jobs, services, and recreation in close proximity reduce emissions in multiple ways, with broad repercussions. Yet because land use patterns are so deeply embedded both physically and culturally, inducing meaningful change will necessitate aggressive policy actions. And because buildings and infrastructure typically last 50 to 100 years, the time to implement new policy is now.

Why Land Use Patterns Matter

The creation of efficient land use patterns is an instrumental strategy for reducing three key sources of urban greenhouse gas emissions: road transportation, building energy use, and embodied carbon, each of which is discussed below.

First and foremost, efficient land use patterns enable substantial reductions in greenhouse gas emissions from road transportation—Seattle's single largest source of emissions. Densely populated neighborhoods with diverse uses and amenities, coupled with strong pedestrian, bicycle and transit access, allow people to walk, bike or take transit instead of drive. The resulting cuts in greenhouse gas emissions have been extensively backed by regional,[1] national,[2] and international[3] data. Conversely, walking, biking, and transit are highly inefficient, if not outright infeasible when destinations are widely dispersed and segregated in low-density, sprawling land use patterns. No amount of new sidewalks, bike paths, or transit lines can change that.

One key piece of the land use/transportation puzzle is affordable housing choices. If high-density urban centers become enclaves of expensive housing, then people who are employed there will be forced to live elsewhere. This leads to longer commute distances and encourages dispersed development. Capturing the greenhouse gas reduction potential of car-free access to jobs hinges on public policy that ensures local economic diversity in the housing market.

Also notable is the relationship between efficient land use patterns and the transportation-related greenhouse gas emissions of food systems. Compact development in existing urbanized centers takes pressure off surrounding undeveloped areas, which often include productive farmland. A key strategy for creating sustainable food systems is to preserve and encourage farming near urban

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[1] *See, for example, Vision 2040 (Puget Sound Regional Council, 2008), Transit-Oriented Communities: A Blueprint for Washington State (Futurewise, GGLO & Transportation Choices Coalition, 2009), Reality Check Final Report (Urban Land Institute, 2008)*

[2] *See, for example, Growing Cooler (Urban Land Institute, 2008), Center for Neighborhood Technology*

[3] *See, for example, U.N. International Panel on Climate Change*

centers so that transportation distances are minimized. A local example of how sprawling development ruins such opportunities is the Kent Valley.

Second, a requisite component of compact land use patterns is multifamily housing, which is inherently more energy-efficient—and therefore more carbon-efficient—than the single-family houses that characterize low-density urban areas. Multifamily housing typically consumes less energy for two key reasons: (1) units are smaller on average, and so require less space heating/cooling, and (2) units share walls, which reduces heat loss. A 2008 study commissioned by the City of Portland, Oregon estimated that per capita building-related greenhouse gas emissions are 32 percent lower for a household in a "high-density" environment compared to a "suburban" environment.[4]

The relatively dense concentration of buildings typical of compact land use patterns also enables the implementation of efficient district energy systems that cut greenhouse gas emissions. In particular, adjacently located, complimentary uses, such as office and housing, create opportunities for district systems that recycle waste heat.

Third, compact land use patterns reduce "embodied carbon," that is, the greenhouse gas emissions emitted through the manufacture and construction of buildings, infrastructure, and products. Again, because multifamily housing units are typically smaller than single-family, on a per household basis their embodied carbon is lower. And because the buildings served are less spread out, compact development also requires significantly less infrastructure—such as pavement and pipelines—and the associated embodied carbon decreases proportionally.

Consumer products are significant source of embodied carbon, but have proven challenging to track (an estimated 25 to 30 percent of global greenhouse gas emissions arise from products originating in one country and traded to another). But although data is scarce, one can readily observe that compared to typical single-family households, multifamily households tend to consume less 'stuff'—such as furniture, appliances, exercise equipment and lawn mowers—and the best example of this trend is cars. The drop in car ownership rates with increasing density is well established, and life-cycle studies estimate that for the average car, the embodied carbon from manufacture, maintenance, and supporting road infrastructure is equivalent to about one-third of the car's lifetime tailpipe emissions.

A Vision For Carbon-Neutral Land Use

The discussion above presents the case that the creation of efficient land use patterns is arguably our most effective and holistic strategy for curtailing urban greenhouse gas emissions. It follows then, that policies that encourage these patterns, while discouraging more wasteful and consumptive ones, will be necessary for Seattle to move towards carbon neutrality. The vision of carbon neutral land use is to establish a framework—including plans, regulations, incentives, programs, and funding—with power to catalyze the great urban neighborhoods that facilitate substantial reductions in greenhouse gas emissions.

Fortuitously, the significant growth projected for the central Puget Sound region has the potential to fuel the realization of compact, mixed-use, walkable, and transit-rich communities in Seattle that align with this vision of carbon-neutral land use. The work required to design and construct these

[4] *E. D. Hovee & Company, LLC, "Portland Streetcar Economic Impacts – First Phase Carbon Footprint Benefits Modeling" (Revised Draft) (City of Portland Office of Transportation, February, 2008).*

retooled places should be fully recognized as what it is: a tremendous source of "green jobs. And if these places are carefully designed, they will help restore a sense of civic pride and permanence that forms strong communities—which ultimately, is our most powerful resource for addressing climate change.

Finally, the actualization of this vision for carbon neutral land use will not only bring about reductions in greenhouse gas emissions, but will also lead to a host of other environmental and social benefits for the City, including higher water and air quality, and better physical health, a more resilient economy, and improved social equity.

Process

The Carbon Neutral Land Use Advisory Group consisted of 30 volunteer members representing a range of land use and community development expertise including affordable housing, urban planning, architecture, development, and environmental sustainability. The Advisory Group met three times between May and August. A steering committee of 12 members met an additional five times. See Appendix A for a full list of committee members.

Due to the abundance of research and policy action agendas on the linkages between land use and climate change—both generally and specific to the central Puget Sound region (see Appendix B for a selected list of reports)—the Advisory Group sought to synthesize those efforts and call attention to the most critical recommendations for short and medium term action. It is our hope that these recommendations will be the starting point for a broader city-led community engagement process that will lead to meaningful implementation.

Recommendations

Achieving carbon neutral land use necessitates a fundamental change in City planning and development regulations and programs in order to implement, finance, and enforce the very goals that Seattle has held for decades: facilitating walking, biking and transit use, providing sufficient affordable housing and diverse neighborhood amenities, and planning holistically for the future welfare of the city and its residents. The recommendations below represent the necessary action steps to begin this process. (See Appendix C for a detailed list and analysis of recommendations.)

Strategy 1: Connecting Land Use to Transit Investments

Policies to encourage people to live and work in walkable, transit-rich urban centers and station areas have a clear link to a reduction in vehicle use, and have been a top recommendation of countless local, regional and state planning processes bridging fields of affordable housing, water quality, social equity and climate change, to name a few. A primary impediment to implementation has been insufficient funding for comprehensive neighborhood planning in urban centers and station areas, as well as insufficient funding for the infrastructure and amenities improvements that the plans call for. The City must therefore leverage existing funding, and work for additional sources of funding, and planning tools to create and implement comprehensive station area and urban center plans.

Objective: Provide funding for meaningful station area and urban center planning and implementation.

Action: Support Cascade Land Conservancy's statewide legislative push to link Transfer of Development (TDR) receiving areas with the granting of limited Tax Increment Financing (TIF) tools. Designate station areas and urban centers as TDR receiving areas.

Objective: Complete comprehensive environmental review for station areas and urban centers expected to receive changes in land use and/or intensity.

Action: Use Planned Actions to create programmatic EIS's for a to-be-determined amount of station areas and urban centers. Use upfront TIF resources (assuming passage of the TDR/TIF legislation) to pay for a portion of EIS. Where appropriate, use the Master Planned Community tool to create long-term development agreements.

Objective: Remove policy barriers that prevent comprehensive station area planning.

Action: Redraw station area overlay boundaries to reflect a five to ten minute walking shed around the station. Amend the location criteria for single-family rezones for properties within a five-minute walk of a high-capacity transit station.

Objective: Identify opportunities to leverage District Energy solutions for station areas and urban centers.

Action: Support Climate Benefit District legislation to identify and enable additional funding tools for district energy strategies for station areas and urban centers.

Strategy 2: Ensuring Affordability

The Seattle Comprehensive Plan projects that the city will need over 17,000 additional units of housing affordable to low and moderate-income residents by 2024. Indeed, the lack of sufficient affordable housing remains one of the greatest social and environmental challenges in our region, resulting in a drive-until-you-qualify syndrome that places people far from jobs, transit and community services. When transportation costs are factored into household affordability, however, exurban areas of King County actually pay more in housing plus transportation costs than do residents in many neighborhoods in Seattle, despite higher housing costs in the city.[5] Creating a new definition of affordability that incorporates housing and transportation costs, together with instituting stronger policies to create and preserve affordable housing throughout the city—and particularly near employment-rich urban centers—is necessary to ensure adequate affordable housing supply.

A full picture of affordability also requires a broader look at a host of other social equity issues such as policies to support living wages, and neighborhood-specific issues such as schools, safety and social services. Although out of the scope and expertise of this committee, these issues are paramount to creating safe and affordable communities and must be a meaningful part of any carbon neutral plan for the city.

Objective: Refine City's measure of affordability to include the costs of transportation.

Action: Embark on immediate process to redefine affordability to include both cost of housing and transportation. Conduct a citywide inventory and needs/opportunity assessment of affordability that incorporates the new definition.

Objective: Ensure the creation and preservation of affordable housing as new development occurs.

Action: Create Inclusionary Zoning policy that levels playing field for all developers. Have affordability requirements reflect location efficiency and associated drops in transportation costs. Option: Allow for graduating AMI strategies. For instance, provide options between offering

[5] See the Center for Neighborhood Technology's online Housing + Transportation online database

larger number of less affordable units with smaller number of more affordable units. Option: Collect fees-in-lieu at escrow rather than at permitting to help projects financially.

Action: Conduct detailed inventories of existing affordable housing stock, especially in station areas and urban centers. Apply preservation strategies to existing housing to prevent increases in rent as new (presumably more expensive) development occurs in neighborhoods.

Objective: Encourage development of affordable ground-related housing types throughout the city.

Action: Permit greater flexibility and incentives for duplexing, attached and detached accessory dwelling units, and cottage housing in single-family zones.

Objective: Reduce end-user costs by eliminating policies and streamlining processes that increase development costs.

Action: Streamline development processes—including rezones, planned actions, MUP, SEPA review and design review—to help lower development costs while enabling more affordable housing.

Action: Eliminate all parking minimum requirements throughout the City and consider parking maximums in station areas and urban centers. Enact regulations to decouple housing units from parking in multi-family zones.

Strategy 3: Providing Amenities

Creating the land use infrastructure to support and encourage sustainable growth requires an equal investment in the amenities that make our neighborhoods and city great places to live. While other cities rely on tax power—such as Tax Increment Financing—to make amenity investments, the City of Seattle does not have such opportunities. Alternative funding strategies are needed to ensure that our growth does not come at the cost of livability.

Objective: Create a funding pool available to neighborhoods that are experiencing growth in order to fund key neighborhood amenities, including but not limited to, parks and open space, community centers, and pedestrian safety improvements.

Action: Develop and spearhead a "Neighborhood Revitalization Levy" that creates a flexible funding mechanism for amenities in neighborhoods that accept and embrace growth targets. Consider opportunities to fund larger ticket projects, including implementation of Seattle Center's Century 21 Masterplan and the creation of a school in one of the city's downtown areas.

Action: Allow parking meter revenue to go to a citywide neighborhood revitalization fund, and redistributed back to priority neighborhoods.

Action: Continue to advocate for additional funding authorities, such as Tax Increment Financing, at the state legislature.

Strategy 4: Planning for the Big Picture

Success in meeting our climate challenges will require a greater alignment of sustainability goals with our city's political, departmental, and programmatic framework. In fact, carbon neutrality can provide a needed organizing tool for planning, as it necessarily touches on a full spectrum of social and environmental sustainability and livability issues. While this task will be iterative and long term, there are opportunities now to begin this change.

Objective: Create a single vision and implementation prioritization plan for carbon neutrality, land use, economic development, transportation, social justice, and resource conservation goals.

Action: Create a "PlaNYC" type document for Seattle. Encourage DPD and OSE to further align their respective Comprehensive Plan and Climate Action Plan updates in the next year. Leverage this work into a Vision and Strategy Document that identifies steps towards achieving city goals of sustainable growth, livability, economic development, and social justice. Coordinate implementation of this plan with other funding and implementation processes in the city, including the city's Capital Improvement Program process.

Objective: Create a culture of positive, depoliticized, and empowered, planning in the City of Seattle.

Action: Identify a path towards creating a centralized planning department with increased discretion and ability to make long-term land use policy decisions. Among the department's mandates should be a shift from the current proscriptive code structure to one based on incentives and outcome-based goals.

Action: Allow DPD greater discretion to reallocate existing resources to priority areas and projects.

Action: Examine the feasibility of creating a Public Development Authority that has greater ability to enter into Public Private Partnerships.

Conclusion

Efficient land use is the foundation of a carbon-efficient city. Most importantly, land use patterns can either lock us into car-dependence and the excessive greenhouse gas emissions that come with it, or can enable the alternative transportation modes that are the most critical component in Seattle's path towards carbon neutrality. Compact land use patterns also have great potential to reduce the emissions generated by building energy use, and by the production of infrastructure and consumer products.

The recommendations above do not represent low-hanging fruit, although many could be implemented in phases—and all are critical strategies to achieving a carbon neutral land use pattern for Seattle. In order to fully realize the potential impacts of these land use strategies however, they must be integrated with equally ambitious policy recommendations from a variety of other sectors, including but not limited to, transportation, energy and social equity. We believe that such a comprehensive approach is challenging but within reach, and is absolutely necessary to both adapt to climate change and create a more livable and sustainable Seattle.

Appendix A

Seattle Carbon Neutrality Initiative
Land Use Advisory Committee
Committee Members

*° Sara Nikolic, Futurewise, Committee Co-Chair
*° Joshua Curtis, Great City, Committee Co-Chair

Matt Anderson, Heartland
° Dan Bertolet, GGLO
* Josh Brower, Tupper Mack Brower
* Jessie Clawson, McCullough Hill
* John Coney, Uptown Alliance
David Cutler, GGLO
Ashley DeForest, King County
Joe Ferguson, Lake Union Partners
Kari-Lynn Frank, NAIOP
* Brian Geller, ZGF
* AP Hurd, Touchstone
Brad Kahn, Pyramid
Bradley Khouri, B9 Architects
* Kelly Mann, ULI Seattle
* Anna Markee, Housing Development Consortium
Dan McGrady, Vulcan
David Neiman, David Neiman Architects
Kristin Pula, Homesight
* Stephanie Pure, AIA Seattle
Natalie Quick, The Fearey Group
Jon Sholes, Downtown Seattle Association
Catherine Stanford, CA Stanford Consulting
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Roger Valdez, Sightline
* Alison Van Gorp, Cascade Land Conservancy
Don Vehige, GGLO
* Barbara Wilson, Seattle Planning Commission
* Chuck Wolfe, Charles R. Wolfe Attorney at Law

* Steering Committee Members
° White Paper Authors

Appendix B

Partial List of Resources Related to Greenhouse Gas Emission Impacts and Reduction Potential from Land Use Patterns

The following resource list was compiled by Tim Trohimovich, Futurewise's Co-Director for Planning and Law, for a November 2009 Law Seminars International event on Climate Change and Washington's Growth Management Act.

There are many excellent sources of additional information on global warming on the internet. They include:

- Intergovernmental Panel on Climate Change (IPCC) http://www.ipcc.ch/index.htm
- United Nations Framework Convention on Climate Change (UNFCC) http://unfccc.int/2860.php
- United Nations Framework Convention on Climate Change Local Coping Strategies Database: http://maindb.unfccc.int/public/adaptation/ Information on strategies for adapting to climate change.
- Western Climate Initiative (WCI) http://www.westernclimateinitiative.org/
- Washington State Department of Ecology Climate Change webpage: http://www.ecy.wa.gov/climatechange/index.htm
- Washington State 2008 Climate Action Team (CAT): http://www.ecy.wa.gov/climatechange/2008CAT_overview.htm
- Washington State Department of Commerce's Climate Change Webpage with helpful web links: http://www.commerce.wa.gov/site/1105/default.aspx
- Washington State Department of Commerce's webpage for its final Greenhouse Gas Emissions Planning Tools report: http://www.commerce.wa.gov/site/1277/default.aspx
- Washington State SEPA Implementation Work Group (IWG): http://www.ecy.wa.gov/climatechange/2008CAT_iwg_sepa.htm
- Climate Change Mitigation through the Growth Management Act & Land Use and Climate Change Advisory Committee: http://www.ecy.wa.gov/climatechange/growthmgt.htm#landusecommittee
- Puget Sound Clean Air Agency Climate Change website: http://www.pscleanair.org/programs/climate/default.aspx
- King County Department of Development and Environmental Services Climate Change and Development Regulations website: http://www.kingcounty.gov/property/permits/info/SiteSpecific/ClimateChange.aspx
- City of Seattle Climate Action Plan webpage: http://www.seattle.gov/climate/ ICLEI-Local Governments for Sustainability webpage: http://www.iclei.org/index.php?id=392
- University of Washington Climate Impacts Group (CIG) webpage: http://cses.washington.edu/cig/
- Cool Cites webpage: http://coolcities.us/
- Association of Washington Cities (AWC) Climate Change Training Materials: http://www.awcnet.org/portal/studionew.asp?Mode=b1&WebID=1&UID=&MenuActionTypeID=80&MenuActionParm=137&OriginPage=/portal/studionew.asp&EDate=&ChannelLink ID=7682
- The Greenhouse Gas Protocol Initiative has guidance and calculators that can be used to estimate greenhouse gas emissions: http://www.ghgprotocol.org/calculation-tools/all-tools
- California Environmental Protection Agency, Air Resources Board Greenhouse Climate Change Program: http://www.arb.ca.gov/cc/cc.htm
- The California Air Resources Board (ARB) Local Government Toolkit at the Cool California website: http://www.coolcalifornia.org/local-government A one stop shop on how local governments can reduce greenhouse emissions and save money.
- The [California] Governor's Office of Planning and Research's CEQA Guidelines and Greenhouse Gases webpage: http://opr.ca.gov/index.php?a=ceqa/index.html This website includes links to

methodologies, lists of environmental documents and plans and policies that address climate change and GHG emissions, and links to other reports on assessing and mitigating greenhouse gas emissions.

- California Air Pollution Control Officers Association: http://www.capcoa.org/ The website includes a handbook for assessing greenhouse emissions and mitigation for environmental reviews and also model policies for greenhouse gas reductions in comprehensive plans

- Futurewise Publications, including links to "What Role Does the GMA Play in Reducing Greenhouse Gas Emissions? The GMA Requires Communities to Mitigate and Adapt to Global Warming (December 2009)" and "Transit-Oriented Communities: A Blueprint for Washington State (November 2009)." http://futurewise.org/resources/publications/index_html

Appendix C

Matrix of Policy Recommendations

Forthcoming