ROBIN ROGERS

Green Transit

The greening of transportation systems, integrated with green buildings, will be vital to sustainable development as populations increase.

The LEED-Silver Broadway Housing project, a mixed-use structure on Portland State University's downtown campus, has an 18,000-square-foot green roof and water-saving fixture, but it also provides transportation connections.

In the Pacific Northwest, residents move into and out of urban centers on a regular basis because of environmental concerns such as air pollution, water pollution, and gas prices. The Northwest corridor has made a number of attempts to solve transportation problems—from designing light-rail systems and bicycle paths, to providing better mass-transit access and promoting transit-oriented development. The lessons the region is learning about sustainable development and transportation can offer solutions for communities around the world.

A swathe between the Pacific Ocean to the west and the Cascade Mountains to the east—the north-south corridor along Interstate 5—links ten metropolitan areas in Washington State and Oregon. Recently identified in the Metropolitan Institute of Virginia Tech's *Beyond Megalopolis* as one of ten areas in the United States that is rapidly becoming a large, contiguous metropolitan unit, or megapolitan area, the region was dubbed *Cascadia* by the authors of the study.

As the key connector of Cascadia's communities, the Interstate 5 corridor has been an integral factor in this megapolitan area's growth. Amtrak's passenger rail system also traverses roughly the same route, but automobile transportation is by far the most popular method of travel in Washington and Oregon. Unlike New York City, where 55 percent of residents use public transit, only 15.2 percent of Seattlites and 13.3 percent of Portlanders use public transportation—and even fewer use a carpool. In addition, approximately 75 percent of Washington State's drivers commute alone. Not only has this caused concerns about pollution and gasoline shortages, it also has resulted in an estimated 30-minute commute throughout the Northwest corridor.

Yet, the Cascadia region, known as much for its environmental awareness as its rain, has begun to de-emphasize the use of individual automobiles through its green building practices. Seattle, for example, has the most LEED-*certified* buildings in the country, followed by Portland, which has the most LEED-*registered* projects. As far as transportation options, Seattle is fifth in the walk-to-work rankings; in bicycling, Portland ranks first and Seattle fourth. Green commitments extend to public agencies, as well. In 2001, Washington's King County became one of the first counties in the nation to adopt a green building initiative. That same year, Seattle's mayor pledged to adopt the International Kyoto Protocol as its goal for reducing air pollution. Portland, meanwhile, was the first city in the country to adopt a policy to reduce greenhouse gas emissions.

BRUCE FORSTER

Center Commons was built on a former department of motor vehicles site and incorporates retail, residential, and office space while creating an area that is a junction for cars and pedestrians.

The four-building, mixed-use community, known as Vancouver Center, offers a transition between the city's downtown transit mall and Esther Shore Park.

Dozens of reasons exist for the region's move to sustainable building and transportation practices. According to *Conserving Energy and Preserving the Environment: The Role of Public Transportation,* a report based on a study published by American Public Transportation Association in 2002, if Americans used public transportation for 10 percent of their daily travel, the nation could reduce its dependence on imported oil by more than 40 percent, nearly equal to the energy used to produce food in the United States. Carbon dioxide emissions could be reduced by more than 25 percent of the Kyoto Agreement mandate, and carbon monoxide pollution by three times the levels emitted by chemical manufacturing, oil and gas production, metal processing, and industrial coal use combined. If this is the case, what is holding back communities from turning to green transit options?

Green Buildings

Interest in saving energy, reducing pollution, and sustaining the natural environment has spurred significant growth in green building and green building rating programs across the country. Part of the criteria for rating programs such as LEED (Leadership in Energy and Environmental Design) or Built Green includes transportation options to help save on the use of fossil fuels. Providing access to public transit, encouraging bicycle use, promoting use of alternative fuels, offering convenient parking for flexcars or other car-sharing programs, and discouraging the use of individual automobiles through reduced parking capacity, are all considered for green building projects throughout the Cascadia region.

The LEED-Silver-rated Broadway Housing project, a mixed-use structure on Portland State University's downtown campus, incorporates a number of green features, including an 18,000-square-foot green roof and water-saving fixtures to sustainably harvested (and produced) interior materials. Yet, the project also achieved alternative transportation credits on the U.S. Green Building Council's LEED checklist, where transportation credits constitute four points on the 69-point rating system.

Transit-Oriented Development

Northwest agencies have found that one of the most effective ways to encourage use of public transit is by designing transit-oriented developments (TOD) located close to public transportation. The mix of housing, retail, and immediate access to mass transit allows residents to leave their individual automobiles at home as they walk to nearby stores and commute to work via bus, train, commuter rail, or light rail. The Yards at Union Station, in Portland's downtown River District, for example, was transformed from a quasi-industrial brownfield into a mixed-use neighborhood with vegetated open space. Adjacent to the historic Union Station, this 7.5-acre project provides urban infill housing at 100 units per acre, while the four- and five-story, wood-frame buildings provide rental and for-sale units above street-level retail space.

Another project, Center Commons, was built—ironically—on a former department of motor vehicles site. Part of a greater revitalization effort in northeast Portland, the urban infill TOD incorporates retail, residential, and office space while creating an

Shoreline's 30-mile Interurban Trail has expanded opportunities for nonmotorized transportation, recreation, and connectivity (left). Bike lanes and sidewalks, along with updated landscaping and lighting, have improved pedestrian safety along the west Main Street thoroughfare in the city of Battle Ground, Washington (above).

area that is a junction for cars, pedestrians, and a playground. Just ten minutes north, the Vancouver Center reinvigorated downtown Vancouver with a four-building, mixed-use community that provided not only new commerce and living options, but also a transition between the city's downtown transit mall and its revered Esther Short Park.

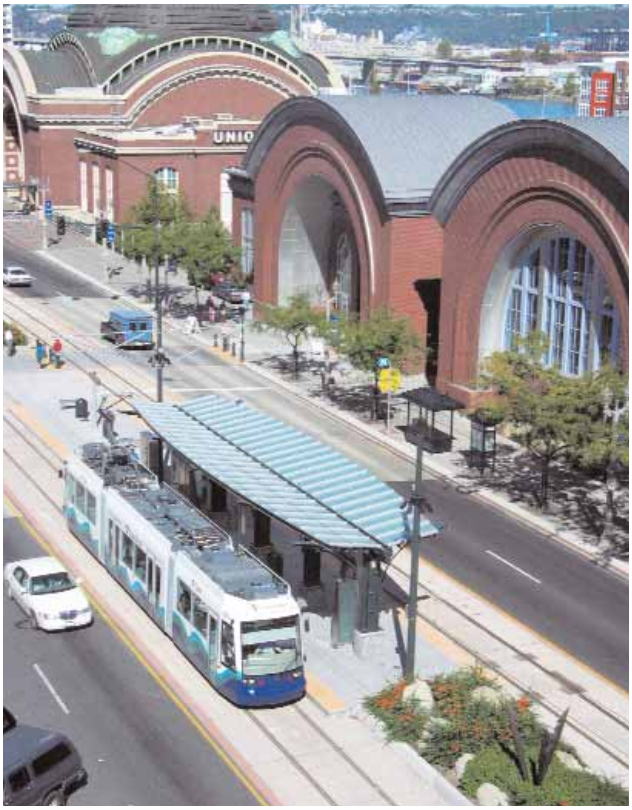
In each of these projects, the buildings connected people to their work and recreation while at the same time connecting them to convenient mass-transit options. In the Cascadia region, such convenience has proved vital to the adoption of green transit, and in many instances has even been a selling point for upscale development.

Bike Trails, Pedestrian Walkways, Open Space

The concept of providing convenient, sustainable connections is not new, but the environment needed to implement them only recently has come to the fore. In 1968, the U.S. Department of Housing and Urban Development (HUD) produced a report about future transportation systems. Of the seven major systems that were recommended—demand-activated bus systems, personal rapid transit, dual-mode vehicle systems, automated dual-mode bus, pallet or ferry system, fast intraurban transit links, and systems for major activity centers—several are being implemented, including fast intraurban transit.

In the Puget Sound region, cities and communities are beginning to study bike traffic, bike accessibility issues, bike stations, and bike trails in an effort to encourage and facilitate bicycle commuting. Also, they are making a substantial effort to create walkable routes within cities by providing more sidewalks, interfacing with existing trails and walkways, and increasing the safety along pedestrian routes. Shoreline's 30-mile Interurban Trail, first conceived in the 1980s and now becoming a reality, offers an example, as it has expanded the opportunities for nonmotorized transportation, recreation, and connectivity.

In downtown Seattle, the historic King Street Station has been re-created as an intermodal transportation hub with commuter rail, light rail, buses, and bicycles, linking the city's commuters to the downtown core and to mass transit that travels the entire Puget sound region.



The 7.5-acre Yards at Union Station in Portland's downtown River District, was transformed from a quasi-industrial brownfield into a mixed-use neighborhood with vegetated open space (far left). Just south of Seattle is the 1.6-mile Tacoma Link Light Rail spur with the interstate highway, park-and-rides, bus transit facilities, bicycle and pedestrian access, and commuter rail (left).

The Portland Streetcar connects residents, visitors, and businesses with Portland's downtown core and the activity centers in the River District and South Waterfront.

Even normal roadway projects have been subjected to increased scrutiny as potential candidates for green transit. The city of Battle Ground, Washington, engaged in a yearlong public visioning process when evaluating how to update its west Main Street thoroughfare. The eventual plan called not just for widening the road, but also for adding bike lanes and sidewalks, updating landscaping and lighting, and improving pedestrian safety. It also provided for wetland mitigation.

Cities hoping to arrest transportation problems before they begin have looked proactively at green transportation. The city of Sammamish, Washington, for instance, has developed a plan that looks at pedestrian, bicycle, and recreational trail facilities that can improve connectivity throughout the city for nonmotorized users. This action brought together city officials, residents, and business owners to retrofit substandard facilities in existing developments and obtain rights-of-way for recreational trails. In the process, it also set the stage for the future greening of public transportation.

Public Transportation

Although suburban areas have begun to explore the promise of green transit, its concept and popularity have proven just as notable in dense urban areas throughout the Cascadia region. King Street Station, in downtown Seattle, has been re-created as an intermodal transportation hub with commuter rail, light rail, buses, and bicycles linking the city's commuters to the downtown core and to mass transit that travels the entire Puget Sound region. In addition, the historic 1906 station is being restored to help conserve materials and save on the costs of harvesting and transporting new materials, while preserving local vernacular architectural, social, and cultural elements.

Just south of Seattle, Tacoma integrated the 1.6-mile Tacoma Link Light Rail spur with the interstate highway, park-and-rides, bus transit facilities, bicycle and pedestrian access, and commuter rail. The agency's initial goals for ridership were exceeded during the first week of operation, and ridership continues to increase. The electric vehicles are free of charge, run every ten minutes, and produce no street-level fumes, addressing another key concern—pollution—in a highly environmentally sensitive region. Considered a model of successful intracity transit, the system was planned to accommodate growth and will eventually link Seattle and Tacoma via another intermodal hub at SeaTac International Airport.

Likewise, the Portland Streetcar connects residents, visitors, and businesses with Portland's downtown core and the activity centers in the River District and South Waterfront, one of the city's most forward-looking redevelopment areas. Portland's MAX Light Rail also has proved so successful that officials have expanded its reach by adding a new spur, and they continue to discuss additional linkages through and around the city.

Amid all these projects, the common denominator has been the need for a community—public, private, residents, and businesses—to design a truly effective transportation system. Each community is unique in its needs, but the Cascadia region has found ways to create better multimodal and green transit options, and to connect those transit options with residential and commercial development.

The greening of such transportation systems will be imperative as populations increase. The current U.S. megapolitan density, now more than 325 people per square mile, easily surpasses the three big nations of western Europe. These megapolitan areas are projected to add 83 million people by 2040. These new residents will require an additional 32 million housing units, both new and replacement, as they will be migrating to and from the 64 million new jobs expected to be created in megapolitan areas during that same period.

Integrating green transit with green building is vital to solving today's migration issues, but it holds even more promise for the ways in which we address tomorrow's migration and the evolution of sustainable development. If we continue to rely on normal petroleum-intensive transit options to transport people to and from green buildings, the question must be asked: "Just how green will our overall communities actually be?" UL

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