Comments on the *Draft* Plan Bay Area

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May 13, 2013

Introduction

The fundamental GHG reduction strategy embedded within the *Plan* emulates the land-use/transportation philosophy that has been in effect for over three decades in Portland, Oregon. The assumption behind this concept is that individual travel patterns can be significantly and permanently altered through a combination of regulatory interventions in the market: strict limits on new roadway construction, massive expenditures on new transit service (especially light rail), and land-use mandates that both require and subsidize mixed-use, high-density development in transit corridors while simultaneously prohibiting lower-density growth. A partial list of plans and policies (state, regional and local) demonstrating this commitment includes the following:

- Creation of a regional public transit district (TriMet) for the Portland metro area in 1969. This agency has a ***dedicated source of non-farebox revenue*** – a regional payroll tax -- that provides TriMet with stable and growing general fund revenues that are ***70% higher than peer agencies.***

- Cancellation of a planned urban freeway for east Portland in 1975, with the federal funds for that project transferred to TriMet to allow construction of one of North America's first light rail lines, which opened in 1986;

- Adoption of a regional Urban Growth Boundary in 1979, which prohibits most forms of land development outside of existing built-up neighborhoods;

- Cancellation of a new highway on the west side of Portland in 1991, replaced with light rail expansion and mandated TOD in the light rail corridor as a means of reducing VMT;

- Enactment of a state Transportation Planning Rule in 1992, requiring the four largest cities in Oregon to reduce per-capita VMT by 20% over 30 years and to reduce total parking spaces;

- Adoption of the Metro 2040 Plan in 1995, committing the Portland region to a regulatory plan to densify the region, build out an extensive rail transit network, and accommodate most future jobs and housing in a limited number of transit corridors known as "regional centers" and "town centers";
- Adoption of the Portland Central City Management Plan in 1995, establishing a goal of 60% transit mode share for commuting in the central city by 2010;

- Opening of new light rail lines in 1998, 2001, 2004, and 2009, with additional extensions scheduled for service in 2015 and 2019; and

- Opening of a 16-mile suburb-to-suburb commuter rail line in 2009, in lieu of highway expansions in the same corridor.

Because of these and many other policies, the Portland region has become an international leader in the application of New Urbanist development principles and Smart Growth regulatory policies.

This author has been conducting field research since 1996 to determine if such policies actually work once they are applied. A particular research focus has been on the functioning of high-density, mixed-use transit-oriented developments (TODs) at light rail and streetcar stations. Unlike much of the literature on this subject, which attempts to measure travel patterns based on self-reported survey data, modeling exercises, or pneumatic tubes placed at curb cuts of TODs, the methodology of our research has been to place observers out in the field and count every passenger-trip in and out of TODs by all modes, for selected hours. These observations have been done mostly on weekdays at the morning peak period of 6:30 a.m. – 8:30 a.m., but have also included mid-day counts, afternoon peak period counts, and weekend observations at TODs deemed worthy of such effort.

The research has included observations at over 30 rail transit stations in downtown Portland as well as suburban locations, covering thousands of residential units and hundreds of employers. The results have been presented at academic conferences at the state, regional and national levels during the past four years. This research informs the following critique.

Assessing the *Plan Bay Area*

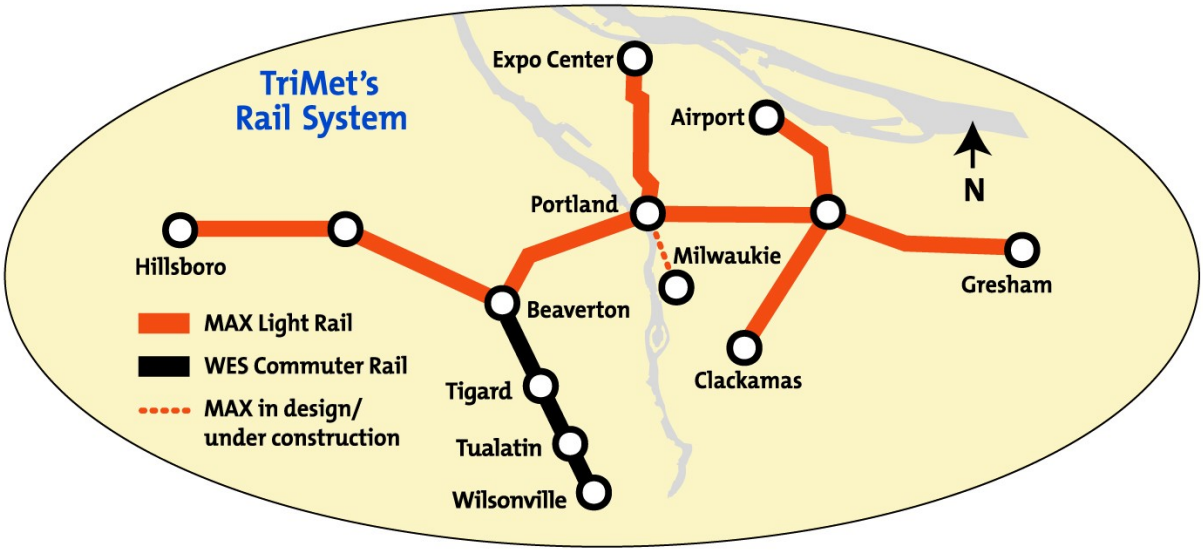
The draft Plan mimics the Portland strategy in most respects. It includes a much larger geographical region, a larger population base, and various heavy rail lines that Portland does not have, but the fundamental approach is the same: funnel most future development into a limited number of centers served by transit; spend most transportation dollars on maintenance of the existing system with capacity expansions focused on transit, not highways; and assume that transit use will increase substantially, resulting in improved air quality and reduced GHGs.

However, before Bay Area officials adopt such a plan, they should consider the results from the Portland regional experience. Virtually every assumption about changing travel behavior has proven to be wrong.

Failed Assumption #1: Transit market share can be substantially increased through integration of land-use and transportation planning with a heavy emphasis on TOD.

***Reality*:** Peak-hour transit use is flat or declining in every major Portland market, despite a moratorium on new highways since 1982, billions of dollars in additional transit subsidies, and mandatory TOD throughout the region.

The graphic below displays the crown jewel of TriMet's transit system, the light rail network along with the sole commuter rail line. Although buses carry 67% of daily boardings, rubber-tired service is not considered glamorous by local officials so it receives little in the way of investment capital or publicity.



Trends in Transit Market Share for Various Geographic Markets in the Portland Region

Transit Mode Share for Weekday Commuting
Portland metropolitan region, 1970-2010

1970	1980	1990	2000	2010
7.0%	9.8%	6.7%	7.7%	6.1%

Source: US Census

Transit Mode Share for Weekday Commuting
Portland Citywide, 1997-2011

Mode	1997	2000	2004	2008	2010	2011
Auto	80%	77%	80%	73%	69%	69%
Transit	10%	12%	11%	11%	12%	12%
Drive/trans	2%	2%	2%	4%	--	--

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Bike	3%	3%	4%	8%	7%	7%
Walk	5%	5%	4%	4%	6%	6%

Source: Portland Auditor, Annual Survey

Transit Mode Share for Weekday Commuting
Downtown Workers, 2001-2011

Mode	2001	2003	2005	2009	2010	2011
Auto	49%	52%	52%	41%	47%	48%
Bus/MAX	45%	40%	37%	44%	38%	34%
Bike	3%	4%	6%	10%	9%	11%
Walk	2%	3%	4%	4%	5%	5%
Streetcar	1%	1%	1%	1%	1%	2%

Source: Annual Downtown Employer Census, Portland Business Alliance

The most natural market for transit use is in the downtown core. Here***, transit market share has plummeted over the past decade***, from 46% of commute trips via transit to 36% (including the streetcar), while auto commuting has only dropped from 49% to 48%. The big gains have been in biking and walking, but those modes have taken market share from transit, not auto commuting.

In 1995, the Portland City Council adopted a land-use/transportation plan called the Central City Management Plan. This plan predicted that by 2010, transit use in the downtown would attain 60% market share. Obviously this prediction proved to be a computer-generated fantasy.

However, this has not stopped Portland planners from continuing to make absurd predictions. When the City Council adopted its latest sweeping vision for the future – the **Portland Plan**, adopted in April 2012 – it doubled down on Smart Growth, approving a goal of ***reducing SOV commuting in Portland from 69% in 2011 to 30% by 2035.*** There is no reason to believe that this projection will be met.

The plan also predicts that average daily VMT per capita in Portland will drop from 18.7 miles to 11 miles, despite the fact that daily per capita VMT has only dropped by .1 since 1990 in Portland.

In essence, Portland politicians continue to believe that if they simply predict less driving in the future, it will happen. Bay Area officials should be more realistic.

Failed Assumption #2: Requiring and/or subsidizing transit-oriented development (TOD) should be the centerpiece of any urban planning strategy to reduce GHGs and VMT.

***Reality*:** TOD can marginally increase transit mode share compared to low-density neighborhoods, but auto travel remains the dominant mode. The following case studies are illustrative.

Case Study: Gresham Civic Station TOD

TriMet Blue Light Rail Line (MAX)

Gresham Civic Station has been intensively planned for more than 25 years, with expectations that this would be a showcase for suburban TOD. The entire area was bare dirt when the Blue MAX line opened in 1986, and offered the possibility of a “blank slate” for planners to create high-density, mixed-use developments focused around light rail.

Gresham Civic Station. Light rail bisects the site running east-west from Gresham to Portland.

Unfortunately, the land was sold several times and various development concepts were conceived but never built into the 1990s. A major north-south road, Civic Drive, was built to link Burnside with Division (two east-west arterials), but for years no other construction took place. Eventually much of the site was built-out, featuring a shopping center, a medical complex, and several hundred units of housing.

Initially the neighborhood did not have its own dedicated light rail station, so anyone who wanted to get to the site had to walk a short distance east to the Gresham City Hall station. However, on December 1, 2010, TriMet celebrated the opening of the Gresham Civic light rail station.

In 1995, Gresham Civic Station was just a dream. The MAX light rail line bisected the large site, but only a road had been built. Multiple developers bought and sold the site before a profitable formula could be found.

Since this TOD has both a large housing component and a shopping center, traffic counting was done for two different peak periods on a mid-week day in December 2010. For work commuting, observations were made from 7:00 a.m. to 9:00 a.m., focusing especially on the four east portals where many of the on-site residents would leave from. For the shopping peak period, monitoring was done from 10:30 a.m. to 12:30 p.m.

Gresham Civic Station
Summary of Observations for Peak-Hour Commuting
7:00 a.m. – 9:00 a.m.

	All trips, in/out	Avg. Vehicle Occupancy	Total pass.-trips	**Mode share, pass.-trips**
Light rail	24	n/a	24	**2.2%**
Auto	953	1.12	1,070	**96.3%**
Bicycle	2	n/a	2	**0.18%**
Pedestrian	15	1.0	15	**1.4%**
Total	994	n/a	1,111	**100%**

10:30 a.m. – 12:30 p.m.
Peak shopping hours during Christmas Season

	All trips, in/out	Average vehicle	Total passenger-	**Mode Share,**

		occupancy	trips	**pass.-trips**
Light Rail	96	n/a	96	**2.30%**
Auto	3,181	1.27	4,031	**96.8%**
Pedestrian	37	n/a	37	**0.9%**
Bicycle	1	1	1	**0.02%**
Total	3,315			**100%**

Today, Gresham Civic Station offers a mix of office, retail, educational and housing products.

The "Crossings" at Gresham Civic is a high-density, mixed-use building with ground-floor retail and residential on top, across the street from the light rail station. In order to pay for the numerous above-market features required by the high-density format, the developer received more than $3 million in subsidies.

As a TOD, Gresham Civic Center offers all the amenities that TriMet/Metro planners originally hoped for: a mixture of high-density housing products (apartments, condos, townhomes and single family houses), numerous retail shopping choices, and office space. The site also offers a mixture of transportation modes.

However, parking is reasonably available in all areas, and for some of the housing projects there are even gated parking lots. Private auto use is the dominant mode choice for most trips to and from the site. The TOD probably has a higher than normal percentage of people walking from their homes to retail sites (*intra*-site trips as opposed to the *inter*-site trips we were monitoring) at certain times and days, but overall more than 96% of passenger-trips are taken via the private automobile.

The light rail station itself has not proven to the a "catalyst for mixed-use development", as Portland planners commonly assume. In fact, for most development concepts, proximity to a light rail station is a nuisance, not an amenity. Thus despite commercial success building out other parts of the TOD, land closest to the LRT station remains undeveloped. The regional government, Metro, bought up the land a decade ago and will sell it at below-market rates for a high-density project.

Ten years after the successful build-out of Gresham Civic Station, the light rail station remains isolated.

Case Study: Russellville TOD, Portland
Blue light rail line

Russellville is an 11-acre, PDC-sponsored project built to a density of 52 units per acre, located immediately south of the 102nd street MAX station. Despite the density and location, light rail ridership during the morning peak is only 13% of all trips, while auto use (mostly SOV) accounts for 79% of all person-trips (both in and out).

Russellville TOD at the intersection of E. Burnside and 102nd. The light rail station is in the foreground.

Internal street parking at Russellville is usually near capacity due to inadequate off-street parking. The parking restrictions are based on the assumption that many trips will be taken on nearby light rail.

Transit Use at AM Peak Period, 6:15 a.m. – 8:30 a.m.
Russellville Commons TOD
Density: 52 units/acre

Observation points	Auto Passenger-trips	MAX	Pedestrian	Bike
102nd & Ankeny	89	27	2	1
102nd & Pine	67	5	9	0
105 & Stark	120	0	7	2
105th & Burnside	55	23	7	4
TOTAL:	331	55	25	7
Mode split in %	**79%**	**13%**	**6%**	**1%**

Russellville was built from the ground up as a high-density TOD because the land was vacant and publicly owned at the time the light rail line opened. Thus, it was a "boutique" project that was subsidized and did not face many of the traditional market barriers for development. Across the street to the north of the light rail station, a traditional Portland neighborhood already existed in 1986, built-out to a much lower density of five units per acre. Since this neighborhood has never densified after 27 years of light rail, it offers an interesting "control" group to compare with Russellville, since both have equal access to light rail. Monitoring of this neighborhood was done in June 2010.

Across the street from Russellville (north of Burnside) is an older Portland neighborhood that never densified after MAX was built. The mode split for that neighborhood is below.

Transit use at peak commuter period, 6:15 a.m. – 8:30 a.m.
Glisan-Burnside Neighborhood
Density: 5 units/acre
June 29, 2011

Observation points	Auto Passenger-trips	MAX	Pedestrian	Bike
104th/103rd & Glisan	31	0	2	0
105th/106th & Glisan	27	0	0	1
102nd/Davis St path	0	5	0	2
TOTAL:	58			
Mode split in %	**85%**	**7%**	**3%**	**4%**

The transit use at Russellville is 86% higher, but the density at Russellville is ***10 times*** that of the Burnside-Glisan neighborhood. This suggests that simply increasing density and providing transit service is not enough to offset the vast increase in driving and parking associated with TOD. Moreover, the 13% light rail usage observed at Russellville is not high in absolute terms, and is near the citywide average for transit use.

Case Study: Portland's South Waterfront District
Streetcar, aerial tram, bus, bikeway, and future Orange light rail line

Portland's South Waterfront urban renewal project is one of the most audacious brownfields redevelopment schemes ever planned in the country. Located on the west bank of the Willamette River in downtown Portland, the South Waterfront was long dominated by low-rise manufacturing and machining facilities, serviced by gravel roads. The 133-acre district is highly constrained for transportation infrastructure: there are no outlets to the east or south, and the roads leading in from the west and north are narrow and congested.

In the late 1980's, the Portland City Council adopted a series of land-use/transportation plans committing hundreds of millions of dollars in public subsidies to transform the district into a neighborhood of high-rises, with a large employment cluster provided by Oregon Health and Sciences University (OHSU), which planned to move much of its existing and future campus operations down from a nearby hilltop location.

Portland's South Waterfront district has very high densities, limited roads, and very low parking ratios.

In order to facilitate the redevelopment as a walkable, transit-oriented district, the Council prohibited any significant new road infrastructure. Instead, the City opted for a suite of transit and non-auto options including ***an aerial tram connecting the OHSU hilltop campus to the waterfront, a streetcar extension, an elevated pedestrian walkway connecting the district to adjacent residential neighborhoods, the widest bikeway in Portland, and access to a new light rail line.***

The South Waterfront features a streetcar, aerial tram (considered part of the transit network), a new elevated pedestrian walkway (right, just below the support tower for the tram), bus service, a huge bikeway (far right), and will soon have a new light rail station.

As part of the light rail project, a new bridge is being constructed across the Willamette River to service the South Waterfront, but ***no cars or trucks will be allowed*** – only light rail, streetcar, bikes and pedestrians.

In addition, when fully built out, the district will allow no surface parking lots, and parking ratios for commercial and office properties will be the lowest in Portland – 2.0 per 1,000 square feet of space. This is being imposed as part of the city's goal of achieving 50% non-auto mode split for commuting and 40% for all travel.

Much of the district has been redeveloped, and additional construction by OHSU is underway. Just prior to groundbreaking for the light rail project, Cascade Policy Institute conducted a thorough traffic observational study of the entire district to obtain baseline data that will be used to compare travel patterns after light rail opens in late 2015. The research team counted every trip into and out of the district by all modes, from 6:00 a.m. to 10:00 p.m. The results show that despite the heroic efforts to encourage non-auto travel, private motor vehicles remain the dominant mode in the South Waterfront.

Bi-directional person-trips to/from the South Waterfront District
Average Weekday, all portals

6:00 a.m. – 10:00 p.m.

	All passenger-trips	**Market share of trips by mode**
Auto/truck	17,023	79%
Streetcar	1,832	9%
Bicycle	1,076	5%
Bus	926	4%
Pedestrian	642	3%

Note: Research was conducted on various good-weather weekdays during the months of May-January, 2010-2011. Excludes aerial tram ridership, which is primarily internal trips to/from the OHSU campuses.

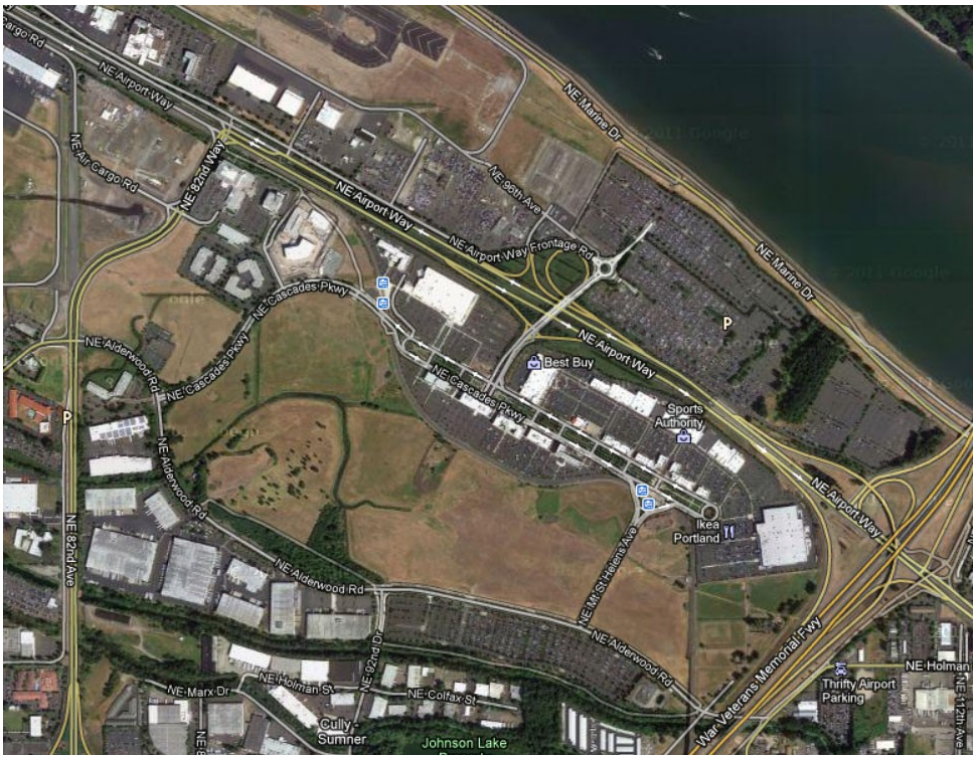
It is clear that the city's goal of 40% non-auto mode share for all trips to/from the district will be difficult or impossible to achieve, despite extensive subsidies and regulatory interventions. Moreover, even if the mode split goals could be achieved, the types of non-auto options that have been provided in the district could never be replicated anywhere else in the city.

Case Study: Cascade Station at Portland International Airport
Red light rail line

Cascade Station is a new shopping mall built just to the east of the Portland International Airport on the south side of Airport Way. It was originally envisioned as a TOD centered around the Red MAX line, which opened for revenue operation in September 2001. In fact, TOD was put forward by planners at the time as ***the primary*** justification for building the 5.5 mile light rail extension.

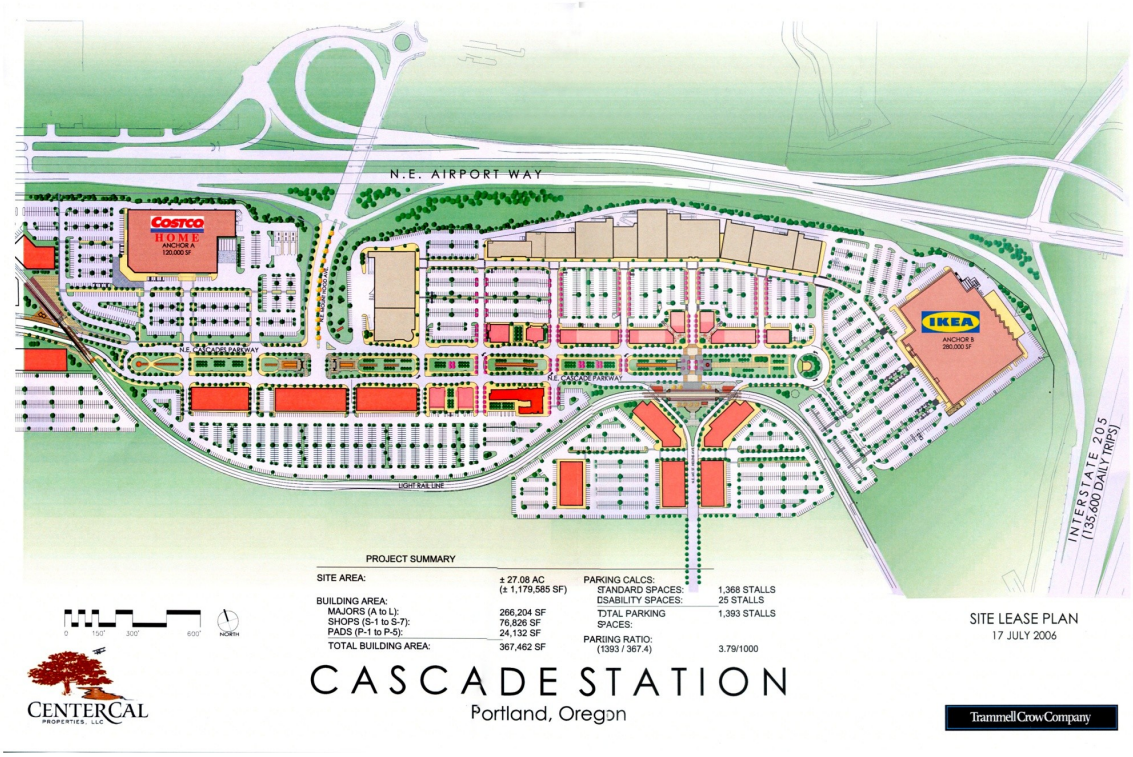
Cascade Station was considered an ideal site for TOD because it was flat, easily served by infrastructure, and completely vacant. Total acreage of the site is 120 acres. Bechtel Co. partnered with Trammel Crow development to build the MAX line in a public-private partnership, in exchange for an exclusive, 99-year lease to develop the site. However, for the first five years after MAX opened, no development took place. The primary reason was that the Portland City Council placed a 60,000 square foot limit on the size of any new retail establishments, in order to avoid "big box" development that would be in conflict with TOD principles. The market rejected this concept.

In February 2005, in a rare admission of a planning mistake, the City Council began the process to re-zoned Cascade Station to allow one large-format store of over 200,000 square feet, and one over 150,000 square feet. The anchor tenant turned out to be IKEA, which takes up 280,000 square feet.



Cascade Station TOD located at Portland International Airport. The large area to the south of light rail remains vacant 12 years after the opening of light rail. The anchor tenant – IKEA – is located at the Northeast corner.

Three years after the opening of the Red Line, Cascade Station remained just a dream.



In 2006, after the City Council changed the zoning code to allow large-format stores and parking, the market finally responded. Ground-breaking for IKEA (below) occurred in July 2006.

One of the many large-format stores now dominating Cascade Station.

IKEA is a short walk from the light rail station, but the train is irrelevant to most customers.

Travel behavior at Cascade Station during the peak shopping period
Friday, November 26, 2010
1:00 p.m. – 3:00 p.m.

	All trips, in and out	Avg. vehicle occupancy	Total passenger-trips	**Mode share**
Light rail	120	N/A	120	**2.2%**
Auto	4,803	1.725	8,286	**98.5%**
Bicycle	2	N/A	2	**0.2%**
Pedestrian	2	N/A	2	**0.2%**
Total	4,927		8,410	**100%**

Saturday, November 27, 2010
2:00 p.m. – 4:00 p.m.

	All trips	Avg. vehicle occupancy	Total passenger-trips	**Mode share**
Light rail	213	N/A	213	**2.2%**
Auto	5,087	1.825	9,284	**97.7%**
Bicycle	1	N/A	1	**0.01%**

Pedestrian	0	N/A	N/a	**0%**
Total	5,300		9,497	**100%**

The observations for this study were limited to the east end of Cascade Station, which is clearly delineated by a traffic light at the entrance to the project near the Airport Way overpass. The east end is substantially built out, it has its own dedicated light rail station, and it is dominated by retail stores that would be of interest to shoppers on Black Friday. Also, the access is entirely controlled; there are only two entrances for automobiles/cyclists/pedestrians, and one light rail station. Thus, every trip in and out of the project can easily be observed.

The observations show that notwithstanding the availability of light rail, the ***travel patterns at Cascade Station are indistinguishable from those at any suburban mall.***

Failed Assumption #3: If we artificially constrain parking through regulation and density mandates, drivers will be incentivized to drive less and/or get rid of their vehicles.

Reality: While it is certainly true that the shortage of parking in dense, geographically constrained urban centers such as Manhattan and San Francisco encourages higher rates of non-auto travel, the same strategy is likely to fare poorly when applied across a large region. The Portland experience shows that limiting parking at TODs leads to a number of undesirable effects: illegal parking, refusal by investors to build on parking-limited sites, lack of investment in retail, and risks to public health and safety due to inadequate access for fire and other emergency service vehicles.

Case Study: Center Commons, NE Portland
Blue, Red and Green MAX lines, bus service

Center Commons is a mixed-use, mixed-income TOD sponsored by Portland's urban renewal agency, Portland Development Commission. The project is located next to a light rail station close to downtown Portland. It has a parking ratio of 0.6 spaces per unit and residential density of 65 units/acre. Due to the inadequate parking, dozens of cars are parked illegally on a daily basis, and additional vehicles regularly park in adjacent neighborhoods, despite high levels of transit service.

Center Commons, located at NE 60th and Glisan, is adjacent to a MAX stop on the south side of I-84.

In 1997, ODOT owned this under-utilized 5-acre site on the south side of the Banfield Expressway (I-84), adjacent to a light rail station. It was sold to PDC in cooperation with Metro, to be re-sold to a private developer in accordance with TOD mandates.

The former DMV site became Center Commons, which opened in 2000.

Sidewalks are routinely blocked by cars (above and below) inside Center Commons due to the designed shortage of parking.

Failed Assumption #4: TOD development will work on a vast scale if we plan it in green fields where the lack of existing development will create a "blank slate" for the vision of planners.

Reality: Even when TOD neighborhoods can be built as new neighborhoods, individual reliance on the automobile does not go away.

Case Study:
Westside Light Rail

The Portland to Hillsboro light rail line opened on September 12, 1998. Westside MAX was unlike any light rail line previously built in America: it was deliberately routed through vacant land in Washington County with the expectation that it would be a catalyst for TOD. The Federal Transit Administration (FTA) recommended against full federal funding for the project, on the grounds that the population density along the planned route was so light that the line would not attract sufficient ridership to justify federal funds.

In desperation, TriMet offered to make a binding legal agreement to force all local jurisdictions along the corridor to re-zone neighborhoods near rail stations at urban densities to generate future riders – much as the *Plan Bay Area* seeks to do across the Bay region. The agreement also required Metro to adopt the "2040 plan", approved by Metro in 1995, which limits urban growth boundary expansion, constrains the supply of new roads, and mandates high densities along rail lines.

In agreeing to these conditions, TriMet was stating that the Westside MAX would not be just a people-mover; it would change the nature of development in Washington County. A leading promoter of this vision said at the time, ***"MAX is more than a transportation investment. MAX is part of a conscious strategy to shape regional growth by coordinating transportation investments with land use policies."***[i]

As such, evaluation of the project would be different than with the Eastside line. TriMet planners admitted: ***"The success or failure of the public's nearly $1 billion investment in the Westside [MAX] will be determined in large part by what happens around its 20 stations. Unlike the East side MAX line, a substantial amount of land around the Westside is primed for development."***

The agency boldly promoted this vision, garnering national attention. For example, *Newsweek* magazine gushed in May 1995: Portland is ***"building transit first, literally in fields, in the hope development will follow."***

What did it mean to create transit-oriented neighborhoods from cow pastures? According to agency commitments in 1996, ***"TriMet is asking local governments along the rail corridor to take action to make development physically more dependent on transit by limiting parking, constraining automobile access, widening sidewalks, improving pedestrian access, allowing a mix of uses, and higher density development."***[ii]

LUTRAQ

At roughly the same time Westside MAX was being planned, debate raged in transportation and land-use circles about long-standing plans to expand highway capacity on HW 26, and to build the Western by-pass. Both HW 26 and HW 217 were already experiencing congestion problems, and ODOT managers felt that more capacity was needed on HW 26 from Portland to Hillsboro, and that an entirely new alternative was needed to HW 217. The southern portion of the Western by-pass was planned to run through mostly farmland from the Hillsboro region down to Wilsonville.

The local land-use advocacy group 1000 Friends of Oregon strongly opposed highway expansion. In order to generate more intellectual ammunition, 1000 Friends designed a modeling exercise to test the hypothesis that extensive use of "New Urbanist" principles in Washington County would reduce driving so much that it would obviate the need for new highway investments. They raised substantial funds for the analysis, and retained consultants such as Peter Calthorpe and Parsons Brinckerhoff to calculate the transportation effects of high-density zoning on a county-wide scale. The project was named LUTRAQ, which stood for Land Use, Transportation, and Air Quality.

The analysis concluded that Westside TODs along light rail could achieve 28% transit use by commuters in the weekday morning peak period (if the use of modest highway pricing was also implemented), and that overall vehicle use would be reduced sufficiently that new highway capacity would not be needed. The study received substantial attention in international planning circles, and plans for new highway capacity were terminated by Oregon political officials.

Fifteen Years Later

Westside MAX is now in its 15th year of operation. The evidence shows that TOD has failed to meet the criteria laid out by its promoters in the early 1990s.

Perhaps the prime example is Beaverton Creek light rail station. This was considered by TriMet planners to be the ***single best TOD site*** on the entire MAX line, east or west. Planners predicted that the development potential of the 134 acre Beaverton Creek site included 2,000 multi-family dwelling units, a 200 room hotel, 1.1 million square feet of retail, office and campus industrial, and 6,000 parking spaces.[iii]

Unfortunately, reality intruded. Little of that development actually occurred. Planners neglected to factor basic market forces into their vision. NIKE bought up the 74 acres of forestland immediately north of the LRT line in 1995 to land-bank for future campus expansion, and that land remains undeveloped.

The six acres immediately southwest of the LRT station, owned by Specht Development, remain vacant. This is not because the owners are opposed to TOD; it's primarily the result of unrealistic zoning by Beaverton related to parking and density. According to a representative of the landowners,

Beaverton Creek light rail station – which TriMet planners believed would be the most successful TOD on the Westside light rail line – in construction, 1997. This project was designed with multi-story residential over retail with limited parking, a daring concept for suburban Portland.

Fifteen years after the opening of light rail, the ground-floor retail continues to go unleased. A lack of foot traffic and limited parking doomed the concept. Note that the land closest to light rail has never attracted any developers.

The mandated retail space at Beaverton Creek has had various tenants since 1998, including a pizza shop, a convenience store, and a computer service center, but none lasted more than a few years.

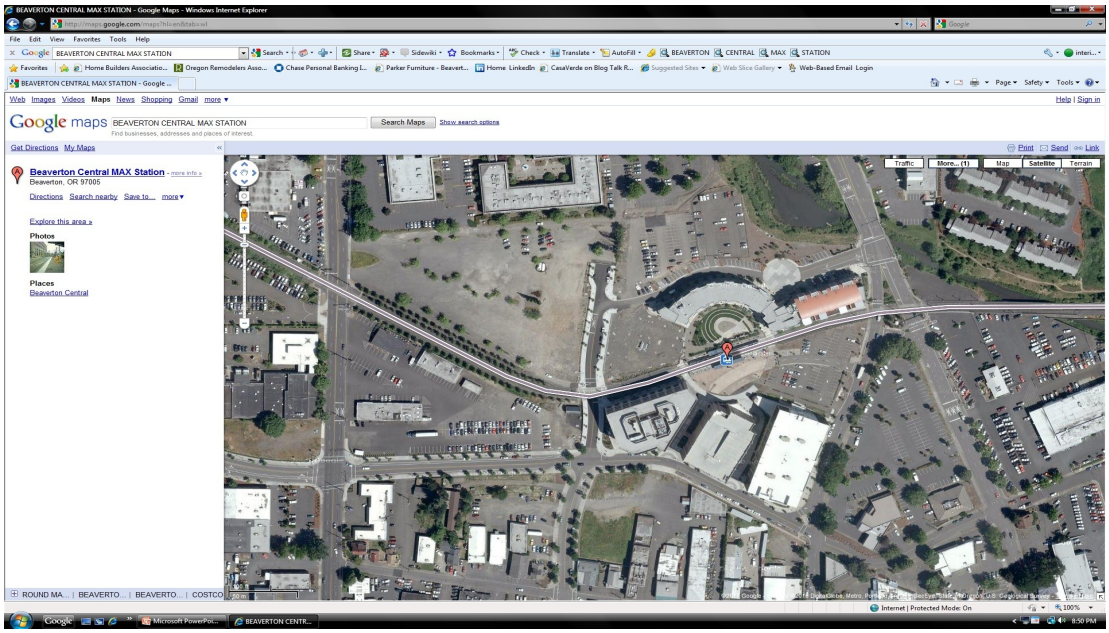
This six-acre site adjacent to Beaverton Creek light rail station should be ideal for a TOD, but stringent requirements for high density and limited parking has stifled investment.

"The primary reason it's never been developed is the ***mandated lack of parking.*** *The Beaverton zoning ratio is 2.7 spaces per thousand square feet of office space; the market rate is 4****. We think light rail is an amenity but it doesn't take the place of parking in the suburbs. Lenders aren't going to go for a project like that.*** *Moreover, the high-density requirements are going to be expensive."*[iv]

The residential complex to the south, LaSalle Apartments, was built as hoped for, and quite a few of its residents (13%) take light rail on a regular basis. But the ground-floor retail, always part of the TOD vision, was poorly thought-out. It was mandated by planners who had no financial stake in its eventual implementation, and as a result the plan ignored market realities.

The retail spaces fronting the LRT station have been consistently vacant for at least the past nine years. The reasons are simple. According to the leasing agent in 2002: *"It's been tough, to say the least; it's not one of those 'field of dreams' things where you just open the door and people come through.* ***If I had to summarize the problem in one word, it would be parking. When I show prospective tenants around, they say, 'where will my customers park?', especially on the spaces fronting light rail.*** *It would be nice to get Starbucks there, to become an anchor tenant of sorts, but they aren't remotely interested."* [v]

According to the current leasing agent, the retail spaces continue to be a challenge, and rents are available at a discount. They hope to attract service-type tenants such as lawyers or CPAs, people who don't rely on foot traffic, because there isn't any.[vi]



The Beaverton Round, one stop east of Beaverton Creek station, is one of TriMet's most celebrated TODs, but it has never fulfilled expectations for it by planners.

Architectural renderings for TODs are notoriously misleading. In this sketch for the Beaverton Round, light rail is featured, along with a pedestrian plaza and high density housing – but no parking. The actual project today is entirely dominated by parking.

The first two developers for The Round went bankrupt, as the concept was financially infeasible.

The partially-built Round in 1999. The Westside light rail line opened in 1998.

Contrary to early promises, parking proved to be necessary at the Round, as it is at all development projects.

Not only does the Round have substantial surface parking, it has the largest structured parking facility in Beaverton.

Water damage to the residential structure during the first bankruptcy required extensive repairs later. Unlike the predictions seen in architectural drawings, it occasionally rains in Portland.

Peak-Hour Counts at Westside MAX TODs
All passenger-trips in/out, 6:30 – 8:30 a.m., Weekdays
Midweek days, various months during 2008

	Total Passenger-Trips	Auto	Ped	MAX	Bike	
Beaverton Creek station	**4,510**	93%	2.2%	4.0%	0.7%	
Millikan Way station	**1,542**	88.9%	4.0%	6.0%	1.1%	
Elmonica station	**785**	91.3%	4.2%	3.5%	1.0%	
Quatama station	**1,050**	88.6	3.1%	7.8%	0.4%	
Hawthorn Farm (Intel)	**650**		94.9%	1.5%	3.4%	0.3%
Orenco Gardens	**689**	86.2%	3.0%	8.5%	2.3%	

Promoters of the Westside MAX hoped to fundamentally change the development patterns of Washington County, and thereby change travel behavior as well. While reduced auto use has been observed at many Westside TODs during peak commuting hours, reliance on private transport is not significantly different from more traditional neighborhoods. The LUTRAQ projection of 28% rail use for morning commute trips proved to be a fantasy; there are no Westside TODs where light rail use exceeds 9% in the morning peak, and at the largest employment centers such as NIKE and Intel, the use is below 4%.

Failed Assumption #5: Politically-imposed high-density mandates of TOD will have no adverse effects on the livability of neighborhoods.

Reality: Portland planners have long used the power of zoning to limit development on the urban fringe ("stopping sprawl"), which means they have had to concurrently ***mandate higher densities within the***

Urban Growth Boundaries. As a consequence, large private yards for new homes anywhere in the Portland region have essentially been outlawed.

Moreover, even older homes are at risk of losing their private open space. Under Portland's extensive urban renewal program, hundreds of acres of neighborhoods have been declared Urban Renewal Districts (thus by definition they are "blighted") and upzoned for higher density. This process pits neighbor against neighbor, as individual homeowners on relatively large lots sell out to developers who tear down the one-story bungalows and build five-story apartment bunkers right up to the lot line, blocking sunlight to adjacent properties and invading their privacy.

As the photo below demonstrate, Portland developers are also incentivized through SDC waivers and property tax abatements.

Portland planners consider large private yards near light rail to be a form of "urban blight" that must be filled in for the greater good. They are willing to subsidize high-density development in order to generate small increases in transit ridership.

It is doubtful that many Portland residents would consider this back yard to be a "problem" that needs solved with a 56-unit apartment building. These family-friendly yards are not available in new homes and are increasingly being lost in older neighborhoods due to Smart Growth mandates.

Failed Assumption #6: Transit-oriented development on a mass scale is financially sustainable.

Reality: TOD requires substantial subsidies for both the high-density land development and the accompanying transit infrastructure, and no region in the country has the capacity to pay for these expenditures. Contrary to popular mythology, ***density costs money***.

Urban growth restrictions make the cost of raw dirt far more expensive in Portland than in areas such as Texas where land development is relatively unconstrained. In addition, in highly regulated regions, the soft costs of lawyers, lobbyists, traffic consultants, and various exactions will make many forms of development infeasible without subsidies.

If a high-density, mixed-use project does get built, everything in the construction process will be more costly than a low-density project on the urban fringe. Any project requiring crane operators and iron workers will necessitate some of the highest unionized labor costs in America; the construction materials will be more expensive; safety/fire codes for residential on top of retail are complex and costly; and parking will be vastly more expensive if it requires going below-grade.

The chart below reflects the results of a Portland construction survey. Elsewhere in the country the costs would vary, but the basic correlation between density and price would not.

Cost of New Housing in Portland

	SFH	Plexes	Multi-Fam.	Mixed Use
Per person	$17,961	$20,407	$28,377	$31,488
Per Sq.Ft.	$74	$74	$91	$96

Building Cost by Density

Units per acre	Cost per sq.ft.
0-20	$62
21-50	$81
51-200	$104
200+	$125

Source: Portland Housing Cost Study, 1997

In addition to development costs, it is virtually impossible to pay for the transit service the many TOD projects being required by planners in Portland. The *Plan Bay Area* draft indicates that there will be financial challenges, and in Portland those challenges are already so severe that TriMet is likely to be insolvent by 2020.

As seen in the chart below, despite an all-funds budget increase of 125% since 2005, TriMet's service levels have dropped by 14%. Even with a dedicated (and growing) revenue source, TriMet's expenditures have risen so fast due to labor costs and rail transit construction that the agency has had to cut service five times in the past four years.

TriMet Financial Resources, 2004-2013 (*000s)*

	FY 04/05	FY 08/09	FY 10/11	FY 11/12 (est)	FY 12/13 (budget)	% Change 04/05-12/13
Passenger fares	$ 59,487	$ 90,016	$ 96,889	$ 104,032	$117,166	**+97%**
Payroll tax revenue	$171,227	$209,089	$224,858	$232,832	244,457	**+43%**
Total operating resources	$308,766	397,240	$399,641	$476,364	$465,056	**+51%**
Total Resources	$493,722	$888,346	$920,044	$971,613	$1,111,384	**+125%**

Annual Fixed Route Service Trends, 2004-2012

	FY 04	FY 06	FY 08	FY 10	FY 12	Change
Veh. revenue hours	1,698,492	1,653,180	1,712,724	1,682,180	1,561,242	**-8.1%**
Veh. revenue miles	27,548,927	26,830,124	26,448,873	25,781,480	23,625,960	**-14.2**
Average veh. speed - bus	15.8	15.8	14.9	14.7	14.6	**-7.6%**
Average veh. speed - L. Rail	20.1	19.4	19.3	19.4	18.4	**-11.5%**

Source: TriMet annual service and ridership report; TriMet budget documents and audited financial statements, various years.

Conclusion

The draft *Plan Bay Area* attempts to reduce VMT-related emissions through regional land-use regulation, parking restrictions, minimal roadway expansion, and large transit subsidies. It is largely modeled on a Portland regional plan that has already been in effect for over 30 years and has failed. One of the most important metrics for such plans is daily VMT per person, yet VMT has barely declined in Portland since 1990 (from 18.8 VMT per capital to 18.7 in 2011). Since 2000, VMT has dropped more significantly across the Columbia River in Vancouver, WA, yet Vancouver has no light rail and relatively modest growth containment policies. If Smart Growth policies are actually effective at changing travel behavior, these trends would be reversed.

Daily VMT per person
Portland and Vancouver since 2000

	2000	2011	% change
Portland	20.0	18.8	**-6%**
Vancouver	21.8	17.6	**-19%**

Source: Metro, http://library.oregonmetro.gov/files//dailyvmt-1990-2011-portland-vancouver-us.pdf

In other key metrics, such as transit use, TriMet is losing mode share even in its most natural market, downtown Portland, despite growing levels of subsidies.

The Bay Area market share for SOV travel has been 68% for 20 straight years, while transit share has stagnated at 10% for the same period. There is little reason to think that the types of interventions contemplated in the *Plan Bay Area* will nudge those numbers to any great degree.

On a more optimistic note, perhaps the most interesting shift over the past twenty years has been the increase in working at home: from 3% to 6% in the Bay Area region. Given the explosion in high-speed wireless communication technologies in recent years, and the declining real costs of telecommuting, Bay Area officials should consider dropping the costly planning emphasis on land-use controls and transit, and embrace a strategy of encouraging remote employment. Significant VMT reductions could be achieved simply by employees working from home one or two days per week, at very little public cost.

i G.B. Arrington, **Beyond the Field of Dreams: Light Rail and Growth Management in Portland**, 1996

ii IBID

iii IBID

iv Todd Schaefer, Specht Development, interview with author, April 2002.

v Andy Sisavec, Norris, Beggs and Simpson, personal communication with author, April 2002.

vi Representative of Norris and Simpson, interview with author, September 2008.