Appendix D: Background to Development of 2040 Growth Concept

RUGGOs and the 2040 Growth Concept

The Regional Urban Growth Goals and Objectives (RUGGOs) were developed beginning in 1989, when concerns were voiced about long-term management of the urban growth boundary for the region. While the urban growth boundary was designed to be moved as growth occurred within its historic bounds, how that growth occurred was of great interest. RUGGOs, developed in cooperation with local governments, provided an articulation of the directions the region wanted to take as it grew. (The Regional Framework Plan has incorporated RUGGOs with some amendments to address policy and consistency issues.) When developed, RUGGOs included such goals as maintaining a compact urban form, creating a balanced transportation system and assuring that market-based preferences are not eliminated by regulation. However, these statements, while laudable, did not provide a blueprint for how to achieve these goals. Local governments in particular were concerned about how these statements would be applied to them. RUGGOs were adopted with the provision that no goal would be directly applicable to a city or county in the region, and that a specific articulation of the goals would be developed to assess the stated directions. From this the Region 2040 project began.

Region 2040

Region 2040 began as a way to define the directions established by the Regional Urban Growth Goals and Objectives. It was also intended to determine how Metro should best manage its urban growth boundary, and, ultimately, provided a major contribution to the Regional Framework Plan.

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Public values and tradeoffs

The first step was to gauge people's values and preferences about their region. Through a combination of random sample surveys and an extensive public involvement process, Metro learned that there is strong support for investment in a mixture of transit systems instead of funding roads alone, and a preference for growth in developed areas over new areas. However, the public also indicated a strong preference for maintaining neighborhoods, and expressed concern regarding increases in density. While people held negative views about density increases that change the character of neighborhoods, they were willing to accept limited changes in their neighborhoods and increased development adjacent to transit and existing commercial development.

Opinions about the tradeoffs associated with managing growth covered the spectrum, indicating that a successful growth management policy must include a range of options. There was most agreement on the tradeoff involving building roads for cars versus building additional transit systems, with only 14 percent saying building roads was significantly more important than transit.

Creating and analyzing the alternatives

Based on research and public comment, Metro developed a status quo "Base Case" scenario and three growth concepts, then analyzed them for impacts on land consumption, travel times and distances, the effects increased density would have on air quality, open space, and different types of urban forms.

The Base Case assumed growth would occur if development took place in land-use patterns similar to that experienced in the region from 1985 to 1990. An important component of the Base Case was that it looked at the land supply and demand in five-year increments. When there no longer was a 20-year land supply within the UGB, the boundary was assumed to move outward. In addition, when congestion occurred, roads were widened up to a limit of five lanes for arterials and six for freeways.

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BASE CASE

Continue Past Trends

354,000 acres in UGB

What we examined:

Urban Form: Greatest expansion of UGB; continuation of development patterns occuring between 1985 and 1990.

Major Roads: 10,780 lane-miles.

Transit: 9,575 daily service-hours, serving almost 47 percent of households.*

What happened:

Congestion: Slightly less than 9 percent of roadways having significant peak-hour congestion due to greatest amount of road construction.

Transit ridership: 266,920 daily riders.

Trip length: Greatest increase in total vehicle miles traveled (VMT); VMT per capita within the UGB would increase 5% over 1990.

* From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Figure 1 Base Case

Base Case findings

The Base Case, in order to accommodate forecast growth consistent with the development patterns of the 1970's and 1980's, needed the expansion of the urban area by about 121,000 acres – an increase of about 70 percent from the current UGB. Of the total expansion, about 98,000 acres were considered to be vacant, buildable acres, of which about 64,000 acres were zoned exclusive farm use. However, only about 50 percent of the added land would be developed, as the pattern of development within the current UGB in the 1980's had a similar amount of privately owned parcels which were undeveloped. About 70 percent of the housing were assumed to be single family detached (the same as in 1990) and the remaining 30 percent assumed to be multi-family.

This development pattern would mean that the current UGB would expand to North Plains, extend halfway to Sandy, Newberg and expand several miles northwest on Highway 30 towards Scappoose. Assuming that this land would be serviced by adequate roads, sanitary sewer and water, employment was forecast to more outward as well, bringing jobs to those living in outlying areas, but requiring more people to drive and possibly making inner city residents less accessible to jobs. Residential and employment development would be at low densities with a substantial majority (64 percent) developed in suburban, auto-oriented development patterns. Reductions in the population and vitality of the central city were expected with this pattern as jobs and population moved outward. Comments from law enforcement, fire safety and emergency medical response representatives from the region concluded that because of the substantial increase in service costs and response times, the Base Case development pattern should be avoided.

The Base Case assumed the most amount of roads built and assumed that three new freeways – the Sunrise Corridor, the Westside Bypass and the Mt. Hood Parkway would be built. Forecasted congestion resulting from the land uses and with added roads in the Base Case was about the same as the recommended alternative, but with much fewer roads built in the recommended alternative and much higher transit use in the recommended alternative.

While most areas added to the UGB in the Base Case were assumed to have a somewhat balanced mix of housing, jobs and services, the low development densities made transit service impractical. As a result, auto travel increased and vehicle miles traveled per capita grew by 5 percent over 1990 levels.

The non-auto share of regional travel for the Base Case was about 7 percent of all trips – lower than any of the growth concepts. Bicycle and pedestrian travel in the Base Case dropped to less than 5 percent of all trips, a decrease from the 1990 share, and less than any of the other growth concepts.

The Base Case also had lower transit ridership than any of the other three growth concepts. Radial high-capacity transit routes, such as the Banfield and Westside MAX lines, drew average weekday boardings of only 13,100 to 26,100 riders, which is lower than today's daily ridership. Furthermore, the Base Case had the lowest percentage of households and the lowest percentage of employment served by transit, 47 percent and 79 percent respectively.

The low transit ridership in the Base Case reflects both the dispersed development pattern assumed in the modeling and the absence of pedestrian enhancements and restricted parking that were assumed for the other three concepts. These factors were excluded from the Base Case to more accurately reflect the relative ease of parking that typically accompanies low density development.

Concept A findings

Concept A was based on "growing out" by adding land for residential development to the urban growth boundary. Under Concept A, existing neighborhoods did not experience significant change, and new ones were added both inside and outside the current UGB. In addition, Concept A expanded the transit and highway systems, had the highest congestion, highest air pollution, lowest transit ridership, most dispersed population and highest cost for water service.

Concept A included a more modest expansion of the urban area when compared with the Base Case. It assumed a UGB expansion of about 25 percent, about 55,000 acres, of which about 18,000 acres are zoned for exclusive farm use. Single family lots were assumed to be in the 7,500 - 9,000 square foot range, (about 10 people per acre). Existing vacant single family zoned areas were assumed to have no increase in density from existing zoning. About 74 percent of the housing would be single family with 26 percent multi-family. bout sixty-two percent of the residential development was assumed to occur in relatively low density development with little or no transit service because of the cost of service. Along transit corridors, it was assumed that transit service would be frequent and people would have easy access to it. A few main streets and other mixed use developments were assumed, particularly in areas where a high level of transit service was likely. Almost half of the employment growth was forecast to occur in low density areas away from transit and not within city centers. About 4,500 acres of land within the current UGB were assumed to be acquired as new public open spaces.

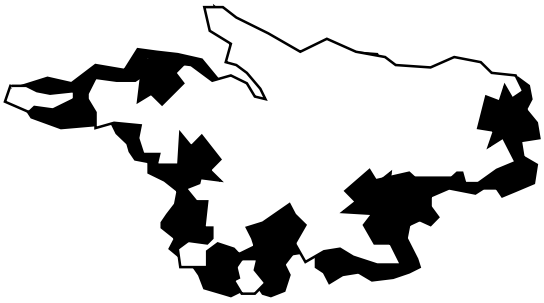
The road system assumed for Concept A resembled the Base Case in that the three freeways were assumed to be built, but slightly fewer lane miles of other road improvements were included. A radial, high capacity transit system centered on downtown Portland with service to the south, north east, west,

southwest and two to the southeast were included. Detailed transportation modeling results from Concept A were similar to the Base Case results. However, compared to the Base Case, the scale of the regional road network was reduced, with a total of 814 additional lane miles added to the existing network. This represents almost a 9 percent increase over 1990, compared to a 16 percent increase in the Base Case. Total transit service hours nearly tripled the 1990 level of 4,983 hours (12,300 daily service-hours).

CONCEPT A

Expand the UGB

284,000 acres in UGB



What we examined:

Urban Form: Significant expansion of the UGB. New growth at urban edge develops mostly in the form of housing.

Major Roads: 10,190 lane-miles.

Transit: 12,322 daily service-hours, serving 49 percent of households.*

What happened:

Congestion: Worst of the four growth concepts, with nearly 12 percent of roadways having significant peak-hour congestion.

Transit ridership: 372,390 daily riders.

Trip length: Total vechicle miles traveled (VMT) more than double 1990 levels; no change to VMT per capita within UGB.

* From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Figure 2: Concept A

Despite these significant improvements to the regional system, Concept A experienced the worst congestion, second lowest transit ridership and the second highest total vehicle miles traveled. While Concept A shows region-wide arterial street congestion, the worst congestion was along Washington County's widely spaced suburban streets. The more closely spaced and fully integrated network of arterials in East Portland and urban Multnomah County were the least congested.

Much of the increase in congestion and vehicle miles traveled was attributed to the assumed separation of homes and businesses. Most areas added to the UGB in this concept were single-family neighborhoods, with few nearby services or jobs. As a result, the arterial streets linking these new neighborhoods to jobs and services were much more congested for longer time periods than in the other growth concepts. The mostly single-family neighborhoods added along the urban fringe in this concept would be difficult to serve with transit, and the lack of nearby services and jobs discouraged bicycle and pedestrian travel. Of the four growth concepts, Concept A had the second smallest share of bicycle and pedestrian trips as a percentage of total person trips.

Concept A had the second lowest percentage of households (49 percent) and the second highest percentage of employment (83 percent) served by transit. It also had the second lowest daily transit

ridership (372,400) of the four growth concepts. Ridership was highest along transit corridors and main streets and to regional centers. The lowest ridership levels were in low-density residential areas with limited service. Compared to the other concepts, transit coverage was somewhat more limited in Concept A, reflecting the difficulty of serving new low-density neighborhoods along the urban fringe.
The results of the transit ridership analysis showed that restricting the UGB expansion area to include only residential growth created major travel demand into the region for employment and for daily services. These results underscore the importance of balancing jobs and housing in communities and centers as a means to shorten the distance traveled between destinations throughout the day.

Concept B findings

Concept B was oriented to "growing up" by increasing densities within the current boundary. The primary feature of Concept B was that 45 percent of new development was accommodated in centers and corridors with high transit levels. In turn, those center and corridors were designed with higher densities. It would require a shift for more multi-family housing units and smaller single-family lot sizes. Concept B would, by design, conserve the highest number of natural areas, open space (about 7,000 acres) and rural land. It would have the most transit ridership; however, it also would have the most light rail constructed and the most hours of transit service.

In order to accommodate the forecasted growth, while not moving the UGB, Concept B assumed a single family/multi-family split of 60 percent single family, 40 percent multi-family. The average lot size of newly created lots was assumed to be 5,800 square feet (as compared with 7,300 in Concept A). Residential densities would average 12 dwelling units per acre. Residential redevelopment was assumed to occur at rates double those of Concept A (11,300 acres of redeveloped lands compared with about 6,00 acres in Concept A or C). Mixed use areas - the Central City, regional centers, town centers, main streets, were assumed to accommodate much more growth – both housing and jobs – than in other concepts. Concept B also assumed the most transit improvements and no freeway additions.

Concept B had the fewest roadway improvements, with less than a 5 percent increase in lane-miles over the 1990 level. Total transit hours of service for Concept B were expanded to 13,192 hours – almost triple the 1990 level, but only 7 percent more than Concept A. Concept B accommodated growth through development of existing land and infill rather than through urban growth boundary expansion.

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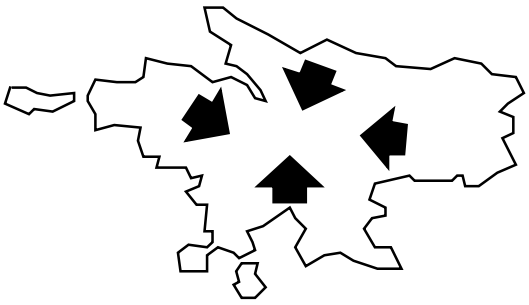
Despite having the highest level of transit, bicycle and pedestrian travel of any growth concept, Concept B had the second highest level of congestion. More than 11 percent of all major urban roadways were severely congested compared to less than three percent in 1990. Freeway congestion in this concept was limited to isolated bottlenecks. Most of the congested freeways were flanked by equally congested arterials. Vehicle miles traveled dropped below 1990 levels by 12 percent, the lowest of any growth concept.

CONCEPT B

No Expansion of UGB

234,000 acres in UGB



What we examined:

Urban Form: No UGB expansion; growth accommodated through development of existing land and infill throughout the region.

Major Roads: 9,820 lane-miles.

Transit: 13,192 daily service-hours, serving 61 percent of households.*

What happened:

Congestion: Slightly less than Concept A, with significant congestion on more than 11 percent of major roadways.

Transit ridership: Highest of Concepts A, B and C, with 527,758 daily riders.

Trip length: Greatest reduction in VMT per capita within the UGB, dropping 12 percent from 1990.

* From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Figure 3: Concept B

Concept B had the highest percentage of households (61 percent) and the highest percentage of employment (87 percent) served by transit. Increased bus service drew more riders than in the other growth concepts, especially along main streets and transit corridors. As in Concept A, bus ridership was highest east of the Willamette River. However, with the exception of a few transit corridors and main streets, bus service west of the Willamette River was more difficult to provide because of topography and lower household and employment densities.

Radial high-capacity transit corridors into downtown Portland had significantly greater daily ridership than circumferential routes or extensions to points along the urban edge. The major radial corridors, such as the Banfield and Westside MAX lines, ranged from 25,600 to 81,000 daily boardings. Circumferential routes, such as along Highway 217, ranged from 6,400 to 23,100 daily boardings.

The significant growth in transit, bicycle and pedestrian travel, along with predicted widespread congestion in Concept B, underscores the importance of having land uses easily served by transit and a balance of road and transit improvements.

Concept C findings

Concept C combined aspects of A and B, but accommodated about one-third of the growth in neighboring "satellite" cities. These areas would become relatively self-sufficient communities with an even mix of jobs and housing. About two-thirds of the people who live in the satellite cities would work there also. Concept C assumed that the UGB would increase by about 23,500 acres, about half of these lands currently zoned for exclusive farm use. The split of single family to multi-family was assumed to be 69/31, about that of 1990 with an average new lot size of 8,300 square feet (about that of 1990). Because a substantial amount of the growth was assumed to occur outside the region, accommodating expected growth was relatively easy. Concept C also assumed that sufficient jobs to accommodate the population increases would occur within the satellite cities. Concept C would achieve the lowest congestion and have the second highest transit use. Cost for developing Concept C would be high and implementation difficult.

Unlike the other concepts, Concept C directed a substantial number of jobs and houses to existing neighboring "satellite" cities just outside the current UGB. This growth strategy relied on green corridors to limit access to, and minimize urban development pressure on, resource lands adjacent to transportation corridors that link neighboring towns to regional centers. Green corridors also helped to prevent neighboring cities from expanding toward the Metro UGB, and therefore helped to maintain distinct communities.

In general, Concept C performed well in several categories because of a smaller population increase in the metro area, with a slight reduction in vehicle miles traveled, somewhat reduced trip lengths over current levels and relatively efficient roadway speeds. Congestion levels were the lowest of the four growth concepts, with slightly more than 8 percent of roadways having significant peak-hour congestion. Transferring one-third of development and population growth to neighboring cities outside the UGB accounted for the relatively lower congestion level. Vehicle miles traveled per capita within the UGB dropped by nearly 4 percent over current levels compared to 12 percent in Concept B. However, Concept C showed the largest increase in VMT per capita outside the urban areas as a result of traffic between the metropolitan area and satellite cities.

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Of the four growth concepts, Concept C had the second largest share of bicycle and pedestrian trips as a percentage of total person trips, accounting for more than 5 percent of all trips. It also had the second highest percentage of households (58 percent) and the second lowest percentage of employment (83 percent) served by transit.

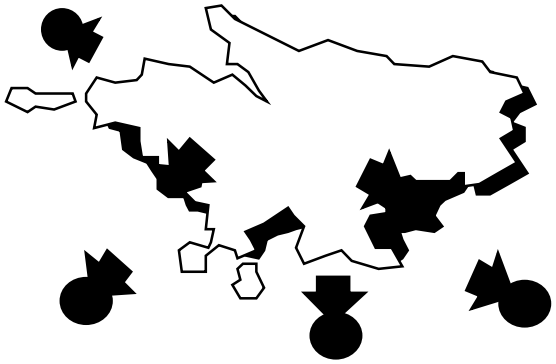
The modeling projected more than 437,000 daily transit riders in Concept C, exceeding Concept A, but significantly less than the nearly 530,000 riders projected for Concept B. Radial high-capacity transit corridors within the main urban area of Concept C would have higher ridership than Concept A, but less than Concept B, with daily boardings ranging from 27,000 to 59,000 riders. Circumferential light-rail routes on Highway 217 and I-205 had lower ridership, with about 12,000 daily boardings.

The evaluation of Concept C found that if growth was directed away from the metropolitan area and to neighboring cities, there would be less need for transportation improvements in the metropolitan area, but more need for transportation improvements in the tri-county area. Some satellite cities have minimal connections to the main urban area and would require major investments to provide adequate access. Other towns, such as Sandy and North Plains, have major highway connections that have already promoted suburban development. As a result, Concept C raises key policy issues about the mix of urban travel routes and rural land uses. Concept C analysis also points to the need to direct regional growth strategically, such as placing jobs near housing and providing office, retail, other commercial services and housing in higher-density, mixed-use centers that are pedestrian-friendly and served by transit.

CONCEPT C

Disperse Growth to Satellite Cities

257,000 acres in UGB



What we examined:

Urban Form: Slight expansion of the UGB, with growth encouraged in centers, corridors and neighboring cities.

Major Roads: 10,327 lane-miles.

Transit: 12,553 daily service-hours, serving 58 percent of households.*

What happened:

Congestion: Least of the three concepts, with slightly more than 8 percent of roadways having significant peak-hour congestion due to transfer of development and dispersal of 1/3 of population to neighboring cities.

Transit ridership: 437,178 daily riders.

Trip length: Slight reduction in VMT per capita within the UGB, with a decrease of nearly 4 percent over 1990.

* From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Figure 4: Concept C

Following is a summary table as well as statements describing what technical conclusions were reached concerning the alternatives.

Table 1: Comparison of 1990 Conditions and Growth Alternatives

Category	Measures	1990	BC	A	B	C
Buildable Acres	Central City	39	48	67	100	67
(No estimate of	Regional Centers	134	273	369	507	403
satellite acres)	Sub Regional Centers	36	41	218	323	151
	Commercial Nodes	998	2,285	4,229	5,322	4,338
	Main Streets	7	8	127	791	342
	Transit Corridors	460	4,925	7,462	9,370	5,955
	Other	52,063	49,181	49,353	48,653	49,580
	New UGB	0	98,214	42,500	0	17,738
	Total	53,736	154,974	104,325	65,066	78,574
Distribution	Central City	7%	5%	5%	7%	6%
of Development	Regional Centers	1%	1%	2%	4%	4%
	Sub Regional Centers	1%	1%	1%	2%	1%
	Commercial Nodes	7%	9%	15%	17%	13%
	Main Streets	1%	1%	1%	3%	2%
	Transit Corridors	9%	18%	14%	21%	12%
	Other	71%	52%	46%	42%	44%
	New UGB	0%	8%	13%	0%	2%
	Satellites	3%	5%	5%	5%	16%
Location of Growth	% of growth in UGB	100%	93%	87%	100%	82%
	% of growth accom. by redevelopment	0%	0%	6%	18%	8%
	EFU Conversion (Acres)	0	63,900	17,200	0	11,400
	% of Employment on Industrial land	32%	43%	53%	33%	53%
Zoning	Single Family	59.0%	61.0%	57.0%	46.5%	51.5%
	Multi-Family	11.0%	11.0%	1.0%	5.0%	1.5%
	Commercial	7.0%	8.5%	1.0%	1.0%	1.0%
	Industrial	19.5%	16.0%	12.0%	10.0%	14.0%
	Mixed Use (commercial and residential)	0.0%	0.0%	24.0%	30.5%	27.0%
	Parks/Open Space	1.5%	1.0%	3.0%	5.0%	3.0%
	Public Facilities	2.0%	2.5%	2.0%	2.0%	2.0%
Density	People per Acre	8.9	7.9	9.8	12.4	9.2
	% High Density (centers) + 50 persons/acre	8.9%	7.4%	7.9%	11.2%	13.6%
	% Medium Density (corridors) 20-50 persons/acre	17.6%	29.1%	30.1%	43.0%	32.3%
	% Low Density (other)less than 20 persons/acre	73.7%	63.5%	61.9%	44.0%	54.2%
Housing	Single Family / Multi Family (percent)	70/30	70/30	74/26	60/40	69/31
Transportation	Average VMT per Capita	12.4	13.04	12.48	10.86	11.92
(all measures inside Metro UGB)	Mode Split: Auto/Transit/ Walk-Bike (percent)	92/3/5	92/3/5	91/4/5	88/6/6	89/5/6
	Lane Miles	5,304	6,777	6,377	5,557	6,116
	Transit Service Hours	4,965	9,575	12,322	13,192	12,553
	Congested Roadway Miles (PM peak hour)	150.5	505.6	682.0	642.6	403.9
Air Quality	CO Winter (Kg/day)	835,115	614,451	613,537	579,579	569,091
	CO Summer	574,708	528,601	525,133	496,017	487,188
	HC Summer	177,857	70,700	69,810	66,375	65,745
	NOx Summer	80,452	94,024	90,987	83,817	86,988
Water	Drinking Water Costs			Moderate	Low	Moderate
	Wastewater Costs			Moderate	Moderate	High
	Stormwater Costs			Moderate	Moderate	Moderate

The following summarizes the findings and directions that were concluded after the alternatives analysis. These conclusions form the technical basis for construction of the Growth Concept.

Land use

The land-use pattern inside the urban growth boundary is more important than the size or shape of the urban area. However, a compact urban region was generally less expensive to serve; required less transportation infrastructure; directed reinvestment to under-used areas inside existing urban areas; preserved more open space, farm and forest land; and resulted in better air quality.

Off-street parking is a major user of land in commercial areas.
Single-family homes and lots consume the most land. Small changes in new lot sizes can have substantial effects on the amount of land needed to accommodate growth.

Transportation

Overall vehicle miles traveled would increase in all the growth concepts, although vehicle miles traveled per capita would decrease under the more compact forms.

Land-use policies are essential and effective in reducing vehicle miles traveled, in encouraging non-auto transportation and in reducing congestion.

A greater mix of uses and strong regional centers resulted in less congestion and more transit ridership.

New regional highways should be evaluated on their ability to support planned regional centers.

A radial light-rail transit system functions as the backbone for regional transit and shapes the region's land-use form.

Transit success is linked to the ease of pedestrian travel, and pedestrian travel is made more practical by transit.

Pedestrian trips should be considered a basic element in virtually all urban designs.

Trips made by bicycles are important and should be treated quite differently than trips made by pedestrians.

Arranging transit and higher-density land uses together resulted in better light rail and overall transit ridership using fewer service hours.

Parking limitations, pedestrian amenities and land-use considerations were more effective in reducing vehicle miles traveled and increasing transit ridership in compact, more densely developed urban areas rather than lower-density land uses.

Areas with many small- and medium-sized arterials and closely connected local streets accommodated growth with less congestion than areas with larger, more widely spaced arterials and less connected local streets. Dense, well-connected street networks also benefited transit, pedestrian and bicycle travel.

Green corridors limited access to, and minimized urban development pressure on, rural lands adjacent to transportation corridors that linked neighboring towns to the nearest regional center. Green corridors also helped maintain distinct communities by preventing neighboring cities from expanding toward the Metro UGB.

Identifying urban connectors through rural areas minimized the impact of urban travel on rural land uses.

The density of the regional network should be expanded to accommodate areas of increased population and employment growth.

The assumptions of prior transportation plans should be re-evaluated, such as re-examining congestion and developing an updated plan around currently acceptable congestion levels.

More compact urban forms and land use patterns and increased opportunities for transit, bicycling and walking will contribute to significant reductions in vehicle emissions.

Urban centers worked best when connected by a set of multi-modal corridors that accommodated auto, transit, bicycle and pedestrian travel to varying degrees.

Employment areas and industrial areas worked best with more roadway connections, especially truck routes, and better access to the regional freight network via air, truck, rail and water.

Air quality

Forecasts for transportation-generated air pollution in the Base Case and the growth concepts show significant decreases in tons per day from 1990 levels for hydrocarbons and carbon monoxide. That type of air pollution is relatively small compared to total emissions.
Air pollution forecasts for the Base Case and the concepts show increased nitrogen oxides compared to 1990, although the Concept B provides a significant reduction from the base case.
In future years, because of vehicle emission improvements, non-transportation sources of hydrocarbons will tend to increase as the population also increases.

Social stability

Strong communities with a sense of place tend to be safer places for residents.
Compact areas can have faster emergency response times.
Effective affordable housing programs should be a component of urban growth management.

Employment

Estimates of supply and demand for employment land suggest that some areas are out of balance.
Suburban employment is likely to increase.

Housing

A balance of jobs and population for many sub-areas of the region does not exist today. The current Metro housing rule requires that one-half of land zoned residential must be for multi-family housing. This is more than would be built in any of the concepts, except for Concept B.
There are areas within the region with too little or too much land for single-family or multi-family housing.

Water, sewer and stormwater

Concept B has the lowest costs for water and sanitary sewer service.

Stormwater costs are indistinguishable among the concepts.

Concentration of development does have limitations. When growth can be accommodated using existing infrastructure, or incorporating replacements of infrastructure that has outlived its useful life, redevelopment and compact development can be substantially less expensive. When redevelopment requires major replacements of infrastructure that is still useful, it can become more expensive than development of vacant land.

Values

People realize this region is unspoiled compared to most other metropolitan areas. Because of this, they are apprehensive about change.

People love the accessibility of the car but think that transit, biking and walking should be made easier and more convenient.

People don't want any more density than is necessary in their neighborhoods.

The nature of growth

Much of the growth will come from in-migration.

The average age of the population will increase substantially and its ethnic diversity will increase.

Slowing growth

Slow-growth policies based on building limits have been unsuccessful elsewhere and appear to be counterproductive.

Current state law prohibits regulations that would stop or slow growth.

A good strategy is to respond to specific problems resulting from growth. This may have the effect of slowing growth compared to policies that simply accommodate all growth regardless of the costs.

Satellite cities

The effect of pushing growth into satellite cities whether existing or new is not likely to be an effective option. Creation of new cities is very difficult and existing cities outside the metro area are likely to be greatly impacted by this approach as are the connecting roads. Accordingly, Metro should work with other cities as neighbor cities in a cooperative approach and drop satellite city policy.

General Conclusions

It would be difficult to make substantial expansions to the urban growth boundary. The land consumption patterns of the last generation cannot continue in the future. This means that substantial changes in urban development will occur.

We should seek a jobs and housing balance.

We must conserve connections with the natural landscape.

Equitable financing of public facilities should be a prerequisite for development.

Determining the Public's Values

Once the growth concepts were analyzed for technical aspects, Metro went back to the public with the results of the analysis and some important questions. Every household in the region (approximately 500,000) received a mailer that included a survey consisting of the following four questions. More than 17,000 households returned completed surveys.

Following are the results of this survey:

Should we reduce the average new residential lot size from the current 8,500 down to 7,000? See Figure 5.

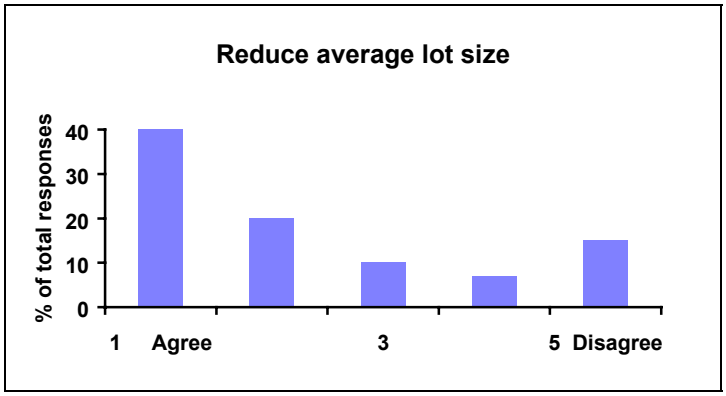


Figure 5: Reduce average lot size graph

Should we decrease the number of parking spaces allowed for retail and commercial development? See Figure 6.

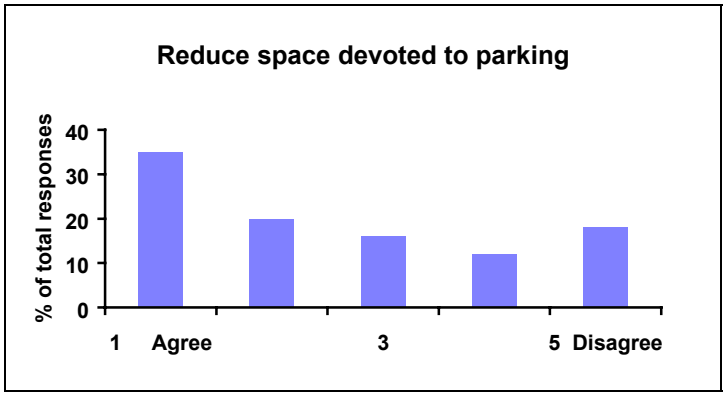


Figure 6: Reduce space devoted to parking graph

Should we increase the amount of residential and retail development along bus lines and light-rail stations? See Figure 7.

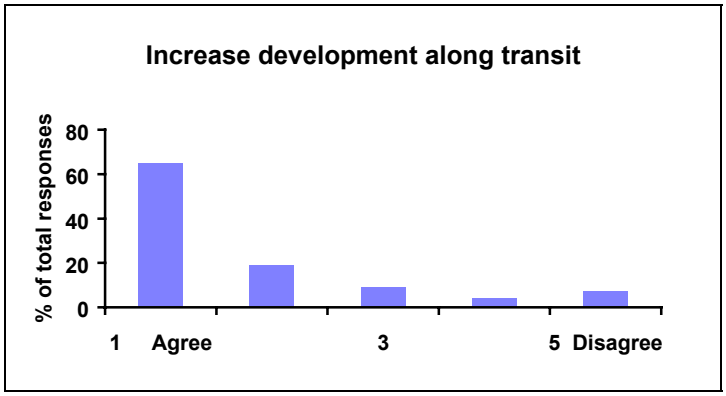


Figure 7: Increase development along transit graph

Should we encourage more growth in city centers and the redevelopment of land for more compact growth? See Figure 8.

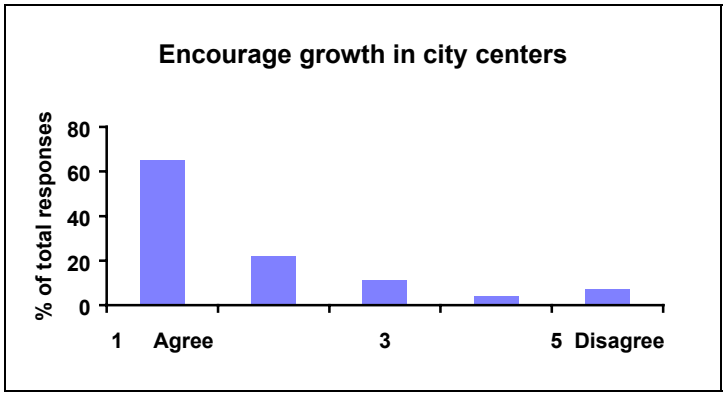


Figure 8: Encourage growth in city centers graph

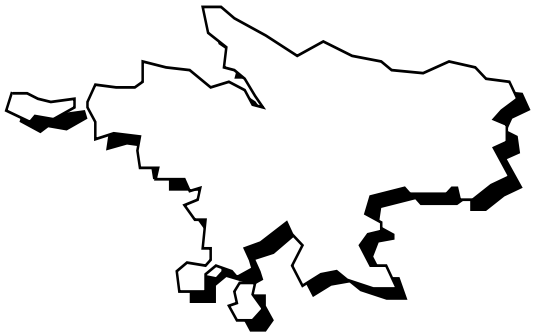
Metro merged insights from the technical analysis with the survey results to create a recommended alternative, which was a hybrid of the growth concepts.

Assessing the Growth Concepts – Concepts A, B and C – was a learning process. Judging detailed, different land use and transportation alternatives allowed technical analysis and an airing of public views about what was valued and what wasn't.

From the public comments and technical analysis of the alternative growth concepts, a "Recommended Alternative" was crafted.

Recommended Alternative

*248,000 to 252,000 acres**



What we examined:

Urban Form: Growth encouraged in centers and corridors with increased emphasis on redevelopment and infill.

Major Roads: 10,483 lane-miles.

Transit: 11,966 daily service-hours, serving 63 percent of households.**

What happened:

Congestion: Slightly more than Concept C, but less than the Base Case and Concepts A and B. Significant congestion on less than 9 percent of major roadways.

Transit ridership: Most ridership with least transit service hours. Higher than Concepts A, B and C, with 570,000 daily riders.

Trip length: The second lowest reduction in VMT per capita within UGB, dropping almost 11 percent from 1990.

* The Metro Council approved 18,579 acres as Urban Reserves in March, 1997 for a total of 251,246 acres.

** From Region 2040: Recommended Alternative Technical Appendix "Intra-UGB Selected Performance Measures" table.

Figure 9: Recommended Alternative

Design of this alternative enabled the development of a growth concept better able to respond to public and technical concerns. For example, the Recommended Alternative assumed that some additional urban growth boundary expansion would need to be coupled with more compact and efficient use of lands within the current urban growth boundary. In addition, some of the more ambitious transit and road improvements were scaled back and industrial designations were refined.

In comparing the Recommended Alternative with Concepts A, B and C, we find that the Recommended Alternative, as a blend (and having learned from A, B and C) is expected to have superior performance. It is more compact than any alternative except B, affecting less farm and forest lands or other rural uses. Analysis also shows that the Recommended Alternative has less vehicle miles traveled than any alternative except C (which exported 1/3 of the growth to neighboring cities), has less congestion that any alternative except C (again which has 1/3 less growth to accommodate). The Recommended Alternative achieves this performance inspite of building fewer miles of roads, thus providing better performance for less public dollars. The Recommended Alternative also has the best air quality and the least cost for providing roads, water, sewer and stormwater facilities except Concept B. The Recommended Alternative's compact urban form provides a less costly urban form that all other alternatives except Concept B.

Often it is asked – how does the Recommended Alternative compare with today? While this gives a point of comparison, it must be remembered that the Recommended Alternative is accommodating about 830,000 additional people (about 87% of them within an expanded UGB) and providing about 530,000 additional jobs more than in the region in 1990.

Not surprisingly, there is more congestion in the future than today (from 151 congested road miles in 1990 to 454) and the number of acres of land developed increases. However, there are other important considerations. Surprisingly, air quality is better with over 40 percent decrease in winter carbon monoxide and greater than 50 percent decrease in summer hydrocarbons when compared with 1990 levels. This is in great part due to a combination of cleaner cars replacing older, more polluting ones, but the role of transit and land use patterns are also expected to make a difference.

Another change from current conditions concerns vehicle miles traveled per capita. With the land use and transportation changes, VMT/capita is forecast to decrease slightly from 1990 levels.

While comparison with the other alternatives – A, B and C - or current conditions, is informative, it is important to address a fundamental question concerning the Recommended Alternative and existing policies – that is, what is the difference between continuing on our present course or making substantial course changes. Comparison with the Base Case provides the opportunity for this. The following table highlights important differences:

Table 2: Comparison of the Base Case and the Recommended Alternative

Factor	*Base Case*	*Recommended Alternative*
Acres added to Urban Growth Boundary	98,214	14,500
Acres of Farmland Consumed	63,900	3,545
Single Family/Multi-Family Ratio	70/30	65/35
Congested Road Miles	506	454
Lane Miles Constructed	1,473	734
Vehicle Miles per Capita	13.04	11.76
Average Speed (miles per hour)	28	26
Mode Split (auto/transit/walk & bike)	92/3/5	88/6/6
Transit Service Hours	9,575	11,966
Transit Ridership	338,323	570,007
Transit Riders/Transit Service Hour	35	48

Reviewing these data and public comment, the Metro Council began hearings on the Recommended Alternative.

The preferred alternative was then presented for review and comment through a series of public hearings. Based on suggestions from local governments and citizens, scores of changes were made, and a preliminary growth concept was adopted by resolution in 1994. The 2040 Growth Concept was adopted in December, 1995, as part of RUGGOs. Other amendments to RUGGOs policies were adopted with the 2040 Growth Concept. The amended RUGGOs were submitted to the Land Conservation and Development Commission for review. In December, 1996, amended RUGGOs, including the 2040 Growth Concept text and map, were "acknowledged" to be consistent with all applicable statewide land use laws, goals and rules. The growth concept accommodates approximately 720,000 additional residents and 350,000 additional jobs, a total population of approximately 1.8 million residents within the expanded UGB.