Introduction

Of the 1,970,000 people who lived within the WRB in 1990, 86% (about 1,692,000) lived within 69 UGBs. By 2050, the basinwide population is projected to reach 3,900,000.115-117 Where this burgeoning population lives and works will affect the whole basin, particularly resource lands, wildlife habitat, and water resources. Moreover, the public’s quality of life will be greatly influenced by the built urban landscape. This section describes how urban land uses of the alternative futures were allocated and sited, and compares some consequences.

Allocating Urban Land Use in the Alternative Futures

To examine effects of different urban policies, residential, commercial, and industrial land uses associated with increasing population were spatially located based on expert stakeholder opinion and computer modeling. There were three phases to this process: estimating population and employment, determining new urban boundaries, and distributing new and redeveloped land uses within those boundaries (Fig. 121).

Population and employment estimates

County population forecasts from the Oregon Department of Administrative Services (DAS) were extrapolated to 2050, and adjusted to the WRB boundary.118-121 All three alternative futures used these same estimates. For Plan Trend, population forecasts for each UGB were based on data from the Center for Population Research & Census supplemented by forecasts from city and county governments. The 1990 urban proportions of each county population and of the entire basin were then calculated and used as the basis for Plan Trend 2050. This number was used as a reference by the PFWG in setting the basinwide percentage for Conservation 2050 and Development 2050 (Table 26, p.85). The 1990 urban populations were then extrapolated for these two future urban land uses within those boundaries (Fig. 121).

New urban boundaries and distribution of new urban land uses

No new cities were created; all urban growth was within enlarged 1990 UGBs. The expansion acreage for each UGB was calculated using the projected residential density mix (Table 36), estimated new C&I acres (Table 35), and circa 1990 urbanizable lands (Table 37). The spatial configurations of these expansions were defined in two ways. For Plan Trend 2050, planning professionals with expert local knowledge consulted comprehensive plans and growth management studies including the Metro 2040 Plan.126 With maps showing 1990 UGBs, prime soils, transportation systems, rural residential zones, and slope, they drew new boundaries for each city accommodating projected 2050 growth. For Conservation 2050 and Development 2050, the expansion area of each UGB was computer modeled. At each 10-year time step, parcels were selected for inclusion into the UGB based on their distance from 1990 roads, travel time to the UGB, nearby rural structure density, and agricultural productivity. The area within the proposed new UGB was then tested for sufficient buildable space to accommodate the projected growth at the stated densities, and the process of parcel selection repeated until the space need was met.

Vacant land within UGBs was defined by circa 1990 tax-assessor data, and by vegetative land cover. Some of this land was unbuildable due to scenario-specific policies. In all alternative futures no new development was permitted on certain designated wetlands131-133 and in floodways.134 It is assumed that 65-70% of the area is actually occupied by houses and yards.

Table 36. Proportion of new urban dwellings built in each residential density category over the period 1990 – 2050.

The new areas were apportioned to each city based on that city’s proportion of C&I land in 1990 (obtained from the ca. 1990 Land Use / Land Cover data, p. 79).
Comparing Results of the Urban Alternative Futures

The UGBs for each alternative future are shown in Figure 129, p. 108. While these urban areas occupy only 6.7% to 7.8% of the entire WRB area in 2050, 87% to 93% of the basin population lives within these boundaries. The area within UGBs expands by 29% in Development 2050 compared to 1990, 12% under Conservation 2050, and 11% under Plan Trend 2050. Plan Trend 2050 shows the most efficient use of land with the lowest rate of increase in urban area per new resident, while Development 2050 shows a three times greater land consumption rate. Despite higher residential densities, UGBs increase more under Conservation 2050 than Plan Trend 2050 due to the increased unbuildable lands (Table 37).

Although residential land use constitutes 73% - 75% by area of new development in all scenarios, the differences in housing densities and the rates of infill and redevelopment (Tables 35, 36) result in substantial differences in the urban pattern of each alternative future. In particular, the amount of housing from infill and redevelopment is 9% in Development 2050 compared with over 25% in Conservation 2050 (Table 37). Although Plan Trend 2050 has the lowest rate of expansion, more vacant land within 1990 urban growth in Plan Trend 2050 than in Conservation 2050. Development 2050 has the least efficient urbanization rate due primarily to a comparatively low residential density (Tables 36, 37).

Two measures of open space are considered: the amount of all vacant land, and the amount of unbuildable land. Under all scenarios, both of these quantities per resident decrease substantially by 2050 (Table 37). Exclusion of development on riparian lands, floodplains, and steep slopes within UGBs and a more expansive definition of protected wetlands result in more unbuildable space in Conservation 2050 than with the more permissive assumptions of Development 2050. However, under Plan Trend 2050, the constraint of compact UGBs without more restrictive environmental protocols results in the least amount of unbuildable open space per resident. If all vacant lands are considered, Development 2050 provides the greatest amount per resident because of its much larger 2050 supply of buildable land (Table 37).

Figure 123 (a-d) compares areas of rural 1990 LULC incorporated within the 2050 UGBs. Although, under all scenarios, agriculture and forest lands were preferentially avoided when new UGBs were drawn, the 1990 transportation network influenced which areas were selected. Resource lands, as a result, comprise over 50% of the expansion areas. The location of the existing 1990 UGBs within the WRB landscape predispose these percentages (Fig. 123(d)): e.g., agriculture occupies 63% of potentially buildable private lands within 1 mi. of 1990 UGBs. Plan Trend and Conservation 2050 UGBs affect agriculture least because of their compact growth and stronger avoidance of productive lands. In all scenarios, this latter policy disproportionately shifts the emphasis to non-resource lands, which are important for wildlife habitat.

Figure 124 (a-d) compares the areas of each soil class brought into the 2050 UGBs with the inventory within 1990 UGBs. Over 60% of the soils within the valley ecoregion and over 74% of the potentially buildable area within 1 mi. of 1990 UGBs are in soil classes I-III (Fig. 124(c)). Conservation 2050 is the most protective of the best soils, while Development 2050, both because of low density development and less restrictive growth policies, urbanizes the most.

As UGBs expand, river length within urban areas increases (Fig. 125). About 45% of all river edge miles inside 1990 UGBs are in a built LULC category. While none of the alternative scenarios removes buildings in riparian areas, Conservation 2050 retains natural vegetation and revegetates former agricultural lands. Under Development 2050, not only does the number of miles of urban stream increase but the proportion that is built upon increases to 59%, increasing the risk to stream habitat from degraded riparian functioning.

Development 2050 shows the greatest increase in urbanized acres, 49% over 1990, while Conservation 2050 and Plan Trend 2050 show increases of 26% and 28%, respectively. However, 68% of new residential areas in Development 2050 are low density housing (0-4 du/ac), compared with 36-37% in Plan Trend and Conservation 2050 (Fig. 126). On-site treatment of stormwater runoff is easier in areas of lower built density where more space is available for the installation of best management practices. Thus, increasing housing density within UGBs, such as in Plan Trend and Conservation 2050 futures, requires increased effort if runoff is to be treated before it reaches waterways.

Figure 126. Comparison of soil capability classes in (a) 1990 UGBs, (b-d) 2050 UGB expansion areas, and (e) potentially buildable rural areas within 1 mi of 1990 UGBs. (See pg. 10 for soil class definitions.)