

THE COSTS OF GROWTH: A BRIEF OVERVIEW¹

A few decades ago, growth was generally considered an unqualified good thing for a community. Growth to most people meant a larger tax base, more jobs and increased economic opportunity. Since the 1960s, however, it has become increasingly recognized that growth entails some significant costs. An extensive body of literature has been developed to try to quantify what the costs of growth are, and who pays for them. An important subset of this literature deals with the costs of sprawl. This paper provides an overview of the issues relating to the costs of community growth.

Most of the cost of growth literature has focused on fiscal costs resulting from the need for expanded infrastructure and public services needed to accommodate new residents and businesses. However, some studies have dealt with other types of costs, including social and environmental effects of growth. Alleged non-fiscal costs of typical sprawl development patterns include excessive water and energy consumption, loss of agricultural land, increased air pollution, greater spatial separation and dependence on the automobile, and a loss of community (Hughes 1996). In this paper, the focus is on the fiscal costs of growth.

Costs of Rapid Growth

Putting aside for a moment the distinction between types of growth, such as sprawl or more compact alternatives, the pace of growth itself can be a potent local issue. Opposition to growth has developed in communities experiencing such rapid growth that their capacity to provide essential services such as roads and schools was overwhelmed and taxes and utility rates increased dramatically. Steady, moderate growth rates of one or two percent annually can generally be accommodated by communities without undue dislocation, while rapid growth spurts in excess of three percent are much more likely to result in traffic congestion, overcrowded schools and rising taxes and utility bills.

Some communities have responded to rapid growth by enacting growth control ordinances. Ordinances enacted by Davis and Petaluma, California, Carson City, Nevada and Boca Raton, Florida in the late 1970s and early 1980s sought to curtail growth by placing a cap on building permits or population growth, or by using adequate public facility standards to impose a virtual building moratorium. Davis grew by 4.6 percent per year in the 1970s; Petaluma grew at a rate of 5.8 percent during the 1960s; Carson City grew by 6.7 and 7.6 percent annually, respectively, during the 1960s and 1970s; and Boca Raton experienced annual growth rates of 15.1 and 5.7 percent, respectively, during the 1960s and 1970s. With its population doubling every ten years, Carson City imposed a three percent cap on annual residential building permits in the late 1970s, although in recent years only about 70 percent of the allowable permits have been used.² One byproduct of such attempts to limit growth, most observers agree, has been to increase local housing costs (Schwartz et al. 1989).

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² "Carson City planning commission to consider growth cap," *Las Vegas Sun*, May 29, 2000.

Does Growth Pay for Itself?

In most communities, the issue is not so much the rate of growth as the type of growth and how the costs of growth are paid for. Under conditions of slow or moderate growth, local citizens are often willing to subsidize growth to a certain extent, but such support for growth tends to evaporate when growth accelerates. The extent to which growth pays for itself, in terms of public costs borne by the community as a whole, then becomes a significant issue. One approach to quantifying this is fiscal impact analysis.

Fiscal impact analysis attempts to calculate the costs required to serve a new development and compare that to anticipated revenues that the new development will generate. Most fiscal impact studies focus primarily on annual operating costs, with capital costs reflected in debt service payments, simply because of the difficulty of determining the capacity of existing capital facilities to accommodate a particular development. The outcome of such studies depends on a number of factors specific to the jurisdiction affected and the proposed development, including taxing structure, types and levels of services provided by the jurisdiction, and property value of the homes and businesses to be constructed, among many others. Some fiscal impact studies are performed to help communities decide whether to approve or annex a particular development. These studies have generally shown that most conventional residential development does not pay for itself, while nonresidential development most often generates a fiscal surplus for the local government (Burchell 1998).

Studies of the fiscal impacts of growth area often confounded by noncomparability in the types and levels of services that are provided. For example, some studies have shown that public sector costs are higher in jurisdictions with higher average density or intensity of development. However, urban areas, where densities are higher, also tend to provide additional services that are typically not provided at all in rural environments (e.g., libraries), as well as higher levels of service (e.g., professional versus volunteer fire protection). It would be an error to conclude from these studies that lower density development would be cheaper to serve than a higher density development within the same community at the same level of service.

Fiscal impact analysis has also been used to evaluate community-wide alternative growth scenarios. Probably the most well-known of these have been the studies performed by the Center for Urban Policy Research at Rutgers University of the New Jersey State Plan (Burchell 1992; Burchell 2000). The latest of these impact assessments compares fiscal outcomes for the state during 20 years of development (2000-2020) in conformance with the State Plan ("plan") versus expected development over the same period assuming the continuation of historical development patterns ("trend"). The plan alternative directs more development to existing urban and exurban centers and less development into rural and environmentally sensitive areas. It is also assumed that the plan alternative would have more households occupying attached dwellings rather than detached single-family housing. The results of the analysis indicate that both alternatives would result in fiscal deficits for local governments, largely due to the fact that most of the anticipated development will be residential, which generally does not pay for itself. However, the deficits would be \$160 million less under the plan alternative. This fiscal advantage results primarily from the greater utilization of excess infrastructure and service capacity in established communities and the benefit of their existing tax structure.

A recent study that included the development of a fiscal impact model for local governments in the state of Minnesota came to similar conclusions (Duncan 1999). The model was based on a state-wide analysis of 240 cities, counties and townships, 88 municipal water and wastewater systems and a sample of 200 independent school districts. The state-wide statistical analysis found that per capita road maintenance costs within a county (sum of cities, townships and county budgets) tended to decline as density, residential market value and percent of city residents increased. It also found that per capita utility operating costs declined with increased linear density (more connections per mile of pipe) and that school transportation costs decline as residential densities increase. The study also applied the model to five counties, as well as a city and township located in the same school district within each county, and projected fiscal impacts of anticipated residential growth over a future 20-year period. For city budgets, the fiscal impact of residential growth was positive in four of the five case studies. Residential development outside of cities had mixed fiscal impacts on rural township governments. Residential development had a negative fiscal impact on county budgets in all five case studies. When the fiscal impacts on county and municipal (city and township) budgets were combined, the results were almost always negative, but in every case residential development was less costly to serve if located in cities rather than in rural townships. The study concluded from the state-wide analysis that local government costs could be reduced by encouraging development within existing developed areas (typically cities) and discouraging development in outlying rural areas.

Whether growth pays for itself cannot be answered without looking at specifics. Scattered residences built in rural areas can have a positive fiscal effect in the short run as they take access to existing roads and otherwise utilize existing excess capacity. The cumulative effect over time can be quite different, as existing roads become congested and new residents begin to demand urban levels of services. Fiscal impacts can be positive for some levels of government and negative for others. In general, though, research indicates that residential development by itself seldom generates positive fiscal impacts, and fiscal effects tend to be more positive when new development is located closer to areas already served with existing infrastructure.

Capital Costs of Growth

Much of the focus in the cost of growth debate has been on capital costs, and justifiably so. Even development that is fiscally advantageous over the long term will not generate sufficient revenues up front to cover the infrastructure costs required to provide service to the development. If bonds are issued to finance the improvements, tax and utility rates for existing residents will often have to be increased to pay the debt service. If the improvements are not made, levels of service decline (e.g., increased traffic congestion) and service disruptions (e.g., water rationing) increase. In the 1960s and 1970s, much of the infrastructure costs related to growth, such as expansions of wastewater treatment plants, were subsidized with grants from the federal government. Those days are gone, as are the days of automatic voter approval of growth-related bond issues. Increasingly, local governments are looking for mechanisms to require new development to pay its own way with respect to capital facilities.

For decades, local governments have required developers to provide those capital improvements in the immediate vicinity of their projects. In addition to internal subdivision streets, storm sewers, and water and wastewater lines, developers are often required to dedicate right-of-way and construct to full cross-section of any internal or adjacent arterial streets shown on the community's major street master plan. Many subdivision regulations require residential developers to dedicate land for

parcs and schools or pay a fee in lieu of dedication. Large developments are also often required to prepare traffic impact assessments, and to mitigate negative impacts on nearby intersections and road segments through building or participating in the cost of signalization, intersection improvements and acceleration/deceleration lanes. While essential in addressing immediate, localized improvements, developer exactions are not the right tool to address more long-term, cumulative, system-wide impacts on the need for capital improvements.

Fees in lieu of dedication of park and school land, as well as water and wastewater connection fees that served to cover system-wide capital costs, were precursors of impact fees. Impact fees are designed to do what exactions cannot, which is to recoup some of the costs of expanding off-site system capacity. With developer exactions under increasing scrutiny by courts employing the U.S. Supreme Court's Nolan/Dolan standards of "essential nexus" and "rough proportionality," and with shrinking traditional sources of capital funding, it is no surprise that impact fees are one of the fastest-growing capital funding sources for local governments.

Impact fees, however, rarely cover more than a fraction of the full cost to serve new development. Part of this is due to revenue credits necessary to acknowledge future contributions by new development through taxes or rate payments to help retire debt for existing facilities. Another factor is the need to use conservative assumptions in order to avoid litigation. But perhaps the most important factor is the general reluctance of public officials to charge the full net cost of growth. Fodor (1997) observes that impact fees in Oregon, which range from \$1,000 to \$6,500 per single-family unit, do not come close to covering the full costs of growth. His study of the average cost to provide new capital facilities to serve a typical single-family unit in Oregon indicates that public sector capital costs (excluding the cost of on-site facilities typically provided by the developer), exceed \$24,000 per unit, as shown in Table 1.

Table 1
Capital Cost per New Single-Family House

School Facilities	\$11,377
Sanitary Sewerage	\$5,089
Transportation Facilities	\$4,193
Water System Facilities	\$2,066
Parks and Recreation Facilities	\$797
Stormwater Drainage	\$510
Fire Protection Facilities	\$470
Total	\$24,502

Capital Costs of Sprawl

Proponents of smart growth maintain that the capital costs of accommodating low density, leapfrog development patterns are significantly higher than higher density infill or contiguous development. Despite a significant body of literature on the subject, however, the concept of sprawl eludes clear and consistent definition. According to Burchell (1998), it refers to "development that expands in an unlimited and noncontiguous (leapfrog) way outward from the solidly built-up core of a metropolitan area." He argues that other distinguishing characteristics are that it occurs at relatively

low density, different land use types are spatially segregated from one another, and there is almost total reliance on the automobile. However, Burchell concedes that many of these characteristics are difficult to measure in a meaningful way to facilitate quantitative analysis. For example, while the density of an individual development can be ascertained, data for meaningful measures of density for entire jurisdictions or large increments of development over time are generally not available. Similarly, the amount of leapfrog or spatially separated development that has or will occur is almost impossible to quantify.

Despite these difficulties, several attempts have been made to quantify the differences in capital costs associated with alternative development patterns. One of the first major studies on the subject was the seminal *The Costs of Sprawl* by the Real Estate Research Corporation in 1974. That study computed estimates of public and private costs for a range of residential development types (from single-family conventional to high-rise apartment) and hypothetical 10,000 unit community prototypes (from low-density sprawl to high-density planned). The study found that public infrastructure costs for the high-density planned alternative were only 53 percent of the low-density sprawl alternative. Most of the difference in costs is due to the lower proportion of single-family homes in the high-density planned alternative. A major criticism of the study is that it is not reasonable to assume that households that would prefer to live in single-family detached housing, even if they could be convinced to live in attached units, would have the same characteristics of households that today occupy such units.

Subsequent studies, however, have come to similar conclusions. Frank (1989) reanalyzed and updated to 1987 costs several earlier studies, corrected for the shortcomings identified in *The Costs of Sprawl*, and concluded that costs for roads, water and wastewater were 45 percent less for "contiguous" development than for "leapfrog, far out" development. Further, while the total public and private capital cost for typical low density sprawl was determined to be about \$35,000 per unit, he concluded that it would cost almost an additional \$15,000 if the development was located ten miles from the wastewater treatment plant, the central water source, the receiving body for stormwater and the major employment center. Burchell's (1998) reanalysis of data on alternative development patterns in Florida compiled by Duncan (1989) found that the average capital cost per single-family unit in compact and contiguous developments was 37 percent less than in scattered, linear and satellite developments, primarily due to lower road costs.

In defense of conventional development patterns, Peiser (1989) argues that leapfrog development is actually more efficient than the likely alternative, which is contiguous low-density development. While initial costs to serve leapfrog development are higher, they are offset by greater efficiencies later as the skipped-over parcels are developed at higher density and intensity than the surrounding early development. In effect, today's leapfrog development creates the conditions for tomorrow's infill development. Altshuler and Gomez-Ibanez (1993) have challenged the idea that infrastructure costs increase with distance from central facilities, arguing that the economies of scale of large regional water and wastewater treatment facilities can more than offset the cost of longer lines. Indeed, the regional wastewater authority in Sacramento County, California was created with the explicit agreement that participating jurisdictions would not be penalized with higher rates due to their distance from the regional treatment plant. Finally, at least one researcher found very little difference in capital costs between "planned" and "unplanned" development in Houston (Peiser 1984).

While the argument that compact and contiguous development patterns have lower infrastructure costs than leapfrog, low-density development on the rural fringe of urban areas has intuitive appeal, none of the studies performed to date are without flaws and the extent of any such cost advantage is in dispute.

Conclusion

In the last 30 years or so, Americans have come to realize that community growth is not an unqualified good. At a minimum, there are often substantial capital costs that must be incurred, and conventional methods of financing these costs under conditions of rapid growth often lead to higher taxes and utility rates for existing residents. The fiscal advantages of planned, compact and contiguous development over conventional, market-driven low-density suburban development have been suggested but not fully demonstrated.

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