THE STUDY REPORT

# Counting the Costs and Benefits of Growth

A Fiscal Impact Analysis
of Growth in the
City of Charlottesville and
Albemarle County, Virginia

By Craig Evans
December 2012

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**The Study Report**

by
**Craig Evans**
with

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# Counting the Costs and Benefits of Growth

## Findings Overview

This study was undertaken to help citizens and policymakers answer an important question: can the encouragement of growth—even in a carefully targeted form—help local governments pay for essential public services, without also undermining the quality of life in Albemarle County and the City of Charlottesville?

It is widely assumed that communities have little choice in this matter, that they must expand their populations and their number of commercial enterprises in order to remain prosperous.

The study approaches this question by considering estimates of all readily measurable fiscal benefits and costs. It is designed to offer a detailed analysis of the fiscal costs and benefits connected to:

- Specific types of land use; and
- Commercial, residential, and population growth in the Albemarle County-Charlottesville City area.

The study focuses on the revenues that are determined and controlled by local government (including the state revenues that they determine or control) and the costs that are incurred by these local governments through the public services they provide. These revenues, excluding state and federal aid, are the revenue targets of proposals that encourage growth. For purposes of comparison, the study also contains a control analysis that includes revenues from all sources.

The study produced six significant findings:

1.  **Few land uses pay their way: they do not generate sufficient government revenues to pay for the public services they require.** This is because new area residents require services that increase local government costs at a level greater than the additional local revenue they contribute. It also is because the deficits created by this growth cannot be offset by other more fiscally advantageous but far less predominant land uses.

2.  **Three types of land use *appear* to pay their way—agricultural, commercial, and industrial uses** (see Figure 1, below)—**but these categories cannot be expanded in a way that conveys any marked fiscal advantage.** There are two reasons for this:

    a.  Residential and commercial uses cannot be converted back into farmland. Little can be done, therefore, to expand agriculture's revenues-over-costs advantage. To maintain its current benefits, this land use only can be most wisely targeted for *preservation*.

    b.  Even the most productive new industrial and commercial enterprises cannot recruit their workforces solely from within the unemployed and underemployed residents of Albemarle County or Charlottesville. This is because the most productive enterprises, which are the most likely to carry positive revenue-to-cost ratios, also tend to have the greatest technological complexity and skilled workforce requirements. Therefore, they must recruit a significant part of their workforce from *outside* of the region. This adds new residents and new per capita costs, which are great enough not only to wash out the favorable revenue/cost ratios associated with these enterprises, but also can increase the existing cost-to-revenue gap.

3. **The cost-benefit ratios generated by this study do *not* include two prominent sources of cost,** which will increase significantly with rising population, and for which it is difficult to account:

    a. Deferred infrastructure improvements and maintenance (which tend to be ignored until accumulating deficits produce obvious failures or crises); and

    b. Environmental degradation (which, as previous studies by Advocates for a Sustainable Albemarle Population show, will not just increase but accelerate with additional population growth).

4. **Attempts to offset the fiscal gaps caused by commercial and population growth by recruiting new residents of significant wealth and income, will not work.** This study calculated the "break-even" price of a new home—the price at which a home will generate enough local revenue to offset the additional public service costs that will be incurred as a result of that new household. The break-even price of a home in Albemarle County is $668,761. This is the average price at which all future homes must be sold to avoid increasing current deficits.

    The "compensating" price, on the other hand, determines the number of homes that must be sold at a specific price to generate sufficient local revenues to pay for the services currently demanded by all land uses, citizens, and commercial enterprises. *This study calculated that the next 2,000 homes sold in Albemarle County must be priced at an average of $2.7 million to make up for current deficits.* This represents the additional property taxes necessary to close the current annual shortfall between local revenues and local costs.

    These two findings show how difficult it will be for Albemarle County to ever recruit enough wealthy new residents, with the capacity to purchase enough homes at these prices, to allow the county to build its way out of its growth-induced financial corner.

5. **The county's proffer program, as implemented, is inadequate as a means of filling the gap between the true costs of new development and its local revenue generating potential.** Current proffers are a legally defensible set of calculations that help offset the costs of new development. This study shows that the proffers do not count all the costs of new development, understate others and overstate anticipated revenues.

6. **Future population increases will generate even less favorable ratios of revenues to public service costs than those reported in this study.** This will happen because increased population density eventually necessitates increasingly complex public service structures, which carry rising per capita costs. This study concludes that even without accounting for this complexity, and due only to the rising share of residential public service costs in the overall land use mix, the fiscal deficits connected to local revenues and local costs only will worsen with additional population growth. At a hypothetical population of 200,000, for example, the prevailing 2008-2009 ratio of public service costs to revenues generated for all land uses in Albemarle County would rise by approximately **16 percent**, from a cost of $1.24 per revenue dollar to a cost of $1.45.

This study concludes that population growth pays for its fiscal costs only in the most carefully controlled and unrealistically isolated scenarios.

These findings are consistent with every previous analysis that has attempted to quantify the fiscal costs and benefits of particular land uses in this region and other Virginia localities.[1]

Only three of the area's nine major land use categories (excluding vacant land, for which the county lacks sufficient data) are found to carry costs *below* the local revenues they are likely to generate.[2]

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[1] See *Appendix #1: Methods & Calculations – How this Study was Conducted*, Section 7.

**Figure 1. Local public service costs per dollar of local revenue generated**

| All Land Uses: 2008-2009 | Albemarle County | Charlottesville |
|---|---|---|
| Single Family Homes | $1.28 | $1.24 |
| Multi-Family Homes | $1.96 | $1.59 |
| Mobile Homes | $2.16 | N/A |
| All Residential Land Uses Combined | **$1.41** | **$1.37** |
| *Commercial Land Uses | $0.51 | $0.47 |
| *Industrial Land Uses | $0.44 | $0.44 |
| Institutional Land Uses (hospitals, libraries, churches) | $1.53 | $1.24 |
| University of Virginia (UVA) | $1.03 | $1.28 |
| *Agriculture | **$0.20** | N/A |
| Open Space/Recreation | $1.28 | $1.64 |
| Vacant Lands | not available | $0.19 |
| **All Land Uses Combined** | **$1.24** | **$1.17** |

**\*** denotes land uses that generate a surplus of revenues over their costs for public services



*Albemarle County, near Seven Oaks Farm*                           *photo by Craig Evans*

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[2] Although state and federal revenue could be included on the revenue-benefits side of this analysis, the analysis focuses only on the revenue determined and controlled by local public officials. This local revenue is both the major source of total revenue, comprising approximately 70 percent of this total, and the only source tied specifically to local political decisions about taxation, economic development, and growth.

# Introduction

Advocates for a Sustainable Albemarle Population (ASAP) originally requested that this study be carried out as the final component in its eight-part Optimal Sustainable Population Size (OSPS) Project, begun in 2007. ASAP is a Charlottesville, Virginia-based non-profit organization. It was formed to encourage community planning that recognizes the often uneconomic consequences of population and physical growth, and the viability of smarter planning alternatives.

ASAP provided a portion of the funding necessary to complete this study; the balance, comprised of the author's time and costs associated with the use his computer models and methodologies, was provided by Renewable Energy Consulting Services in Charlottesville.

The author has no further affiliation with ASAP and is solely responsible for the content of this study.

The previous OSPS studies endeavored to estimate:

- The area's ecosystem services and the way in which future population growth is likely to degrade them;
- The area's existing ecological "footprint," to underscore the current and potentially precarious dependence on varied ecosystem services, near and far; and
- The evolving relationship between area population growth and its stream water health, groundwater integrity, and air quality.

These studies made clear the connection between environmental degradation, certain levels and thresholds of regional population growth, and the quality of life in Albemarle County and Charlottesville. These studies demonstrated that the region's quality of life is tied inextricably to its environmental assets and scenic beauty.

One thing these studies did not do was underscore the extent to which this degradation is tied to attempts that encourage growth as a way of overcoming prevailing revenue/public services deficits.

## *Purpose of this study*

This study explores the connection between potential population increases—in the variety of places and forms they are most likely to occur in this community—and the additional public service costs and revenues most likely to be associated with these increases.

This study is a *fiscal* cost-benefit analysis. It weighs the local tax revenue that is generated against the local public service costs that are incurred. This is the type of analysis on which most "economic development" proposals rest.

This study does not render an *economic* or *employment* analysis of commercial and demographic expansion. Such an analysis, by definition, would indicate positive employment effects (expressed in job quantity), but it also would include a wider array of socioeconomic effects, positive and negative. Moreover, such an analysis would do little to answer the question about the ***necessity of bringing in jobs*** (versus their cultivation *within* current commercial and governmental structures).

This study's focus on *fiscal* costs and benefits is designed to make possible a careful examination of the alleged benefits (new revenues associated with new enterprises) that often are used to validate or

encourage efforts to recruit employers and jobs from outside the Albemarle and Charlottesville communities.

This study examines all fiscal costs and benefits that are:

- Captured by local government data collection efforts, and
- Controlled by these governments.

But it does not account for two significant types of costs associated with population growth:

1. The first of these is the cost associated with deferred infrastructure development and maintenance. Albemarle County does not attempt to estimate this cost, pretending for financial purposes that it does not exist. Only priority capital needs are acknowledged and counted. Existing data on unmet and deferred capital needs, therefore, is insufficient to render an accurate estimate of this ongoing and accumulating deficit. Nevertheless, local government planning staff recognize that this cost is substantially *greater than zero*.

2. The second set of excluded costs are those associated with environmental degradation (highlighted in ASAP's previous OSPS studies). This too has never been captured in any Albemarle County or Charlottesville cost-benefit analysis. Because these costs are difficult to quantify in dollars and cents, and because they fall outside the scope of direct fiscal impact, they also are not included in this analysis. Nevertheless, the OSPS studies, especially the ecosystems services analyses undertaken by Jantz and Manuel (2010), reveal conclusively that these costs also are *substantially greater than zero*. Moreover, these studies reveal that the Albemarle County-Charlottesville region is not far from perilous "tipping points," beyond which associated degradation will not just increase but *accelerate* noticeably and inevitably.[3]

As the outline of related cost-benefits studies in *Appendix #1: Methods & Calculations – How this Study was Conducted*, Section 7, makes clear, no previous cost-benefit analysis for the Albemarle-Charlottesville area has provided an up-to-date and comprehensive fiscal cost-benefit analysis for the entire region. This report, therefore, is unique in its analysis of the fiscal impact of potential commercial and population growth in these communities.

### *Addressing the notion that bigger is better*

Complex societies need densely populated urban communities. Owing to their unique histories and geography, these vital urban centers are both an economically efficient way to organize people and their activities and a critical source of any region's cultural, social, and economic quality of life. For these cities to thrive, however, other places connected to them must situate themselves on a markedly different path.

Vibrant cities depend for their existence on places that are *not* cities, in order to obtain critical ecosystem services and the environmental, agricultural, economic (and even aesthetic) assets on which they depend. Due to this critical dependence and the finite amount of *external* resources that these urban centers have to draw upon, it is apparent that every city cannot simply adopt the growth patterns of the largest ones. Efficient organization may proceed seemingly without a hitch, but the mostly invisible and unrecognized exploitation of external resources may quickly generate a critical overlap,

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[3] As the Jantz and Manuel analysis makes clear, an aggressive urban forestry program can forestall these tipping points and can modestly lessen the pace of degradation, but in the face of this study's population growth assumptions, it can do little to alter the general extent and pace of ecosystem services decline.

where additional growth cannot help but degrade the viability of these external resources and the quality of life connected to them.

While smaller, less densely populated places like Charlottesville place lesser demands on regional assets than the nation's largest cities, the quality of their community life often is even more intimately connected to and critically affected by the integrity of their adjacent landscapes, however unrecognized that relationship may become.

Indeed, the Greater Charlottesville-Albemarle County area has become the highly rated place that it is today in large part because of its lightly populated and ecologically well-endowed setting. This is enhanced by the region's relatively low (and at times non-existent) connection between its economic vitality and its growth and expansion (a very direct, tangible benefit of the region's university-centered economy and its significant *external* financing).

Thomas Jefferson, the founder of the community's great university, which has become the clear center of its cultural and economic life, fought to build the university in Charlottesville in large measure because of its key environmental and geographic factors.[4]

"As Jefferson knew," one local historian has observed, "the Albemarle area was not conducive to growth. The rivers were small and unpredictable, the roads were poor, and the area's future as a site for the satanic mills of the Industrial Revolution was unlikely... Albemarle looked like it would remain Arcadian, close enough to nature to inspire the students, as he had been inspired."[5]

## *The value of this study*

As detailed in Appendix #1, Section 7, research for this study builds on previous studies that have illustrated the relationships between:

- Local spending and population growth,
- Local tax rates and population growth, and
- Specific land uses and their implications for overall fiscal pressure (for the 1990s).

Some of these earlier studies, such as the Urban Institute study cited below, provided a cost-benefit analysis for *specific* economic development and transportation proposals. But none provided an up-to-date and comprehensive fiscal cost-benefit analysis for the entire region.

Most of the studies are focused on taxes and growth and spending and growth, but say little if anything about realistic cost-benefit trade-offs.

One informative study, summarized in *Appendix #1,* Section 7, is an analysis of proposed development for Albemarle County's Hollymead subdivision, conducted in 1972 by the Urban Institute. This study is unique in that it does describe the cost-benefit trade-offs of development. While its data is 40 years old and its geographic scope is far too limited to draw any reliable conclusions about the current fiscal costs

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[4] A majority of Virginia's General Assembly, prior to the university's founding in 1819, wanted to place the school in a town that they believed to be an emerging commercial center. Scottsville and Staunton were their principal favorites.

[5] Avery Chenoweth and Robert Llewellyn, *Albemarle: A Story of Landscape and Identity* (Earlysville, VA: Albemarle Books, 2003).

and benefits associated with population growth in the Charlottesville-Albemarle County region, the study's method, analyses, and conclusions dovetail strikingly well with those reported in this study.

Likewise, in a study conducted by Tamara Vance for the Piedmont Environmental Council in June 1984, the fiscal costs and public revenue generation connected to three major land uses, if dated, also compare very favorably to the results of this study. Cited in the Vance/PEC report is a similar report, completed for Loudoun County in 1982, that generated comparable cost/revenue ratios by land use type and reached similar conclusions about the fiscal impact of commercial, residential, and population growth.[6]

This analysis includes a more up-to-date and comprehensive assessment of the ways in which future development and area population growth might, or might not, pay their way. It also is more detailed in its analysis of land use categories, and more revealing of the way in which population growth can dramatically alter the perceived fiscal benefits of commercial development when it is no longer analyzed in isolation from its effects on area population.

As a result, this study has clear relevance for policymakers who are seeking to spur "economic development." Without a careful analysis of related fiscal costs and benefits, efforts to encourage economic development may rest on unfounded or obsolete assumptions.



*Court House Square, Charlottesville*                                    *photos by Craig Evans*

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[6] Richard Calderon, "Fiscal Analysis of Rural Land Use," Department of Planning, Loudoun County, Virginia, 1982.

# Objectives

This study has two objectives:

1. To estimate the local fiscal costs and benefits of growth, first, by specific land use category and, second, by hybrid combinations of land-use categories, which reflect the way costs are connected to where citizens live, work, and play.

2. To illustrate the ways in which such cost-benefit ratios can help citizens and policymakers make better land use decisions by estimating the net fiscal costs or benefits of expected patterns of commercial, residential, and population growth.

# Methods & Calculations

A full description of the methods and calculations used in this study can be found in *Appendix #1: Methods & Calculations – How this Study was Conducted.* The following is an abridged description of key methods and calculations.

### Revenues and public service costs

Five different analyses were conducted to generate a clear and comprehensive picture of the revenues and costs associated with potential growth in the Albemarle-Charlottesville region. These analyses used actual revenues and expenditures from two different fiscal years for both Albemarle County and the City of Charlottesville.[7]

**The first analysis** considered only *locally* generated revenues. This analysis formed the basis of this study, and is reported first, in Section 1.1. Although the City of Charlottesville and Albemarle County currently rely on federal and state aid for approximately 30 percent of their budgets, ongoing state and federal fiscal austerity (among other factors) makes it unlikely that this assistance will increase in lockstep with local population growth or local government fiscal need.

State aid in particular, which comprises most of this external government assistance, is likely to continue its recent per capita decline for the foreseeable future. The additional costs associated with new area residents, in other words, are likely to be borne mostly, if not completely, *by our local governments.*[8]

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[7] Data was drawn from a different combination of years for the City of Charlottesville (2006-2007 and 2008-2009) and Albemarle County (2007-2008 and 2008-2009). This was due to the necessity of using data reported by the U.S. Census Bureau from two different years for the Economic Census—in which data for cities was reported in 2007 and data for states and counties was reported in 2008. For this reason, the results from the two-year combinations for the city and county may not be completely comparable. Conversely, data drawn from 2008-2009, the most recent fiscal year for which complete data was available at the time the study was conducted, and for which data could be obtained uniformly for both jurisdictions, have been used as the base from which to report overall study results.

[8] A glimpse at the sources of marginal school funding in Virginia underscores this trend. Once adjustments for student population, general inflation, extraordinary inflation tied to health insurance costs and energy, and new special education expenditures are included, few public K-12 educational spending increases over the last 40 years have come from anywhere but local governments. See David Shreve, "Public Education Spending in Virginia, 1973-2003," unpublished report for the Commonwealth Institute, May 2009.

Moreover, there are two other reasons why the volume of federal and state revenue is unlikely to increase in any significant manner:  First, the corporate income tax base on both the federal and state levels is small (accounting for approximately 9 percent and 6 percent of revenue, respectively).  Second, the customary new enterprise scenario (hiring from the ranks of the already employed) does little to change state and federal personal income tax contributions. Consequently, there is little likelihood of a state or federal revenue boost to aid local growth. This is why all local government "economic development" proposals (and the principal calculations in this study) focus on local sources of revenue.

**A second analysis**, reported in Section 1.2, was conducted to illustrate the often marked distinctions between different types of commercial and industrial development.  This analysis took the share of revenues and expenses calculated in Section 1.1 for commercial, industrial and institutional land uses for both the City of Charlottesville and Albemarle County and separated each revenue and expense item *into further divisions*, based upon their North American Industrial Classification System (NAICS) designations.  This allowed for comparisons among the various designations such as retail stores, restaurants and lodgings, construction, manufacturing, and health care and social services.

**The third analysis** used actual revenues from all sources (local, state, and federal), as shown in the publicly published budgets for the City of Charlottesville and Albemarle County.  This analysis will be the most familiar to people acquainted with the budgets for Albemarle County and the City of Charlottesville, since all revenues and expenditures are shown exactly as they appear in the publicly available government documents.  This became a "control" analysis and is reported in Section 1.3.

**The fourth analysis** also used only local revenues, but the estimates of revenues and expenses by the major land use categories were calculated by allocations based almost entirely on population.  This is a fairly typical and easily understood form of allocation.  This became an alternate "control" analysis and is reported in Section 1.4.

**The fifth and final analysis**, reported in Section 2, was undertaken to determine the real estate values of new residential development necessary to do two things:

1.  Generate sufficient revenue to pay for the public service costs associated with a new residential unit; and
2.  Generate sufficient revenue to offset the deficits generated by all land uses, citizens and commercial enterprises.

The first calculation in this analysis is referred to as the *break-even* price.  This was determined by calculating the value at which a new residence will generate sufficient expected revenues to offset the average cost of additional public services that will be incurred as a result of that new household.

The second calculation is referred to as the *compensating* price.  This was determined by estimating the value at which the next 2,000 new residences to be sold in each of the two jurisdictions will need to be priced in order to generate sufficient revenues to offset both the public service costs of these new residences and the current shortfall in local revenues that is generated by all land uses, citizens and commercial enterprises.

This analysis was included largely to demonstrate the feasibility of trying to close fiscal gaps associated with residential revenues and costs by attracting more residential growth.  The point made by these calculations is that the only hypothetical way in which existing and future gaps could be closed as new homes are built is by encouraging the in-migration of extremely wealthy new residents who have the capacity to build homes expensive enough to make a significant fiscal difference.  This would mean the complete exclusion of any additional middle class or middle income families.  Neither option, of course, is either possible or realistic.

## Infrastructure costs

This study did not attempt to account for infrastructure costs, either deferred or proposed. This is because the county and city governments currently dedicate little time to an ongoing analysis of infrastructure costs. Reliable data, therefore, is difficult to obtain.

The current practice in Albemarle County, like that of many localities throughout the nation in this era of tax structure erosion and counterproductive austerity, is to muddle through any accounting for infrastructure costs, partly by ignoring the backlog of unmet needs, partly by defining diminished service as the norm, partly by a gradual privatization of some related costs, and partly by addressing the costs only when the quality and quantity of the county's infrastructure appears to have eroded to uncomfortable, widely unacceptable levels.

## School expenses

Educational expenses account for a significant portion the budget outlays for Albemarle County and the City of Charlottesville. This is illustrated in the table below:

**Figure 2: School expenses as a percentage of total local government expenses**

| 2008-2009<br>Fiscal year Budget | Total Budget Expenses | School Expenses | % of Total Budget Expenses Represented by Schools |
|---|---|---|---|
| Albemarle County | $364,186,925 | $148,739,041 | 39.14% |
| City of Charlottesville | $192,776,298 | $68,814,266 | 30.83% |

One hypothetical way that a community can reduce the per capita costs associated with schools is by recruiting larger numbers of older people without school-age children. Evidence suggests, however, that Albemarle County and the City of Charlottesville would be unlikely to change their current demographics in ways significant enough to lessen per capita school expenditures. Accordingly, the study excludes any cost-benefit factor connected to the potential for this kind of demographic change.

The area's largest age cohort is already the category with the greatest earning power (between 35-44 years of age). This also is the class of citizens most likely to have school-age children. Because of the way in which the University of Virginia serves as the region's economic anchor, a phenomenon that is not likely to change in any significant way and which the community is unlikely to want to change, the dominance of this age cohort is not likely to give way at any time to an older or wealthier class of residents without school-age children.

At the same time, the Albemarle-Charlottesville region already includes a larger number of wealthy retirees than can be found in most communities of similar size and fiscal cost structure. Although the presence of the University of Virginia is likely to help maintain the region's attractiveness to prosperous retirees, its centrality to the economic life of the region also is likely to ensure that this class of citizens will not become proportionally more dominant.

## A special note regarding prospective school costs

Determining prospective education-related capital and operating costs can be especially tricky. In addition to critical differences of wealth and income, as discussed above, newcomers to a community may have a higher (or lower) number of school-age children per household than the historical average for the community.

This study uses historical data to estimate ongoing and future educational costs.  Should the Charlottesville and Albemarle County region begin to grow even more rapidly than even at present, the basis of this report's estimate of educational expenses would be subject to the errors other analysts have noticed in other rapidly growing jurisdictions.

Loudoun County, Virginia, for example, currently averages 0.45 pupils per household.  Based on survey and other data, the county estimates that:

- The average new single-family, detached dwelling unit currently generates 0.90 pupils per household, twice the average for all households;
- A new townhouse generates 0.45 pupils per household; and
- A new multi-family apartment or condominium unit generates 0.20 pupils per unit.

With Loudoun's future development estimated to consist of 39 percent detached, 38 percent townhouses and 23 percent multi-family units, the average future housing unit in the county can be expected to generate 0.57 pupils, or 26 percent more enrollment than the current average household in the county.

If a fiscal impact analysis were to apply Loudon County's current school-age-children-per-household average to estimate the number of new pupils that can be anticipated from new residential development, it would underestimate the capital and operating cost for new schools by 26 percent, a significant error considering that the cost of local public schools usually exceeds the cost of all other general-purpose local government services combined.

This phenomenon, common to all fast-growing areas, is likely to produce cost estimating errors of similar magnitude anywhere such fast-paced growth prevails.

Other deviations from the norm also are common, such as when slower-growing communities exhibit decreased numbers of school-aged children per household (as the community's mean and median age increases).   Likewise, a community experiencing substantial new retirement or second home development also may exhibit a lower number of pupils per new household than the current average.

## *Combination ratios*

To reflect the way in which the costs of certain land use categories (such as recreational or institutional) are in reality tied to the people who use them (the residential land use category), additional calculations were undertaken to combine the residential and recreation categories, and the residential, recreation and institutional categories.  This allows one to see the costs and benefits of recreational and institutional land use where they are actually incurred—as extensions of the services demanded by residential land uses.  These findings are reported in Section 1.4, and are included in the second part of each table in that section.

As the tables in Section 1.4 illustrate, the combinations had little effect on the relation of revenues to expenses for residential uses.  This is because revenues and expenses already are concentrated in the residential category, since that is where the bulk (69.4%) of the taxable value of the county's real estate is found, and that is where people spend the majority of their time.

A similar calculation was carried out to see what would occur if one single family home was added to each of the 4,499 agricultural parcels in the county (which would be in addition to the residences already scattered across these properties).  This was done, not to suggest that the county's agricultural lands be subdivided so that additional homes could be built, but to help answer questions about how extensively the conversion of the county's agricultural land to residential use would diminish the

beneficial revenues-over-costs ratio of agricultural parcels ($1.00 in revenue for every $.20 in local government costs).

This combined ratio shows that agricultural uses are sufficiently productive to offset the costs of at least one additional single family home, but adding two homes generates a deficit. Hence, along with the obvious erosion of viewscapes and environmental benefits (such as water recharge and air purification), the moment agricultural land is taken out of production and subdivided, it no longer contributes any net fiscal benefit to the county.

# Study Findings

## PART 1: WHERE THE COMMUNITY STANDS NOW

### 1.1 – Land Use Costs and Benefits

Can Albemarle County and Charlottesville grow their way to a sounder fiscal posture? This cost-of-growth study illustrates how improbable and even counterproductive such an approach can be. This study also makes clear how difficult it will be to ever achieve appropriate fiscal balance if community policymakers continue to:

- Bury significant and rising environmental and infrastructure costs, and
- View the benefits of recruited industries and commercial enterprises in isolation without also considering their impacts on residential growth.

As the study findings indicate, there are a small number of land use categories—viewed in isolation—that do carry positive fiscal revenue-to-cost ratios (industrial, commercial, and agriculture). Indeed, one of the study's most significant findings—corroborating previous analyses by the American Farmland Trust, among others—is that agricultural lands contribute a large surplus of revenues over costs because they require very few services. Unfortunately, the absolute contribution of revenue is quite small, and it is a land use difficult if not impossible to expand to any noticeable degree.

Likewise, the industrial and commercial categories appear to have positive revenue-to-fiscal cost ratios, but these are in reality subject to significant change. When these land uses are viewed, not in isolation but in the context of the workers they must recruit, their fiscal advantage dissipates quite rapidly.

One study that examined this effect in detail—in Montgomery County, Maryland—found that while *isolated* business activities produced positive net fiscal impacts, those positive impacts were greatly reduced (to the point where some commercial land uses resulted in a net fiscal deficit) when new employee residences were included in the calculation.[9]

The enterprises best positioned to recruit from the ranks of the locally unemployed and underemployed, which might be able to preserve most of their fiscal advantage, often are precisely those enterprises that deliver lower-than-average productivity, profitability and tax payments.

Conversely, the enterprises that appear to have the best revenue-to-public-service-cost ratios often are the least likely to recruit locally. When their impact on expanded residential growth is accounted for, their positive revenue-to-fiscal-cost ratios are either greatly diminished or lost entirely. This happens

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[9] Alan Altschuler and Jose Gomez-Ibanez*, Regulations for Revenue: The Political Economy of Land Use Exactions* (Washington, D.C.: Brookings Institute and Lincoln Institute of Land Policy, 1994).

simply because low-cost/high fiscal benefit industries are inherently large scale, technically advanced, and managerially specialized—all factors that often necessitate the outside recruitment of key managerial and production line employees.

The large gap between the "compensating" home prices for Charlottesville and Albemarle County, explained in Part 1, Section 2, "Break-even Prices," suggests that Albemarle County has generated a much larger deficit due at least partly to this effect.

### *Specific land use revenue/cost findings*

Even *without* the inclusion of obscured and officially ignored infrastructure and environmental costs, this analysis concludes that population growth pays for its attendant public service fiscal costs only in the most carefully controlled and unrealistically isolated scenarios.

As the study's findings indicate, following its land use organization and analysis, only three of the area's nine major land use categories (excluding *vacant land*, captured only in the Charlottesville City analysis) carry costs *below* the local revenue they are likely to generate.[10]

Some land uses create deficits, some generate a surplus. For every $1 generated in revenue, according to the cost-of-growth analysis undertaken in this study, the services required by different land use categories in Albemarle County and the City of Charlottesville incur the following costs:

**Figure 3. Local public service costs per dollar of local revenue generated**

| All Land Uses: 2008-2009 | Albemarle County | Charlottesville |
|---|---|---|
| Single Family Homes | $1.28 | $1.24 |
| Multi-Family Homes | $1.96 | $1.59 |
| Mobile Homes | $2.16 | N/A |
| All Residential Land Uses Combined | **$1.41** | **$1.37** |
| *Commercial Land Uses | $0.51 | $0.47 |
| *Industrial Land Uses | $0.44 | $0.44 |
| Institutional Land Uses (hospitals, libraries, churches) | $1.53 | $1.24 |
| University of Virginia (UVA) | $1.03 | $1.28 |
| *Agriculture | **$0.20** | N/A |
| Open Space/Recreation | $1.28 | $1.64 |
| Vacant Lands | not available | $0.19 |
| **All Land Uses Combined** | **$1.24** | **$1.17** |

\* denotes land uses that generate a surplus of revenues over their costs for public services

Among the study's notable findings is the *markedly positive cost-benefit ratio associated with the region's agricultural lands* (which includes forest land held at least partly for ongoing or prospective timber operations). Because agriculture requires fewer services than any other land use, it generates a

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[10] Although state and federal revenue could theoretically be included on the revenue (benefits) side of this analysis, the analysis focuses only on the revenue determined and controlled by local public officials. This local revenue is both the major source of total revenue, comprising approximately 70 percent of this total, and the only source tied specifically to local political decisions about taxation, economic development, and growth.

larger fiscal surplus than any other major land use.  Indeed, agricultural uses are sufficiently productive to offset the costs of at least one additional single family home.  When a single residence is placed on one of the county's agricultural parcels, these parcels continue to show a surplus of revenue over costs, but the average surplus is reduced by $0.60 per dollar (moving to $0.80 in costs for every $1.00 in revenue).  Adding two homes to this hypothetical agricultural parcel, however, generates a deficit.  Hence, the moment agricultural land is taken out of production and subdivided, it no longer contributes any net fiscal benefits to the county.

A 2008 study by the Weldon Cooper Center for Public Service revealed that the total annual output of the state's agriculture-related industries was over $55 billion and that the sector provided more than 357,000 jobs to the Commonwealth.  Agriculture also is a major contributor to Albemarle County's economy, generating $25 million a year in annual farm-gate sales and $38 million in indirect and induced spending. [11]  There is, however, almost no opportunity to exploit agriculture's favorable revenues-to-fiscal costs status, since the only prevailing pressure, historically and at present, is to convert this land to *other* uses.  Since it is nearly impossible to reclaim farmland once it has been dedicated to other uses, this finding—corroborated by many previous analyses—generally challenges policymakers to find ways to *preserve* rather than *develop*.



*Albemarle County, looking down Davis Shop Road, near Earlysville*          *photo by Craig Evans*

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[11] The indirect and induced impacts resulting from agricultural product sales were calculated by multiplying the numbers for the direct cash sales of agricultural products by regional economic multipliers.  These multipliers were calculated using value-added and employment coefficients published by IMPLAN, and reported in Terance J. Rephann, "The Economic Impact of Agriculture and Forestry on the Commonwealth of Virginia," The Weldon Cooper Center for Public Service, September 2008.

ALBEMARLE COUNTY, VIRGINIA - 2009
RATIO OF EXPENSES
TO EACH $1 OF REVENUE

■ Revenues ■ Expenses

| Land Use | Revenues | Expenses |
|---|---|---|
| SINGLE FAMILY | $1.00 | $1.28 |
| MULTI-FAMILY | $1.00 | $1.96 |
| MOBILE HOMES | $1.00 | $2.16 |
| RESIDENTIAL | $1.00 | $1.41 |
| COMMERCIAL | $1.00 | $0.51 |
| INDUSTRIAL | $1.00 | $0.44 |
| INSTITUTIONAL | $1.00 | $1.53 |
| UVA | $1.00 | $1.03 |
| AGRICULTURE | $1.00 | $0.20 |
| RECREATION | $1.00 | $1.28 |
| TOTAL | $1.00 | $1.24 |



CHARLOTTESVILLE, VIRGINIA - 2009
RATIO OF EXPENSES
TO EACH $1 OF REVENUE

■ Revenues ■ Expenses

| Land Use | Revenues | Expenses |
|---|---|---|
| SINGLE FAMILY | $1.00 | $1.24 |
| MULTI-FAMILY | $1.00 | $1.59 |
| RESIDENTIAL | $1.00 | $1.37 |
| COMMERCIAL | $1.00 | $0.47 |
| INDUSTRIAL | $1.00 | $0.44 |
| INSTITUTIONAL | $1.00 | $1.24 |
| UVA | $1.00 | $1.28 |
| RECREATION | $1.00 | $1.64 |
| VACANT | $1.00 | $0.19 |
| TOTAL | $1.00 | $1.17 |

*Charlottesville's Downtown Mall*                                                    *photos by Craig Evans*
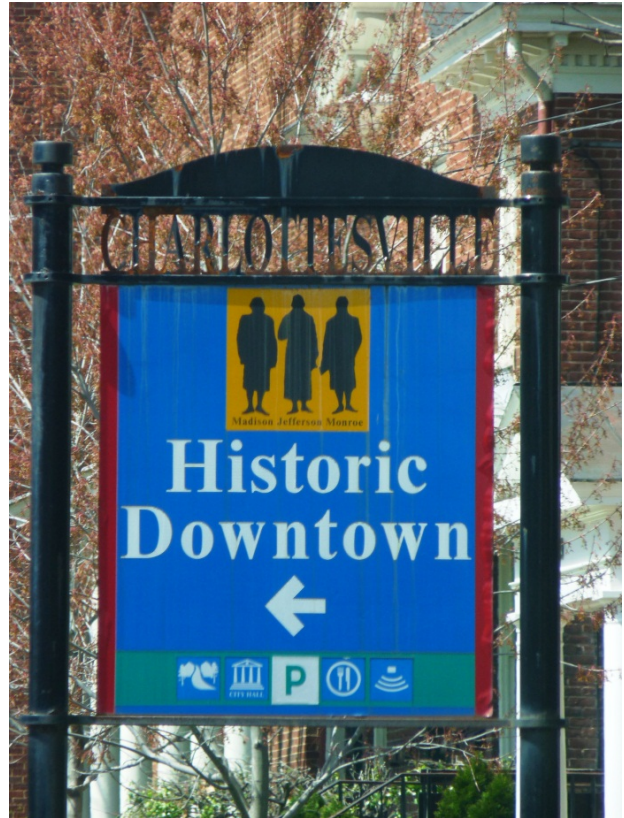
## *Land use ratios with two years of data*

One weakness of the single-year snapshot, described above, is that it may limit the analysis to an atypical year that may not reflect customary revenue-cost relationships.  To guard against this problem, this study conducted calculations based on two years of data.  This is illustrated in the two tables on the next page.

The two-year analysis (see Figure 7, next page) is based on budget data that is less uniform, since some line items in budgets change from year to year.  Also, data was drawn from a different combination of years for the City of Charlottesville (2006-2007 and 2008-2009) and Albemarle County (2007-2008 and 2008-2009).  This was due to the necessity of using data reported by the U.S. Census Bureau from two different years for the Economic Census—in which data for cities was reported in 2007 and data for states and counties was reported in 2008—to carry out the calculations for Section 1.2 of this study.

Nevertheless, the data is comparable enough to reveal any potential anomaly in the single-year analysis.  Because the numbers in the ratios vary only by a few pennies (as shown in the two tables below), the two-year analysis corroborates the findings and relationships in the single-year calculations.

The first table on the next page shows the ratios for fiscal year 2007-2008 for Albemarle County and fiscal year 2006-2007 for the City of Charlottesville.  The second table shows the combination of the ratios for these fiscal years and the base year for the study.  The base year for the study, fiscal year 2008-2009, is the year for which the most recent complete and comparable data for actual expenditures was available at the time the study was conducted.

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**Figure 6.  Land use costs per dollar of revenue, year one analysis**

| All Land Uses: Year One Analysis | Albemarle County 2007-2008 | Charlottesville 2006-2007 |
|---|---|---|
| Single Family Homes | $1.27 | $1.33 |
| Multi-Family Homes | $1.92 | $1.62 |
| Mobile Homes | $2.10 | N/A |
| All Residential Land Uses Combined | **$1.39** | **$1.44** |
| Commercial Land Uses | $0.51 | $0.50 |
| Industrial Land Uses | $0.45 | $0.42 |
| Institutional Land Uses (hospitals, libraries, churches) | $1.47 | $1.18 |
| University of Virginia (UVA) | $1.01 | $1.16 |
| Agriculture | $0.21 | N/A |
| Open Space/Recreation | $1.27 | $1.49 |
| Vacant Lands | not available | $0.34 |
| **All Land Uses Combined** | **$1.23** | **$1.22** |

**Figure 7.  Land use costs per dollar of revenue, two-year analysis**

| All Land Uses: Two-Year Analysis | Albemarle County 2007-2008 & 2008-2009 | Charlottesville 2006-2007 & 2008-2009 |
|---|---|---|
| Single Family Homes | $1.28 | $1.28 |
| Multi-Family Homes | $1.94 | $1.61 |
| Mobile Homes | $2.13 | N/A |
| All Residential Land Uses Combined | **$1.41** | **$1.40** |
| Commercial Land Uses | $0.51 | $0.49 |
| Industrial Land Uses | $0.44 | $0.43 |
| Institutional Land Uses (hospitals, libraries, churches) | $1.50 | $1.21 |
| University of Virginia (UVA) | $1.02 | $1.22 |
| Agriculture | $0.20 | N/A |
| Open Space/Recreation | $1.28 | $1.57 |
| Vacant Lands | not available | $0.26 |
| **All Land Uses Combined** | **$1.23** | **$1.20** |

## *Percentage of revenues and expenses generated by different land use categories*

Some land uses such as agriculture and vacant lands generate large surpluses relative to the costs they impose.  But they account for such a small percentage of overall revenues and costs, that their advantageous revenues-to-public service cost ratios do not carry enough impact to significantly offset the deficits generated by other land uses.  The charts below illustrate the extent to which the revenue-cost ratios associated with all other land uses are dwarfed in significance by the revenue-cost ratios associated with residential properties.

ALBEMARLE COUNTY, VIRGINIA - 2009
PERCENTAGE OF REVENUES & EXPENSES
GENERATED BY EACH LAND USE



CHARLOTTESVILLE, VIRGINIA - 2009
PERCENTAGE OF REVENUES & EXPENSES
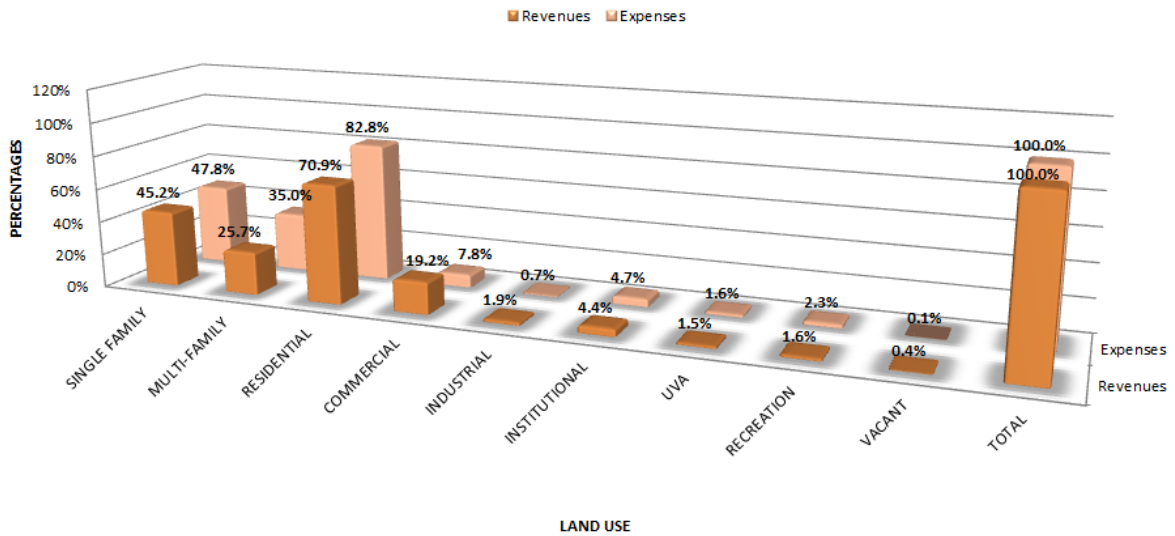GENERATED BY EACH LAND USE

18
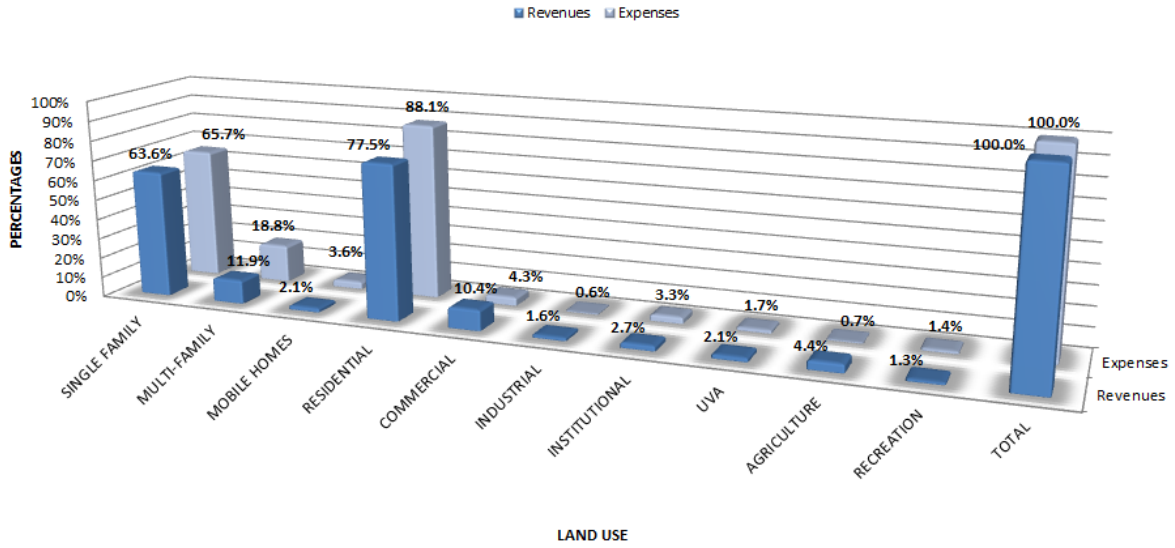
**Figure 10. Revenues and expenses by land use category, Albemarle County**

ALBEMARLE COUNTY, VIRGINIA: COMPARISON BETWEEN PRINCIPAL LAND USES 2009
SHOWING HOW MUCH IT COSTS TO PROVIDE SERVICES TO EACH LAND USE FOR EVERY $1 OF REVENUE GENERATED BY THAT LAND USE

| | SINGLE FAMILY | MULTI-FAMILY | MOBILE HOMES | RESIDENTIAL | COMMERCIAL | INDUSTRIAL | INSTITUTIONAL | UVA | AGRICULTURE | RECREATION | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL REVENUE: | $195,044,719 | $36,431,369 | $6,352,824 | $237,828,913 | $31,913,042 | $5,052,154 | $8,170,859 | $6,353,238 | $13,481,548 | $4,057,991 | $306,857,745 |
| PERCENT OF TOTAL: | 63.56% | 11.87% | 2.07% | 77.50% | 10.40% | 1.65% | 2.66% | 2% | 4.39% | 1.32% | 100.00% |
| TOTAL EXPENSES: | $249,599,291 | $71,384,564 | $13,698,503 | $334,682,358 | $16,220,751 | $2,200,096 | $12,497,298 | $6,549,883 | $2,639,153 | $5,202,588 | $379,992,127 |
| PERCENT OF TOTAL: | 65.69% | 18.79% | 3.60% | 88.08% | 4.27% | 0.58% | 3.29% | 0.02 | 0.69% | 1.37% | 100.00% |
| REVENUE TO EXPENSES | $1.00 to $1.28 | $1.00 to $1.96 | $1.00 to $2.16 | $1.00 to $1.41 | $1.00 to $0.51 | $1.00 to $0.44 | $1.00 to $1.53 | $1.00 to $1.03 | $1.00 to $0.20 | $1.00 to $1.28 | $1.00 to $1.24 |
| COMBINED 2008 & 2009: | $1.28 | $1.94 | $2.13 | $1.40 | $0.51 | $0.44 | $1.50 | $1.02 | $0.20 | $1.28 | $1.23 |

| | RESIDENTIAL WITH RECREATION | RESIDENTIAL WITH INSTITUTIONS & RECREATION | SINGLE-FAMILY RESIDENTIAL ADDED TO A FARM (1) |
|---|---|---|---|
| TOTAL REVENUE: | $241,886,904 | $250,057,763 | $31,172,104 |
| PERCENT OF TOTAL: | 78.8% | 81.5% | 10.2% |
| TOTAL EXPENSES: | $339,884,946 | $352,382,245 | $25,277,809 |
| PERCENT OF TOTAL: | 89.4% | 92.73% | 6.7% |
| REVENUE TO EXPENSES | $1.00 to $1.41 | $1.00 to $1.41 | $1.00 to $0.81 |
| COMBINED 2008 & 2009: | $1.40 | $1.40 | $0.81 |

NOTES:
(1) There are 4,499 agricultural parcels in the County. Assuming each one was to add a single-family home, this would represent 9.07% of the single family homes in the County (4,499 divided by 49,609 single family parcels). When 9.07% of the revenues and expenses for single family homes are added to agriculture, along with existing residences already on agricultural lands, the resulting ratio is: $0.81

**Figure 11. Revenues and expenses by land use category, City of Charlottesville.**

CHARLOTTESVILLE, VIRGINIA: COMPARISON BETWEEN PRINCIPAL LAND USES 2009
SHOWING HOW MUCH IT COSTS TO PROVIDE SERVICES TO EACH LAND USE FOR EVERY $1 OF REVENUE GENERATED BY THAT LAND USE

|  | SINGLE FAMILY | MULTI-FAMILY | RESIDENTIAL | COMMERCIAL | INDUSTRIAL | INSTITUTIONAL | UVA | RECREATION | VACANT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL REVENUE: | $86,242,047 | $49,011,544 | $135,253,591 | $36,719,903 | $3,645,505 | $8,435,297 | $2,834,282 | $3,058,741 | $857,900 | $190,805,218 |
| PERCENT OF TOTAL: | 45.20% | 25.69% | 70.89% | 19.24% | 1.91% | 4.42% | 1.49% | 1.60% | 0.45% | 100.00% |
| TOTAL EXPENSES: | $106,785,679 | $78,086,458 | $184,872,137 | $17,396,176 | $1,590,090 | $10,488,295 | $3,637,143 | $5,027,706 | $161,989 | $223,173,537 |
| PERCENT OF TOTAL: | 47.85% | 34.99% | 82.84% | 7.79% | 0.71% | 4.70% | 1.63% | 2.25% | 0.07% | 100.00% |
| REVENUE TO EXPENSES | $1.00 to $1.24 | $1.00 to $1.59 | $1.00 to $1.37 | $1.00 to $0.47 | $1.00 to $0.44 | $1.00 to $1.24 | $1.00 to $1.28 | $1.00 to $1.64 | $1.00 to $0.19 | $1.00 to $1.17 |
| COMBINED 2007 & 2009: | $1.28 | $1.61 | $1.40 | $0.49 | $0.43 | $1.21 | $1.22 | $1.57 | $0.26 | $1.20 |

|  | RESIDENTIAL WITH RECREATION | RESIDENTIAL WITH INSTITUTIONS & RECREATION |
|---|---|---|
| TOTAL REVENUE: | $138,312,332 | $146,747,629 |
| PERCENT OF TOTAL: | 71.3% | 75.8% |
| TOTAL EXPENSES: | $189,899,843 | $200,388,138 |
| PERCENT OF TOTAL: | 82.9% | 87.61% |
| REVENUE TO EXPENSES | $1.00 to $1.37 | $1.00 to $1.37 |
| COMBINED 2007 & 2009: | $1.41 | $1.39 |

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**Figure 12.  Taxable value basis for analysis of revenue, acreage & parcel, by land Use, Albemarle County**

| SINGLE-FAMILY RESIDENTIAL | |
|---|---|
| Taxable Value | $10,456,553,700 |
| Acreage | 87,250.50 |
| Parcel Count | 36,631 |

| MULTI-FAMILY RESIDENTIAL | |
|---|---|
| Taxable Value | $499,225,100 |
| Acreage | 674.45 |
| Parcel Count | 257 |

| MOBILE  HOMES | |
|---|---|
| Taxable Value | $0 |
| Acreage | 622.00 |
| Parcel Count | 82 |

| TOTAL  RESIDENTIAL | |
|---|---|
| Taxable Value | $10,955,778,800 |
| Acreage | 88,547 |
| Parcel Count | 36,970 |

| COMMERCIAL | |
|---|---|
| Taxable Value | $2,166,377,700 |
| Acreage | 4,270.37 |
| Parcel Count | 1,127 |

| INDUSTRIAL | |
|---|---|
| Taxable Value | $282,138,500 |
| Acreage | 2,105.56 |
| Parcel Count | 158 |

| INSTITUTIONAL | |
|---|---|
| Taxable Value | $3,511,628,900 |
| Acreage | 35,097.32 |
| Parcel Count | 989 |

| UVA | |
|---|---|
| Taxable Value | $0 |
| Acreage | 1,462.00 |
| Parcel Count | 1 |

| AGRICULTURE | |
|---|---|
| Taxable Value | $1,789,720,900 |
| Acreage | 326,841.85 |
| Parcel Count | 4,499 |

| PARKS/ RECREATION | |
|---|---|
| Taxable Value | $0 |
| Acreage | 3,139.28 |
| Parcel Count | 18 |

| TOTAL | |
|---|---|
| Taxable Value | $18,705,644,800 |
| Acreage | 462,470 |
| Parcel Count | 43,661 |

**Multi-Family Units Incur More Costs than Single-Family**

| Category | Housing Units | Av. Taxable Value per Unit |
|---|---|---|
| Total Housing Units | 41,604 | $264,525 |
| Single family | 30,374 | $344,260 |
| Multi-family | 9,095 | $54,890 |
| Mobile home | 1,761 | $28,120 |

Some home types run larger deficits than others.  While the expenses generated by each housing type are different, primarily because of differences in pupil generation factors,  the revenues generated by each unit's taxable value also are much less for multi-family residences and mobile homes; hence, there are fewer revenues to offset the costs of public services incurred by these units.

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**Figure 13. Taxable value basis for analysis of revenue, acreage & parcel by land use, City of Charlottesville**

| SINGLE-FAMILY RESIDENTIAL | |
|---|---:|
| Taxable Value | $2,931,479,823 |
| Acreage | 2,375.83 |
| Parcel Count | 9,887 |

| MULTI-FAMILY RESIDENTIAL | |
|---|---:|
| Taxable Value | $931,695,357 |
| Acreage | 382.58 |
| Parcel Count | 2,568 |

| TOTAL RESIDENTIAL | |
|---|---:|
| Taxable Value | $3,863,175,179 |
| Acreage | 2,758.41 |
| Parcel Count | 12,455 |

| COMMERCIAL | |
|---|---:|
| Taxable Value | $1,266,500,797 |
| Acreage | 624.46 |
| Parcel Count | 1,122 |

| INDUSTRIAL | |
|---|---:|
| Taxable Value | $66,624,337 |
| Acreage | 89.23 |
| Parcel Count | 59 |

| INSTITUTIONAL | |
|---|---:|
| Taxable Value | $9,000,769 |
| Acreage | 13.65 |
| Parcel Count | 9 |

| UVA | |
|---|---:|
| Taxable Value | $0 |
| Acreage | 240.00 |
| Parcel Count | 1 |

| OPEN SPACE/ RECREATION | |
|---|---:|
| Taxable Value | $0 |
| Acreage | 987.00 |
| Parcel Count | 1 |

| VACANT | |
|---|---:|
| Taxable Value | $67,152,217 |
| Acreage | 321.04 |
| Parcel Count | 876 |

| TOTAL | |
|---|---:|
| Taxable Value | $5,272,453,300 |
| Acreage | 5,040.31 |
| Parcel Count | 14,522 |

**Multi-Family Units Incur More Costs than Single-Family**

| Category | Housing Units | Av. Taxable Value per Unit |
|---|---:|---:|
| Total Housing Units | 17,591 | $219,610.89 |
| Single family | 9,992 | $293,347.21 |
| Multi-family | 7,599 | $122,583.94 |

# 1.2 – Land Use Costs and Benefits: Commercial, Industrial & Institutional Uses

Not all commercial and industrial uses generate equally attractive fiscal cost-benefit ratios. While the overall ratios shown in Section 1.1 for commercial and industrial land uses suggest that *all* uses in these categories generate a surplus, a more detailed assessment of commercial and industrial land use *subgroups* shows a less-than-uniform distribution of costs and benefits within these categories.

**Figure 14. Fiscal costs of commercial, industrial and institutional subgroups per dollar of revenue generated**

| Commercial Land Uses | Albemarle County | Charlottesville |
|---|---|---|
| Retail Trade | **$0.44** | $0.55 |
| Information | data not available | $0.64 |
| Finance & Insurance | $0.65 | **$0.48** |
| Real Estate | $0.50 | $0.55 |
| Professional, Science & Technical Services | $0.50 | **$0.48** |
| Management | $0.74 | data not available |
| Arts, Entertainment & Recreation | $0.63 | $0.61 |
| Accommodation & Food Services | **$0.42** | **$0.40** |
| Other Services | $0.64 | $0.53 |

| Industrial Land Uses | Albemarle County | Charlottesville |
|---|---|---|
| Agriculture | **$0.43** | N/A |
| Mining, Quarrying | $0.88 | N/A |
| Utilities | data not available | data not available |
| Construction | $0.44 | $0.48 |
| Manufacturing | **$0.33** | **$0.33** |
| Wholesale Trade | $0.51 | $0.44 |
| Transportation | $0.68 | **$0.43** |

*The ratio for *Agriculture* noted here is not as a land use, but as an industrial use.

| Institutional Land Uses | Albemarle County | Charlottesville |
|---|---|---|
| Administrative Support | $1.72 | $1.33 |
| Educational Services | $0.73 | $1.37 |
| Health Care & Social Assistance | $1.23 | $0.96 |
| Public Administration | $1.58 | $1.81 |
| Unclassified | $2.46 | data not available |
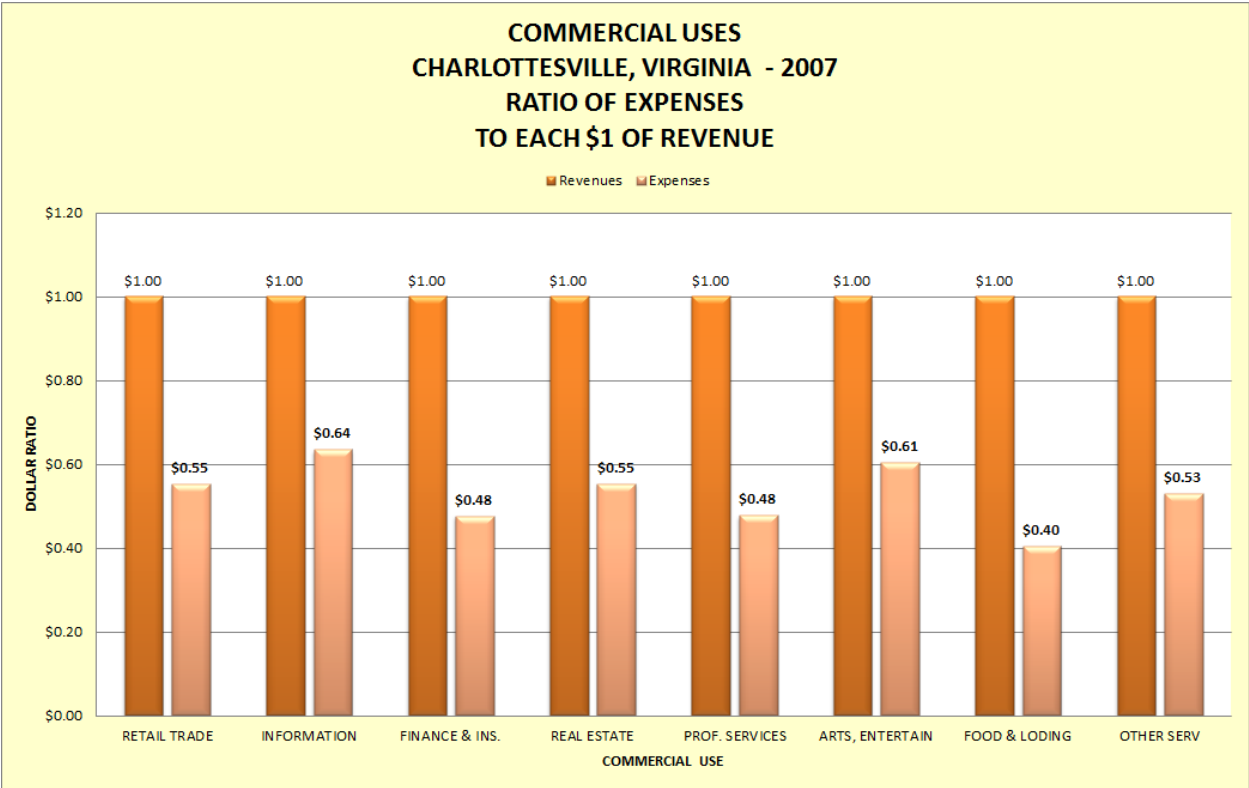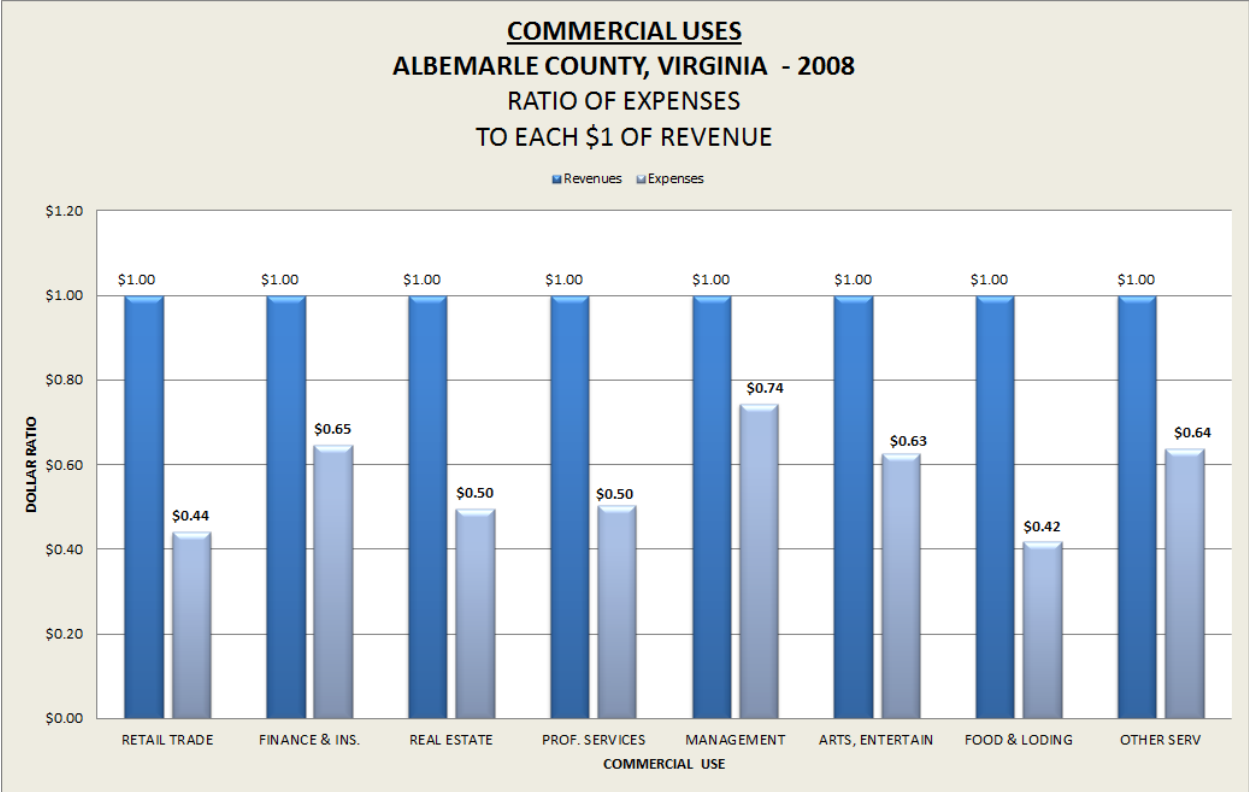
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COMMERCIAL USES
ALBEMARLE COUNTY, VIRGINIA - 2008
RATIO OF EXPENSES
TO EACH $1 OF REVENUE



COMMERCIAL USES
CHARLOTTESVILLE, VIRGINIA - 2007
RATIO OF EXPENSES
TO EACH $1 OF REVENUE

**INDUSTRIAL USES**
**ALBEMARLE COUNTY, VIRGINIA - 2008**
**RATIO OF EXPENSES**
**TO EACH $1 OF REVENUE**
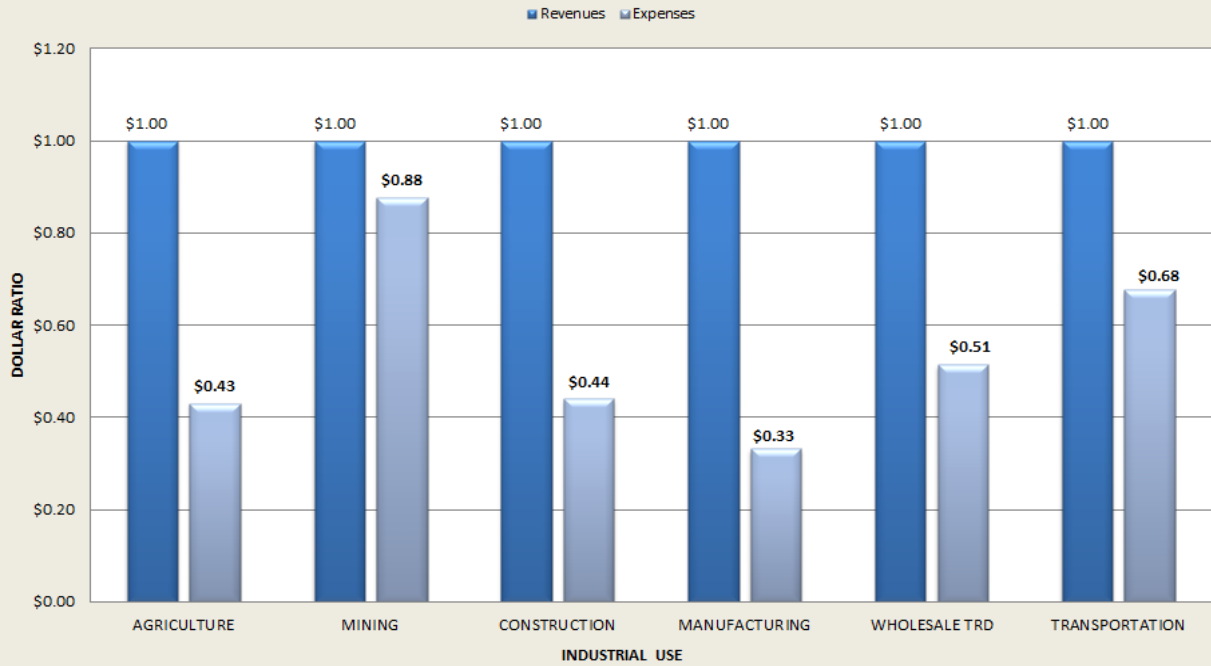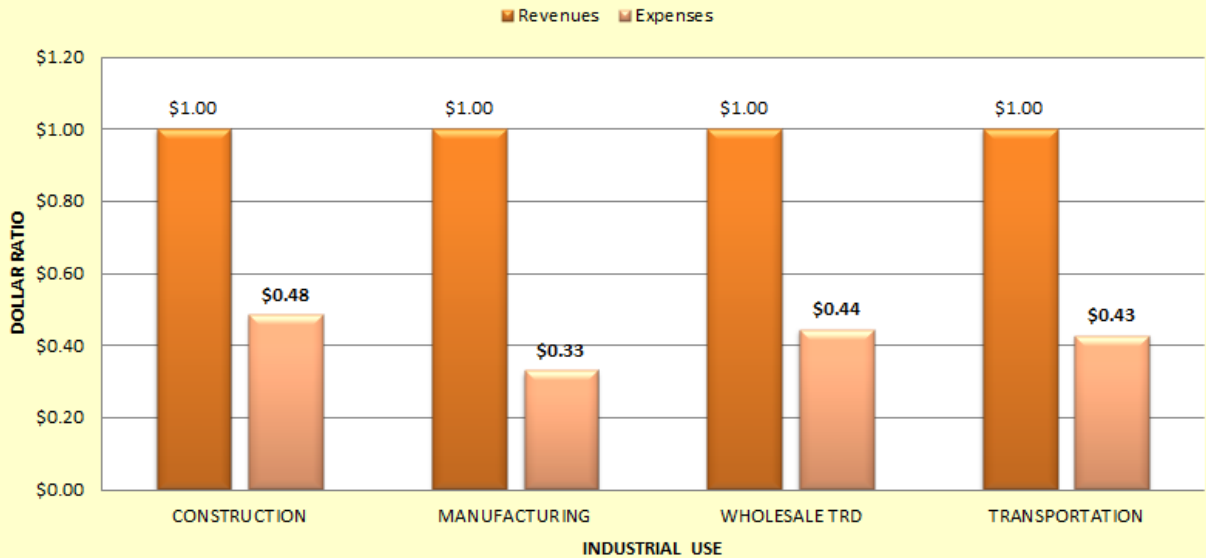


**INDUSTRIAL USES**
**CHARLOTTESVILLE, VIRGINIA - 2007**
**RATIO OF EXPENSES**
**TO EACH $1 OF REVENUE**

## INSTITUTIONAL USES
## ALBEMARLE COUNTY, VIRGINIA  - 2008
## RATIO OF EXPENSES
## TO EACH $1 OF REVENUE
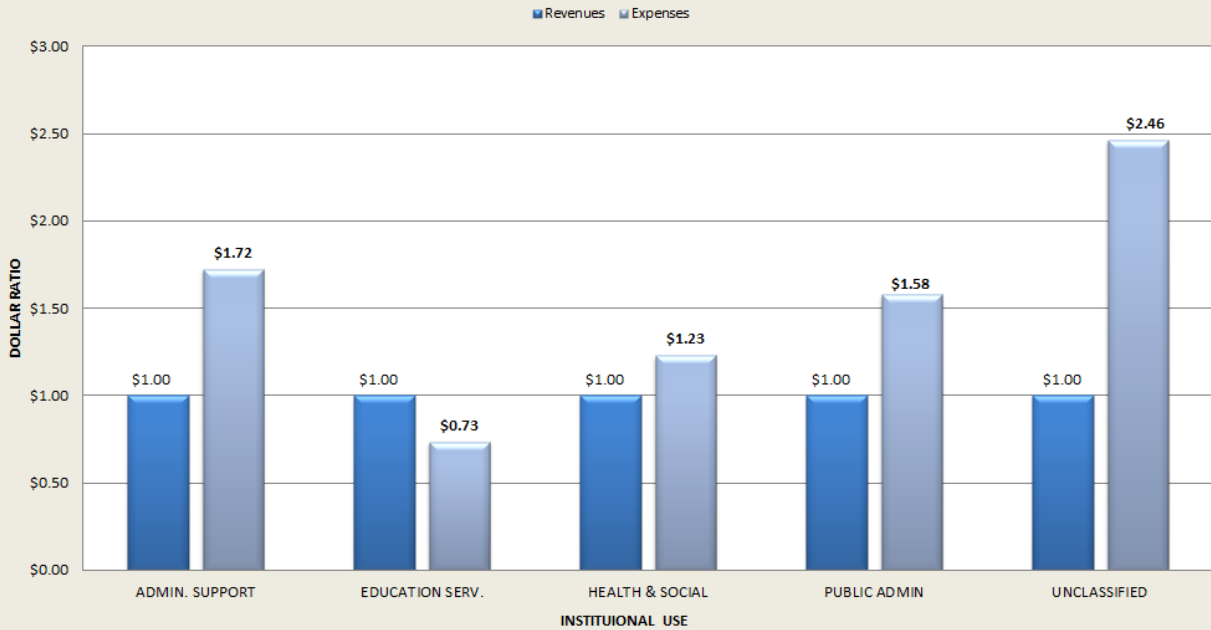
■ Revenues  ■ Expenses

DOLLAR RATIO

| | ADMIN. SUPPORT | EDUCATION SERV. | HEALTH & SOCIAL | PUBLIC ADMIN | UNCLASSIFIED |
|---|---|---|---|---|---|
| Revenues | $1.00 | $1.00 | $1.00 | $1.00 | $1.00 |
| Expenses | $1.72 | $0.73 | $1.23 | $1.58 | $2.46 |

INSTITUIONAL  USE

## INSTITUTIONAL USES
## CHARLOTTESVILLE, VIRGINIA  - 2007
## RATIO OF EXPENSES
## TO EACH $1 OF REVENUE

■ Revenues  ■ Expenses

DOLLAR RATIO

| | ADMIN. SUPPORT | EDUCATIONAL | HEALTH & SOCIAL | PUBLIC ADMIN |
|---|---|---|---|---|
| Revenues | $1.00 | $1.00 | $1.00 | $1.00 |
| Expenses | $1.33 | $1.37 | $0.96 | $1.81 |

INSTITUTIONAL  USE

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**COMMERCIAL USES**
**ALBEMARLE COUNTY, VIRGINIA - 2008**
**PERCENTAGE OF REVENUES & EXPENSES**
**GENERATED BY EACH LAND USE**

■ Revenues  ■ Expenses

PERCENTAGES

| Commercial Use | Revenues | Expenses |
|---|---|---|
| RETAIL TRADE | 26.3% | 22.7% |
| FINANCE & INS. | 11.8% | 14.9% |
| REAL ESTATE | 8.6% | 8.3% |
| PROF. SERVICES | 21.0% | 20.7% |
| MANAGEMENT | 1.2% | 1.8% |
| ARTS, ENTERTAIN | 3.7% | 4.5% |
| FOOD & LODING | 16.9% | 13.8% |
| OTHER SERV | 10.6% | 13.2% |

COMMERCIAL USE

**COMMERCIAL USES**
**CHARLOTTESVILLE, VIRGINIA - 2007**
**PERCENTAGE OF REVENUES & EXPENSES**
**GENERATED BY EACH LAND USE**

■ Revenues  ■ Expenses

PERCENTAGES

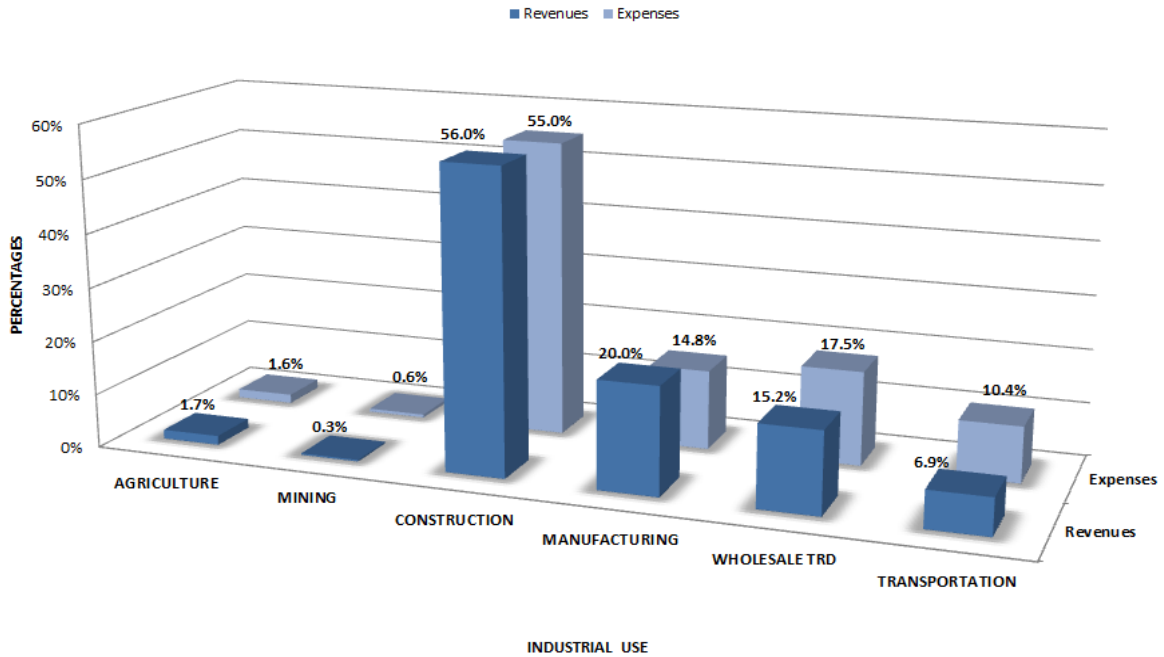| Commercial Use | Revenues | Expenses |
|---|---|---|
| RETAIL TRADE | 26.5% | 29.5% |
| INFORMATION | 4.7% | 6.1% |
| FINANCE & INS. | 3.4% | 3.3% |
| REAL ESTATE | 4.3% | 4.7% |
| PROF. SERVICES | 18.3% | 17.6% |
| ARTS, ENTERTAIN | 1.9% | 2.3% |
| FOOD & LODING | 28.3% | 23.1% |
| OTHER SERV | 12.6% | 13.4% |

COMMERCIAL USE

INDUSTRIAL USES
ALBEMARLE COUNTY, VIRGINIA - 2008
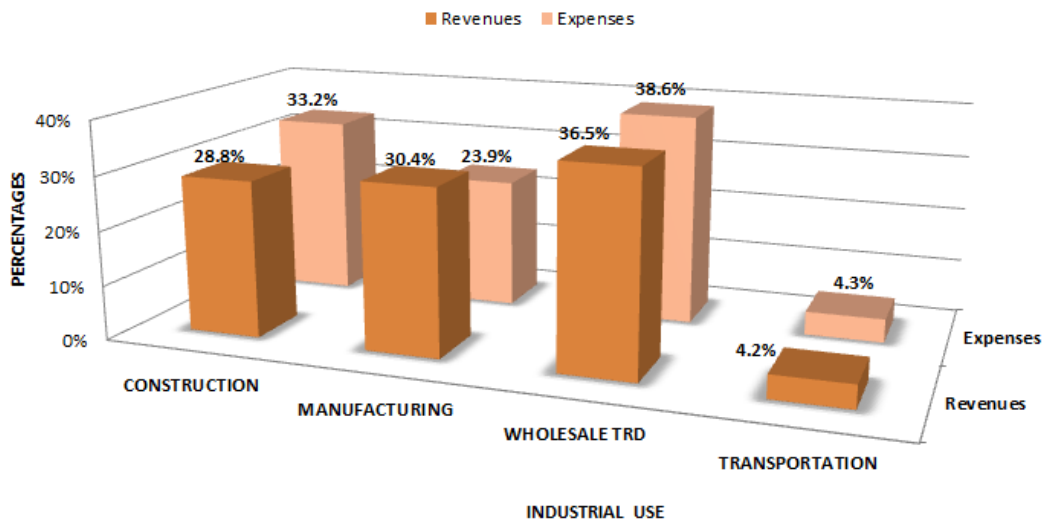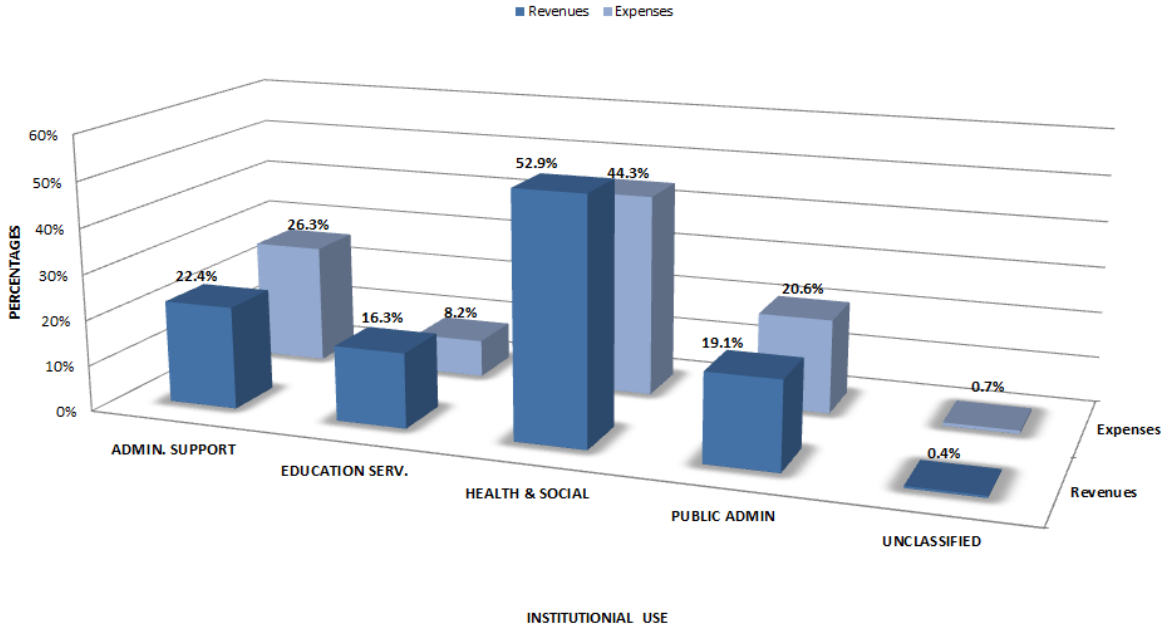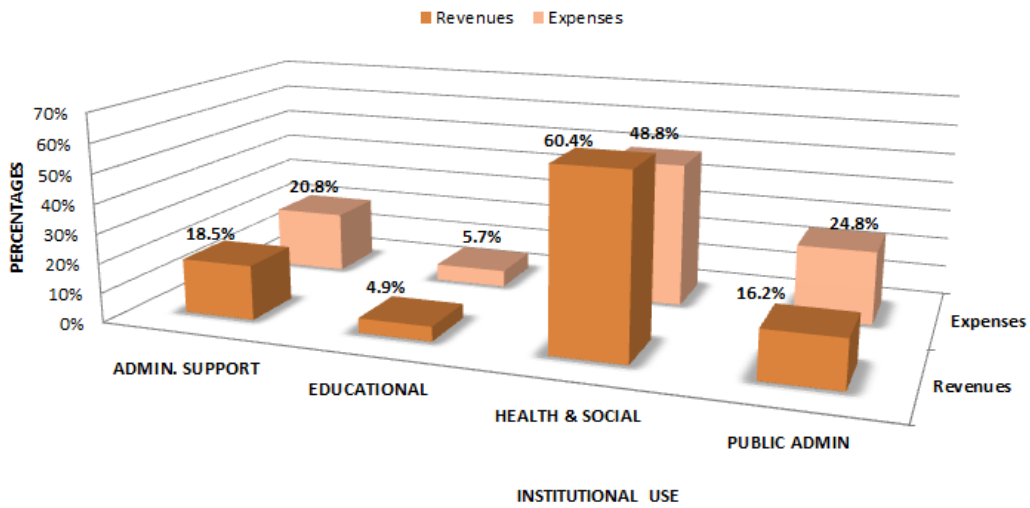PERCENTAGE OF REVENUES & EXPENSES
GENERATED BY EACH LAND USE



INDUSTRIAL USES
CHARLOTTESVILLE, VIRGINIA - 2007
PERCENTAGE OF REVENUES & EXPENSES
GENERATED BY EACH LAND USE

# INSTITUTIONAL USES
## ALBEMARLE COUNTY, VIRGINIA - 2008
## PERCENTAGE OF REVENUES & EXPENSES
## GENERATED BY EACH LAND USE

■ Revenues  ■ Expenses

PERCENTAGES

- ADMIN. SUPPORT: 22.4% / 26.3%
- EDUCATION SERV.: 16.3% / 8.2%
- HEALTH & SOCIAL: 52.9% / 44.3%
- PUBLIC ADMIN: 19.1% / 20.6%
- UNCLASSIFIED: 0.4% / 0.7%

Expenses / Revenues

INSTITUTIONIAL USE

# INSTITUTIONAL USES
## CHARLOTTESVILLE, VIRGINIA - 2007
## PERCENTAGE OF REVENUES & EXPENSES
## GENERATED BY EACH LAND USE

■ Revenues  ■ Expenses

PERCENTAGES

- ADMIN. SUPPORT: 18.5% / 20.8%
- EDUCATIONAL: 4.9% / 5.7%
- HEALTH & SOCIAL: 60.4% / 48.8%
- PUBLIC ADMIN: 16.2% / 24.8%

Expenses / Revenues

INSTITUTIONAL USE

As the charts above illustrate, institutional land use is the only category where the ratios between the City of Charlottesville and Albemarle County do not exhibit comparable revenue-cost ratios. One reason for this is the excess of expenses attributed to *Unclassified* uses in the U.S. Census Bureau's 2008 County Business Patterns data used for Albemarle County; there is no similar data for this category in the 2007 Economic Census for Charlottesville. And while *Educational services* is a smaller professional category than *Health Care & Social Assistance* in both jurisdictions, there are more *Health Care & Social Assistance* providers in the City of Charlottesville on a per capita basis than in Albemarle County. This likely explains the difference between the two jurisdictions in the ratios for these two uses.



*Charlottesville City Market*                                                                                    *photos by Craig Evans*

# 1.3 – Land Use Costs and Benefits: with Non-local Revenues Included

Since the purpose of this study is to isolate and count the localized cost of growth, the calculations in Sections 1.1 and 1.2 include only local revenues. Revenues from most state and federal sources are not counted.

The only federal and state revenues that are counted in Sections 1.1 and 1.2 are those that are legitimately and directly generated by local actions. For example, when an adult buys an alcoholic beverage, he or she pays a state beverage tax. A portion of those revenues are returned by the state each year, based upon the number of residents living in a community who helped generate the tax that was collected. In this case, the state funds were counted in the findings from Sections 1.1 and 1.2, since there is a direct connection between these revenues and the local means by which they were derived. Payments in lieu of taxes for the University of Virginia and state and federal buildings located in the community also were counted in Sections 1.1 and 1.2, since these buildings have a local impact and would pay property taxes if they were privately owned. Titling fees for mobile homes were treated similarly.

On the other hand, state and federal payments for social services, grants, law enforcement, highway assistance and miscellaneous assistance were not counted in the calculations carried out for Sections 1.1 and 1.2.

For the purposes of comparison, this section of the study, Section 1.3, counts all revenue items shown in the 2006-2007, 2007-2008 and 2008-2009 budget details for the City of Charlottesville and Albemarle County. By state law and/or custom, these operating budgets must balance, and they do, thanks in significant measure to the customary infusions of external state and federal funds.

The objectives of this section are to:

1. Show what impact state and federal funds have on the various land use ratios, and

2. Make clear the way in which state and federal financial assistance can mask the shortcomings of a local growth-led fiscal policy (which has negligible effect, at best, on the levels of federal and state assistance).

With state and federal contributions counted, single family homes move to an almost break-even position, although the residential category as a whole still generates a $0.10 deficit in both Albemarle County and the City of Charlottesville.

**Stated another way, the infusion of state and federal funds which are not derived from local sources or accrue as a result of growth *give the illusion* that single family homes almost pay for themselves, creating only a small deficit of $0.02 for every $1.00 of revenue generated in Albemarle County.**

Findings for the City of Charlottesville are the same as the county for the 2008-2009 fiscal year. In the 2006-2007 fiscal year, however, even with all state and federal revenues counted, the city ran a deficit of $0.09 for every $1.00 of revenue generated in the single family home category, and a deficit of $0.15 for the residential category as a whole.

With all sources of funding included, the revenue-cost ratios associated with the University of Virginia also reflect a more positive balance, since a significant portion of university revenue (that contributed by the state) is included. Results for the university improve in the City of Charlottesville as well, but not as dramatically.

The ratios for commercial and industrial land use categories change only modestly as a result of counting all state and federal revenues, and remain arrayed in essentially the same statistical relationship with one another. Hence, the more detailed breakouts for commercial and industrial uses (as above, in section 1.2) were not repeated as part of this analysis. The ratios for the institutional land use category, which includes state and federal buildings and services, also become more positive, as one might expect, when all state and federal funds are counted. But they did not improve enough to eliminate the deficits that these land uses run. Consequently, a more detailed analysis was not repeated for institutional land use as part of this analysis.



*The Rotunda, University of Virginia*                                                    *Photos by Craig Evans*

**Figure 27. Albemarle County land use cost-benefit ratios, all revenues:**

ALBEMARLE COUNTY, VIRGINIA: COMPARISON BETWEEN PRINCIPAL LAND USES 2009
SHOWING HOW MUCH IT COSTS TO PROVIDE SERVICES TO EACH LAND USE FOR EVERY $1 OF REVENUE GENERATED BY THAT LAND USE
WITH REVENUES CONSIDERED FROM ALL SOURCES: LOCAL, STATE AND FEDERAL

| | SINGLE FAMILY | MULTI-FAMILY | MOBILE HOMES | RESIDENTIAL | COMMERCIAL | INDUSTRIAL | INSTITUTIONAL | UVA | AGRICULTURE | RECREATION | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL REVENUE: | $244,448,068 | $51,224,398 | $9,217,093 | $304,889,559 | $35,386,626 | $5,407,748 | $10,217,248 | $7,979,493 | $13,577,813 | $5,625,507 | $383,083,994 |
| PERCENT OF TOTAL: | 63.81% | 13.37% | 2.41% | 79.59% | 9.24% | 1.41% | 2.67% | 2% | 3.54% | 1.47% | 100.00% |
| TOTAL EXPENSES: | $249,599,291 | $71,384,564 | $13,698,503 | $334,682,358 | $16,220,751 | $2,200,096 | $12,497,298 | $6,549,883 | $2,639,153 | $5,202,588 | $379,992,127 |
| PERCENT OF TOTAL: | 65.69% | 18.79% | 3.60% | 88.08% | 4.27% | 0.58% | 3.29% | 0.02 | 0.69% | 1.37% | 100.00% |
| REVENUE TO EXPENSES | $1.00 to $1.02 | $1.00 to $1.39 | $1.00 to $1.49 | $1.00 to $1.10 | $1.00 to $0.46 | $1.00 to $0.41 | $1.00 to $1.22 | $1.00 to $0.82 | $1.00 to $0.19 | $1.00 to $0.92 | $1.00 to $0.99 |
| COMBINED 2008 & 2009: | $1.02 | $1.38 | $1.47 | $1.09 | $0.46 | $0.41 | $1.20 | $0.81 | $0.20 | $0.92 | $0.99 |

| | RESIDENTIAL WITH RECREATION | RESIDENTIAL WITH INSTITUTIONS & RECREATION | SINGLE-FAMILY RESIDENTIAL ADDED TO A FARM (1) |
|---|---|---|---|
| TOTAL REVENUE: | $310,515,066 | $320,732,314 | $35,749,253 |
| PERCENT OF TOTAL: | 81.1% | 83.7% | 9.3% |
| TOTAL EXPENSES: | $339,884,946 | $352,382,245 | $25,277,809 |
| PERCENT OF TOTAL: | 89.4% | 92.73% | 6.7% |
| REVENUE TO EXPENSES | $1.00 to $1.09 | $1.00 to $1.10 | $1.00 to $0.71 |
| COMBINED 2008 & 2009: | $1.09 | $1.09 | $0.71 |

NOTES:
(1) There are 4,499 agricultural parcels in the County. Assuming each one was to add a single-family home, this would represent 9.07% of the single family homes in the County (4,499 divided by 49,609 single family parcels). When 9.07% of the revenues and expenses for single family homes are added to agriculture, along with existing residences already on agricultural lands, the resulting ratio is:     $0.71

**Figure 28. Charlottesville City land use cost-benefit ratios, all revenues:**

**CHARLOTTESVILLE, VIRGINIA: COMPARISON BETWEEN PRINCIPAL LAND USES 2009**
**SHOWING HOW MUCH IT COSTS TO PROVIDE SERVICES TO EACH LAND USE FOR EVERY $1 OF REVENUE GENERATED BY THAT LAND USE**
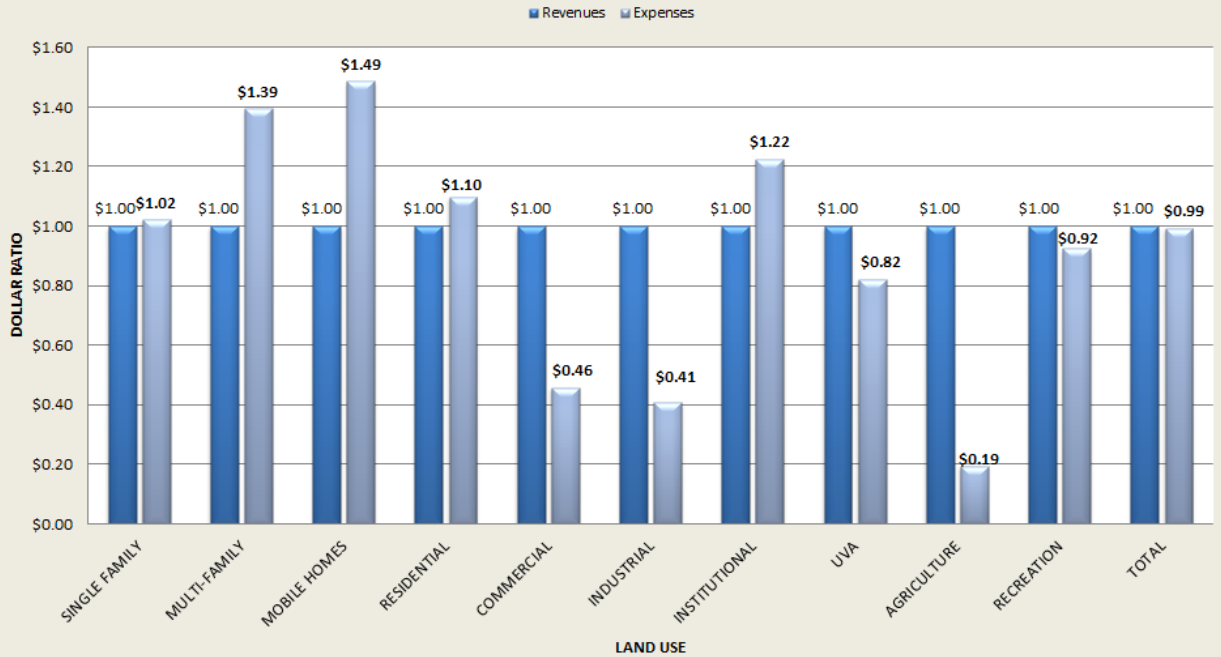WITH ALL REVENUES: LOCAL, STATE & FEDERAL

|  | SINGLE FAMILY | MULTI-FAMILY | RESIDENTIAL | COMMERCIAL | INDUSTRIAL | INSTITUTIONAL | UVA | RECREATION | VACANT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL REVENUE: | $105,181,197 | $63,415,970 | $168,597,167 | $38,210,513 | $3,776,890 | $9,439,531 | $3,236,410 | $3,639,301 | $857,900 | $227,757,711 |
| PERCENT OF TOTAL: | 46.18% | 27.84% | 74.02% | 16.78% | 1.66% | 4.14% | 1.42% | 1.60% | 0.38% | 100.00% |
| TOTAL EXPENSES: | $106,785,679 | $78,086,458 | $184,872,137 | $17,396,176 | $1,590,090 | $10,488,295 | $3,637,143 | $5,027,706 | $161,989 | $223,173,535 |
| PERCENT OF TOTAL: | 47.85% | 34.99% | 82.84% | 7.79% | 0.71% | 4.70% | 1.63% | 2.25% | 0.07% | 100.00% |
| REVENUE TO EXPENSES | $1.00 to $1.02 | $1.00 to $1.23 | $1.00 to $1.10 | $1.00 to $0.46 | $1.00 to $0.42 | $1.00 to $1.11 | $1.00 to $1.12 | $1.00 to $1.38 | $1.00 to $0.19 | $1.00 to $0.98 |
| COMBINED 2007 & 2009: | $1.05 | $1.25 | $1.12 | $0.47 | $0.42 | $1.09 | $1.08 | $1.34 | $0.26 | $1.00 |

|  | RESIDENTIAL WITH RECREATION | RESIDENTIAL WITH INSTITUTIONS & RECREATION |
|---|---|---|
| TOTAL REVENUE: | $172,236,468 | $181,675,998 |
| PERCENT OF TOTAL: | 74.4% | 78.5% |
| TOTAL EXPENSES: | $189,899,843 | $200,388,137 |
| PERCENT OF TOTAL: | 82.9% | 87.61% |
| REVENUE TO EXPENSES | $1.00 to $1.10 | $1.00 to $1.10 |
| COMBINED 2007 & 2009: | $1.13 | $1.13 |

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## WITH ALL REVENUES: LOCAL, STATE & FEDERAL
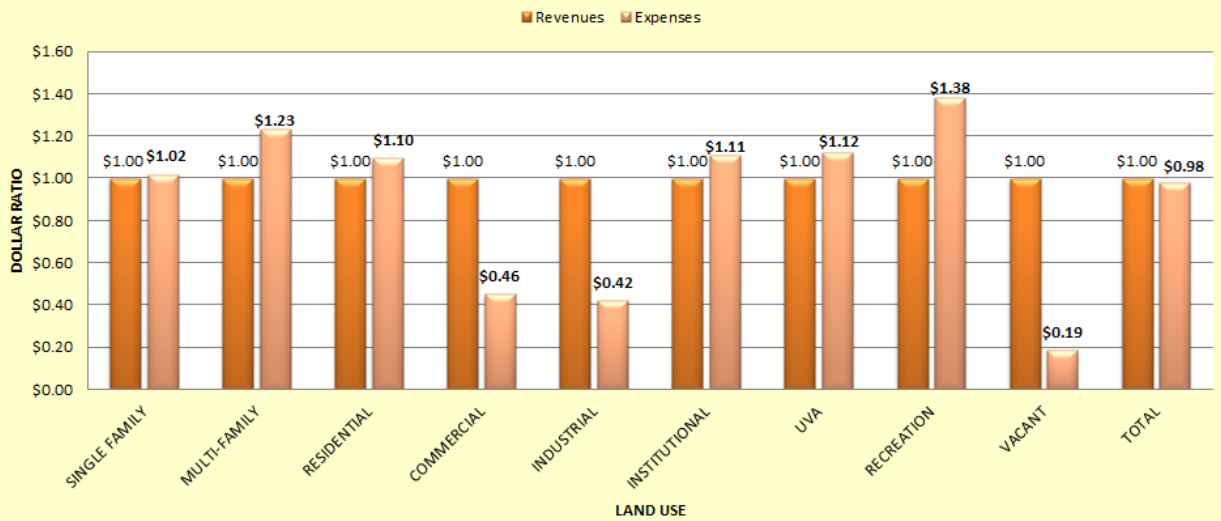### ALBEMARLE COUNTY, VIRGINIA - 2009
### RATIO OF EXPENSES
### TO EACH $1 OF REVENUE

Revenues  Expenses

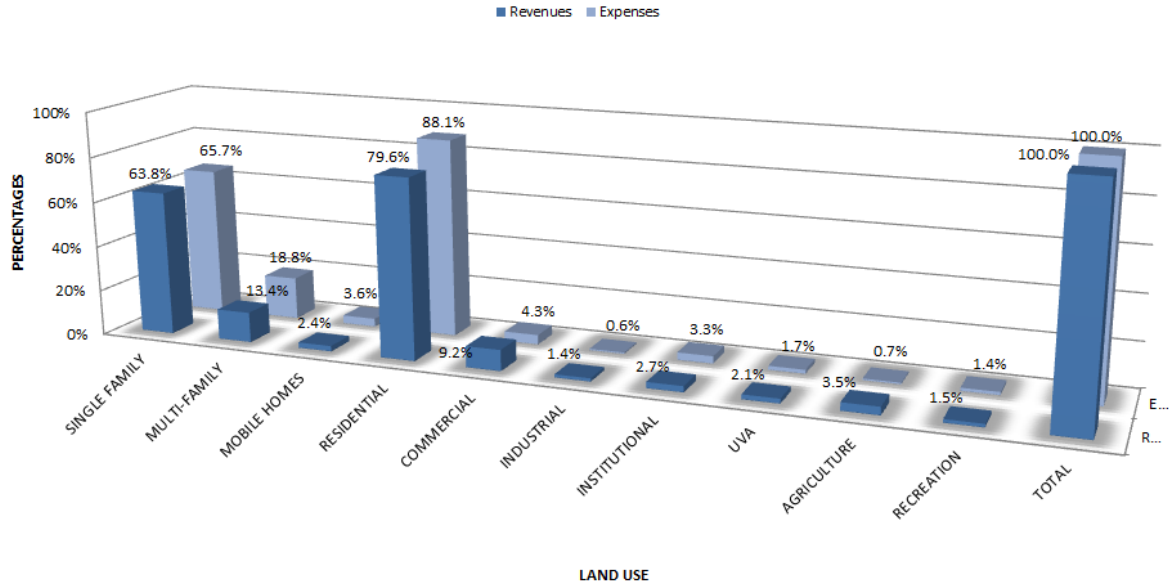| LAND USE | Revenues | Expenses |
|---|---|---|
| SINGLE FAMILY | $1.00 | $1.02 |
| MULTI-FAMILY | $1.00 | $1.39 |
| MOBILE HOMES | $1.00 | $1.49 |
| RESIDENTIAL | $1.00 | $1.10 |
| COMMERCIAL | $1.00 | $0.46 |
| INDUSTRIAL | $1.00 | $0.41 |
| INSTITUTIONAL | $1.00 | $1.22 |
| UVA | $1.00 | $0.82 |
| AGRICULTURE | $1.00 | $0.19 |
| RECREATION | $1.00 | $0.92 |
| TOTAL | $1.00 | $0.99 |

## WITH ALL REVENUES: LOCAL, STATE & FEDERAL
### CHARLOTTESVILLE, VIRGINIA - 2009
### RATIO OF EXPENSES
### TO EACH $1 OF REVENUE

Revenues  Expenses

| LAND USE | Revenues | Expenses |
|---|---|---|
| SINGLE FAMILY | $1.00 | $1.02 |
| MULTI-FAMILY | $1.00 | $1.23 |
| RESIDENTIAL | $1.00 | $1.10 |
| COMMERCIAL | $1.00 | $0.46 |
| INDUSTRIAL | $1.00 | $0.42 |
| INSTITUTIONAL | $1.00 | $1.11 |
| UVA | $1.00 | $1.12 |
| RECREATION | $1.00 | $1.38 |
| VACANT | $1.00 | $0.19 |
| TOTAL | $1.00 | $0.98 |

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WITH ALL REVENUES: LOCAL, STATE & FEDERAL
ALBEMARLE COUNTY, VIRGINIA - 2009
PERCENTAGE OF REVENUES & EXPENSES
GENERATED BY EACH LAND USE



WITH ALL REVENUES: LOCAL, STATE & FEDERAL
CHARLOTTESVILLE, VIRGINIA - 2009
PERCENTAGE OF REVENUES & EXPENSES
GENERATED BY EACH LAND USE

# 1.4 – Land Use Costs and Benefits: Population-only Allocations

Most fiscal impact studies use average per capita and population-based allocations, since community service and infrastructure costs are related directly to the number of people served.  This study, instead, has chosen a disaggregated approach, which "unbundles" the local budget by estimating the costs and revenues separately for each of the two jurisdictions' major *land use categories*.  This approach and its benefits are described in detail in *Appendix #1: How the Study was Conducted*, Section 1.1., *Commentary*.

This section was conducted as a control, to see how results differed if the vast majority of revenue and expense items were allocated by population—specifically by a calculation designed to allocate costs by **"where people spend their time."**  (This allocation method is described in more detail in Section 1.5 of *Appendix #1:  How this Study was Conducted*.)

In this control analysis, revenues are allocated primarily by population-only/where-people-spend-their-time, except for the following:

**Figure 33.  Allocation exceptions for population-based analysis**

| Revenue Item | Allocation Method |
|---|---|
| Real Estate Taxes | Property Tax Share |
| Delinquent Taxes | Property Tax Share |
| Penalty | Property Tax Share |
| Interest & Fees | Property Tax Share |
| Recordation Tax Receipts | Property Tax Share |
| Property Transfer Fees | Property Tax Share |
| Mobile Homes | Mobile Homes |
| Mobile Home Titling | Mobile Homes |
| Machinery & Tools | Industrial |
| Transient Room Tax | Commercial |
| Tourism | Commercial |
| State Payments in Lieu of Taxes | UVA |
| Collections from UVA for Services | UVA |
| Federal Payments in Lieu of Taxes | Recreation |
| Schools | Residential |

All but one group of expense items also are allocated by population-only/where-people-spend-their-time.  The sole exception is for K-12 school costs, which are attributed entirely to the residential land use category, since neither commercial nor industrial land uses, nor institutional or recreational land uses generate a *direct* need for public education services.

As this control analysis revealed, there proved to be little variance with the findings from Section 1.1.  This would suggest that **the allocations selected in Section 1.1 reflect a reasonable allocation of revenue and expense items across different land use categories.**

Moreover, as can be seen from the results reported below, the population-only/where-people-spend-their-time allocation *does not account* for all the costs associated with some land uses.

Agriculture, for example, requires fewer services than most other land uses and, therefore, generates a larger surplus of revenues over expenses. The calculations used in Section 1.1 produced a ratio of revenues to costs for agricultural land use of $1.00:$0.20. When a population-only/where-people-spend-their-time allocation is used, the costs drop to $0.03 for each $1.00 of revenue, which most likely understates the costs required to maintain agricultural land uses in the county.[12]

Similarly, in this control analysis, the costs associated with vacant lands in the city of Charlottesville change from a ratio of $1.00:$0.19, to a cost of zero. While no one lives on or uses vacant parcels to any great degree, it is reasonable to assume that in a city the size of Charlottesville, with a population density of 4,246 people per square mile (per 2010 Census), vacant lands are likely to receive some use and require occasional fire, police, emergency, and other public maintenance services.



*Albemarle County recreation: Chris Greene Lake Park/hot air ballooning*          *photos by Craig Evans*

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[12] This cost is very likely understated because a minimum threshold of costs, for fire and police protection, for example, must be maintained at least partly on a geographic basis, regardless of population density.

**Figure 34.  Albemarle County land use cost-benefit ratios, with allocations by population:**

ALBEMARLE COUNTY, VIRGINIA: COMPARISON BETWEEN PRINCIPAL LAND USES 2009
SHOWING HOW MUCH IT COSTS TO PROVIDE SERVICES TO EACH LAND USE FOR EVERY $1 OF REVENUE GENERATED BY THAT LAND USE
WITH REVENUES FROM LOCAL SOURCES - USING ALLOCATIONS BASED ON POPULATION

|  | SINGLE FAMILY | MULTI-FAMILY | MOBILE HOMES | RESIDENTIAL | COMMERCIAL | INDUSTRIAL | INSTITUTIONAL | UVA | AGRICULTURE | RECREATION | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL REVENUE: | $195,336,496 | $38,086,125 | $6,730,790 | $240,153,410 | $28,702,186 | $3,860,851 | $6,155,023 | $5,010,523 | $12,388,567 | $4,748,442 | $301,019,001 |
| PERCENT OF TOTAL: | 64.89% | 12.65% | 2.24% | 79.78% | 9.54% | 1.28% | 2.04% | 2% | 4.12% | 1.58% | 100.00% |
| TOTAL EXPENSES: | $248,170,758 | $74,310,695 | $14,388,250 | $336,869,702 | $14,498,412 | $1,484,216 | $8,541,433 | $6,787,834 | $401,803 | $6,542,663 | $375,126,062 |
| PERCENT OF TOTAL: | 66.16% | 19.81% | 3.84% | 89.80% | 3.86% | 0.40% | 2.28% | 0.02 | 0.11% | 1.74% | 100.00% |
| REVENUE TO EXPENSES | $1.00 to $1.27 | $1.00 to $1.95 | $1.00 to $2.14 | $1.00 to $1.40 | $1.00 to $0.51 | $1.00 to $0.38 | $1.00 to $1.39 | $1.00 to $1.35 | $1.00 to $0.03 | $1.00 to $1.38 | $1.00 to $1.25 |
| COMBINED 2008 & 2009: | $1.26 | $1.92 | $2.09 | $1.39 | $0.51 | $0.38 | $1.36 | $1.33 | $0.03 | $1.35 | $1.24 |

|  | RESIDENTIAL WITH RECREATION | RESIDENTIAL WITH INSTITUTIONS & RECREATION | SINGLE-FAMILY RESIDENTIAL ADDED TO A FARM (1) |
|---|---|---|---|
| TOTAL REVENUE: | $244,901,852 | $251,056,875 | $30,105,587 |
| PERCENT OF TOTAL: | 81.4% | 83.4% | 10.0% |
| TOTAL EXPENSES: | $343,412,365 | $351,953,798 | $22,910,891 |
| PERCENT OF TOTAL: | 91.5% | 93.82% | 6.1% |
| REVENUE TO EXPENSES | $1.00 to $1.40 | $1.00 to $1.40 | $1.00 to $0.76 |
| COMBINED 2008 & 2009: | $1.39 | $1.39 | $0.76 |

NOTES:
(1) There are 4,499 agricultural parcels in the County.  Assuming each one was to add a single-family home, this would represent 9.07% of the single family homes in the County  (4,499 divided by 49,609 single family parcels).  When 9.07% of the revenues and expenses for single family homes are added to agriculture, along with existing residences already on agricultural lands, the resulting ratio is:        $0.76
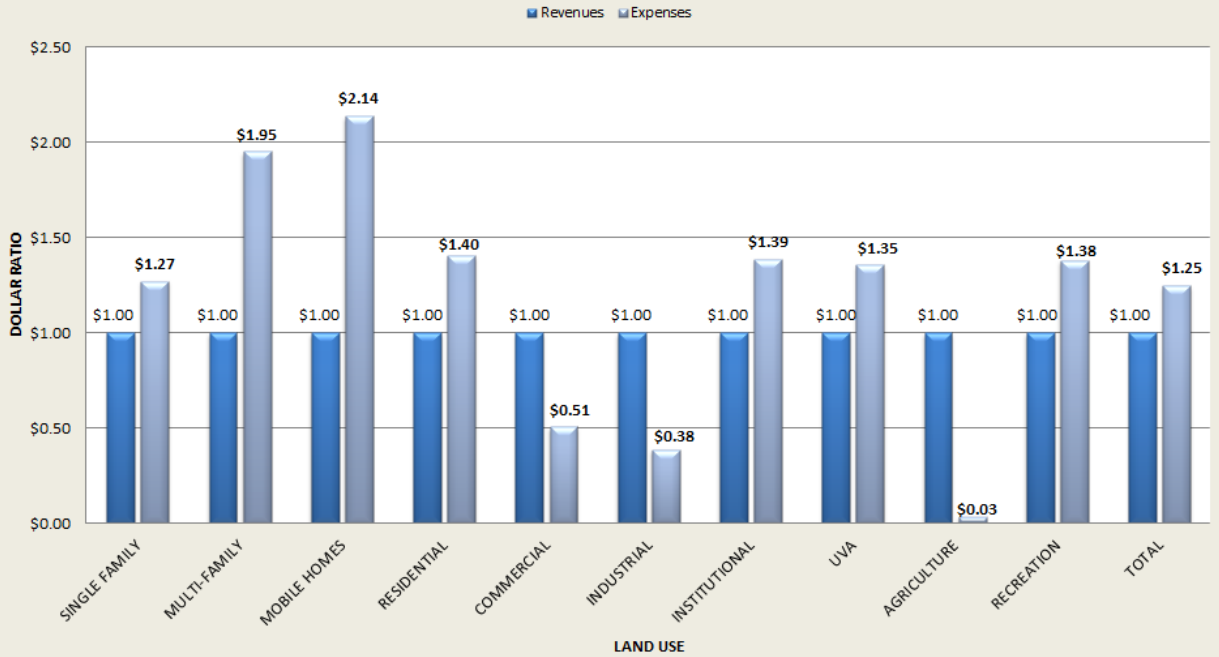
**Figure 35. City of Charlottesville land use cost-benefit ratios, with allocations by population:**

**CHARLOTTESVILLE, VIRGINIA: COMPARISON BETWEEN PRINCIPAL LAND USES 2009**
**SHOWING HOW MUCH IT COSTS TO PROVIDE SERVICES TO EACH LAND USE FOR EVERY $1 OF REVENUE GENERATED BY THAT LAND USE**
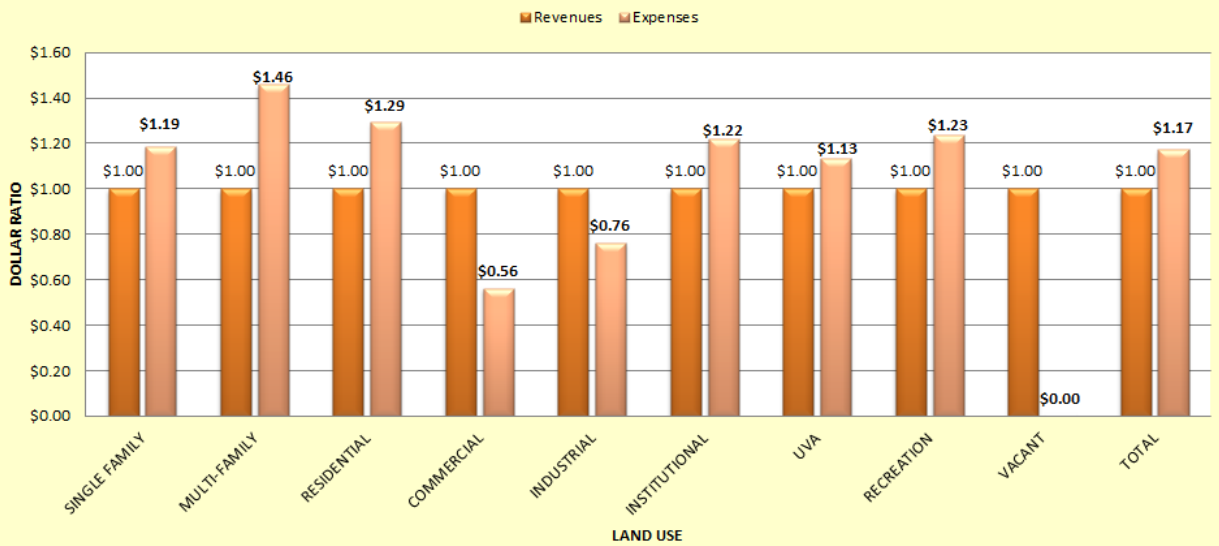WITH REVENUES FROM LOCAL SOURCES - USING ALLOCATIONS BASED ON POPULATION

|  | SINGLE FAMILY | MULTI-FAMILY | RESIDENTIAL | COMMERCIAL | INDUSTRIAL | INSTITUTIONAL | UVA | RECREATION | VACANT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL REVENUE: | $89,242,681 | $55,275,481 | $144,518,162 | $27,036,294 | $1,760,696 | $8,415,796 | $3,625,982 | $4,796,404 | $651,884 | $190,805,218 |
| PERCENT OF TOTAL: | 46.77% | 28.97% | 75.74% | 14.17% | 0.92% | 4.41% | 1.90% | 2.51% | 0.34% | 100.00% |
| TOTAL EXPENSES: | $105,864,462 | $80,516,649 | $186,381,111 | $15,196,571 | $1,339,453 | $10,238,027 | $4,099,646 | $5,918,729 | $0 | $223,173,536 |
| PERCENT OF TOTAL: | 47.44% | 36.08% | 83.51% | 6.81% | 0.60% | 4.59% | 1.84% | 2.65% | 0.00% | 100.00% |
| REVENUE TO EXPENSES | $1.00 to $1.19 | $1.00 to $1.46 | $1.00 to $1.29 | $1.00 to $0.56 | $1.00 to $0.76 | $1.00 to $1.22 | $1.00 to $1.13 | $1.00 to $1.23 | $1.00 to $0.00 | $1.00 to $1.17 |
| COMBINED 2007 & 2009: | $1.22 | $1.49 | $1.32 | $0.56 | $0.77 | $1.23 | $1.13 | $1.26 | $0.00 | $1.20 |

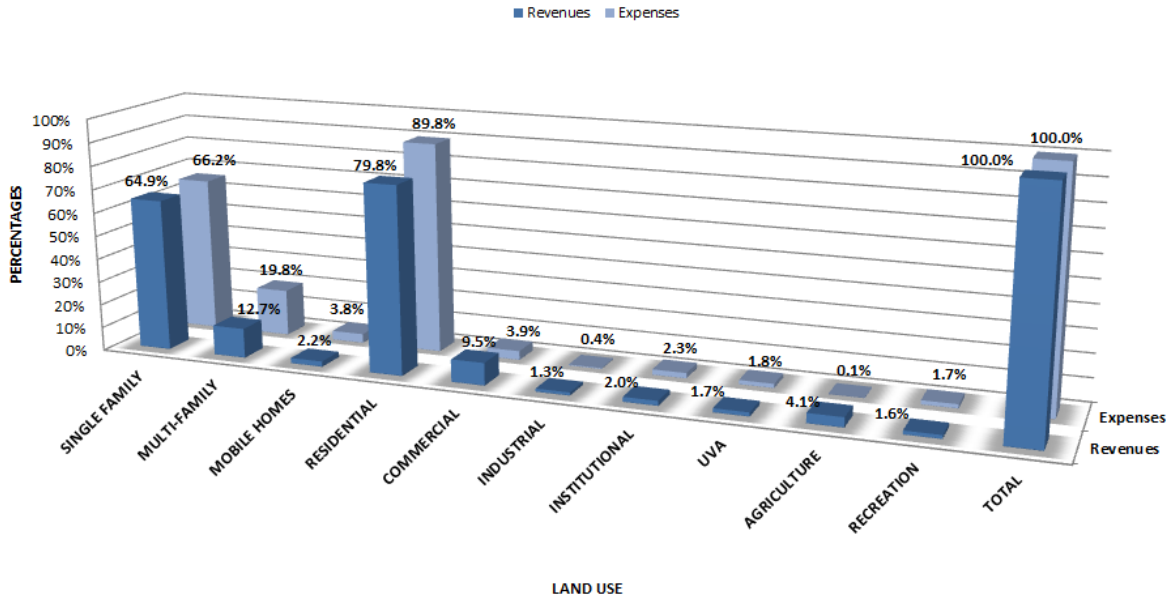|  | RESIDENTIAL WITH RECREATION | RESIDENTIAL WITH INSTITUTIONS & RECREATION |
|---|---|---|
| TOTAL REVENUE: | $149,314,566 | $157,730,362 |
| PERCENT OF TOTAL: | 76.1% | 80.5% |
| TOTAL EXPENSES: | $192,299,840 | $202,537,866 |
| PERCENT OF TOTAL: | 83.5% | 88.10% |
| REVENUE TO EXPENSES | $1.00 to $1.29 | $1.00 to $1.28 |
| COMBINED 2007 & 2009: | $1.32 | $1.31 |

ALBEMARLE COUNTY, VIRGINIA - 2009
RATIO OF EXPENSES
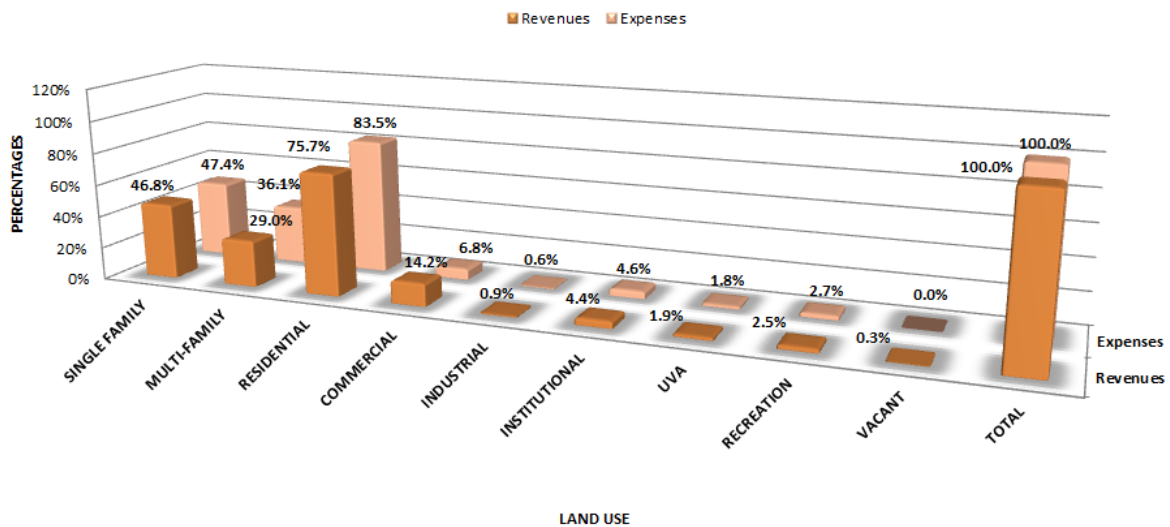TO EACH $1 OF REVENUE
WITH ALLOCATIONS BY POPULATION



CHARLOTTESVILLE, VIRGINIA - 2009
RATIO OF EXPENSES
TO EACH $1 OF REVENUE
WITH ALLOCATIONS BY POPULATION

# ALBEMARLE COUNTY, VIRGINIA - 2009
## PERCENTAGE OF REVENUES & EXPENSES
## GENERATED BY EACH LAND USE
## WITH ALLOCATIONS BY POPULATION

Revenues    Expenses

| Land Use | Revenues | Expenses |
|---|---|---|
| SINGLE FAMILY | 64.9% | 66.2% |
| MULTI-FAMILY | 12.7% | 19.8% |
| MOBILE HOMES | 2.2% | 3.8% |
| RESIDENTIAL | 79.8% | 89.8% |
| COMMERCIAL | 9.5% | 3.9% |
| INDUSTRIAL | 1.3% | 0.4% |
| INSTITUTIONAL | 2.0% | 2.3% |
| UVA | 1.7% | 1.8% |
| AGRICULTURE | 4.1% | 0.1% |
| RECREATION | 1.6% | 1.7% |
| TOTAL | 100.0% | 100.0% |

LAND USE

# CHARLOTTESVILLE, VIRGINIA - 2009
## PERCENTAGE OF REVENUES & EXPENSES
## GENERATED BY EACH LAND USE
## WITH ALLOCATIONS BY POPULATION

Revenues    Expenses

| Land Use | Revenues | Expenses |
|---|---|---|
| SINGLE FAMILY | 46.8% | 47.4% |
| MULTI-FAMILY | 29.0% | 36.1% |
| RESIDENTIAL | 75.7% | 83.5% |
| COMMERCIAL | 14.2% | 6.8% |
| INDUSTRIAL | 0.9% | 0.6% |
| INSTITUTIONAL | 4.4% | 4.6% |
| UVA | 1.9% | 1.8% |
| RECREATION | 2.5% | 2.7% |
| VACANT | 0.3% | 0.0% |
| TOTAL | 100.0% | 100.0% |

LAND USE

# 2 – Break-even Analysis

Almost every fiscal impact study shows that the average mix of residential uses in all but the most upscale American communities create fiscal cost-revenue deficits. This forces these communities to rely increasingly upon outside revenue (from state or federal governments, or in some cases, tourists and visitors). It also contributes to the ongoing degradation of both essential public services and key environmental assets.

Like other regions centered on college towns, Charlottesville and Albemarle County have been able to mitigate these outcomes to a significant degree by banking on the positive fiscal impact of a large temporary population (UVA students and visitors). Although this temporary population is not without costs for which local governments remain responsible, it nevertheless generates significant local revenue (tied to both direct and indirect sales and direct and indirect property tax payments) and requires fewer services, which imposes fewer costs.

Despite this uncommon advantage, Charlottesville and Albemarle still lack the capacity under their status quo tax policies to finance the essential public service needs of their existing populations. This is especially obvious if state aid to local jurisdictions fails to keep pace (as has been the case in Virginia for more than a decade).

One common strategy used by local policymakers to help close this fiscal gap is the recruitment of targeted commercial enterprises. The weakness of this strategy, as discussed earlier, is that these enterprises often must recruit a significant part of their workforce from *outside* of the region. The resulting population growth can dramatically undermine their perceived fiscal advantage.

Another strategy is to encourage the development of new, expensive home sites, in order to attract wealthy homeowners so that their extraordinary property and sales tax payments might help close existing fiscal gaps.

Recognizing the prevalence of this tactic, this study also calculated hypothetical **"break-even"** and **"compensating"** home price comparisons.

The "break-even" price is the price at which a home will generate enough local revenue to offset the additional public service costs that will be incurred as a result of the new household. This is the average price at which all future homes must be sold to *avoid widening* the current fiscal gap.

The "compensating" price takes a specified number of homes (in the case of this analysis, 2,000 homes was used) and determines the price at which these homes will generate sufficient local revenues to pay for the services currently demanded by all land uses, citizens, and commercial enterprises. This price compensates not only for the costs incurred by each new household but makes up entirely for the community-wide shortfall between local revenues and costs. It is the price that is necessary to *close* the current fiscal gap.

As the table and bar charts below illustrate, it is unlikely that either Charlottesville or Albemarle County would be able to close their current fiscal gaps with this tactic.

**Figure 40. Average taxable value, residential property**

| Current Single Family Home Values | Average Taxable Value | Property Taxes Generated | Ratio of Revenues to Expenses |
|---|---|---|---|
| Albemarle County | $344,260 | $2,578.50 | $1.00:$1.28 |
| City of Charlottesville | $293,347 | $2,786.79 | $1.00:$1.24 |

**For single family homes to generate enough revenue to pay for the services they require, assuming no change in demographics or the numbers of school-age children per household, the average taxable values of the entire stock of homes on a countywide and citywide basis would have to increase to:**

<u>**$668,761**</u> **in Albemarle County and**
<u>**$634,350**</u> **in the City of Charlottesville** (see the bar charts on the next page).

These estimates are comparable to those calculated by Albemarle County. According to the June 1995 Cost-Revenue Impact Model (CRIM) prepared for Albemarle County by Tischler & Associates, Inc., the typical single-family detached residence in Albemarle County would have to have an assessed value of $634,970 in order for the unit to pay for the services demanded by the average family that would inhabit such a new home. At the time this county estimate was made, the average assessed value of a single family dwelling in the county was $154,788, 45% of what it is today.

Even if it was possible to limit all newly occupied houses to those that have a break-even price, this still would be insufficient to close the *current* shortfall between the revenues generated and the services required by all *existing* residences and land uses in Albemarle County or Charlottesville.

As the bar charts on the next page indicate, for Albemarle County to build its way to such a hypothetical balance, it would have to add **2,000 homes valued at $2.7 million each,** *without adding any homes of a lower value*, to close this gap.

For Charlottesville to build its way to such a hypothetical balance, it would have to add a little more than **2,000 residences valued at $1.537 million each** to make up for its current shortfall.

These calculations have significant bearing on the question central to this study: can the encouragement of growth—even in a carefully targeted form—help local governments pay for the essential public services that their populations require? These two sets of calculations reveal:
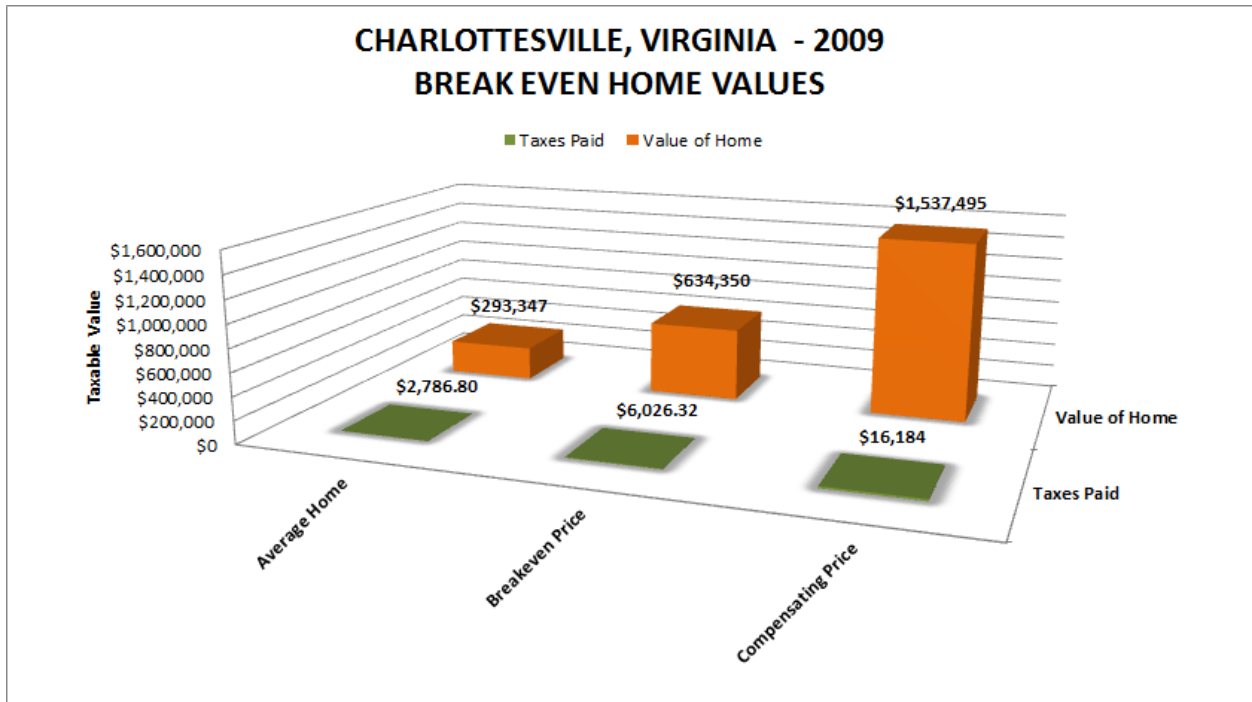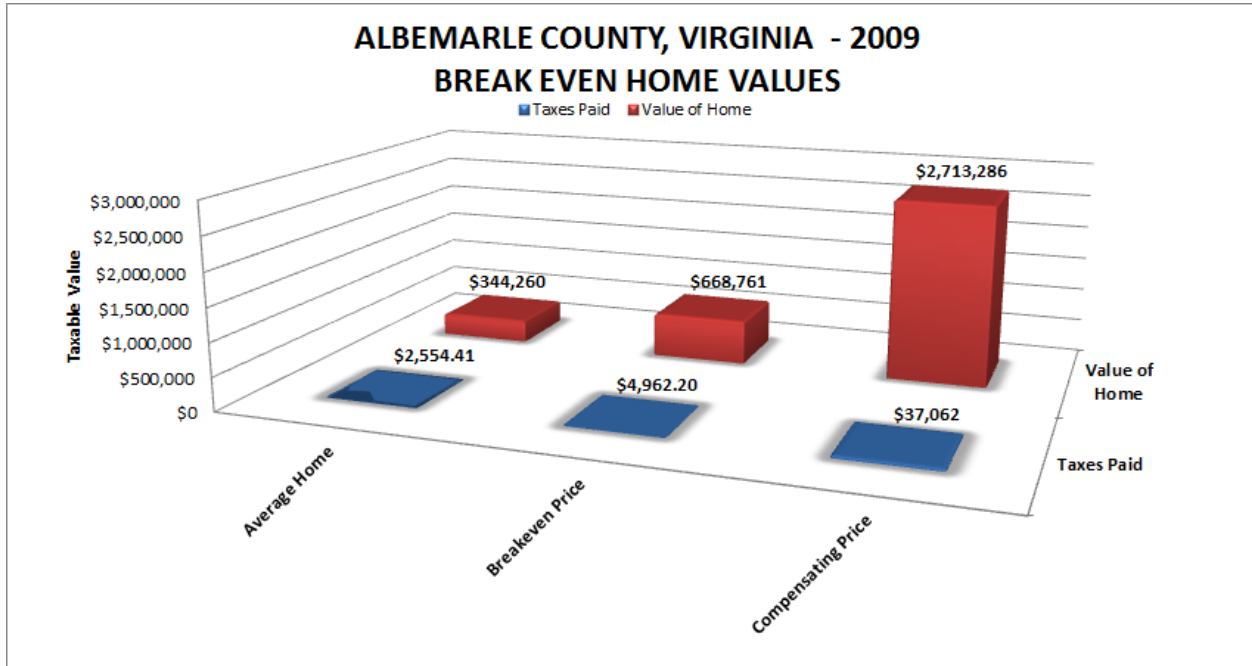- There is a close similarity in the break-even prices of the two jurisdictions, but a large disparity in their compensating prices.
- Albemarle's break-even price is just 5% more than Charlottesville's, yet its compensating price is 76% greater than Charlottesville's.
- The similarity between the break-even prices indicates that both jurisdictions have relatively similar levels of local revenues and costs on a per-household basis.
- With that being the case, the question becomes: what distinguishing factor between the two jurisdictions can be isolated to explain the large difference in their compensating prices?
- One obvious difference between Charlottesville and Albemarle County over the past 30 years has been their vastly different growth rates.
- During the 30-year period between 1980 and 2010, Charlottesville's population grew just 9% from 39,916 to 43,475 residents, while Albemarle's population increased 77%, from 55,783 to 98,970 residents.[13]
- The difference between these two rates of growth—63%—is strikingly similar to the difference between the two compensating prices.

The findings elsewhere in this study (Section 1.1 Land Use Costs and Benefits, Section 3 Per Capita Costs and Benefits, and Section 6 Growth Projections) give further support to the conclusion that the disparity in compensating prices is a function of Albemarle County's much greater rate of growth—which, in turn, has contributed to an ever-widening shortfall between local revenues and costs.

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[13] U.S. Census Bureau

It should be noted once again that, like other analyses in this study, these home price estimates do not include any costs associated with deferred infrastructure development or maintenance, nor do they account for the environmental degradation and loss of critical area ecosystem services that such development would most assuredly introduce.

For details on these calculations, see Section 2 of *Appendix 1: Methods & Calculations, How this Study was Conducted.*



ALBEMARLE COUNTY, VIRGINIA - 2009
BREAK EVEN HOME VALUES



CHARLOTTESVILLE, VIRGINIA - 2009
BREAK EVEN HOME VALUES

# 3 – Per Capita Costs and Benefits

This study identified over 250 services that people require–and another 150 that they commonly want. These serve as the basis for a functioning community and a satisfactory quality of life. This is why Oliver Wendell Holmes, Jr. once described taxes as "the price we pay for civilization."

Population growth in any community entails increased community complexity and interdependence, which necessitates an increased reliance upon greater numbers of these services. Some of these services are provided by local government, some by the state and federal governments, and some by private entities such as utilities, nonprofit organizations, and commercial for-profit enterprises. (For a list of these services, see Sections 3.1 and 3.2 in *Appendix 2: A Guide to the Study's Spreadsheets*.)

Many of the services provided by local governments are like rules of the road: they are there to help things flow smoothly, ensure safe and efficient transactions, and allow everyone to take turns in moving forward. Many others represent investments, in human capital and in goods that are inherently public, that help to underwrite economic stability and broad economic opportunity. Paradoxically, when these services are purchased efficiently and in adequate quantity, communities function so much more smoothly and create so much more opportunity that one hardly notices their presence.

Most of this study (as reported in Section 1) based its findings on a disaggregated analysis, in which public service costs were allocated by land use categories. In contrast, findings for the final section, which illustrates the fiscal impacts of estimated growth projections, are based on public service costs that are allocated on a per capita basis. These per capita costs are described on the next page.



*Albemarle County Office Building & Charlottesville City Hall*                    *photos by Craig Evans*

As the per capita cost tables below illustrate, each person in Charlottesville and Albemarle County currently requires more spending at the local, state and federal levels for the services they need than they pay in taxes, fees and other charges.

**Figure 43.  Per capita costs by jurisdiction**

### TOTAL PER CAPITA COSTS

| City of Charlottesville | PER CAPITA PERMANENT POPULATION | | Albemarle County | PER CAPITA PERMANENT POPULATION |
|---|---|---|---|---|
| **City** | | | **County** | |
| TOTAL PER CAPITA CITY REVENUE | $4,518.67 | | TOTAL PER CAPITA COUNTY REVENUE | $3,113.88 |
| TOTAL PER CAPITA CITY EXPENSES | $5,492.91 | | TOTAL PER CAPITA COUNTY EXPENSES | $4,003.79 |
| DIFFERENCE: REVENUES LESS EXPENSES | ($974.24) | | DIFFERENCE: REVENUES LESS EXPENSES | ($889.92) |
| **State** | | | **State** | |
| TOTAL PER CAPITA STATE REVENUES | $3,036.73 | | TOTAL PER CAPITA STATE REVENUES | $2,977.89 |
| TOTAL PER CAPITA STATE EXPENSES | $3,488.00 | | TOTAL PER CAPITA STATE EXPENSES | $4,177.51 |
| DIFFERENCE: REVENUES LESS EXPENSES | ($451.27) | | DIFFERENCE: REVENUES LESS EXPENSES | ($1,199.62) |
| **Federal** | | | **Federal** | |
| TOTAL PER CAPITA FEDERAL REVENUES | $7,981.00 | | TOTAL PER CAPITA FEDERAL REVENUES | $7,981.00 |
| TOTAL PER CAPITA FEDERAL EXPENSES | $12,613.77 | | TOTAL PER CAPITA FEDERAL EXPENSES | $12,692.38 |
| DIFFERENCE: REVENUES LESS EXPENSES | ($4,632.77) | | DIFFERENCE: REVENUES LESS EXPENSES | ($4,711.38) |
| **TOTAL DIFFERENCE** | **($6,058.28)** | | **TOTAL DIFFERENCE** | **($6,800.93)** |

Sources:  for local data, 2008-09 Budget Actuals for Albemarle County and City of Charlottesville were used; state and federal data came from The Tax Foundation (http://www.taxfoundation.org/research/topic/64.html).

**The average household which, according to 2010 U.S.  Census Bureau data, is 2.45 people in Albemarle County and 2.22 in the City of Charlottesville, incurs an annual shortfall of:**

**Charlottesville household:  ($13,449.38)**          **Albemarle household:   ($16,662.28)**

# PART 2: WHAT ARE THE IMPLICATIONS OF CONTINUED POPULATION GROWTH?

## 4 – What's in the Pipeline?

According to data compiled by county staff and discussed during a February 14, 2012 Board of Supervisors meeting, Albemarle County has a significant amount of development already in the pipeline:

- 7,700 residential units
- over 1 million square feet of commercial space

These residential and commercial developments are approved but not yet built.

Assuming the average 2010 U.S. Census Bureau density of 2.45 people per household is maintained, the approved units could accommodate 18,865 people, a 19% population increase. **That's more than the county grew between 2000 and 2010, when the population increased by 14,794 people.**

A build-out analysis conducted in November 2011 by the Charlottesville Department of Neighborhood Services indicates that if all vacant land in the city were developed at maximum by-right density with no regard for any limiting factors and selected properties were re-developed, the city's current zoning could accommodate 4,328 additional residential units, or 10,514 additional residents.[14]

Moreover, an additional 5,759 residential units, or 15,209 residents, could be accommodated through the by-right re-development of the selected properties. Adding these calculations together, the city found its current zoning could accommodate approximately 10,000 additional residential units, or roughly 25,000 additional residents. Added to the current population of the city, this would result in a population of 69,198.

Through a more aggressive analysis, assuming maximum use of special use permits, Charlottesville City government staff found that the city's current zoning could accommodate approximately 40,000 residential units, or roughly 100,000 additional residents; added to the current population of the city, this would result in a population of 145,989.

The conclusions drawn from the analysis were:

1. Ample capacity for development exists under the city's current zoning regulations to accommodate projected increases in population.

2. Of the 10,000 units shown in additional by-right capacity, only roughly 800 would be accommodated in low-density residential zones. Any substantial increase in city population will require the construction of additional multi-family residential structures.

3. Additional commercial and industrial space in the city will most likely need to be located in mixed use zones, or in existing commercial and industrial sites via re-development.

4. The analysis shows that the city's ability to accommodate new units on vacant property is declining, and will continue to do so in the future. Development activity will be increasingly focused on re-use and re-development of previously built upon sites.

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[14] "Buildout Analysis for the City of Charlottesville," Charlottesville Department of Neighborhood Services, prepared for a Work Session of the Charlottesville Planning Commission held on November 22, 2011.

One implication of these analyses is clear: the Charlottesville-Albemarle County population **could grow significantly in the coming years and decades.**

# 5 – Infrastructure Costs

The biggest surprise in this study is that **no one could provide specific information on the current capacity, number of people served, the backlog of unmet needs and the estimate of related costs for Albemarle County's infrastructure.**

As one county official noted, "We don't know, but we *should* know."

The county's Capital Improvements Program (CIP) and the Capital Needs Assessment (CNA) show proposed spending plans for the budget in a five-year (CIP) and subsequent five-year (CNA) time frames, but they do not address the actual unmet needs of the community in its effort to accommodate future growth.[15]

Three different University of Virginia interns attempted to gather information for this section at different times over the course of the 2010-2011 academic year. The interns and the study's project director met with county staff on six occasions, exchanged numerous emails and pored over all of the documents made available.

It was clear, as one county staff member explained, that "There is no mechanism in place to estimate the cost of needs and to put means in place to acknowledge and pay for those needs."

The city fared better, since it has had a stable population for 35 years and is not, therefore, playing catch up. Indeed, at the time this study was being conducted, the city was focusing on the costs of upgrading its extensive network of sidewalks. While the city had a much more realistic grasp of the existing infrastructure shortfall and how much it was likely to cost than did the county, like the county, it did not have sufficient funds to meet this need.

## *Shortcomings in the Comprehensive Plans and Master Plans*

The city's and county's current Comprehensive Plans include scattered goals for desired levels of service for facilities such as the police department, fire department, and schools, but none of the numbers tie with any consistency to specific steps through which the goals can be implemented. There also is no clear means of translating these goals into costs.

The county's Comprehensive Plan maintains, for example, that libraries are required to have 1 facility per 20,000 residents as well as 3 books per resident. Police departments require 1.5 officers per 1,000 residents and a 10 minute response time to rural areas of the county. Fire departments require a response time of less than 5 minutes to developed areas and less than 13 minutes to rural areas.

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[15] As research for this study was being completed in the fall of 2011, county staff was informed that the county's Capital Needs Assessment (CNA), the five-year block beyond its five-year Capital Improvements Program (CIP), was to be updated in 2012 and was to include capital needs that *actually exist*, not just capital needs that the county *can afford to address* given the budget and tax policy status quo. As one county staff member noted, "This approach doesn't necessarily guarantee that these identified needs actually would be funded but, at least, should give the county a reasonably accurate assessment of its current needs."

These are the kinds of specific numerical measurements one would expect to see in planning documents in order to determine acceptable levels of service and to plan for the facility improvements and expansions that will be required as a community grows.

None of the numbers in the Comprehensive Plans and none of the numbers in the Master Plans reflect genuinely comprehensive estimates of the region's infrastructure needs, nor do they tie with any consistency to specific steps through which the goals can be implemented. For example, there are no steps for:

- Determining adequate levels of service,
- Measuring progress in meeting these levels of service, or
- Providing warnings when capacities are being exceeded and large expenditures are going to be needed as a result of accepting or encouraging additional growth.

Another looming set of costs, that have been officially ignored, even when they are potentially knowable, are the costs related to forthcoming water quality standards for Total Maximum Daily Loads (TMDL) of regulated water pollutants. Indeed, a recent study by the American Water Works Association estimated that even without accounting for pipe replacement and other upgrades associated with any new standards, the necessary repair and expansion of U.S. drinking water systems will cost at least $1 trillion between 2012 and 2035.[16]

As a result, it is clear that the current practice in Albemarle County, like that of many localities throughout the nation in this era of tax structure erosion and counterproductive austerity, is to muddle through any accounting for infrastructure costs, partly by ignoring the backlog of unmet needs, partly by defining diminished service as the norm, partly by a gradual privatization of some related costs, and partly by addressing the costs only when the quality and quantity of the county's infrastructure appears to have eroded to uncomfortable, widely unacceptable levels.

# 6 – Growth Projections

The principal data used in this analysis comes from a snapshot of the most currently available costs and revenues at the time the study was conducted. But what about the future?

With 7,700 residential units and over 1 million square feet of commercial space in the county's current pipeline, approved but not yet built, it is clear the county is poised to grow. What is not clear is how much this additional growth may cost.

It is possible to estimate how the various cost-benefit ratios by land-use type reported in this study would change with population growth. This can be done by projecting estimated deficits and assuming the status quo for tax rates and state and federal assistance.

Using this approach, cost estimates for growth were estimated for three different county population thresholds: 125,000; 150,000, and 200,000. These estimates were calculated without accounting for:

- Critical Population Impact Points (PIPs), tipping points at which linear cost increases are transformed into much more significant accelerating cost increases, such as when a water treatment facility reaches capacity and the addition of a few more new residents requires a new treatment facility; and

- Unrecognized environmental degradation associated with population growth.

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[16] Blake Ellis, "Water Bills Expected to Triple in Some Parts of U.S.," *CNN Money*, 28 February 2012.

## *Proffers and cost projections*

The projections used in this study are linear extensions of the data gathered through the study from county budgets and per capita costs, combined with the data and projections contained in the county's proffer documents.

Proffers are voluntary offers by a landowner/developer to perform an act, contribute money or donate land in order to mitigate the impacts of new development that result from a rezoning.

Considerable thought has gone into developing a series of legally defensible proffer documents for the county to use in projecting the cost impacts of new residential and commercial developments.

The county's proffer documents, which are reviewed and updated as necessary by the county's Fiscal Impact Advisory Committee, contain estimates of the costs incurred by adding a new single family, single family attached, or multi-family residence or mobile home unit.  The proffer documents also contain estimates of how budget revenues will be impacted by the addition of new residents.

## *How the county's proffer documents were developed*

The county's proffer calculation method was not, and is not, intended to be structured as a genuine cost of growth analysis.  The purpose of the proffer calculations is to derive dollar estimate amounts that would reflect only the types of costs that can be included under existing state law.  In practice, this means that the county's Fiscal Impact Advisory Committee (FIAC) faces two major constraints:

1. Operating costs associated with new development could *not* be included in the calculation; and

2. Only infrastructure costs that appeared at the time in the county's Capital Improvement Program/Capital Needs Assessment (CIP/CNA) document could be included in the calculation.

## *Weaknesses in the county's proffer documents*

As a result of these constraints, the county's proffer documents suffer from several weaknesses:

1. They do not include costs for all of the infrastructure that will be required by a new development; and

2. They do not account for Population Impact Points (thresholds at which major, rather than incremental, construction or reconstruction becomes necessary).

Despite these shortcomings, this study used the proffer documents as the basis for its projections.

To estimate prospective costs, this study used the estimated costs cited in the proffer documents for a single family dwelling unit (or SFD), since this provides a very conservative (and therefore significantly understated) cost projection.

The proffer documents show non-transportation costs for SFDs of $18,714 plus transportation costs of $3,827 for a total combined cost of $22,541 per dwelling unit.  Similar costs are broken out for single family attached town houses (SFA/TH), multi-family residences (MF) and mobile homes (MH).  For SFA/THs the cost is $15,584, for MFs the cost is $13,835 and for MHs the cost is $20,651 per unit.

This study uses $22,541 as the cost that is incurred for the infrastructure necessary to support a new dwelling unit with an average of 2.27 people, the U.S. Census Bureau per capita density for Albemarle County at the time the proffer calculations were made.  When rounded, this number results in a per capita cost of $10,000 (or $22,700 with 2.27 people per household).

The proffer memorandum states that "the Cost Revenue Impact Model has estimates for fourteen different federal, state and local revenue streams associated with a dwelling unit in each of the four residential categories." These estimates are $4,269 in annual revenue for SFDs, $3,171 for SFA/THs, $2,416 for MHs and $2,989 in annual revenues for MHs.

There are three problems with these estimates:

1. To use federal and state revenue to fill in gaps is to include sources that must offset ever increasing per capita deficits in locally generated revenue. Given the current anti-tax environment and acceptance of devolution (the passing on of *greater* fiscal responsibility to local governments from the jurisdictions above them), such implied federal and state capacity is very unlikely to materialize.

2. The proffer analysis earmarks 10% of expected revenues for debt service.

   This study shows that the revenues generated by each new dwelling unit are not sufficient to cover even the annual per unit *operating* costs of government. Each residential unit, on average, creates a deficit of $0.28 for each $1.00 of revenue generated. Earmarking revenues for debt service can be done only if operating deficits are allowed to grow, service is allowed to deteriorate, and unrecognized capital costs remain tucked away out of sight.

3. The proffer documents include "assumed twenty year increases in Albemarle County Revenue streams" as new dwelling units are added. Annual revenues are projected to increase in excess of 4% per year (4.47% for each SFD, 4.52% for each MF unit and 4.26% for each MH unit) as growth occurs. With a regressive tax base built principally on a property tax that can appear responsive only through the prism of the recent speculative real estate investment bubble, such estimated increases are likely to be far too optimistic.

## Adjusting for the proffer's weaknesses

To overcome the weaknesses in the proffer documents, two changes were made.

- For the purposes of projection, revenue not connected to population increases was excluded as was any revenue not derived from local taxes.

- The proffer documents only count expenses for services provided to residents directly by the county, including costs for courts, fire stations, police, parks, recreational facilities, libraries, and schools, but exclude costs for water, sewer and waste disposal, detention and correction facilities, human service facilities, health facilities, as well as utility extensions for gas, electricity and Internet. For this reason, the projection of costs in this study assumes that the $10,000 per capita cost ought to be doubled. Instead of charging this as a one-time fee, however, this analysis amortizes it as a cost of $1,000 per person per year for 20 years, the period over which bonded debt would be paid down, with a 5% financing charge added.

Even with this adjustment, the costs still are most likely understated.

## Projections of the future costs of growth

The projections carried out in this study show that **costs follow people**. As the population increases, the shortfall between revenues and the expenses for necessary services also increases (due to the rising preponderance of residential property relative to other land uses). As noted above, this assumes the emergence of no Population Impact Points and, additionally, no marked expansion of per capita state and federal aid.

The table below illustrates estimated shortfalls related to the county's 2008-09 population of 94,098 and prospective populations of 125,000, 150,000 and 200,000:

**Figure 44.  Rising per capita fiscal gap, by hypothetical population thresholds**

| Albemarle County | 2008-09 Population 94,908 | With Population of 125,000 | With Population of 150,000 | With Population of 200,000 |
|---|---|---|---|---|
| **County** | | | | |
| TOTAL PER CAPITA REVENUE | $3,113.88 | $3,113.88 | $3,113.88 | $3,113.88 |
| TOTAL PER CAPITA EXPENSES | $4,003.79 | $4,213.79 | $4,353.79 | $4,528.79 |
| DIFFERENCE: REVENUES LESS EXPENSES | ($889.92) | ($1,099.91) | ($1,239.91) | ($1,414.91) |

Distinguished by land use, prospective population growth would impact revenues and expenses in the following manner:

**Figure 45.  Rising per capita fiscal gap, by land use type at hypothetical population thresholds**

| All Land Uses – Albemarle County | 2008-09 | w/ 125,000 | w/ 150,000 | w/ 200,000 |
|---|---|---|---|---|
| Single Family Homes | $1.28 | $1.40 | $1.44 | $1.50 |
| Multi-Family Homes | $1.96 | $2.14 | $2.21 | $2.30 |
| Mobile Homes | $2.16 | $2.35 | $2.43 | $2.53 |
| **All Residential Land Uses** | **$1.41** | **$1.54** | **$1.59** | **$1.65** |
| Commercial Land Uses | $0.51 | $0.56 | $0.57 | $0.60 |
| Industrial Land Uses | $0.44 | $0.48 | $0.49 | $0.51 |
| Institutional Land | $1.53 | $1.67 | $1.73 | $1.80 |
| University of Virginia (UVA) | $1.03 | $1.13 | $1.16 | $1.21 |
| Agriculture | $0.20 | $0.21 | $0.22 | $0.23 |
| Open Space/Recreation | $1.28 | $1.40 | $1.45 | $1.50 |
| **All Land Uses Combined** | **$1.24** | **$1.35** | **$1.40** | **$1.45** |

Even after adjusting for the less than comprehensive costs figured into the official proffer cost analysis, this table still reflects ***understated*** costs and cost increases, due to the inherent difficulty associated with gathering relevant data and generating accurate estimates.  Among the ignored costs are:

- Current unmet needs;
- Deteriorations in levels of service and "quality of life" factors, such as crowded classrooms and gridlocked roadways;
- Population Impact Points (PIPs);
- Externalities related to air and water quality and biodiversity; and

- Transfers of costs to other communities by people who work in Charlottesville or Albemarle County but commute to other locales to find affordable housing.

Communities undergoing rapid population growth and facing a series of Population Impact Points are confronted by additional challenges in trying to estimate the actual fiscal impacts of new development. That's because these costs can be seriously misrepresented by fiscal impact analyses that rely on constant service levels or revenues (as when existing per capita costs and revenues are used to estimate the impact of new development).

In Loudoun County, Virginia, for example, which has been one of the fastest-growing counties in the United States since the mid-1980s, relative per capita operating outlays (in inflation-adjusted dollar terms) have increased substantially for all of the county's major service functions, from 27 percent for the judicial branch of government on up to 350 percent for public works between 1985 and 1997.

As Helen Ladd noted in her influential study of population growth and the cost of providing public services, "the major stress on local public spending associated with a surge in population occurs in the capital, not the current account budget."[17] In Ladd's analysis, the first significant Population Impact Point emerges at a population density of 250 people per square mile.[18]



*Looking west across Albemarle County at sunset, above Stony Point*          *Photo by Craig Evans*

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[17] Ladd, Helen, *Population Growth, Density and the Costs of Providing Public Services,* in *Urban Studies*, Vol. 29, No. 2, 1992, p. 288. Measuring impacts based on two dimensions of population growth—the rate of change and the gross residential densities—Ladd examined data for 247 large county areas covering 59 percent of the population.

[18] Reflecting an additional weakness of the proffer-based fiscal compensation strategy, Ladd concluded her study by noting that "it is hard to make an argument for high financing burdens on new residents alone; after all, the established residents are as much a cause of the higher density as are the new residents." Ibid, p. 293.

*The Downtown Mall in autumn*                                                              *photos by Craig Evans*

# Conclusion

It is clear that, with the amount of development already in the pipeline, and the development potential allowed by current zoning, the Charlottesville-Albemarle County population ***could grow significantly in the coming years and decades.***

This report should leave no doubt that, even with environmental costs and infrastructure deficits excluded, this ***growth is not likely to pay for itself***.

This is especially so if growth proceeds apace *without* targeted efforts to attract specific residents or enterprises presumed to carry relatively lower costs and relatively higher revenue generating capacity.

Yet, as this report should make clear, even these kinds of targeted efforts are unlikely to provide any marked fiscal dividend.  Rare, small-scale exceptions to the rule may be possible, and some of these may come close to paying for themselves.  None, however, are likely to be prominent enough (without also attracting many new residents and their attendant costs) to provide a suitable means to close existing gaps in fiscal capacity, infrastructure and environmental protection.

## *Options are limited to pay for a growth-led strategy*

It is worth pointing out that when the added fiscal costs of growth fall almost exclusively upon local governments, the most politically viable fiscal remedies are constrained by the proven limits of the local property tax, the tax vehicle that must be counted on to meet the rising needs of a potentially rising local population.

As the chart below reveals, the middle range of the property tax curve (reflecting the effective rate paid by middle income families) indicates a slightly progressive incidence (generating more revenue for each dollar of income as moderately wealthier residents move into the area). However, the chart also shows that the high-income section of the curve is even more steeply regressive than the significantly regressive low-income section.

This highlights two poorly recognized impediments to any growth-led strategy for fiscal soundness:

1. Due to the *falling* property tax rate for the highest income classes, new residences can generate sufficient revenue to pay for their attendant public service costs only if the incomes of the new residents are even higher than the exceptionally high *break-even* home prices.

2. Any attempt to close per capita deficits with *general* rate increases will disproportionately stifle the purchasing power and economic well-being of the area's poor and working class residents. This is shown in the figure below by the very regressive character of the tax incidence curve for low incomes on the far left side of the chart. The effect of this curve is that general rate increases will fund essential public services with disproportionate amounts of essential income, automatically limiting the way in which such services may promote economic activity and contribute to increased revenue growth.

**Figure 46. Virginia property tax incidence (2007 data)**[19]
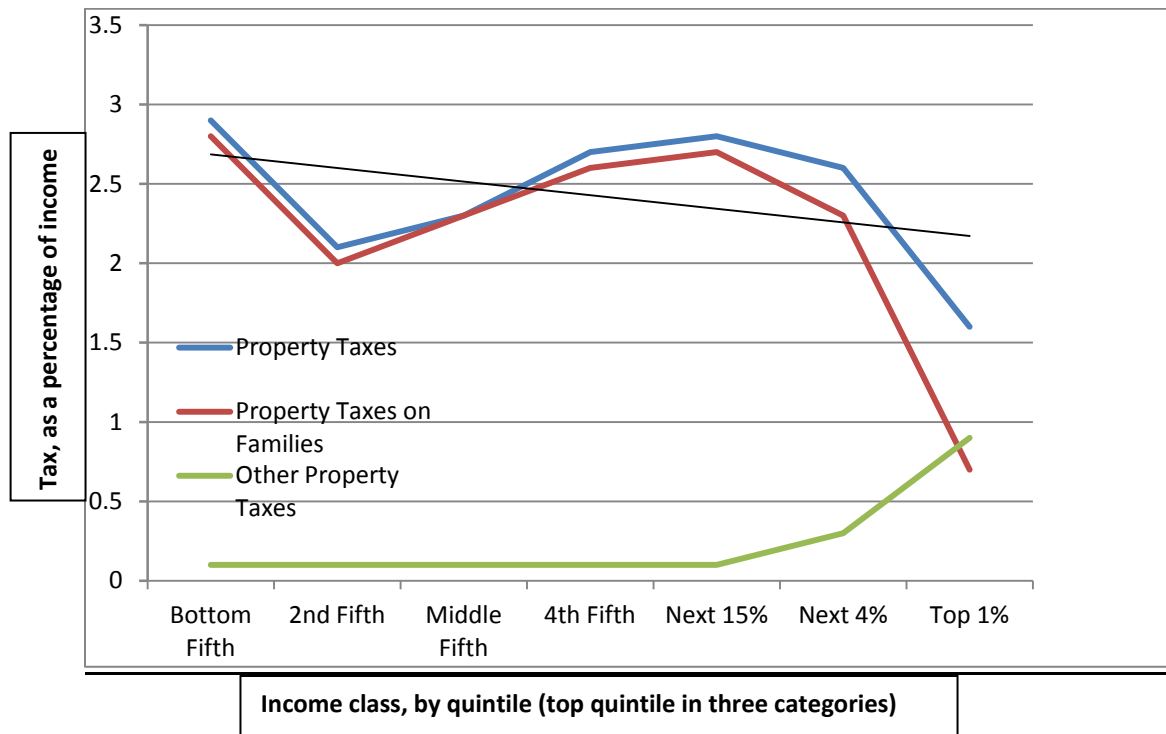
## *Economic development fallacies*

This study also concludes that ongoing efforts at "economic development," which rely on targeted recruitment strategies, are destined to fail.

Moreover, if the recruitment strategy involves what has now become an all-too-customary *race-to-the-bottom* tax competition between communities or states, two other factors come into play, both of which lessen the advantage of this strategy:

1. Even if a tax break is designed to be temporary or with strict employment criteria, this type of incentive directly reduces the tax base on which the cost-benefit analysis is figured. In the long run, this undermines even the isolated and unrealistic advantage of these land uses.

   If a tax break is undertaken on an interstate level, especially if local recruitment is augmented by related state government efforts, this action also degrades the *state* tax base. This occurs both directly when tied to specific state efforts, and indirectly as all states move to join the zero-sum race to the bottom.

   Since an infusion of state funding is one significant way in which localities can "make ends meet," the impact of these incentives greatly impairs the capacity of states to shore up local revenues when there is a shortfall. This essential and comparatively sound fiscal counterweight for localities is weakened by these incentives.

2. Economic development proposals typically overestimate the prospective revenues connected to new, often speculative enterprises. Two mistakes in this regard are common:

   a. Developers, especially those seeking public subsidies, commonly exhibit unrealistic expectations about their ability to capture a share of the local or regional market for housing and commercial space. The developer of a commercial project, for example, may base the project's fiscal impact analysis on 100 percent of the planned space being developed and occupied, without delay. Yet the typical project may not achieve full "build-out" for several years or decades, if ever.

      Large projects are usually "phased" by their developers, with later portions developed over the course of the project only if previous phases are successful and local economic conditions prove favorable. Although failure to achieve an anticipated buildout is quite common, revenue estimates are typically based on the expectation that *all* phases will be undertaken and completed, without significant delay.

   b. Some projects take "credit" for various planning and permitting fees paid by the developer to local governments, counting these fees as part of the project's projected revenue. These fees are collected to offset the cost of providing administrative and other development-related public services to developers. But the additional costs associated with these services often are not included in the fiscal analysis. Credit should not be taken unless the costs also are counted.

The calculations in this study exclude any quantitative assessment of the impacts of these factors. However, even without these factors, and without accounting for potential environmental degradation

or rising infrastructure deficits, this study illustrates how, in all but the unlikeliest of scenarios, *prospective growth in the Charlottesville-Albemarle region is likely to impose greater costs than benefits*.

## *Recommendations*

This report provides clear guidance to Charlottesville and Albemarle County policymakers and planners on how they must approach questions related to potential population growth. Here are six recommended policy changes that should be made in light of the study's findings:

1. Growth cannot pay for itself in all but the most unrealistically controlled circumstances; therefore, growth should not be pursued as a remedy to fiscal shortfalls.

2. If area population climbs for other reasons (expansion of the University of Virginia mission and scope; increasingly unequal economic opportunities in the region or state that make Charlottesville-Albemarle more attractive), per capita costs for services and infrastructure also will increase. To avoid a degradation of services and the area's quality of life, local (or local and state) tax structures must be made more progressive and responsive. Without such structural change, rates must rise.

3. In any population growth scenario, environmental degradation will increase and accelerate. These costs can no longer be ignored and swept under the rug. They must be recognized and paid for, since any potential for remediation (urban forestry, conservation, reduced per capita consumption, etc.) is limited to the point where ultimately no effort, no matter how expensive, will be able to offset or undo the degradation.

4. The number and percentage of workers that are likely to be recruited from outside of current city and county populations must be taken into account when permits for new industries are considered, and when the overall fiscal benefits and costs of these industries are calculated. (This is neglected in the county's Target Industries Study.)

5. Current proffer calculations greatly underestimate the real costs of additional new developments. This is true even after projected tax revenues from the new enterprises are added and even after the marginal environmental and infrastructure costs are ignored. Residents and policymakers must consider and decide how to close this increasingly large fiscal gap (by implementing full cost proffer calculations, increased general taxes, stricter developmental approval criteria, or some combination of these).

6. Because population growth has important fiscal, environmental, and quality of life implications, the Charlottesville-Albemarle County community needs to develop an informed population policy that is focused on actual and complete costs and benefits. This needs to be incorporated into all future policy analysis and deliberations regarding transportation, schools, water and sewers, and public safety.

# Contributors

This idea for this study was suggested by Advocates for a Sustainable Albemarle Population (ASAP), a nonprofit organization based in Albemarle County. ASAP used a grant from the Colcom Foundation and a contribution from an anonymous ASAP donor to help offset expenses related to the study. The balance of costs, related to the use of the author's computer models and methodologies and his time, was provided by Renewable Energy Consulting Services.

The study was initiated as part of ASAP's Optimal Sustainable Population Size (OSPS) Project, which includes five investigations in its first phase focusing on the impacts of continued population growth on the biological carrying capacity of Albemarle County, and three investigations in its second phase focusing on the social and fiscal impacts of growth.

Research for the study, along with initial calculations and draft write ups, were carried out by five University of Virginia students working on degrees in economics, urban planning, environmental law, public policy and commerce. The students worked as interns over a period of three to six months each, working under the direction of Craig Evans, who designed, executed and completed the study.

**Craig Evans** served as the project manager of the study. He also is the author of the study report and the appendices accompanying the report. He has conducted economic and fiscal impact studies to measure the impacts that different economic activities such as agriculture, agribusiness and upscale home construction have on county economies and county and school budgets. He also has looked at the costs and benefits of maintaining habitats for endangered species on private lands, which formed the basis for state legislation in Florida and contributed to incentives included in the 2002 and 2008 U.S. Farm bills that both recognize and reward the important roles that private landowners play and can play in endangered species management.

Evans served in 2002 on a governor-appointed working group to develop a methodology for counties in Florida to conduct fiscal impact analysis on a regular basis, which currently is in use. He also cooperated with several members of the working group to explore the benefits of "true cost accounting" that takes externalities such as impacts on air and water and biological diversity into consideration, and to explore different patterns of development that could be implemented to help growth pay for itself by generating revenue-neutral mixes of land use. Neither approach was successful, which is what has led Evans to question approaches to growth that promise a revenue-neutral mix of land uses. He serves as a member of Albemarle County's Fiscal Impact Advisory Committee.

**David Shreve** wrote the introduction and conclusion to this report and worked with Evans in amplifying key points in the body of the report. He is an economist and economic historian who earned his PhD. at Louisiana State University in 1995. He is the editor of seven volumes in W.W. Norton's presidential recordings series, the author of many articles and studies on macroeconomic theory and intellectual history, fiscal federalism, tax policy, and the political economy of fiscal and monetary policy. He is the author of the forthcoming book, *American Promise: The Triumph and Eclipse of the Keynesian Revolution*.

**Kelsey Kerle-O'Brien** graduated with a Bachelors of Arts in History from the University of Virginia in 2011. There, she was President of the Campus Chapter of Habitat for Humanity and Vice President of the Outdoors Club. Kelsey received a full scholarship to pursue a Masters in Public Policy at American University in Washington, D.C. Kelsey is now a Student Intern at the White House Council on

Environmental Quality, a Graduate Student Intern at Arlington Department of Environmental Services, and a Graduate Assistant at American University School of Public Affairs.

**Clark Belote** is a recent graduate of the University of Virginia. Originally from Newport News, VA, he graduated a semester early in December 2010, with a B.A. in Environmental Thought & Practice, an inter-disciplinary major consisting of environmental policy and science. During the spring of 2011 he worked as an intern for both ASAP and Southern Environmental Law Center. In the fall of 2011 he entered the University of Richmond Law School, to pursue a career in environmental law.

**Desiree Moore** is an undergraduate student at the University of Virginia where she is pursuing a Bachelors of Arts degree in Economics and a volunteer at Madison House, the school's student volunteer center.

**Caitlyn Campbell** was a second-year student at the University of Virginia, taking classes to qualify for a major in Commerce during the time she worked on the study.

**Selena Hilton-Aragon** was a candidate for a Master's degree in Urban and Environmental Planning from the University of Virginia who graduated in May 2012. She holds a Bachelor of Science from James Madison University with a concentration in Geographic Information Systems.