MORE
MAINTAIN OUR RURAL ENVIRONMENT

June 6, 2006

Ms. Jennifer Turchetta, *President*
Shelby County Chamber of Commerce
c/o Process Machinery, Inc.
1636 Isaac Shelby Drive
Shelbyville, KY 40065

Ms. Shelley Goodwin, *Executive Director*
Shelby County Chamber of Commerce
P.O. Box 335
Shelbyville, KY 40066-0335

Dear Ms. Turchetta and Ms. Goodwin:

In an April 14, 2006, letter addressed to you, the Home Builders Association of Louisville (HBAL) responded to a letter of March 6, 2006, that Maintain Our Rural Environment, Inc. (MORE) sent to the members of the Shelby County Chamber of Commerce.

The Home Builders Association of Louisville letter stated that it hoped "to clarify and take issue with specific points within the [MORE] letter as well as challenge the validity and further use of the study referred to as the Cost of Community Services Study (COCS)."

The HBAL letter then sought to discredit not only MORE and the study's author, the American Farmland Trust, but all other organizations and institutions of regional or national renown that have conducted COCS studies – not to mention the usefulness of the COCS studies themselves.

But for those willing to do deeper research, it's obvious that COCS studies consistently prove a creditable and valuable tool in community development.

Thus, seeking to further investigate HBAL's assertions, MORE asked an outside party to review the HBAL letter and respond. Ms. Lori Garkovich, a University of Kentucky professor with extensive expertise in this area, has graciously accepted this task.

Ms. Garkovich has provided a memorandum summarizing her key points if your time is limited. However, MORE hopes you'll read the complete analysis. MORE feels Ms. Garkovich does much to address and correct the HBAL assertions, some of which (though not necessarily intentionally) border on misinformation.

These two documents are enclosed.

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In addition to Ms. Garkovich's comments, MORE asks you to note the following:

- The only study HBAL offered that showed a positive return for residential development *did not include the cost of construction of new schools and other capital construction costs required for the new development.* According to the Shelby County Public Schools, the proposed Saddle Ridge development would cost Shelby County property taxpayers $10.8 million above what the proposed development would pay in property taxes.

- Quite simply, community services for residential development in rural areas cost more than residential development in cities. There's no getting around it.

- The implied assertion by HBAL that Shelby County has excess capacity in infrastructure is simply not true. Even Triple S Planning and Zoning has stated that our present infrastructure is insufficient for explosive growth.

- HBAL stated that much of the quoted $8.2 million in sales of nursery, greenhouse, floriculture, and sod is generated by Shelby County residents. MORE cannot find HBAL's sources for this statement, but in talking to farmers here we believe these producers receive a significant portion – and perhaps the majority of their revenues –from outside the county.

- While HBAL has agreed to impact fees in Jefferson County, it has told Shelby Fiscal Court that it would sue if Shelby County put them in place. Appropriate development fees would remove the burden of paying for community services related to new residential growth from our existing and future taxpayers.

- In Shelby County, HBAL is on record as being opposed to the school growth ordinance that would enable our public school system to build schools as development takes place, instead of after development has overcrowded the school facilities.

MORE advocates balanced economic development for Shelby County. Which means that MORE believes agriculture should be a part of that development along with residential, commercial, and industrial land uses. Agricultural land use pays its way in Shelby County, so agriculture should not be summarily dismissed and replaced by land uses that cost the community money – merely to satisfy the desires of outside special interest groups.

We really appreciate your time, and regret any inconvenience. But we believe that where our county's future is concerned, the facts *must* be kept straight and clear.

To review Shelby County's Cost of Community Services study online, visit www.more-ky.org. And, if you have any questions or comments, please contact:

Jim Ellis, President
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Shelbyville, KY 40066-1104
jimellis@more-ky.org

Again, thank you so much for your time,

Catherine A. Wilde.

Jim Ellis

Cathy Wilde, Director
Maintain Our Rural Environment

Jim Ellis, President
Maintain Our Rural Environment

Enclosures:

Garkovich summary points
Garkovich review of HBAL letter

cc:

Shelby County Chamber Board of Directors
Shelby County Judge/Executive Rob Rothenburger
Shelby County Magistrates
Mayor of Shelbyville, Tom Hardesty
Mayor of Simpsonville, Steve Eden
Kentucky Senator Gary Tapp
Kentucky Representative Brad Montell
Public School Superintendent Elaine Farris
Triple S Planning Commission Chairman George Best
Triple S Planner Ryan Libke
Farm Bureau President Eddie Mathis
HBAL Exec. V.P. Charles Kavanaugh

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June 2, 2006

MEMORANDUM

TO: Jim Ellis

FROM: Lori Garkovich, Professor

RE: Analysis of Home Builders Association of Louisville (HBAL) letter to the Shelby County Chamber of Commerce

I have read the letter and documentation submitted to the Shelby County Chamber of Commerce and others in Shelby County by the Home Builders Association of Louisville. The attached document presents my analysis of the HBAL letter and its supporting papers. Here, I offer key points from my analysis.

1. A COCS study is a type of fiscal impact analysis that should be added to the knowledge base that informs a public policy decision in specific communities. It is a tool that is widely accepted and used by diverse academic and public interest research organizations as well as private consulting firms.

2. Every COCS study and nearly all other fiscal impact analyses find that farmland generates more property tax revenues than it receives back in publicly funded services and that residential land receives back more in publicly funded services than it pays in property tax revenues. Although the exact ratio varies, the consistency of these findings across states, time periods, types of communities, estimates of components and parameters in the models, and types of researchers is remarkable and significant. The patterns of fiscal impacts associated with particular types of land use change are real.

3. Shelby County local governments will not benefit directly from new residents spending money locally. Growth in the local economy will not offset any excess costs created by new residential developments because in Kentucky, the primary source of local government revenues is property taxes. Property taxes are insensitive to changes in the value of sales and services of entities occupying the land. In other words, a retail lot is assessed at a given property tax whether the store on that lot sells $500,000 or $5 million annually. Local governments in Kentucky have no effective tool to capture any value from economic growth other than property taxes.

4. There is a need to evaluate development proposals both individually and as a comprehensive whole in order to assess the total fiscal impact of development patterns in a community. The tendency in zoning decisions is to evaluate each proposal individually, but this ignores the cumulative effect on public infrastructure capacity. This cumulative effect may tip the scales toward a serious fiscal crisis in the community. This is confirmed by one of the HBAL supporting studies where the excess of revenues over expenditures in the study reflects the exclusion of the cost of capital expenditures for public schools, road construction, sewer and water lines as well as the costs of servicing any debts for these items. This exclusion is based on the assumption that no congestion in the delivery of services will occur with development. This is a fiscally dangerous assumption.

Review of the Home Builders Association of Louisville
Letter to the Shelby County Chamber of Commerce

by Dr. Lori Garkovich
Professor of Rural Sociology
University of Kentucky

June 6, 2006

Introduction to the review

In this review, I will summarize and then analyze the arguments presented by the Home Builders Association of Louisville (HBAL) in its letter and the supporting papers and conclude with some comments on cost of community services studies in general.

The statements in the letter

<u>Paragraph two</u>

HBAL statement - *They also identify $6.097M in farm workers and payroll, while Dr. Paul Coomes in an economic presentation to the Shelby Chamber identified $5M in agricultural wages and salaries, includes net loss for farm proprietors.*

Response - There are multiple sources of information on wages and payroll and each uses a slightly different measure. For example, the U.S. Census of Population and Housing uses self-reported income and wages; the U.S. Census of Agriculture uses farm operator reports of farm income and wages paid; while the REIS (Regional Economic Information Service, Bureau of Economic analysis) uses earnings as well as transfer payments such as Social Security. So it is not surprising that there would be a difference in these estimates, especially since the economic presentation by Dr. Coomes included net loss of income for farm proprietors.

HBAL statement - *Lastly, M.O.R.E. listed a $120M economic impact for agriculture products, services and agri-tourism. We cannot find a source for the services and agri-tourim numbers in the study.*

Response - It is my understanding that the $120 million economic impact for agricultural products and services and agri-tourism was not part of the COCS study. I believe that the sources for this information are cited in the bar chart accompanying the March 6, 2006 M.O.R.E. letter to the members of Shelby County Chamber of Commerce. From this citation, it is apparent that the data are a compilation of information from the Kentucky Agricultural Statistics Service, the Saddlebred Farms of Shelby County, and the Shelbyville/Shelby County Visitors Bureau.

HBAL statement - *In addition, much of the agriculture sales such as nursery, greenhouse, floriculture, and sod, which accounts for $8.2 million of total agricultural product sold, are purchased by the residents in Shelby County homes whose purchases add a significant amount to the agriculture and services industry of the county.*

Response – The exact proportion of these particular agricultural products and services sold in Shelby County to residents of Shelby County cannot be accurately estimated by either M.O.R.E. or the Home Builders Association of Louisville. But the point of this statement is not clear. The $8.2 million in expenditures claimed for Shelby County residents (but not documented by HBAL) will not disappear if Shelby County adopts a local PACE program or development impact fees.

Bullet one

HBAL Statement - *The American Farmland Trust study (AFT) lacked consideration of the impact of residents purchasing goods and services in Shelby County, thus adding to the local economy...and by doing so building the tax base of those businesses that pay taxes to county government.*

Response - The stated purpose of any cost of community services study (COCS) is to examine the property tax revenue and public services expenditures of different land uses. A COCS study does not purport to be a comprehensive fiscal impact analysis; it is what it is.

But there is an implication here by the HBAL that local governments will directly benefit from economic growth; and benefit sufficiently to offset any negative revenue effects from residential growth. But, remember the following points:

> First, Kentucky law limits the revenue sources for local government to property taxes as well as occupational taxes and a list of fees. Property taxes represent the bulk of local government revenues and therefore the primary source of income for public services expenditures.
>
> Second, Kentucky's local governments cannot levy sales taxes and the property tax assessment is on the value of the land and its improvements (e.g., buildings, roads, water lines) regardless of the gross sales generated by that land. Therefore, a retail lot is assessed at a given property tax whether the store on that lot sells $500,000 or $5 million annually.

Thus, the statement cited above in bullet one is incorrect. Property taxes are insensitive to changes in the value of sales and services of entities occupying the land. Local governments in Kentucky have no effective tool to capture any value from economic growth other than property taxes.

Bullet two

HBAL statement - *Houses on farms demand a greater level of service than homes concentrated in cities or residential developments/communities.*

Response - This statement is correct only if "greater level of service" means "greater cost for service."

A house in the country does impose a higher cost for a comparable set of services provided to a house in the city. An example is the cost of driving that school bus on a 10 mile round trip compared to the children walking to a school three blocks away in the city.

This is precisely the point underlying M.O.R.E.'s efforts to encourage higher density development in Shelbyville and other urban concentrations on municipal sewers in Shelby County and to preserve agricultural land in the rural parts of the county. When development leapfrogs into rural/agricultural parts of the county, planting subdivisions miles from an urban center, the cost of delivering services rises tremendously. Quite simply, distance matters.

The easiest way to see this is as follows: A single farm house on a 100 acre is occupied by a husband, wife and 2 school age children. The school bus has to travel 10 miles (round trip) to pick up those 2 children. Now, sell the farm and put 300 homes (3 units per acre) on that 100 acres and each house has a husband, wife and 2 school age children (600 children in the subdivision). The school bus still has to travel 10 miles (round trip) to pick up the children but now it is 20 buses (30 children per bus) that make the trip. As one editorial writer once stated: "Cows don't go to school."

Even Deller (2001:10) notes *"The econometric results, numerous applications of WEIMS and other SPAN-like models (e.g., Deller, 1999) all suggest that the level and magnitude of impact assessment hinges on correctly estimated population changes. In the end, population changes drive the impacts."* As a result, residential uses of any kind are going to have substantively different fiscal impacts following a land use change from agriculture than changes to industrial or commercial uses.

Another way to think of this impact is as follows. Picture a rural county road with 10 homes in 1990 and 14 in 2000. The four additional houses, on an annual basis (using data from 2004) will:

> Increase demand for water service by 227,760 gallons (56,940 gal/yr/HH or, given a HH size of 2.6 persons x 60 gal/person/day x 365 days)
> Generate 11,972 more day trips on the road
> Generate 16,320 pounds more of solid waste

Note that these calculations are easy to make – one simply obtains information on daily or annual consumption and average household size and do the math.

<u>Bullet three</u>

HBAL statement - *We went further than our analysis here and researched nationally the COCS Studies and methods the American Farmland Trust applies to conduct these such [sic] studies. As you would expect with such a nonscientific and arbitrary mode to conduct a cost of community services study, the AFT always finds that farmland coasts county governments less than the taxes they pay and residential costs more than they pay.*

Response - To this point, the letter from the Home Builders Association of Louisville has not proven that the methodology underlying a cost of community services study is "nonscientific" nor "arbitrary." In fact, with this statement, the Home Builders Association of Louisville is painting not just AFT COCS studies as "nonscientific and arbitrary" but also studies done by: University of New Hampshire Extension Service, University of Wisconsin Extension Service, Pennsylvania State University Agricultural Economics Department, Sonoran Institute, University of Wyoming, University of Illinois Extension Service to name just a few other research studies utilizing this methodology (see Appendix A for a longer but not exhaustive list of COCS studies by researchers other than those employed by AFT).

Every single one of these studies find that farmland generates more property tax revenues than it receives back in publicly funded services and that residential land receives back more in publicly funded services than it pays in property tax revenues. Although the exact ratio varies, the consistency of these findings across states, time periods, types of rural communities, types of estimates for estimates and components in the models, and types of researchers suggests that the conclusion of the Home Builders Association of Louisville may be, at best, unfounded. All of these studies can't be simultaneously in error in the same way.

<u>Bullet four</u>

HBAL statement - *Use of "fallback percentages" is completely inappropriate to use in an economic study...Another critical issue with the study is the arbitrary allocation of general administrative costs for county government operation.*

Response - The basis for making these claims is not presented. However, I draw your attention to the Greenaway and Sanders (2006) study for Red Deer County in Canada. Here, the researchers did not employ normal fallback percentages in assigning revenues and expenditures to different categories of land use. These researchers used in-depth interviews with local officials to develop their allocations. They then developed a new set of estimates utilizing fallback percentages (the proportions applied to revenues and expenditures for which there is no basis, or for which it would be inappropriate to allocate among land uses) as is done in many previous COCS studies. The results of this comparison are as follows.

> Utilizing a property-tax-based fallback allocation did make residential land use more efficient, but

it still cost at least $1.20 for every dollar in revenues, down from $1.66 for every dollar in revenues utilizing their original model.

Fallback percentages would allocate 11% of road-related expenditures to agricultural land use even though their interviews and actual road surveys indicate that agricultural traffic represents about 2% of rural road use. Thus, the use of fallback percentages would be overestimating the allocation to agricultural land for rural road expenditures and thereby overestimating the expenditure demand of agricultural land.

Bullet five

HBAL statement - *The study did not consider city services. This is a significant flaw because all city residents pay city taxes as well as county taxes; however, those residents who do not live within the city limits certainly use city services from time to time and contribute no revenue through taxes to provide the services they use. The COCS study calculated the portion of taxes that city resident's [sic] pay to the county but did not consider the number of people who live outside of the city limits but use city services on a daily basis that city residents pay for? [sic]*

Response - Again, the Home Builders Association of Louisville is attempting to assert that a COCS study is more than it claims to be. A COCS does not purport to evaluate the entire ledger for local government and does not attempt to evaluate all sources of revenues and all types of expenditures. A COCS study is what it is – an evaluation of the property tax revenues generated by farmland and what it receives back in publicly funded community services. The issue of city revenues and city-funded services is not the focus of a COCS study. To attack the conclusions of a COCS study because it did not encompass more than it was intended to is unwarranted.

The papers by Steven Deller

"The impact of alternative economic development and land use options: a case study using the Wisconsin economic impact modeling system" paper presented at the annual meetings of the North American Regional Science Association, 2001.

"Urban growth, rural land conversion and the fiscal well-being of local municipalities" pg 94-119 in John Bergstrom, John C. Bergstrom, Stephan Goetz, James Shortle and John Bergstrom, editors, Land use problems and conflicts: Causes, consequences and solutions. London, Routledge, Taylor and Francis, 2004.

HBAL letter - a series of quotations are extracted from the chapter inBergstrom et.al. (2004) The substance of these extracted statements is that fiscal impact assessment is utilized by advocacy groups to support their policy positions and that there are purported flaws in the methodology of COCS studies.

Response - First, if you read both the chapter and the professional paper on which it is based, the methodological concerns are attributed to fiscal impact analyses in general, not just COCS studies. In other words, Deller is asserting that because the results of fiscal impact analyses in general and COCS studies in particular are used to question the benefits of development this makes the results of these studies suspect. But logically, how one uses the results has nothing to do with the scientific method used to generate the results.

Second, both of the Deller papers present a laundry list of methodological flaws in fiscal impact analyses in general and COCS studies in particular. These purported flaws include:

1. These are "snapshots" of impacts at one time and therefore may be incorrectly assessing the fiscal impact of different uses

2. The arbitrary nature of the allocation of particular revenues and expenditures across different land use categories
3. The use of gross land use categories (e.g., residential, industrial, commercial) may overlook different impacts across more finer land use delineations (e.g, single family vs multi-family housing)
4. The use of gross dollars generated (revenues) and spent (expenditures) blurs differences in the intensity of land uses
5. Excess capacity in public infrastructure may absorb residential development and thus enable rural places to achieve economies of scale in the utilization of public goods
6. People may incorrectly interpret the results attributing the net fiscal benefit or loss of a class of land use to individual parcels

Let me address each of these.

1. *These are "snapshots" of impacts at one time and therefore may be incorrectly assessing the fiscal impact of different uses*

Correct, COCS studies are assessments of impact at one point in time. However, fiscal impact analyses have been conducted over longer periods of time and arrived at the same conclusions as these "snapshots." Four of these fiscal impact analyses are:

Burchell, R.W. and S. Mukherji, 2003 - this study uses mathematical impact models to produce US estimates of differences in resources consumed in several different growth patterns projected from 2000-2025 and found that sprawl "causes about 10% more annual public service (fiscal) deficits ($4.2 billion) and 8% higher housing occupancy costs ($13,000 per dwelling unit).

Carruthers, J.I. and G. Ulfarsson, 2003 - this is a study of how the character of urban development affected per capita public outlays in a cross-section of 283 metropolitan counties during the 1982-1992 time period and found that "urban sprawl does undermine the cost-effective provision of public services."

Gaertner, K., 2006 - this study compares the projected costs of continuing today's pattern of residential development through 2025 to the costs of a shifting to a more compact settlement pattern (9% less development in rural counties and a 20% increase in the density of development in urban places) and found considerable reductions in consumption of land and natural resources, infrastructure expenditures, real estate development costs, and fiscal impacts with the compact settlement pattern.

Johnston, R.J., 1998 - this is a study of the primary fiscal impact of a subdivision on a farm in Rhode Island over a 30 year time horizon and found that residential development of the property would cost taxpayers between $920,680 and $2,679,775 in net discounted 1998 dollars even after considering all the tax and other revenues generated by the new residential units

2. *The arbitrary nature of the allocation of particular revenues and expenditures across different land use categories*

The term "arbitrary" is not appropriate because in all cases of COCS studies, the researcher has spent considerable time consulting with local public officials and examined local budgets to develop the estimates for allocating revenues and expenditures across different land use categories. If you examine the methodological discussions in the references presented in Appendix A, every single one notes the importance of operationalizing key variables within the context of the characteristics of the community under study. This is what accounts for the variability in results as to the ratio of revenues to expenditures under different land use scenarios in all these studies.

Moreover in Deller's 2001 study using WEIMS (the Wisconsin Economic Impact Modeling System), he too relies on the allocation of particular revenues and expenditures across different land use categories. In other words, any fiscal impact or economic impact model must rely on estimates of components and parameters. This is evident in the references in Appendix A that specify their models.

The fact that different estimates of components and parameters in these models yield comparable results – residential land uses generate less revenues than they receive back in publicly-funded service expenditures – suggests that the pattern of fiscal impacts associated with particular types of land use change are real.

3. *The use of gross land use categories (e.g., residential, industrial, commercial) may overlook different impacts across more finer land use delineations (e.g., single family vs. multi-family housing)* and

4. *The use of gross dollars generated (revenues) and spent (expenditures) blurs differences in the intensity of land uses*

This may be true, but in general, when urban development occurs in rural agricultural areas it is residential in nature and most commonly, single family dwellings. Rarely is it multi-family housing. I draw your attention to the report "Fiscal impact analysis of residential and nonresidential land use prototypes" prepared by Tischler and Associates for the town of Barnstable, Massachusetts (2002:2-5). This study used 4 residential and 8 nonresidential prototypes to estimate fiscal impacts. The only positive residential impact was for townhouses, while single family moderately priced ($131,000) residential units had a net cost to the community of $1,675 annually. Tischler and Associates note that:

> "The only difference within each residential prototype in their model is the average assessed value and subsequent property taxes....The majority of the costs for the residential prototypes are driven by average household size, school pupil generation rates, number of Equivalent Dwelling Units (EDUs) per household, and vehicle trip generation rates. As a result, the single family prototypes generate greater costs than the townhouse prototypes."

Tischler and Associates go on to note that because property taxes comprise a significant proportion of general fund revenues for this community (as they do in Kentucky), residential growth can lead to a demand for services that cannot be supported by the local revenue structure.

I think it is important here to consider Deller's 2001simulation of different types of development scenarios using the WEIMS which includes some assumptions that are critical to the outcomes of his modeling.

First, let's remember Deller's conclusion:

> For each of the five different types of economic development options, and corresponding land use decisions, the demand for services provided by local governments increases. But given the size of local government in the case study area, Walworth County, Wisconsin, these increases represent less than half of one percent increases. Modest impacts given the relative size of the county. Increases in revenues outpace increases in expenditures by 2 to 2.3 times in every example scenario. (Pg 11)

But Deller notes the following assumptions that underlie this simulation:

> *The expenditures estimated here do not include any capital expenditures (e.g., road construction, sewer and water lines, etc) and the costs of servicing any debt incurred to finance the capital items.* (Pg 11)
>
> *It is particularly important to note that in addition to capital expenditures not being captured, these analyses do not include public schools.* (Pg 11)
>
> *For this county example, development does seem to pay for itself* ***if congestion in services in not an issue.*** (Emphasis in original) (Pg 11)

These are **very substantive assumptions** that may, in fact, shape the outcome of the analysis. For example, the costs for the provision of public schools are a significant public expenditure factor in any conversion of agricultural land to residential uses. The impact of population growth on the demand for school services is widely acknowledged and this is why estimates of public school impacts are incorporated into COCS studies as well as other fiscal impact analyses of land use changes.

5. Excess capacity in public infrastructure may absorb residential development and thus enable rural places to achieve economies of scale in the utilization of public goods

It is true that some rural communities do have excess capacity in public infrastructure that may benefit from a given amount of urban-type growth in order to achieve efficiency in operations. But this is a very delicate balancing act. Consider for example a school facility that is designed for 500 children and has 400 attending. Residential development that adds 100 children to this school brings it to the maximum capacity under state law. The next child who moves in and attends this school and each child after that will trigger a cascade of state actions that will force the school district to build new capacity, either with a permanent structure or temporary classrooms. The school district will have no choice in this matter. It cannot say that a classroom of 32 children is acceptable if the state mandates classrooms of 25.

6. People may incorrectly interpret the results attributing the net fiscal benefit or loss of a class of land use to individual parcels

It is certainly true that any single development proposal may yield a fiscal impact that is either similar to or different (either positively or negatively) from the results identified in a COCS. In other words, a particular development proposal may have greater net revenue gains <u>or</u> greater net revenue losses than the averages estimated in any COCS analysis. But a COCS study was never designed to address a single parcel of land but rather to assess the consequences of changes in types of land uses.

Final comments

A COCS study is a tool of fiscal impact analysis that should be added to the knowledge base that informs a public policy decision in specific communities. It is an important tool but it should not be the only tool to inform decision-making. Moreover, it is obvious that it is a tool that is widely accepted because it is used by diverse academic and public interest research organizations as well as private consulting firms. If we are to use a decision tool we must have a level of confidence that it can contribute important information for our deliberations. COCS studies are credible and useful to a community in decision-making.

One thing that has become clear in this discussion is the need to evaluate development proposals both individually and as a comprehensive whole in order to assess the total fiscal impact of development patterns in a community. The tendency in zoning decisions is to evaluate each proposal individually, but this ignores the cumulative effect on public infrastructure capacity. This cumulative effect may tip the scales toward a serious fiscal crisis in the community. This in fact is a cautionary note in the two papers by Deller accompanying the HBAL letter.

I have identified the web sites where research papers and reports I have referenced and others are available. However, some of the materials noted in Appendix A are only available in hard copies in the professional journals or through a University with Academic Search Premier access.

References

Burchell, R.W. and S. Mukherji. 2003 “Conventional development versus managed growth: The costs of sprawl.” American Journal of Public Health, Vol. 93, Issue 9, Sept: 1534-1540.

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