TOWN BOARD WORK SESSION MEETING
Joint Meeting with Planning Commission & Town of Severance
November 2, 2016 – 6:00 P.M.
301 Walnut Street, Town Board Chambers
Windsor, CO 80550

The Town of Windsor will make reasonable accommodations for access to Town services, programs, and activities and will make special communication arrangements for persons with disabilities. Please call (970) 674-2400 by noon on the Thursday prior to the meeting to make arrangements.

GOAL of this Work Session is to have the Town Board receive information on topics of Town business from the Town Manager, Town Attorney and Town staff in order to exchange ideas and opinions regarding these topics.

Members of the Public in attendance are asked to be recognized by the Mayor before participating in any discussions of the Town Board.

AGENDA

6:00 p.m. – 7:00 p.m. Village East developer proposal to amend the Windsor-Severance Intergovernmental Agreement

M E M O R A N D U M

Date: November 2, 2016
To: Windsor Mayor, Town Board & Planning Commission
Severance Mayor, Town Board & Planning Commission
Via: Kelly Arnold, Town Manager
Scott Ballstadt, AICP, Director of Planning
From: Josh Olhava, AICP, Senior Planner
Subject: Analysis of a request to amend the Commercial Corridor and Cooperative Planning boundaries of the Windsor-Severance SH 392 Development Plan to allow residential uses
Item #: 1

Executive Summary:

The intent of this item is for staff to receive direction from Windsor and Severance Town Boards (Boards) regarding a request to amend the boundaries of the Windsor-Severance SH 392 Development Plan to allow for residential use in areas currently designated for commercial and industrial uses.

The enclosed analysis was previously reviewed by Windsor Town Board at their October 3, 2016 work session and staff was directed to coordinate this joint meeting with the Town of Severance to discuss the details of the proposal.

Based on the enclosed materials, the Boards may choose to:

- Deny the requested amendment to the IGA
- Direct legal staff from both communities to finalize the draft IGA amendment for consideration

Should the Boards decide to amend the IGA, additional attention should be paid to the revenue sharing provisions of the IGA found in Section 10 as follows:

Section 10.a Shared Revenues:

- *"…It is understood and agreed that all sales, use and property tax revenues collected by each of the municipalities within the CPA shall be shared and distributed between the municipalities, two thirds (2/3) to the collecting municipality and one third (1/3) to the other municipality."*

As outlined below in Windsor's staff analysis, residential uses typically place a higher demand on government services. Additionally, this cost would be exacerbated by the property tax sharing provisions of the IGA, as the Town would be required to share the residential property taxes while continuing to provide services and maintain public infrastructure to this residential neighborhood. The revenue sharing provisions of the IGA as they pertain to the subject property should be modified to reflect the additional residential demands on Windsor infrastructure and services.

Background:

The property owner, Global Asset Recovery, LLC, represented by Mr. David Tschetter, is requesting an amendment to the boundaries of the 2004 SH 392 Development Plan between Windsor and Severance. The property owner is proposing a development concept within the Eastbrook 2nd and 3rd Annexations, located north of and adjacent to SH 392 and west of and adjacent to WCR 21 *(see enclosed aerial exhibit)*. As seen in the aerial exhibit, the property is situated in a unique location, adjacent to: WCR 21, SH 392 and the Great Western Trail; the John Law and Greeley No. 2 Ditches; and unincorporated residential and heavy industrial uses. The concept, as presented by the property owner, depicts 33.72 acres of buildable area within the Coordinated Planning Area (CPA) and per staff's review, approximately 9.6 acres of buildable area within the Commercial Corridor Plan area as mostly single-family residential development *(reference enclosed applicant request and original concept plan map)*. The concept shows approximately 120 residential units proposed within the CPA and Corridor Plan areas.

History and background of the intergovernmental agreement (IGA):

- The IGA was adopted in 2000 by both Windsor and Severance for the development of land and for the provision of urban services and facilities along certain portions of SH 392 known as the Cooperative Planning Area (CPA).
    - Section 3.(a)(2) of the IGA specifically "prohibited residential zoning within the CPA, unless such residential zoning was specifically agreed upon by both municipalities."
    - Section 4 goes on to state that "the parties intend that the area to be contained within the CPA be limited to commercial and industrial development…"
- In 2004, Windsor and Severance adopted the 'Windsor-Severance Development Plan' by Resolution 2004-02.
    - The SH 392 Development Plan established the Commercial Corridor and Cooperative Planning boundaries for the east SH 392 corridor.
    - The plan also included the same language prohibiting residential zoning as the 2000 IGA. Specific commercial and industrial design standards and guidelines were also adopted as part of the 2004 plan (amended in 2014).

Section 4 of the 2000 IGA regarding Amendment of the Cooperative Planning Area Boundaries states, "The parties recognize that as annexations occur, and developments are proposed within the Geographic Area, it may be necessary to amend this Agreement to modify the boundaries of the CPA to include additional land that may be developed as commercial or industrial or to exclude land which will not be so developed. The parties agree that they shall fully cooperate with one another in adopting such amendments to this Agreement as may be necessary to effectuate the intentions of the parties as expressed in this paragraph."

Analysis:

Access and circulation:
The developer's concept shows two primary access points: one off of WCR 21 and the other connecting to the existing Village East Subdivision by means of Dakota Way. A traffic study will need to be prepared by the developer for any proposed development, regardless of land use, for determining viable options for access points and circulation. A primary concern regarding the two options is the potential impact to Dakota Way and any residences directly fronting the street within both the Village East and Winter Farm (Peakview) neighborhoods. The Town has received complaints regarding the increased traffic generation on Dakota Way through the 'Peakview' neighborhood as a result of the Village East development. It is anticipated that the traffic

generation would increase based on the developer's concept, as there are limited options for access into and out of the proposed neighborhood.

Direct vehicular access onto SH 392 with a right-in and right-out or three quarter movement intersection could lessen the increased traffic generation on Dakota Way, providing a third option for residents of this neighborhood to travel west into Windsor. Based on meetings with the developer's consultants, constructing a direct vehicular access to SH 392 would be expensive, if not cost-prohibitive, due to the floodplain. In addition, access to the adjacent parcels along SH 392 needs to be provided from within this site. Several of these parcels along SH 392 may already have direct access, but if redevelopment or new development is proposed, any existing access points will need to meet Town and CDOT requirements.

Floodplain:
There is not a significant difference in the floodplain permitting process between commercial/ industrial and residential uses. Either type of development will need to complete an application for a Conditional Letter of Map Revision (CLOMR) prior to construction and an application for a Letter of Map Revision (LOMR) following construction, with acceptance from FEMA. If residential uses are approved, the developer is encouraged to complete soil boring tests early on to ensure that basements are feasible, due to potential ground water levels. Per Sec. 18-3-10(29) of the Municipal Code, *"In no case shall the bottom of the basement floor or crawl space finished grade lie within three (3) feet of the ground water table…."*

Sewer capacity:
Based on staff's rough calculations, the proposed single-family and multi-family residential uses do not appear to present any issues with available sewer capacity and the sewer counts shown on the approved Eastbrook Master Plan. In addition, the proposed development concept does not appear to impact sewer capacity for future development on the adjacent sites along SH 392, if those properties are annexed in the future. If residential uses are approved for the subject site, the developer is required to complete a revised Master Plan with updated sewer calculations.

Fiscal analysis:
Using the Town's 'Economic Fiscal Analysis Model', staff calculated the net fiscal benefits and costs using inputs based on existing conditions and similar development types in the area. Please see the enclosed 'Eastbrook Annexation 2nd and 3rd - Fiscal Analysis' document. The first page of the document includes the assumptions made based on the applicant's concept submittal and staff's research into similar project types. The remaining pages of the document include the net fiscal benefits and costs summary for both residential and industrial/flex uses. The summaries cover a 10-year span and make the assumption that either type of development is built out in one-year. As shown on the residential summary sheets, there is a net fiscal cost of $316,399 to the Town after ten years. The industrial/flex summary sheets show a net fiscal benefit of $2,094,052 to the Town over the same ten year span. After ten years, it is presumed that both numbers would continue to increase: residential as a cost and industrial/flex as a benefit to the Town.

Residential development brings with it new tax revenue; however, it also brings demand for local government services. Costs of Community Services (COCS) studies are an approach used to determine the fiscal contribution of existing local land uses on government budgets. These studies summarize fiscal impact analysis to determine whether various forms of land use provide a net fiscal cost or benefit on government budgets. COCS studies typically divide land use into three categories: residential, commercial/industrial and farmland/open space. A ratio is calculated for each land use category comparing how many dollars' worth of local government services are demanded for each dollar collected. A ratio greater than 1.0 suggests a net fiscal cost. A ratio

below 1.0 suggests a net fiscal benefit. A variety of researchers have conducted studies with consistent results. The COCS ratio for lower density residential development is substantially above 1.0, demonstrating a net fiscal cost. Higher density residential development is typically closer to COCS ratio of 1.0 and in some instances can be below 1.0. Typically, a healthy mix of housing works in the best interests of the community, such as the inclusion of higher-density housing which lessens the overall traffic, water and school impacts. It is worth noting that most commercial/ industrial and farmland/open space areas typically have a COCS ratio around 0.5 *(Sources: American Farmland Trust, Chicago Metropolitan Agency for Planning, Lincoln Institute of Land Policy – Sonoran Institute).*

Conformance with the 2016 Comprehensive Plan:
The property is identified as commercial land uses in the Land Use Plan, Residential Areas Framework Plan, and the Commercial and Industrial Areas Framework Plan of the Town of Windsor Comprehensive Plan. These sections of the Comprehensive Plan took into account the existing 2000 IGA and 2004 SH 392 Development Plan between Windsor and Severance, which restricted the subject property to commercial and industrial uses. In addition, the property had been zoned and master planned for General Commercial (GC) and Limited Industrial (I-L) uses. SH 392 serves as the eastern 'gateway' into Windsor, with over 7,300 annual average daily trips between WCR 23 and SH 257 (2015 CDOT counts). The Comprehensive Plan identifies the SH 392 and WCR 23/Great Western Drive interchange as the eastern gateway into Windsor. WCR 23/Great Western Drive is approximately ¾ of a mile east of the subject property and the WCR 21 - SH 392 intersection.

Growth Framework Plan

Goal:

Maintain the character of the community while accommodating future growth that is fiscally and environmentally responsible.

Objectives:

1. *Prioritize new growth in areas currently served by Town infrastructure and services.*
6. *Work cooperatively with adjacent municipalities to coordinate future land use and development within intergovernmental planning areas and amend intergovernmental agreements to meet evolving community needs and land use demand.*

Primary Growth Area

"The Primary Growth Area includes vacant infill properties, redevelopment opportunities, and underutilized agricultural parcels adjacent to urbanized areas." "…Future development should be prioritized within the Primary Growth Area to utilize existing infrastructure and services."

"As new development occurs within the Primary Growth Area, the Town should ensure appropriate design and placement of residential and commercial uses." "…while new residential subdivisions will likely be predominantly single-family detached homes, residential developments should include a variety of housing types while also siting new units to preserve environmental features and open space areas."

Residential Areas Framework Plan

Goal:

Support diverse housing and residential neighborhoods to meet the needs of varying family sizes, lifestyles, and income levels.

Objectives:

1. *Promote multi-modal connectivity to increase neighborhood access and resident mobility.*
2. *Utilize conservation design and traditional neighborhood design for new residential growth areas and promote overall community livability.*

"…Windsor's newer subdivisions tend to include more curvilinear layouts with larger blocks, limited through-connections, and fewer access points to the major street network. This approach to residential development exacerbates the need for residents to use major roadways to make local trips and increases congestion…"

"Dead-end streets and cul-de-sacs should be limited in favor of a more complete network of streets and sidewalks that shorten travel distances…" "…the Town should also work with the development community to integrate trails within new neighborhoods."

Commercial & Industrial Areas Framework Plan

Objectives:

8. *Create a distinct sense of place for the Town's commercial and industrial districts.*

"Windsor features commercial and industrial areas distributed throughout the community, which creates the need to carefully manage residential growth alongside these zones in a way that appropriately buffers and transitions between land uses."

"The intersection of SH 392 and SH 257 is a catalyst opportunity for the SH 392 Corridor East."

<u>Analysis Summary:</u>

The site development issues such as access, circulation, floodplain and utilities remain the same whether the property develops commercially or residentially. A traffic study will need to be completed as part of the development review process to assess all potential problems and provide recommendations to alleviate these concerns. The CLOMR and LOMR FEMA processes are required with any development located in a designated floodplain area. Lastly, sewer capacity does not appear to be a factor for this area.

Based on staff's analysis, amending the IGA boundaries to allow residential uses within the subject property appear to be most critical to the fiscal impacts and long-term maintenance of Town-owned infrastructure. Town-owned infrastructure, or public improvements, typically consist of water and sewer mains, storm drainage facilities and public sidewalks and roads. Using the economic fiscal analysis model, it was determined that a change to residential would produce a net fiscal cost of $316,399 over a 10-year period. Additionally, this cost would be exacerbated by the property tax sharing provisions of the IGA, as the Town would be required to share the residential property taxes while continuing to provide services and maintain public infrastructure.

The Comprehensive Plan based the Land Use Plan and Framework Plans on the existing IGA and zoning of the property. In addition, the Comprehensive Plan specifically identified two intersections along the SH 392 Corridor East as either a 'catalyst opportunity' or 'gateway'. The SH 392 and SH 257 intersection was identified as a 'catalyst opportunity' for the corridor and is located approximately one mile west of the subject property. The SH 392 and WCR 23/Great Western Drive intersection, located ¾ mile east of the subject property, was identified as the Town's eastern 'gateway'.

The IGA was developed based on the commercial/industrial strip development concept which was a popular development style along major corridors in the mid to late 20th Century. Throughout the Comprehensive Plan there are references to commercial nodes and nodal development as being the preferred development style. This development style promotes walkable neighborhoods and better multi-modal circulation and access.

If an IGA boundary adjustment and allowance of residential uses is approved, the property owner will need to address access and circulation through the development review process, as well as adequate buffers between any residential lots and the industrial (Pioneer Sand) site and SH 392.

On August 3rd, staff from Windsor and Severance met to discuss the concept proposal. At that time Severance staff did not express any major concerns and said that Severance would await Windsor's direction before reviewing and commenting on the IGA request.

Legal Aspects:

It is important to note that amendment of the IGA will require official action by both the Windsor and Severance Town Boards.

If residential development in the CPA is approved, there are two key components to amendment of the IGA:

- Express language allowing residential uses in an area defined by an attached map with clear outlines for the approved residential area.

- Express language modifying the revenue-sharing percentages for property tax and construction use tax generated in the approved residential area.

Action:

As previously outlined, the intent of this item is for staff to receive direction from Windsor and Severance Town Boards (Boards) regarding a request to amend the boundaries of the Windsor-Severance SH 392 Development Plan to allow for residential use in areas currently designated for commercial and industrial uses.

Based on the enclosed materials, the Boards may choose to:

- Deny the requested amendment to the IGA
- Direct legal staff from both communities to finalize the draft IGA amendment for consideration

Should the Boards decide to amend the IGA, additional attention should be paid to the revenue sharing provisions of the IGA found in Section 10 as follows:

Section 10.a Shared Revenues:

- *"…It is understood and agreed that all sales, use and property tax revenues collected by each of the municipalities within the CPA shall be shared and distributed between the municipalities, two thirds (2/3) to the collecting municipality and one third (1/3) to the other municipality."*

Enclosures: IGA amendment request and concept plan
Aerial map of the property
Eastbrook Annexation 2nd and 3rd - Fiscal Analysis
Applicant response to staff analysis and memorandum
Applicant's supporting documents to their response
Discussion draft IGA amendment

pc: David Tschetter, representative for Global Asset Recovery, LLC

Mr. Josh Olhava, AICP
Senior Planner
Town of Windsor | Planning
301 Walnut Street | Windsor, CO 80550

Re: Global Asset Recovery, through its representatives, is requesting a variance to the Cooperative Planning Area and the Commercial Corridor Area defined in the Intergovernmental Agreement, IGA, dated December 11, 2000 and modified on January 12, 2004 and again on May 12, 2014 between the town of Windsor, Colorado and Severance, Colorado for the project know as Village East.

Dear Josh,

Global Asset Recovery, through its representatives, has now submitted a new concept plan taking into consideration staffs' comments pertaining to water mitigation on the site. Based on that submittal, and new comments from staff, it has been determined that a variance to the Intergovernmental Agreement between the towns of Windsor and Severance Colorado, as it relates to the Cooperative Planning Area and the Commercial Corridor Area will be required for this concept to be acceptable to the Town of Windsor. We are requesting that we be placed on the first available work session of the town board to discuss the validly of our request for this variance.

The variance we are requesting will allow residential building to take place in both the Cooperative Planning Area and the Commercial Corridor Area as defined in the IGA between the municipalities of Windsor, Colorado and Severance, Colorado in our project.

Those areas are defined in the original IGA agreement under Section 2, Definitions,

> (b) Cooperative Planning Area. Cooperative Planning Area (CPA) is a portion of Exhibit A and is specifically depicted thereon. The Cooperative Planning Area is a corridor defined as one-quarter (1/4) mile north and south of Colorado State Highway 392, bound on the west by Colorado State Highway 257 / Weld County Road 19, on the east by Weld County Road 23.
>
> (d) Commercial Corridor Area. Commercial Corridor Area is a portion of the Cooperative Planning Area and is specifically depicted within the Cooperative Planning Area on Exhibit A. The Commercial Corridor Area is a corridor defined as one-eighth (1/8) mile north and south of Colorado State Highway 392, bound on the west by Colorado State Highway 257/Weld County Road 19" and on the east by Weld County Road 23.

We have provided an exhibit that reflects these defined areas and how they relate to our proposed concept plan.

The IGA goes on to state under Section 3 of the original agreement that residential zoning is only allowed if both municipalities specifically agree it to:

> 3.Comprehensive Development Plan for the Cooperative Planning Area
>
> > 3.(a).2 Land use restrictions in the CPA, specifically including the prohibition of residential zoning within the CPA, unless such residential zoning is specifically agreed upon by both municipalities.

Additionally, if both municipalities agree to allow residential zoning, Section 3 of the IGA states that it must be in writing and the review period can be shortened by agreement.

> (b) Upon the adoption of the Corridor Development Plan, in whole or in part, no development proposals, which for purposes of this Agreement shall include conditional use grants, shall be approved by either of the parties which are inconsistent with the plan adopted by the municipalities without the specific written consent of the board of trustees of each of the municipalities. It is understood and agreed that upon the adoption of this Intergovernmental Agreement, all plans and specifications for any development proposal within the boundaries of the CPA, received by either of the parties after the effective date of this Agreement, shall be forwarded to the other party for review and comment at least thirty (30) days prior to any action being taken on said development proposal. The review and comment period provided for herein may be shortened or extended by the parties by mutual agreement.

In Section 4 of the original IGA agreement Windsor and Severance anticipated that some developments would have cause that would necessitate the need for a variance to their IGA so they agreed to cooperate with each other to adopt such amendments.

> 4. Amendment of the Cooperative Planning Area Boundaries. The parties· recognize that the boundaries of the CPA as established by this Agreement are reflective of current and projected land uses within the Geographic Area. The parties intend that the area to be contained within the CPA be limited to commercial and industrial development and that such development not be divided by the artificial boundaries established by this Agreement. The parties recognize that as annexations occur, and developments are proposed within the Geographic Area, it may be necessary to amend this Agreement to modify the boundaries of the CPA to include additional land that may be developed as commercial or industrial or to exclude land which will not be so developed. The parties agree that they shall fully cooperate with one another in adopting such amendments to this Agreement as may be necessary to effectuate the intentions of the parties as expressed in this paragraph.

Village East has become one of those developments that require such a variance. Staff is aware of the limiting factors to the site that have necessitated this request for a variance

to the IGA agreement between Windsor and Severance. However, I believe it would be beneficial to those not as familiar with the challenges associated with this site for us to give some historical background on the revisions to the John Law Drainage Basin imposed by FEMA that have impacted the site, curtailing development opportunities.

Our site became more challenging, as a direct result of the hydrologic and hydraulic study that was conducted by FEMA, for the Law Basin, that calculated up basin reservoirs would be operating at full capacity with no availability for additional water storage during a major event. When that criteria was applied to our site, the calculations of water flow on our site during a major event totaled 4400 cfs, a similar amount of water volume as the Poudre River above flood stage!!

The Towns of Windsor and Severance, to their credit, understood that the likelihood of challenging FEMA's new Flood Insurance Rate Map (FIRM) for the Law Basin with the new water flow calculations was unlikely, and that these changes would have a direct impact on development within their municipalities.

As a result in November 2012 the Draft Environmental Assessment of the John Law Ditch Flood Mitigation Project associated with the Town of Windsor, Colorado was released and determined;

> "Historic drainage patterns in the vicinity of Windsor, including what is known as Law Basin, have been altered by the construction of the Greeley Number 2 Canal and two major roads: Weld County Road 21 (WCR 21) and Colorado State Highway 392 (SH 392), which cross the basin. Irrigation water is routed through the John Law Ditch, which flows through the middle of Law Basin. The John Law Ditch is approximately 20 feet wide and 4 feet deep and does not have the capacity to convey the 2-year storm event (Town of Windsor 2011)".

Each construction alteration defined in that assessment, Weld County Road 21, Colorado State Highway 392 and the Greeley Number 2 Canal all come together to impact our site.

The report goes on to say;

> "The floodplain associated with Law Basin was first delineated on a Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Weld County dated March 18, 1980 (Town of Windsor 2011). Since that time, a hydrologic and hydraulic study was completed for Law Basin as part of Letter of Map Revision (LOMR) Case No. 08-08-0233P. An updated FEMA FIRM is available for the project area (Weld County, Colorado, Unincorporated Areas; Panel Number 0802660605D, Revised September 27, 1991). The revised floodplain was determined to be more extensive than that shown on the 1991 FIRM and includes 10 residential structures and two roads at risk of flooding during low 2-year to 10-year events (50- to 10-percent-annual-risk of flooding, respectively). SH 392 has traffic counts of approximately 8,200 vehicles per day and is at risk of overtopping during relatively minor events (less than a 10-year

> event). SH 392 is a vital road in the project area and a major connector route between Greeley and Fort Collins. WCR 21 has traffic counts of 1,650 vehicles per day and is also at risk of overtopping during minor events (less than a 10-year event) (Town of Windsor 2011)".

We realize that a 128-page report has a lot more to say, but the underlining conclusion of that draft assessment was that the Town of Windsor decided;

> "Based on the continuing risk of flooding, the Town of Windsor has identified the need to mitigate future flood events associated with the John Law Ditch east of Windsor near the intersection of WCR 21 and SH 392 by conveying stormwater runoff and flood flows without flooding residential properties and two roadways during floods up to and including a 10-year flood event. The primary need for the project is to reduce the flood risk to 10 residential properties and protect/maintain traffic flows on WCR 21 and SH 392 up to the 10-year storm event".

It should be noted that we participated in working with the Town of Windsor to help facilitate the mitigation of Law Basin and were willing participants in this capital project.

We could spend more time on the impact the Law Basin water mitigation project has had on our site, but I believe we all understand the scope of this project, along with, the amount of time, money, and energy that has gone into preparing this location in Windsor for future storm events.

Our request for the variance of the Cooperative Planning Area and the Commercial Corridor Area associated with our project is based on what is now the highest and best use for the property now that the mitigation of water flows have been addressed through the John Law capital project undertaken by the Town of Windsor.

Our concept plan for Village East Phase 2 presented to staff for comment provides a solution to mitigation of 4400 cfs, <u>with zero rise</u> on the site. We believe that our concept provides a solution that improves the water mitigation at this difficult location where Weld County Road 21, Colorado State Highway 392 and the Greeley Number 2 Canal all come together.

We are now asking that the Towns of Windsor and Severance to agree to allow residential building in Cooperative Planning Area and the Commercial Corridor Area for our property for the flowing reasons.

1. The amount of land remaining the in Commercial Corridor Area of our project is only 3.98 acres with limited access.

2. The amount of ground remaining in the Cooperative Planning Area of the project is 29.74 acres. This ground is surrounded by residential zoning and with the amount of open space created by channels associated with the Law Project, or new detention and channeling created by our project, along with bordering the

Great Western Trail System the continuation of the Village East residential neighborhood looks is the highest and best use for the land.

3. Access off SH 392 at best is a right in, right out scenario, if access off SH 392 is viable at all to the project, making it impractical for Windsor residents traveling east bound on SH 392 to access the property for commercial purposes.

4. Water in the Law Basin flows at this location to the southwest and the practical location for future commercial development would be the northeast corner of Weld County Road 21 and SH 392. Both the access issues and additional water mitigation can be accomplished at that location with excellent SH 392 visibility.

5. The estimated assessed valuation for residential property tax on an additional 135 residential homes in this location would be $3,223,800 based on the current average sale price of Homes in Village East.

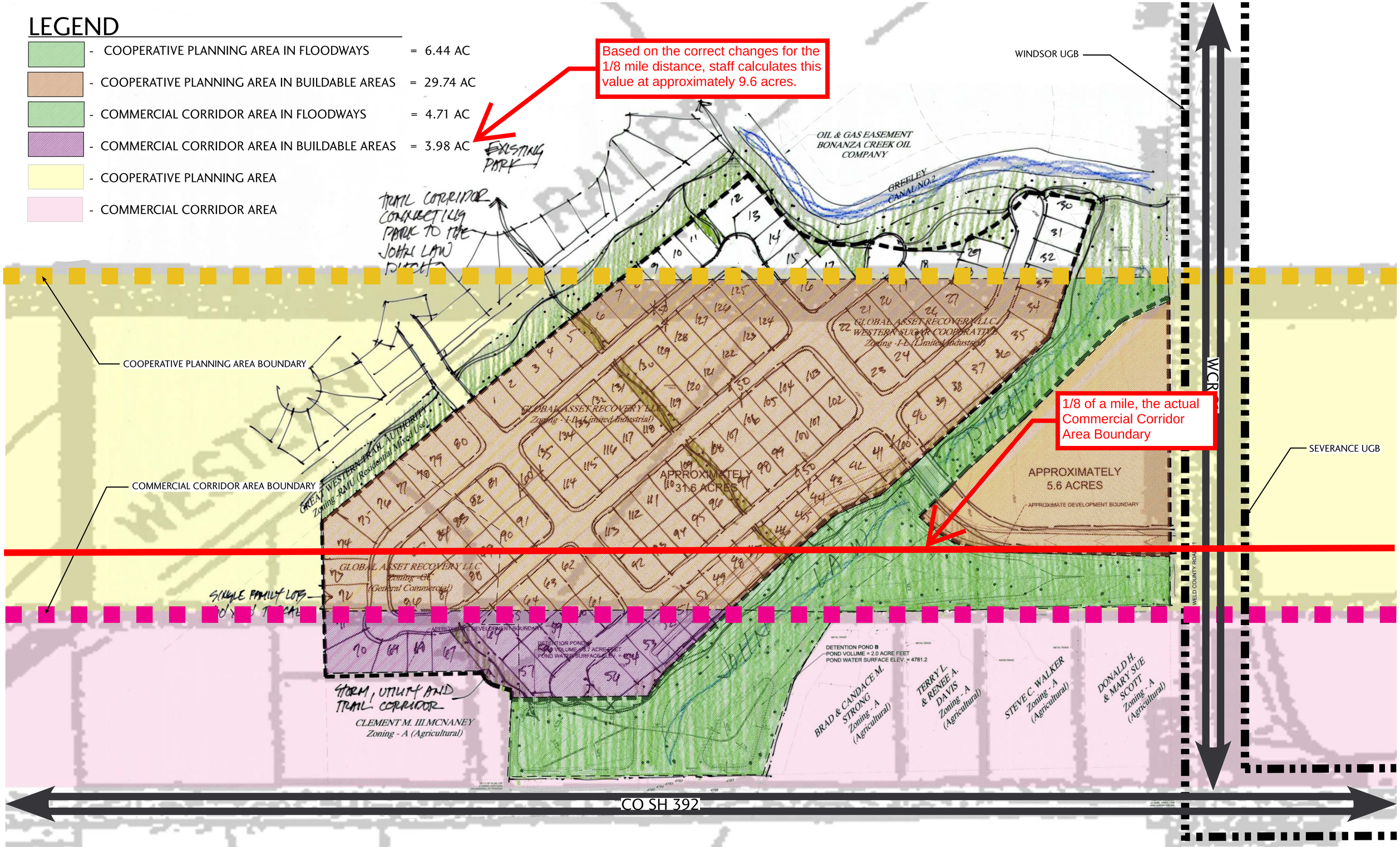
We ask that you approve our request for this variance to the IGA and allow residential building to occur at this location within the Cooperative Planning Area and the Commercial Corridor Area for the site.

Thank you for your consideration on this issue.

David Tschetter
Global Asset Recovery, as agent

LEGEND

- COOPERATIVE PLANNING AREA IN FLOODWAYS = 6.44 AC
- COOPERATIVE PLANNING AREA IN BUILDABLE AREAS = 29.74 AC
- COMMERCIAL CORRIDOR AREA IN FLOODWAYS = 4.71 AC
- COMMERCIAL CORRIDOR AREA IN BUILDABLE AREAS = 3.98 AC
- COOPERATIVE PLANNING AREA
- COMMERCIAL CORRIDOR AREA



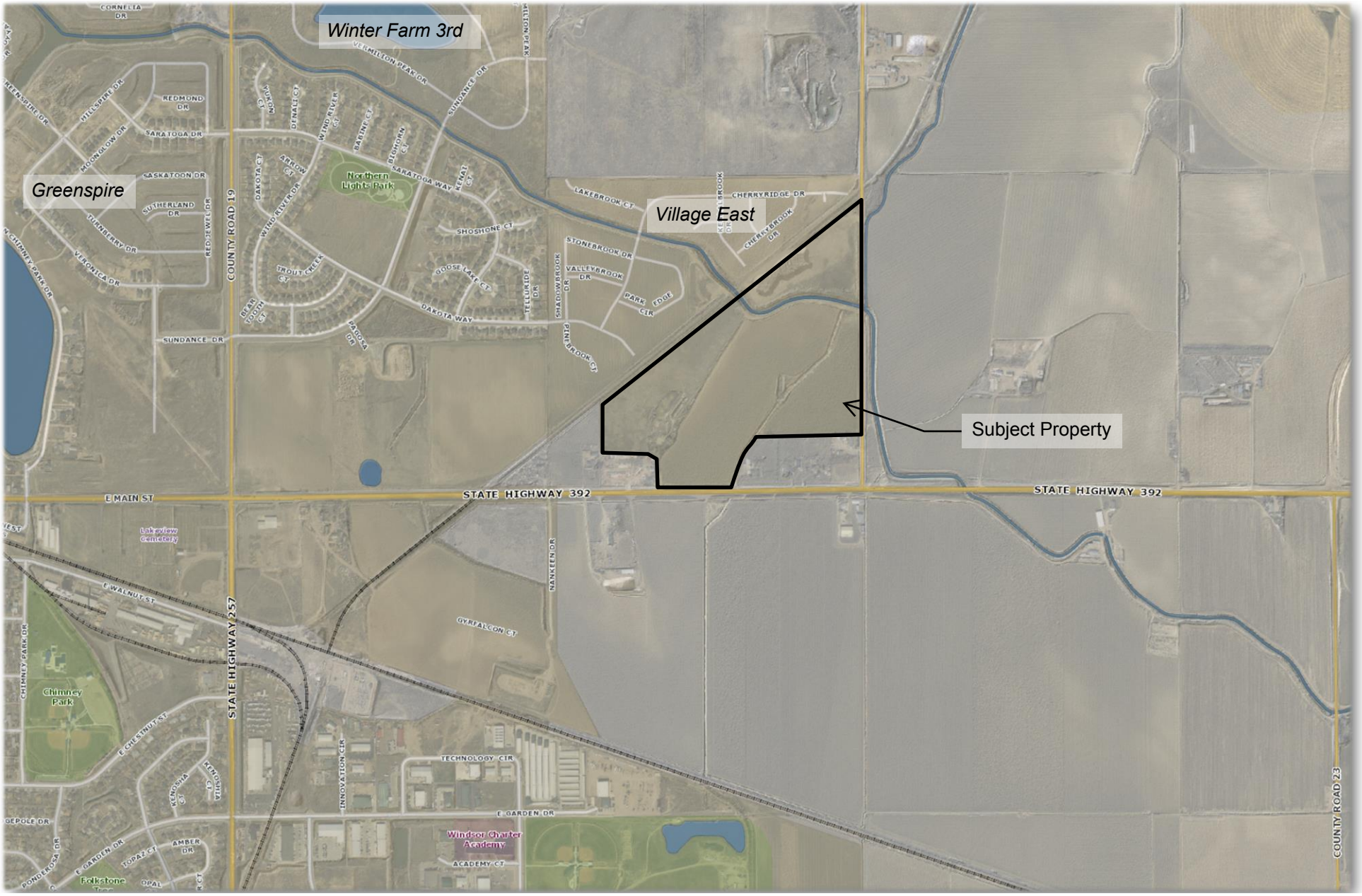
VILLAGE EAST - Cooperative Planning Area and Commercial Corridor Area

DATE: 7.15.2016

0' 50' 100' 200'

CONSILIUM DESIGN

Aerial Exhibit – Eastbrook 2nd and 3rd Annexations



Site Stats Comparison of Residential vs. Limited Industrial Land at Eastbrook Annexation 2nd and 3rd

The following assumptions were made when inputting data into this model:

All projects full build out 2016

Inputs	Residential	Limited Industrial
Project Buildable Acres: *(total site is 33.7 acres)*	28.1 single fam/ 5.6 multi-fam)	33.7
Single Family (SF) Home Price	$310,000.00	
Multi-Family (MF) Home Price	$200,000.00	
Number of SF Homes/ MF Homes	124/56 (*used recent MF projects as assumption*)	
Occupancy Rates:	98% / 92.3%	95%
Office Market Value Per Sq. Ft. *(Source: Xceligent)*		$185.00
Office Sq. Ft. (15% of Industrial Projects)		110,097.90 *(only 15% of industrial building was used for sq. ft. estimate)*
Industrial Market Value per Sq. Ft. *(Source: Xceligent)*		$95.00
Industrial Sq. Ft.		623,888.10 *(only 50% of buildable area was used for sq. ft. estimate)*
# of employees living within project site *(Source: Development Research Partners Work Destination Report)*		8%

Economic and Fiscal Benefits Summary

Residential

Eastbrook Annexation 2nd and 3rd

Economic and Fiscal Benefits of Construction Activity in Town of Windsor

	10 Year Total Benefits	
	Total	Town of Windsor
Economic Benefits		
Construction Materials	$23,827,200	$1,286,669
Soft Costs	$3,971,200	$266,070
Payroll	$8,339,520	$208,488
Benefits	$3,574,080	$21,444
Total Economic Benefits	**$39,712,000**	**$1,782,672**
Employees (Person-Years)	170	4
Fiscal Benefits		
Sales/Use Tax on Construction Materials		$635,392
Impact Fees		$0
Miscellaneous Fees		$0
Total Government Revenues		**$635,392**
Total Government Costs		**$0**
Net Fiscal Benefit		**$635,392**
Net Economic and Fiscal Benefits		**$2,418,064**

Economic and Fiscal Benefits of Business Operations in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	Town of Windsor	Total	Town of Windsor
Economic Benefits				
Personal Property	$0	$0	$0	$0
Materials for Operations	$0	$0	$0	$0
Utilities	$0	*Not Estimated*	$0	*Not Estimated*
Telecommunications	$0	*Not Estimated*	$0	*Not Estimated*
Payroll	$0	$0	$0	$0
Total Economic Benefits	**$0**	**$0**	**$0**	**$0**
Employees			0	0
Retail Sales		$0		$0
Fiscal Benefits				
Property Tax		$0		$0
Sales/Use Tax		$0		$0
Franchise Fees		$0		$0
Occupational Privilege Tax		$0		$0
Sales/Use Tax from Retail Operations		$0		$0
Other Revenue		$0		$0
Total Government Revenues		**$0**		**$0**
Total Government Costs		**$0**		**$0**
Net Fiscal Benefit		**$0**		**$0**
Net Economic and Fiscal Benefits		**$0**		**$0**

Economic and Fiscal Benefits Summary

Residential

Eastbrook Annexation 2nd and 3rd

Economic and Fiscal Benefits of On-Site Residents in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	Town of Windsor	Total	Town of Windsor
Economic Benefits				
Total Residents				465
Total Occupied Housing Units				173
Total Household Income		$96,620,689		$10,735,632
Market Value of Resident Housing				$49,640,000
Taxable Retail Sales (Total Econ Benefits)	**$33,913,862**	**$16,685,620**	**$3,768,207**	**$1,853,958**
Fiscal Benefits				
Property Tax		$427,812		$47,535
Sales Tax		$533,940		$59,327
Other Revenue		$1,506,606		$167,401
Total Government Revenues		**$2,468,358**		**$274,262**
Total Government Costs		**$3,420,149**		**$380,017**
Net Fiscal Benefit		**($951,791)**		**($105,755)**
Net Economic and Fiscal Benefits		**$15,733,829**		**$1,748,203**

Economic and Fiscal Benefits of Off-Site Employees in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	Town of Windsor	Total	Town of Windsor
Economic Benefits				
Total Off-Site Employees				0
Total Annual Earnings		$0		$0
Market Value of Off-Site Employee Housing				$0
Taxable Retail Sales (Total Econ Benefits)	**$0**	**$0**	**$0**	**$0**
Fiscal Benefits				
Property Tax		$0		$0
Sales Tax		$0		$0
Other Revenue		$0		$0
Total Government Revenues		**$0**		**$0**
Total Government Costs		**$0**		**$0**
Net Fiscal Benefit		**$0**		**$0**
Net Economic and Fiscal Benefits		**$0**		**$0**

Economic and Fiscal Benefits Summary

Residential

Eastbrook Annexation 2nd and 3rd

Economic and Fiscal Benefits of Visitors in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	**Town of Windsor**	**Total**	**Town of Windsor**
Economic Benefits				
Non-Lodging Expenditures				
Total Visitors		0		0
Average Length of Stay (Days)		0.0		0.0
Total Non-Lodging Expenditures	**$0**	**$0**	**$0**	**$0**
Lodging Expenditures				
Total Overnight Visitors	0	0	0	0
Total Room-Nights of Demand	0	0	0	0
Total Lodging Expenditures		**$0**		**$0**
Total Economic Benefits		**$0**		**$0**
Fiscal Benefits				
Sales Tax Revenue		$0		$0
Lodging Tax Revenue		$0		$0
Seat or Ticket Tax Revenue		$0		$0
Total Government Revenues		**$0**		**$0**
Total Government Costs		**$0**		**$0**
Net Fiscal Benefit		**$0**		**$0**
Net Economic and Fiscal Benefits		**$0**		**$0**

Economic and Fiscal Benefits Summary

Residential

Eastbrook Annexation 2nd and 3rd

Fiscal Benefits of Project Name in Town of Windsor

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*	*Year 7*	*Year 8*	*Year 9*	*Year 10*	*Total*
Property Tax:											
Business (Real)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Business (Personal)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
On-site Residents	$0	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	**$427,812**
Off-site Employees	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Property Tax Revenue	$0	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	$47,535	**$427,812**
Sales and Use Tax:											
Generated from Construction	$635,392	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$635,392**
Generated from Business Operations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Generated from Retail Space	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Generated from On-site Residents	$0	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	**$533,940**
Generated from Off-site Employees	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Generated from Visitors	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Sales and Use Tax Revenue	$635,392	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	$59,327	**$1,169,332**
Lodging Tax	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Occupational Tax	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Franchise Fees on Utilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Other Tax Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Other Revenue	$0	$167,401	$167,401	$167,401	$167,401	$167,401	$167,401	$167,401	$167,401	$167,401	**$1,506,606**
Total Local Government Revenues	**$635,392**	**$274,262**	**$274,262**	**$274,262**	**$274,262**	**$274,262**	**$274,262**	**$274,262**	**$274,262**	**$274,262**	**$3,103,750**
Total Local Government Costs	**$0**	**$380,017**	**$380,017**	**$380,017**	**$380,017**	**$380,017**	**$380,017**	**$380,017**	**$380,017**	**$380,017**	**$3,420,149**
Net Fiscal Benefit (Cost)	**$635,392**	**($105,755)**	**($105,755)**	**($105,755)**	**($105,755)**	**($105,755)**	**($105,755)**	**($105,755)**	**($105,755)**	**($105,755)**	**($316,399)**

Economic and Fiscal Benefits Summary

Industrial / Flex

Eastbrook Annexation 2nd and 3rd

Economic and Fiscal Benefits of Construction Activity in Town of Windsor

	10 Year Total Benefits	
	Total	**Town of Windsor**
Economic Benefits		
Construction Materials	$0	$0
Soft Costs	$0	$0
Payroll	$0	$0
Benefits	$0	$0
Total Economic Benefits	**$0**	**$0**
Employees (Person-Years)	0	0
Fiscal Benefits		
Sales/Use Tax on Construction Materials		$0
Impact Fees		$0
Miscellaneous Fees		$0
Total Government Revenues		**$0**
Total Government Costs		**$0**
Net Fiscal Benefit		**$0**
Net Economic and Fiscal Benefits		**$0**

Economic and Fiscal Benefits of Business Operations in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	**Town of Windsor**	**Total**	**Town of Windsor**
Economic Benefits				
Personal Property	$110,273,115	$5,825,242	$10,930,458	$577,433
Materials for Operations	$224,379,389	$9,872,693	$22,437,939	$987,269
Utilities	$44,130,529	*Not Estimated*	$4,413,053	*Not Estimated*
Telecommunications	$7,403,320	*Not Estimated*	$740,332	*Not Estimated*
Payroll	$793,354,963	$130,110,214	$79,335,496	$13,011,021
Total Economic Benefits	**$1,179,541,315**	**$145,808,149**	**$117,857,278**	**$14,575,723**
Employees			1,499	246
Retail Sales		$0		$0
Fiscal Benefits				
Property Tax		$4,701,842		$464,346
Sales/Use Tax		$2,151,417		$214,979
Franchise Fees		$1,323,916		$132,392
Occupational Privilege Tax		$0		$0
Sales/Use Tax from Retail Operations		$0		$0
Other Revenue		$3,699,779		$369,978
Total Government Revenues		**$11,876,954**		**$1,181,694**
Total Government Costs		**$9,870,837**		**$987,084**
Net Fiscal Benefit		**$2,006,118**		**$194,611**
Net Economic and Fiscal Benefits		**$147,814,267**		**$14,770,334**

Economic and Fiscal Benefits Summary

Industrial / Flex

Eastbrook Annexation 2nd and 3rd

Economic and Fiscal Benefits of On-Site Residents in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	Town of Windsor	Total	Town of Windsor
Economic Benefits				
Total Residents				0
Total Occupied Housing Units				0
Total Household Income		$0		$0
Market Value of Resident Housing				$0
Taxable Retail Sales (Total Econ Benefits)	**$0**	**$0**	**$0**	**$0**
Fiscal Benefits				
Property Tax		$0		$0
Sales Tax		$0		$0
Other Revenue		$0		$0
Total Government Revenues		**$0**		**$0**
Total Government Costs		**$0**		**$0**
Net Fiscal Benefit		**$0**		**$0**
Net Economic and Fiscal Benefits		**$0**		**$0**

Economic and Fiscal Benefits of Off-Site Employees in Town of Windsor

	10 Year Total Benefits		Year 10 Benefits	
	Total	Town of Windsor	Total	Town of Windsor
Economic Benefits				
Total Off-Site Employees				226
Total Annual Earnings		$119,701,397		$11,970,140
Market Value of Off-Site Employee Housing				$53,525,172
Taxable Retail Sales (Total Econ Benefits)	**$42,015,190**	**$20,671,474**	**$4,201,519**	**$2,067,147**
Fiscal Benefits				
Property Tax		$461,296		$51,255
Sales Tax		$661,487		$66,149
Other Revenue		$814,776		$81,478
Total Government Revenues		**$1,937,559**		**$198,881**
Total Government Costs		**$1,849,624**		**$184,962**
Net Fiscal Benefit		**$87,934**		**$13,919**
Net Economic and Fiscal Benefits		**$20,759,408**		**$2,081,066**

Economic and Fiscal Benefits Summary

Industrial / Flex

Eastbrook Annexation 2nd and 3rd

Economic and Fiscal Benefits of Visitors in Town of Windsor				
	10 Year Total Benefits		Year 10 Benefits	
	Total	Town of Windsor	Total	Town of Windsor
Economic Benefits				
Non-Lodging Expenditures				
Total Visitors		0		0
Average Length of Stay (Days)		0.0		0.0
Total Non-Lodging Expenditures	**$0**	**$0**	**$0**	**$0**
Lodging Expenditures				
Total Overnight Visitors	0	0	0	0
Total Room-Nights of Demand	0	0	0	0
Total Lodging Expenditures		**$0**		**$0**
Total Economic Benefits		**$0**		**$0**
Fiscal Benefits				
Sales Tax Revenue		$0		$0
Lodging Tax Revenue		$0		$0
Seat or Ticket Tax Revenue		$0		$0
Total Government Revenues		**$0**		**$0**
Total Government Costs		**$0**		**$0**
Net Fiscal Benefit		**$0**		**$0**
Net Economic and Fiscal Benefits		**$0**		**$0**

Economic and Fiscal Benefits Summary

Industrial / Flex

Eastbrook Annexation 2nd and 3rd

Fiscal Benefits of Project Name in Town of Windsor

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*	*Year 7*	*Year 8*	*Year 9*	*Year 10*	*Total*
Property Tax:											
Business (Real)	$277,831	$277,831	$277,831	$277,831	$277,831	$277,831	$277,831	$277,831	$277,831	$277,831	**$2,778,312**
Business (Personal)	$244,895	$186,515	$186,515	$186,515	$186,515	$186,515	$186,515	$186,515	$186,515	$186,515	**$1,923,530**
On-site Residents	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Off-site Employees	$0	$51,255	$51,255	$51,255	$51,255	$51,255	$51,255	$51,255	$51,255	$51,255	**$461,296**
Total Property Tax Revenue	$522,727	$515,601	$515,601	$515,601	$515,601	$515,601	$515,601	$515,601	$515,601	$515,601	**$5,163,138**
Sales and Use Tax:											
Generated from Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Generated from Business Operations	$216,608	$214,979	$214,979	$214,979	$214,979	$214,979	$214,979	$214,979	$214,979	$214,979	**$2,151,417**
Generated from Retail Space	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Generated from On-site Residents	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Generated from Off-site Employees	$66,149	$66,149	$66,149	$66,149	$66,149	$66,149	$66,149	$66,149	$66,149	$66,149	**$661,487**
Generated from Visitors	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Sales and Use Tax Revenue	$282,757	$281,127	$281,127	$281,127	$281,127	$281,127	$281,127	$281,127	$281,127	$281,127	**$2,812,904**
Lodging Tax	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Occupational Tax	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Franchise Fees on Utilities	$132,392	$132,392	$132,392	$132,392	$132,392	$132,392	$132,392	$132,392	$132,392	$132,392	**$1,323,916**
Other Tax Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Other Revenue	$451,456	$451,456	$451,456	$451,456	$451,456	$451,456	$451,456	$451,456	$451,456	$451,456	**$4,514,555**
Total Local Government Revenues	**$1,389,330**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$1,380,576**	**$13,814,513**
Total Local Government Costs	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$1,172,046**	**$11,720,461**
Net Fiscal Benefit (Cost)	**$217,284**	**$208,530**	**$208,530**	**$208,530**	**$208,530**	**$208,530**	**$208,530**	**$208,530**	**$208,530**	**$208,530**	**$2,094,052**

Mr. Josh Olhava, AICP
Senior Planner
Town of Windsor | Planning
301 Walnut Street | Windsor, CO 80550

Re: Response to Analysis of a request to amend the Commercial Corridor and Cooperative Planning boundaries of the Windsor-Severance SH 392 Development Plan to allow residential uses

Dear Josh,

Please include our response to staff's analysis in the packets for the Town's Mayor and Town Board in preparation for our meeting on October 3rd, 2016.

We will assume that there is no need to readdress the information we provided in our request for variance of the Cooperative Planning Area and the Commercial Corridor Area as defined in the IGA between the municipalities of Windsor, Colorado and Severance, Colorado that was submitted July 18, 2016, to the town.

We believe that there were two key discussion points laid out in the analysis you presented to us. The first is the fiscal analysis and the second is access and circulation within the project.

A fiscal analysis is a key component of any development to determine the feasibility of the project from an economic standpoint. Fiscal comparisons between land uses can only be viable if the outcome of the development is predicable so that the analysis has validly. In this analysis, the assumption is that the project has 95% + occupancy levels for both the commercial / light industrial use or the residential use. The reality is that only the residential use is a viable solution for this property from both an economic and environmental standpoint and, therefore, the accompanying results of the analysis for the commercial / light industrial will not be obtained on this property.

If we assume the project could be a viable commercial or light industrial development, then it would be a compelling reason to keep the current zoning. However, we believe that there are simply to many environmental and economic constraints to make this project feasible with current zoning uses. We are in agreement, for the most part, with the assumptions used in the financial model; however, we would take some exceptions on what impact residential construction and home ownership has on the local economy. It is always interesting that when looking at residential neighborhoods versus commercial development, and the related fiscal impact they have on the local economy, the natural tendency is to favor commercial development due to the tax revenues associated with commercial development. However, what is overlooked in that discussion is how residential neighborhoods both enhance a communities' ability to attract new business, and, at the same time, provide citizens with one of its most basic needs (housing). The

2015 report by the National Association of Home Builders titled "The Economic Impact of Home Building in a Typical Local Area" is a great reference supporting the economic benefits of residential construction on the local economy. (See attached).

When we look at this development, what we can say with certainty about the project, from a **residential development** standpoint, is that upon approval by the town of a final plat the project **<u>will be</u>** completed in a timely manner as evidenced by the completion of the north side of Village East. The benefits of the project from a residential standpoint include;

1. Village East has created a more affordable housing market within the Windsor market.

2. Village East is a model for the Town's goal within the Growth Framework Plan to "Maintain the character of the community while accommodating future growth that is fiscally and environmentally responsible". Village East phase one dedicated over 22 acres, 34% of the project, to open space and trail connectivity within the community and the town, and phase two would increase the total dedication of open space and trail connectivity, within Village East, to over 35% of the project.

3. Village East phase two could provide a specific housing need within the Windsor market for multi-family, once again fulfilling a portion of the affordable housing needs within the Windsor housing market.

4. The conclusion in the executive summary, pages 1-2, of the 2015 report by the National Association of Home Builders titled "The Economic Impact of Home Building in a Typical Local Area" estimates that the one-year impacts of building 100 single-family homes in a typical local area include;

    a. $28.7 million in local income,
    b. $3.6 million in taxes and other revenue for local governments, and
    c. 394 local jobs.

    The summary goes on to state, "These are local impacts, representing income and jobs for residents of an average metropolitan area or nonmetropolitan county, and other sources of revenue, including permit fees for all local jurisdictions within the local area. They are also one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity spending part of it within the local area. Local jobs are measured in full time equivalents—i.e., one reported job represents enough work to keep one worker employed full-time for a year, based on average hours worked per week by full-time employees in the industry. The one-year estimates also assume that construction materials are subject to a local sales tax of 1.52 percent, an average (weighted by population) computed by NAHB across rates for individual states reported by the Tax Foundation".

5. The conclusion in the executive summary, pages 1-2, of the 2015 report by the National Association of Home Builders titled "The Economic Impact of Home Building in a Typical Local Area" estimates that the annually recurring impacts of building 100 single-family homes in a typical local area include;

    a. $4.1 million in local income,
    b. $1.0 million in taxes and other revenue for local governments, and
    c. 69 local jobs.

    The summary goes on to state "These are ongoing, annual local impacts that result from the new homes becoming occupied, and the occupants paying taxes and otherwise participating in the local economy year after year. The ongoing impacts also include the effect of increased property taxes, based on the difference between the value of raw land and the value of a completed housing unit on a finished lot, assuming that raw land would be taxed at the same rate as the completed housing unit.

    The above impacts were calculated assuming that new single-family homes built in a typical metropolitan area or nonmetropolitan county have an average price of $378,000; which includes $48,000 in raw land value and $13,672 in permit, hook-up, impact and other fees paid to local governments; and incur an average property tax of $4,239 per year. The house price and raw land value are based on a blended average of prices of new homes built for sale and contract prices for custom homes built on the homeowner's land, from the Census Bureau's Survey of Construction (along with assumptions about raw land and other factors the Census Bureau uses when processing construction value in the survey). The impact fees are based on a national average percentage estimated by NAHB in a 2011 article. The property tax payment is based on a national average computed from the Census Bureau's American Community Survey summary files.

We believe that data supports the benefits of residential construction within the town and that a change in zoning that allows residential construction is beneficial to the community and allows development on this property to occur.

What we can say with certainty about the project from a **commercial / light industrial** standpoint is that the constraints economically and environmentally **are prohibitive and will more than likely hinder development of the project now or any time in the foreseeable future.** Those constraints, include but may not be limited to;

1. As a direct result of the hydrologic and hydraulic study that was conducted by FEMA, for the Law Basin, that calculated up basin reservoirs would be operating at full capacity with no availability for additional water storage during a major event. When that criteria was applied to our site, the calculations of water flow on our site during a major event totaled 4400 cfs, a similar amount of water

volume as the Poudre River above flood stage!! The direct result of this impacts the property in the following manner;

a. We had to develop a plan that would provide a solution to mitigate 4400 cfs, <u>with zero rise</u> on the site.
b. After mitigation of the water issue the remaining developable land within the Commercial Corridor Area of the project is only 3.98 acres with limited access.
c. After mitigation of the water issue, the remaining developable land within the Cooperative Planning Area of the project is 29.74 acres.
d. Even if the remaining property, **<u>not owned</u>** by Global, fronting SH 392 become available in the future for development that property would be subjected to flooding reducing the viability of any development.
e. The Access Control Plan for SH 392 shows access being limited to a right in, right out movement on our property, further complicating the viability of commercial / light industrial project at this location.
f. The mitigation of the water issue has made any practical entrance from SH 392 fiscally impossible for a project of this size. The projected cost for an entrance from SH 392 to the property is $1.25M +.

2. Using the projections from the financial analysis the economic feasibility for the commercial / light industrial at this location does not work.

    a. Our annual costs to lease 10,000 square feet, just over 1% of the project, using the numbers provided in the fiscal analysis would be approximately;
        i. 150% of monthly PI, principle and interest, on 75% LTV, loan to value, at 5% interest rate, amortized over 20 years equals an annual payment of $164,808.
        ii. Using a factor of $5 / foot for property tax, insurance and maintenance.
        iii. Total annual carry $214,808
        iv. Lease rate to break even on 10,000 square feet is $21.48 / foot
        v. Current Windsor market for commercial $15/$20 foot.

3. It would be difficult to secure spec financing for the project when the likelihood of the project cash flowing is not likely. This is further complicated by the location which is;

    a. Not as attractive as other commercial projects within the Windsor market space, such as Crossroads, which would drive down the economics of this location.
    b. In direct competition with other projects currently located on SH 392.

4. Residential zoning surrounds this property on multiple sides and the push back from the neighbors would be significant.

We believe that the economic and environmental constraints on the property have made commercial / light industrial development unlikely on the property now or anytime in the immediate future. This being the case, the fiscal analysis could not reflect current market conditions and the feasibility of the development under a commercial or light industrial use.

The other issue in the memorandum that we would like to comment on deals with your comments as it pertains to access and circulation within the project.

As to the question of access to the property from SH 392 we believe that with our most recent concept plan that we presented shows traffic flows through the project that is more in line with the existing Access Control Plan for SH 392. That plan shows access from our property being limited to a right in, right out movement. That limited access further supports our request and diminishes the viability of commercial construction on our property. The economics of an access point from our property to SH 392 are prohibitive for a project of this size due to the water mitigation require on the site. The Access Control Plan for SH 392 also calls for a full movement intersection on the half section line between Weld CR 19 and Weld CR 21 that works well with a southern extension of Saratoga Way from Peakview, with a future connection point to Village East. We believe that our latest concept plan addresses the concerns of access and circulation to Village East in a manner that aligns itself with the Access Control Plan for SH 392 finalized in 2006.

We are in agreement that other issues dealing with the project will be dealt with through the normal channels during platting process.

We believe that in light of the economic and environmental constraints our request should be granted so that Windsor can benefit from the residential development now. No amount of time will change the constraints that have been placed on this property, and this is our attempt to make this a viable project that Windsor can be proud of.

Thank you for your consideration on this issue.

David Tschetter
Global Asset Recovery, as agent

Attachments:

NAHB report "The Economic Impact of Home Building in a Typical Local Area"
Village East Concept Plan
Concept Vicinity Map
Access Control Plan for SH 392

National Association of Home Builders

The Economic Impact of Home Building in a Typical Local Area

Income, Jobs, and Taxes Generated

April 2015

Housing Policy Department

NAHB

The Economic Impact of Home Building in a Typical Local Area

Income, Jobs, and Taxes Generated

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Attachment:
Local Impact of Home Building—Technical Documentation for the NAHB Model Used to Estimate the Income, Jobs, and Taxes Generated

Executive Summary

Home building generates substantial local economic activity, including new income and jobs for residents, and additional revenue for local governments. The National Association of Home Builders has developed a model to estimate these economic benefits. The model captures the effect of the construction activity itself, the ripple impact that occurs when income earned from construction activity is spent and recycles in the local economy, and the ongoing impact that results from new homes becoming occupied by residents who pay taxes and buy locally produced goods and services. In order to fully appreciate the positive impact residential construction has on a community, it is important to include the ripple effects and the ongoing benefits. Since the model was initially developed in 1996, NAHB has used it successfully to estimate the impacts of construction in over 800 projects, local jurisdictions, metropolitan areas, non-metropolitan counties, and states across the country.

This report presents separate estimates of the local area impacts of building 100 single-family homes, 100 rental apartments and $1 million worth of spending on residential remodeling. As described more fully below, most of the key inputs (such as value of the homes being built, and impact fees and property taxes per dollar of new construction) are based on national averages. Other than construction-related fees and residential property taxes, local government revenue is determined by on aggregating line items for all 89,000-plus local governments in the U.S. in the latest Census of Governments.

For purposes of the NAHB model, a local area must be large enough to include the places where construction workers live and spend their money, as well as the places where the new home occupants are likely to work, shop, and go for recreation. In practice, this usually means a Metropolitan Statistical Area (MSA) or Metropolitan Division, as defined by the U.S. Office of Management and Budget (OMB) based on local commuting patterns. Outside of an MSA, many counties are relatively self-contained areas that will satisfy the above criteria for a local area.

The NAHB model produces impacts on income and employment in 16 industries and local government, as well as detailed information about taxes and other types of local government revenue. Aggregate results are summarized below. Subsequent sections of the report show detail by industry and type of tax or fee revenue generated.

Single-Family Construction

- The estimated one-year impacts of building 100 single-family homes in a typical local area include
    - **$28.7 million** in local income,
    - **$3.6 million** in taxes and other revenue for local governments, and
    - **394** local jobs.

  These are local impacts, representing income and jobs for residents of an average metropolitan area or nonmetropolitan county, and other sources of revenue, including permit fees) for all local jurisdictions within the local area. They are also one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity spending part of it

within the local area. Local jobs are measured in full time equivalents—i.e., one reported job represents enough work to keep one worker employed full-time for a year, based on average hours worked per week by full-time employees in the industry. The one-year estimates also assume that construction materials are subject to a local sales tax of 1.52 percent, an average (weighted by population) computed by NAHB across rates for individual states reported by the Tax Foundation.

- The additional, annually recurring impacts of building 100 single-family homes in a typical local area include
    - **$4.1 million** in local income,
    - **$1.0 million** in taxes and other revenue for local governments, and
    - **69** local jobs.

  These are ongoing, annual local impacts that result from the new homes becoming occupied, and the occupants paying taxes and otherwise participating in the local economy year after year. The ongoing impacts also include the effect of increased property taxes, based on the difference between the value of raw land and the value of a completed housing unit on a finished lot, assuming that raw land would be taxed at the same rate as the completed housing unit.

The above impacts were calculated assuming that new single-family homes built in a typical metropolitan area or nonmetropolitan county have an average price of $378,000; which includes $48,000 in raw land value and $13,672 in permit, hook-up, impact and other fees paid to local governments; and incur an average property tax of $4,239 per year. The house price and raw land value are based on a blended average of prices of new homes built for sale and contract prices for custom homes built on the homeowner's land, from the Census Bureau's Survey of Construction (along with assumptions about raw land and other factors the Census Bureau uses when processing construction value in the survey).[1] The impact fees are based on a national average percentage estimated by NAHB in a 2011 article.[2] The property tax payment is based on a national average computed from the Census Bureau's American Community Survey summary files.

Multifamily Construction

- The estimated one-year impacts of building 100 rental apartments in a typical local area include
    - **$11.7 million** in local income,
    - **$2.2 million** in taxes and other revenue for local governments, and
    - **161** local jobs.

  These are local impacts, representing income and jobs for residents of the typical metropolitan area or nonmetropolitan county, and revenue for all jurisdictions within the local area. They are also one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity spending part of it within the local area's economy.

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[1] For more detail, see "Impact of Home Building and Remodeling on the U.S. Economy" published by NAHB in *HousingEconomics.com*, May 2014.

[2] "How Government Regulation Affects the Price of a New Home," *HousingEconomics.com*, July 2011

- The additional, annually recurring impacts of building 100 rental apartments in a typical local area include
    - **$2.6** million in local income,
    - **$503,000** in taxes and other revenue for local governments, and
    - **44** local jobs.

  These are ongoing, annual local impacts that result from the new apartments becoming occupied, and the occupants paying taxes and otherwise participating in the local economy year after year. They also represent impacts that have been reduced to account for the natural vacancy rate that tends to prevail in multifamily properties (see page 23 of the Technical Documentation).

These impacts were calculated assuming that new multifamily units built in the typical local area have an average market value of $145,000; which includes $14,000 in raw land value and $13,672 in permit, hook-up, impact and other fees paid to local governments; and incur an average annual property tax of $1,626 per unit. Value is based on national median asking rent for new apartments in the Survey of Market Absorption (funded by HUD and conducted by the U.S. Census Bureau) and the national median rent to value ratio in the inaugural Rental Housing Rental Housing Finance Survey (also funded by HUD and conducted by the Census Bureau). The assumptions about the construction related fee percentage and residential property tax rate are the same as for single-family construction.

Residential Remodeling

- The estimated one-year local impacts of $1 million spent on residential remodeling in a typical local area include
    - **$841,000** in local income,
    - **$71,000** in taxes and other revenue for local governments, and
    - **11 and a half** local jobs.

  Again, these represent local, one-year impacts occurring within a metropolitan area or nonmetropolitan county.

- Although certain remodeling jobs may be extensive enough to render otherwise uninhabitable units fit for occupancy (thereby allowing the local area to retain extra households and trigger ongoing impacts analogous to the ones for new construction), the NAHB local impact model uses a conservative default assumption that this is not the case. The ongoing, annual economic benefits to the local economy are therefore limited to
    - $11,000 in residential property taxes.

In addition to the treatment of property taxes, the estimated remodeling impacts assume that 1.25 percent of the value of the remodeling job is paid to a jurisdiction in the local area in the form of permit fees, a percentage NAHB Remodelers have reported as typical for projects undertaken by professional remodeling companies.

The Economic Impact of Home Building in a Typical Local Area

Income, Jobs, and Taxes Generated

Detailed Tables on Single-Family Construction

Impact of Building 100 Single-Family Homes In a Typical Local Area

Summary

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$28,670,800	$8,606,200	$20,064,700	$3,358,600	394

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes[3]	Local Jobs Supported
$19,204,100	$6,526,800	$12,677,400	$2,152,500	237

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$9,466,700	$2,079,400	$7,387,300	$1,206,100	157

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$4,091,900	$922,400	$3,169,900	$1,014,800	69

[3] The term local taxes is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc.

Impact of Building 100 Single-Family Homes in a Typical Local Area
Phase I—Direct and Indirect Impact of Construction Activity

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$14,804,600	$5,048,300	$9,756,300	$55,000	176
Manufacturing	$1,500	$100	$1,500	$54,000	0
Transportation	$800	$400	$400	$29,000	0
Communications	$123,700	$43,200	$80,500	$78,000	1
Utilities	$27,300	$5,900	$21,400	$97,000	0
Wholesale and Retail Trade	$1,535,500	$338,600	$1,196,900	$35,000	34
Finance and Insurance	$276,900	$10,400	$266,500	$120,000	2
Real Estate	$760,400	$654,700	$105,600	$55,000	2
Personal & Repair Services	$76,000	$18,100	$57,900	$40,000	1
Services to Dwellings / Buildings	$52,100	$20,100	$32,000	$37,000	1
Business & Professional Services	$1,217,500	$283,300	$934,300	$66,000	14
Eating and Drinking Places	$43,800	$7,200	$36,600	$29,000	1
Automobile Repair & Service	$16,200	$4,900	$11,300	$40,000	0
Entertainment Services	$9,500	$900	$8,600	$33,000	0
Health, Educ. & Social Services	$1,700	$100	$1,700	$51,000	0
Local Government	$63,700	$0	$63,700	$74,000	1
Other	$192,900	$90,600	$102,200	$48,000	2
Total	$19,204,100	$6,526,800	$12,677,400	$53,000	237

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$55,200	Residential Permit / Impact Fees	$1,367,200
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$200,000
General Sales Taxes	$190,500	Hospital Charges	$92,600
Specific Excise Taxes	$8,200	Transportation Charges	$36,300
Income Taxes	$40,200	Education Charges	$37,700
License Taxes	$6,900	Other Fees and Charges	$113,200
Other Taxes	$4,600	TOTAL FEES & CHARGES	$1,847,000
TOTAL TAXES	$305,500	TOTAL GENERAL REVENUE	$2,152,500

Impact of Building 100 Single-Family Homes in a Typical Local Area
Phase II—Induced Effect of Spending Income and Tax Revenue from Phase I

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$554,600	$203,900	$350,600	$55,000	6
Manufacturing	$1,900	$100	$1,800	$52,000	0
Transportation	$21,300	$10,300	$11,000	$29,000	0
Communications	$498,300	$206,300	$292,000	$81,000	4
Utilities	$171,900	$36,400	$135,600	$97,000	1
Wholesale and Retail Trade	$1,343,000	$226,000	$1,116,900	$31,000	36
Finance and Insurance	$289,100	$11,400	$277,800	$90,000	3
Real Estate	$919,000	$380,900	$538,100	$55,000	10
Personal & Repair Services	$342,200	$124,800	$217,400	$40,000	5
Services to Dwellings / Buildings	$121,900	$47,000	$74,800	$37,000	2
Business & Professional Services	$1,241,500	$359,300	$882,300	$58,000	15
Eating and Drinking Places	$615,900	$120,400	$495,600	$27,000	18
Automobile Repair & Service	$272,500	$82,000	$190,500	$40,000	5
Entertainment Services	$74,800	$14,200	$60,500	$30,000	2
Health, Educ. & Social Services	$1,467,600	$163,200	$1,304,400	$55,000	24
Local Government	$1,341,600	$0	$1,341,600	$60,000	22
Other	$189,600	$93,200	$96,400	$43,000	2
Total	$9,466,700	$2,079,400	$7,387,300	$47,000	157

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$299,400	Residential Permit / Impact Fees	$0
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$421,800
General Sales Taxes	$105,600	Hospital Charges	$89,300
Specific Excise Taxes	$44,400	Transportation Charges	$17,900
Income Taxes	$31,900	Education Charges	$18,600
License Taxes	$28,500	Other Fees and Charges	$125,900
Other Taxes	$22,900	TOTAL FEES & CHARGES	$673,400
TOTAL TAXES	$532,700	TOTAL GENERAL REVENUE	$1,206,100

Impact of Building 100 Single-Family Homes in a Typical Local Area
Phase III—Ongoing, Annual Effect That Occurs Because Units Are Occupied

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$232,500	$85,600	$147,000	$55,000	3
Manufacturing	$800	$0	$800	$53,000	0
Transportation	$6,500	$3,200	$3,400	$29,000	0
Communications	$230,800	$96,100	$134,800	$81,000	2
Utilities	$81,800	$17,300	$64,500	$97,000	1
Wholesale and Retail Trade	$639,700	$104,500	$535,200	$31,000	17
Finance and Insurance	$151,400	$5,600	$145,900	$88,000	2
Real Estate	$283,900	$117,700	$166,300	$55,000	3
Personal & Repair Services	$145,100	$57,100	$88,000	$40,000	2
Services to Dwellings / Buildings	$55,900	$21,600	$34,300	$37,000	1
Business & Professional Services	$617,400	$190,300	$427,100	$60,000	7
Eating and Drinking Places	$306,100	$57,900	$248,300	$27,000	9
Automobile Repair & Service	$123,800	$37,200	$86,500	$40,000	2
Entertainment Services	$47,400	$8,100	$39,300	$29,000	1
Health, Educ. & Social Services	$606,600	$70,200	$536,400	$55,000	10
Local Government	$460,000	$0	$460,000	$60,000	8
Other	$102,200	$50,000	$52,100	$42,000	1
Total	$4,091,900	$922,400	$3,169,900	$46,000	69

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$143,800	Residential Permit / Impact Fees	$0
Residential Property Taxes	$370,100	Utilities & Other Govt. Enterprises	$230,700
General Sales Taxes	$50,700	Hospital Charges	$85,300
Specific Excise Taxes	$21,300	Transportation Charges	$7,700
Income Taxes	$14,400	Education Charges	$8,000
License Taxes	$13,600	Other Fees and Charges	$58,100
Other Taxes	$11,000	TOTAL FEES & CHARGES	$389,900
TOTAL TAXES	$624,900	TOTAL GENERAL REVENUE	$1,014,800

The Economic Impact of Home Building in a Typical Local Area

Income, Jobs, and Taxes Generated

Detailed Tables on Multifamily Construction

Impact of Building 100 Rental Apartments In a Typical Local Area

Summary

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$11,693,000	$3,620,500	$8,072,300	$2,211,200	161

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$7,403,300	$2,750,500	$4,652,700	$1,699,600	90

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$4,289,700	$870,000	$3,419,600	$511,600	71

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$2,640,600	$623,200	$2,016,900	$503,500	44

[1] The term local taxes is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc.

Impact of Building 100 Rental Apartments in a Typical Local Area
Phase I—Direct and Indirect Impact of Construction Activity

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$6,100,800	$2,346,500	$3,754,300	$55,000	68
Manufacturing	$400	$0	$400	$54,000	0
Transportation	$200	$100	$100	$29,000	0
Communications	$39,500	$13,600	$25,900	$77,000	0
Utilities	$9,300	$2,000	$7,300	$97,000	0
Wholesale and Retail Trade	$674,400	$148,800	$525,600	$33,000	16
Finance and Insurance	$36,000	$1,400	$34,600	$102,000	0
Real Estate	$152,500	$131,300	$21,200	$55,000	0
Personal & Repair Services	$24,900	$5,900	$19,000	$40,000	0
Services to Dwellings / Buildings	$15,000	$5,800	$9,200	$37,000	0
Business & Professional Services	$272,500	$66,600	$205,900	$63,000	3
Eating and Drinking Places	$7,800	$1,200	$6,500	$29,000	0
Automobile Repair & Service	$5,600	$1,700	$3,900	$40,000	0
Entertainment Services	$2,400	$200	$2,200	$33,000	0
Health, Educ. & Social Services	$700	$0	$700	$51,000	0
Local Government	$18,000	$0	$18,000	$78,000	0
Other	$43,300	$25,400	$17,900	$47,000	0
Total	$7,403,300	$2,750,500	$4,652,700	$52,000	90

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$35,300	Residential Permit / Impact Fees	$1,367,200
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$77,100
General Sales Taxes	$80,400	Hospital Charges	$35,700
Specific Excise Taxes	$5,200	Transportation Charges	$14,000
Income Taxes	$16,100	Education Charges	$14,500
License Taxes	$3,900	Other Fees and Charges	$47,200
Other Taxes	$2,800	TOTAL FEES & CHARGES	$1,555,800
TOTAL TAXES	$143,800	TOTAL GENERAL REVENUE	$1,699,600

Impact of Building 100 Rental Apartments in a Typical Local Area
Phase II—Induced Effect of Spending Income and Tax Revenue from Phase I

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$231,600	$85,300	$146,300	$55,000	3
Manufacturing	$900	$0	$900	$52,000	0
Transportation	$10,500	$5,100	$5,400	$29,000	0
Communications	$210,600	$87,000	$123,600	$81,000	2
Utilities	$71,500	$15,100	$56,400	$97,000	1
Wholesale and Retail Trade	$554,000	$93,600	$460,300	$31,000	15
Finance and Insurance	$121,100	$4,700	$116,300	$90,000	1
Real Estate	$380,400	$157,700	$222,700	$55,000	4
Personal & Repair Services	$145,400	$52,200	$93,200	$40,000	2
Services to Dwellings / Buildings	$53,000	$20,500	$32,500	$37,000	1
Business & Professional Services	$533,000	$153,200	$379,900	$58,000	7
Eating and Drinking Places	$254,900	$50,000	$204,900	$27,000	8
Automobile Repair & Service	$111,700	$33,600	$78,100	$40,000	2
Entertainment Services	$30,800	$5,800	$25,000	$30,000	1
Health, Educ. & Social Services	$599,800	$66,700	$533,100	$55,000	10
Local Government	$900,400	$0	$900,400	$60,000	15
Other	$80,100	$39,500	$40,600	$43,000	1
Total	$4,289,700	$870,000	$3,419,600	$48,000	71

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$124,400	Residential Permit / Impact Fees	$0
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$178,800
General Sales Taxes	$43,900	Hospital Charges	$40,100
Specific Excise Taxes	$18,400	Transportation Charges	$8,100
Income Taxes	$14,000	Education Charges	$8,400
License Taxes	$11,900	Other Fees and Charges	$54,100
Other Taxes	$9,500	TOTAL FEES & CHARGES	$289,500
TOTAL TAXES	$222,100	TOTAL GENERAL REVENUE	$511,600

Impact of Building 100 Rental Apartments in a Typical Local Area
Phase III—Ongoing, Annual Effect That Occurs Because Units Are Occupied

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$86,900	$32,900	$53,900	$55,000	1
Manufacturing	$600	$0	$500	$52,000	0
Transportation	$5,900	$2,800	$3,000	$29,000	0
Communications	$146,800	$60,800	$85,900	$81,000	1
Utilities	$29,300	$6,200	$23,100	$97,000	0
Wholesale and Retail Trade	$436,800	$65,200	$371,600	$34,000	11
Finance and Insurance	$80,500	$3,100	$77,400	$87,000	1
Real Estate	$499,100	$206,800	$292,200	$55,000	5
Personal & Repair Services	$77,700	$28,300	$49,500	$40,000	1
Services to Dwellings / Buildings	$33,100	$12,800	$20,300	$37,000	1
Business & Professional Services	$271,300	$76,300	$194,900	$53,000	4
Eating and Drinking Places	$194,200	$38,100	$156,100	$27,000	6
Automobile Repair & Service	$94,200	$28,300	$65,800	$40,000	2
Entertainment Services	$35,400	$4,800	$30,600	$29,000	1
Health, Educ. & Social Services	$367,200	$38,500	$328,800	$55,000	6
Local Government	$243,800	$0	$243,800	$60,000	4
Other	$37,800	$18,300	$19,500	$42,000	0
Total	$2,640,600	$623,200	$2,016,900	$46,000	44

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$91,100	Residential Permit / Impact Fees	$0
Residential Property Taxes	$146,900	Utilities & Other Govt. Enterprises	$106,200
General Sales Taxes	$32,100	Hospital Charges	$41,500
Specific Excise Taxes	$13,500	Transportation Charges	$5,000
Income Taxes	$9,200	Education Charges	$5,200
License Taxes	$8,700	Other Fees and Charges	$37,100
Other Taxes	$7,000	TOTAL FEES & CHARGES	$194,900
TOTAL TAXES	$308,500	TOTAL GENERAL REVENUE	$503,500

The Impact of Home Building in a Typical Local Area

Income, Jobs, and Taxes Generated

Detailed Tables on Residential Remodeling

Impact of $1 Million Spent on Residential Remodeling in a Typical Local Area

Summary

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$840,800	$254,800	$585,500	$70,700	11.5

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes[5]	Local Jobs Supported
$577,200	$194,500	$382,400	$36,000	7.2

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Business Owners' Income	Local Wages and Salaries	Local Taxes[1]	Local Jobs Supported
$263,600	$60,300	$203,100	$34,700	4.4

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Residential Property Taxes
$11,200

[5] The term local taxes is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc.

Impact of $1 Million Spent on Residential Remodeling in a Typical Local Area
Phase I—Direct and Indirect Impact of Construction Activity

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$447,900	$152,700	$295,200	$55,000	5.3
Manufacturing	$0	$0	$0	$54,000	0.0
Transportation	$0	$0	$0	$29,000	0.0
Communications	$3,700	$1,300	$2,400	$78,000	0.0
Utilities	$800	$200	$600	$97,000	0.0
Wholesale and Retail Trade	$46,400	$10,200	$36,100	$35,000	1.0
Finance and Insurance	$8,100	$300	$7,900	$120,000	0.1
Real Estate	$20,100	$17,300	$2,800	$55,000	0.1
Personal & Repair Services	$2,300	$500	$1,700	$40,000	0.0
Services to Dwellings / Buildings	$1,500	$600	$900	$37,000	0.0
Business & Professional Services	$36,500	$8,400	$28,000	$66,000	0.4
Eating and Drinking Places	$1,300	$200	$1,100	$29,000	0.0
Automobile Repair & Service	$500	$100	$300	$40,000	0.0
Entertainment Services	$300	$0	$300	$33,000	0.0
Health, Educ. & Social Services	$100	$0	$100	$51,000	0.0
Local Government	$1,900	$0	$1,900	$74,000	0.0
Other	$5,800	$2,700	$3,100	$48,000	0.1
Total	$577,200	$194,500	$382,400	$53,000	7.2

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$1,600	Residential Permit / Impact Fees	$12,500
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$6,000
General Sales Taxes	$5,700	Hospital Charges	$2,800
Specific Excise Taxes	$200	Transportation Charges	$1,100
Income Taxes	$1,200	Education Charges	$1,100
License Taxes	$200	Other Fees and Charges	$3,400
Other Taxes	$100	TOTAL FEES & CHARGES	$26,900
TOTAL TAXES	$9,100	TOTAL GENERAL REVENUE	$36,000

Impact of $1 Million Spent on Residential Remodeling in a Typical Local Area
Phase II—Induced Effect of Spending Income and Tax Revenue from Phase I

A. Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$16,100	$5,900	$10,200	$55,000	0.2
Manufacturing	$0	$0	$0	$53,000	0.0
Transportation	$600	$300	$300	$29,000	0.0
Communications	$14,400	$6,000	$8,400	$81,000	0.1
Utilities	$5,000	$1,100	$3,900	$97,000	0.0
Wholesale and Retail Trade	$39,200	$6,600	$32,600	$31,000	1.1
Finance and Insurance	$8,400	$300	$8,000	$89,000	0.1
Real Estate	$26,800	$11,100	$15,700	$55,000	0.3
Personal & Repair Services	$9,800	$3,600	$6,200	$40,000	0.2
Services to Dwellings / Buildings	$3,500	$1,300	$2,100	$37,000	0.1
Business & Professional Services	$35,500	$10,300	$25,200	$58,000	0.4
Eating and Drinking Places	$17,900	$3,500	$14,400	$27,000	0.5
Automobile Repair & Service	$8,000	$2,400	$5,600	$40,000	0.1
Entertainment Services	$2,200	$400	$1,800	$30,000	0.1
Health, Educ. & Social Services	$43,000	$4,800	$38,200	$55,000	0.7
Local Government	$27,700	$0	$27,700	$60,000	0.5
Other	$5,500	$2,700	$2,800	$43,000	0.1
Total	$263,600	$60,300	$203,100	$46,000	4.4

B. Local Government General Revenue by Type

TAXES:		USER FEES & CHARGES:	
Business Property Taxes	$8,700	Residential Permit / Impact Fees	$0
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	$12,100
General Sales Taxes	$3,100	Hospital Charges	$2,500
Specific Excise Taxes	$1,300	Transportation Charges	$500
Income Taxes	$900	Education Charges	$500
License Taxes	$800	Other Fees and Charges	$3,600
Other Taxes	$700	TOTAL FEES & CHARGES	$19,300
TOTAL TAXES	$15,500	TOTAL GENERAL REVENUE	$34,700

The Economic Impact of Home Building in a Typical Local Area

Income, Jobs, and Taxes Generated

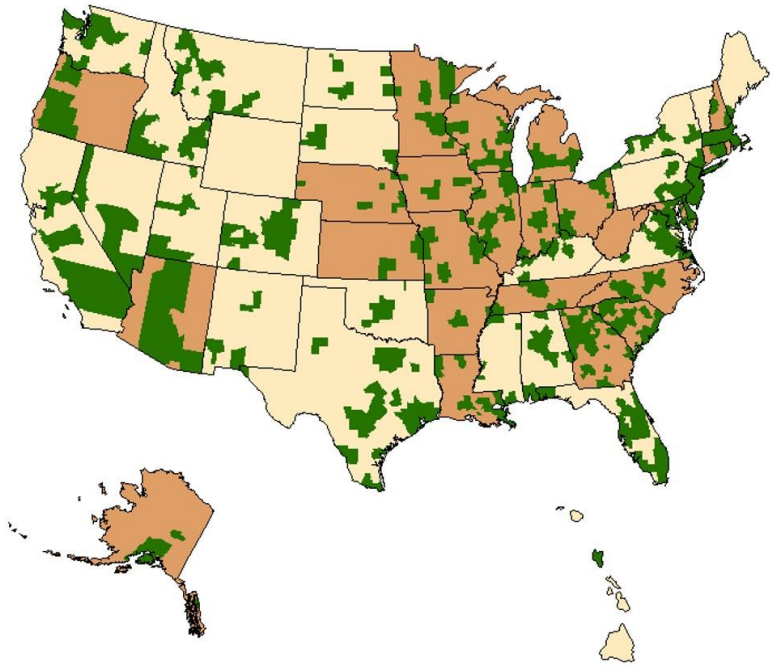
Background and a Brief Description of the Model Used to Estimate the Economic Benefits

In 1996, the Housing Policy Department of the National Association of Home Builders (NAHB) developed an economic model to estimate the local economic benefits of home building. Although at first calibrated to a typical metropolitan area using national averages, the model could be adapted to a specific local economy by replacing national averages with specific local data for key housing market variables. The initial version of the model could be applied to single-family construction, multifamily construction, or a combination of the two.

Since 1997, NAHB has used the model to produce customized reports on the impact of home building in various parts of the country. As of February 2012, NAHB has produced over 800 of these customized reports, analyzing residential construction in various metropolitan areas, non-metropolitan counties, and states (see map below).

Areas Covered by NAHB Local Impact Studies

The dark green shading indicates studies covering metro areas and non-metro counties; the orange shading studies covering an entire state.



The reports have analyzed the impacts of specific housing projects, as well as total home building in areas as large as entire states. In 2002, NAHB developed new versions of the model to analyze active adult housing projects and multifamily development financed with the Low-Income Housing Tax Credit, then in 2005 a version of the model that analyzes remodeling.

Results from NAHB's local impact model have been used by outside organizations such as universities, state housing authorities and affordable housing agencies:

- The Shimburg Center for Affordable Housing at the University of Florida used results from the NAHB model to establish that "the real estate taxes paid year after year are the most obvious long-term economic benefit to the community. Probably the second most obvious long-term economic benefit is the purchases made by the family occupying the completed home." www.shimberg.ufl.edu/pdf/Newslett-June02.pdf

- The Louisville Affordable Housing Trust Fund (AHTF) used results from the NAHB model to determine the initial one-year impact and the ongoing annual effect that occurs when new homes are occupied. This analysis was performed to help justify the creation of a commission to oversee the newly established AHTF to insure that it works at "finding creative ways to create a sustainable and renewable fund to provide affordable housing opportunities throughout the Louisville community." www.openthedoorlouisville.org/housing-trust/economic-growth

- The Illinois Housing Development Authority used the NAHB model to determine that "the Authority's new construction activity in single and multifamily housing….resulted in the creation of 4,256 full-time jobs in construction and construction-related industries." The Authority also used the NAHB impact model to determine the federal, state and local taxes and fees generated from new construction and substantial rehabilitation activity. www.ihda.org/admin/Upload/Files/94c0ecf7-a238-4be3-90bd-6043cfae81ea.pdf

- The Stardust Center at the Arizona State University used "the model used and developed by the NAHB to assess the immediate economic impacts of affordable housing" by phase including the construction effect, the construction ripple, and on-going impacts. This was done to show "that permanent, affordable and geographically accessible housing provides numerous benefits both to individual families and to the broader community." www.orangecountyfl.net/NR/rdonlyres/efo5wiffiqvqqgn2s35shus5i4lwdgqbcxpck2dddnds3msj5qs26ubzllsfl6s6rrwnmtkq4dypnjrdrdzei2llq5g/Socialeconomicimpacts.pdf

- The Center for Applied Economic Research at Montana State University used "results from an input-output model developed by the National Association of Home Builders to assess the impacts to local areas from new home construction." The results show that "the construction industry contributes substantially to Montana's economy accounting for 5.5 percent of Gross State Product."

- The Housing Education and Research Center at Michigan State University also adopted the NAHB approach: "The underlying basis for supporting the implementation of this [NAHB] model on Michigan communities is that it provides quantifiable results that link new residential development with commercial and other forms of development therefore illustrating the overall economic effects of residential growth."

- The Center for Economic Development at the University of Massachusetts found that "Home building generates substantial local economic activity, including income, jobs, and revenue for state and local governments. These far exceed the school costs-to-property-tax ratios. …these factors were evaluated by means of a quantitative assessment of data from the National Association of Home Builder's Local Impact of Home Building model."

- Similarly, the Association of Oregon Community Development Organizations decided to base its analysis of affordable housing on the NAHB model, stating that "This model is widely respected and utilized in analyzing the economic impact of market rate housing development," and that, compared to alternatives, it "is considered the most comprehensive and is considered an improvement on most previous models." www.aocdo.org/docs/EcoDevoStudyFinal.pdf

- The Boone County Kentucky Planning Commission included results from the NAHB model in its 2005 Comprehensive Report. The Planning Commission used values from the impact model to quantify the increase in local income, taxes, revenue, jobs, and overall local economic impacts in the Metro Area as a result of new home construction.

The NAHB model is divided into three phases. Phases I and II are one-time effects. Phase I captures the effects that result directly from the construction activity itself and the local industries that contribute to it. Phase II captures the effects that occur as a result of the wages and profits from Phase I being spent in the local economy. Phase III is an ongoing, annual effect that includes property tax payments and the result of the completed unit being occupied.

Phase I: Local Industries Involved in Home Building

The jobs, wages, and local taxes (including permit, utility connection, and impact fees) generated by the actual development, construction, and sale of the home. These jobs include on-site and off-site construction work as well as jobs generated in retail and wholesale sales of components, transportation to the site, and the professional services required to build a home and deliver it to its final customer.

Phase II: Ripple Effect

The wages and profits for local area residents earned during the construction period are spent on other locally produced goods and services. This generates additional income for local residents, which is spent on still more locally produced goods and services, and so on. This continuing recycling of income back into the community is usually called a ***multiplier*** or ***ripple*** effect.

Phase III: Ongoing, Annual Effect

The local jobs, income, and taxes generated as a result of the home being occupied. A household moving into a new home generally spends about three-fifths of its income on goods and services sold in the local economy. A fraction of this will become income for local workers and local businesses proprietors. In a typical local area, the household will also pay 1.25 percent of its income to local governments in the form of taxes and user fees, and a fraction of this will become income for local government employees. This is the first step in another set of economic ripples that cause a permanent increase in the level of economic activity, jobs, wages, and local tax receipts.

Modeling a Local Economy

The model defines a local economy as a collection of industries and commodities. These are selected from the detailed benchmark input-output tables produced by the U.S. Bureau of Economic Analysis. The idea is to choose goods and services that would typically be produced, sold, and consumed within a local market area. Laundry services would qualify, for example, while automobile manufacturing would not. Both business-to-business and business-to-consumer transactions are considered. In general the model takes a conservative approach and retains a relatively small number of the available industries and commodities. Of the roughly 400 industries and commodities provided in the input-output files, the model uses only 97 commodities and 99 industries.

The design of the model implies that a local economy should include not only the places people live, but also the places where they work, shop, typically go for entertainment, etc. This corresponds reasonably well to the concepts of Metropolitan Statistical Areas and Metropolitan Divisions, areas defined by the U.S. Office of Management and Budget based on local commuting patterns. Outside of these officially defined metropolitan areas, NAHB has determined that a county will usually satisfy the model's requirements.

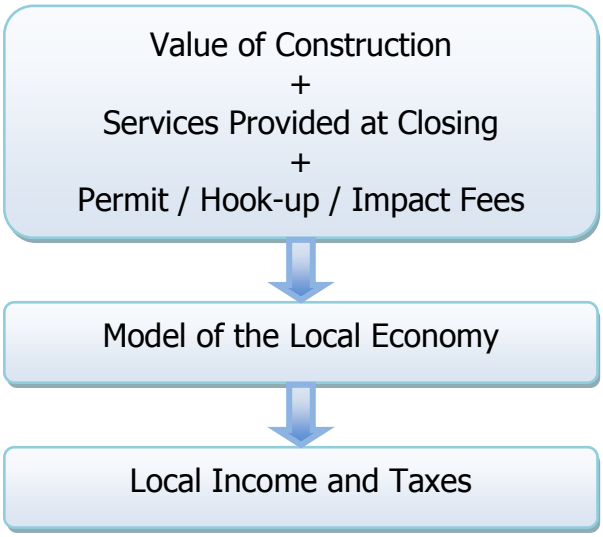
For a particular local area, the model adjusts the indirect business tax section of the national input-output accounts to account for the fiscal structure of local governments in the area. The information used to do this comes primarily from the U.S. Census Bureau's Census of Governments. Wages and salaries are extracted from the employee compensation section of the input-output accounts on an industry-by-industry basis. In order to relate wages and salaries to employment, the model incorporates data on local wages per job published by the Bureau of Economic Analysis.

Phase I: Construction

In order to estimate the local impacts generated by home building, it is necessary to know the sales price of the homes being built, how much raw land contributes to the final price, and how much the builder and developer pay to local area governments in the form of permit, utility connection, impact, and other fees. This information is not generally available from national sources and in most cases must be provided by representatives from the area in question who have specialized knowledge of local conditions.

The model subtracts raw land value from the price of new construction and converts the difference into local wages, salaries, business owners' income, and taxes. This is done separately for each of the local industries. In addition, the taxes and fees collected by local governments during the construction phase generate wages and salaries for local government employees. Finally the number of full time jobs supported by the wages and salaries generated in each private local industry and the local government sector is estimated.

Summary of Phase I



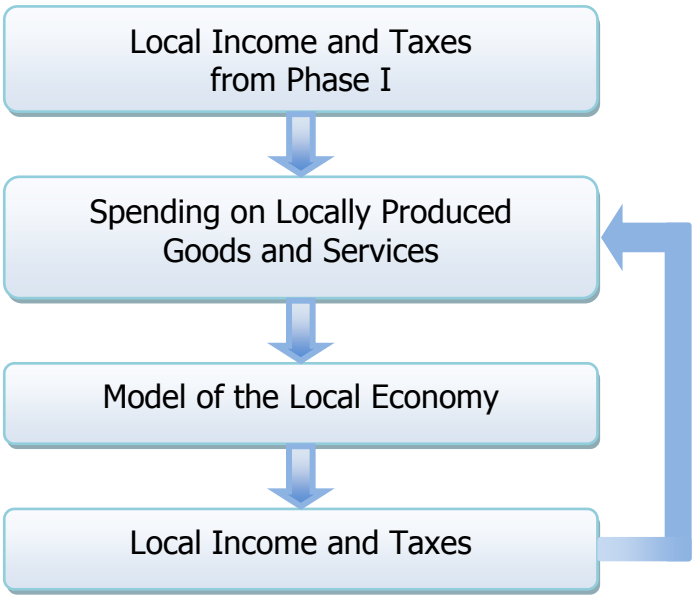
Phase II: The Construction Ripple

Clearly, the local residents who earn income in Phase I will spend a share of it. Some of this will escape the local economy. A portion of the money used to buy a new car, for example, will become wages for autoworkers that are likely to live in another city, and increased profits for stockholders of an automobile manufacturing company who are also likely to live elsewhere. A portion of the spending, however, will remain within, and have an impact on, the local economy. The car is likely to be purchased from a local dealer and generate income for a salesperson that lives in the area, as well for local workers who provide cleaning, maintenance, and other services to the dealership. Consumers also are likely to purchase many services locally, as well as to pay taxes and fees to local governments.

This implies that the income and taxes generated in Phase I become the input for additional economic impacts analyzed in what we call Phase II of the model. Phase II begins by estimating how much of the added income households spend on each of the local commodities. This requires detailed analysis of data from the Consumer Expenditure (CE) Survey, which is conducted by the U.S. Bureau of Labor Statistics primarily for the purpose of determining the weights for the Consumer Price Index. The analysis produces household spending estimates for 52 local commodities. The remainder of the 97 local commodities enter the model only as business-to-business transactions.

The model then translates the estimated local spending into local business owners' income, wages and salaries, jobs, and taxes. This is essentially the same procedure applied to the homes sold to consumers in Phase I. In Phase II, however, the procedure is applied simultaneously to 56 locally produced and sold commodities.
In other words, the model converts the local income earned in Phase I into local spending, which then generates additional local income. But this in turn will lead to additional spending, which will generate more local income, leading to another round of spending, and so on. Calculating the end result of these economics is a straightforward exercise in mathematics.

Summary of Phase II



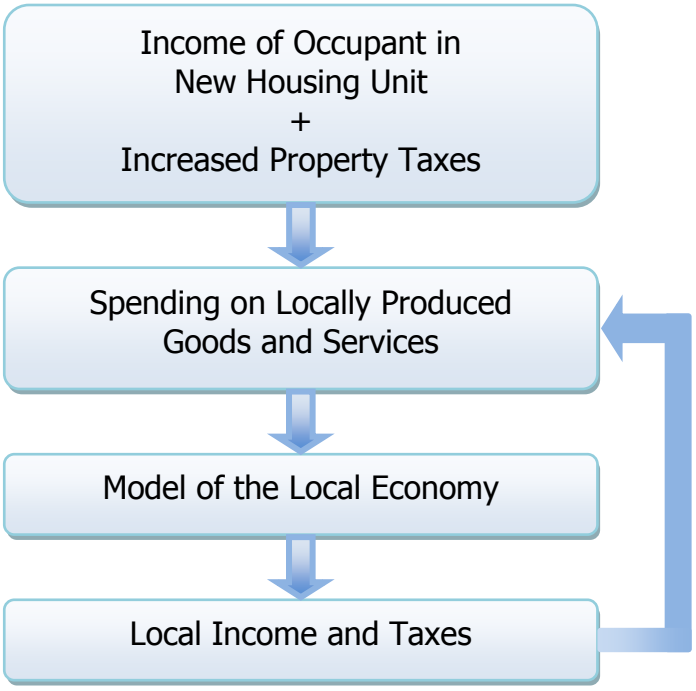
Phase III: Ongoing Impacts

Like Phase II, Phase III involves computing the sum of successive ripples of economic activity. In Phase III, however, the first ripple is generated by the income and spending of a new household (along with the additional property taxes local governments collect as a result of the new structure). This does not necessarily imply that all new homes must be occupied by households moving in from outside the local area. It may be that an average new-home household moves into the newly constructed unit from elsewhere in the same local area, while average existing-home household moves in from outside to occupy the unit vacated by the first household. Alternatively, it may be that the new home allows the local area to retain a household that would otherwise move out of the area for lack of suitable housing.

In any of these cases, it is appropriate to treat a new, occupied housing unit as a net gain to the local economy of one household with average characteristics for a household that occupies a new home. This reasoning is often used, even if unconsciously, when it is assumed that a new home will be occupied by a household with average characteristics—for instance, an average number of children who will consume public education.

To estimate the impact of the net additional households, Phase III of the model requires an estimate of the income of the households occupying the new homes. The information used to compute this estimate comes from several sources, but primarily from an NAHB statistical model based on decennial census data. Phase III of the local impact model then estimates the fraction of income these households spend on various local commodities. The spending tendencies are estimated with CE data in a fashion similar to that described under Phase II. The model also estimates the amount of local taxes the households pay each year. These estimates are based on Census of Governments data with the exception of residential property taxes, which are treated separately, most often with specific information obtained from a local source. Finally, a total ripple effect is computed in a way similar to the procedure outlined above under Phase II.

Summary of Phase III



The details covered here provide a brief description of the model NAHB uses to estimate the local economic benefits of home building. For a more complete description, see the technical documentation at the end of the report. For additional information about the model, or questions about applying it to a particular local area, contact one of the following in NAHB's Economics and Housing Policy Group:

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National Association of Home Builders

Local Impact of Home Building

Technical Documentation for the NAHB Model Used to Estimate Income, Jobs and Taxes

March 2015

Paul Emrath
Housing Policy Department

NAHB®

Technical Documentation for the NAHB Model Used to Estimate Income, Jobs and Taxes

The Housing Policy Department of the National Association of Home Builders (NAHB) maintains an economic model that it uses to estimate the local economic benefits of home building. The NAHB model is divided into three phases. Phases I and II are one-time effects. Phase I captures the effects that result directly from the construction activity itself and the local industries that contribute to it. Phase II captures the effects that occur as a result of the wages and profits from Phase I being spent in the local economy. Phase III is an ongoing, annual effect that includes property tax payments and the result of the completed unit being occupied.

The model can be customized to a specific local economy by replacing key housing market variables. This document explains describes the sources of data used and explains how the estimates are generated.

Modeling a Local Economy

In the NAHB model, a local economy is defined as a collection of industries and commodities, selected from the 2007 benchmark input-output accounts produced by the U.S. Bureau of Economic Analysis (BEA). These accounts are generally based on the North American Industry Classification System (NAICS), although BEA combines and otherwise modifies the NAICS categories for purposes of the input-output estimates. NAHB's model uses the most detailed (6-digit) industry codes in order to parse industries and commodities as precisely as possible and include only those that are generally local in nature. BEA's 2007 benchmark input-output tables contain a total of 389 industries at the 6-digit level of detail. NAHB's local economy retains the following 99:

	IO Code	***Detailed Industry Name***
1	111400	Greenhouse, nursery, and floriculture production
2	212310	Stone mining and quarrying
3	221100	Electric power generation, transmission, and distribution
4	221200	Natural gas distribution
5	221300	Water, sewage and other systems
6	230301	Nonresidential maintenance and repair
7	230302	Residential maintenance and repair
8	233210	Health care structures
9	233411	Single-family residential structures
10	233412	Multifamily residential structures
11	323120	Support activities for printing
12	339950	Sign manufacturing
13	420000	Wholesale trade
14	441000	Motor vehicle and parts dealers
15	445000	Food and beverage stores
16	452000	General merchandise stores
17	485000	Transit and ground passenger transportation
18	492000	Couriers and messengers
19	493000	Warehousing and storage
20	511110	Newspaper publishers
21	515100	Radio and television broadcasting
22	515200	Cable and other subscription programming
23	517110	Wired telecommunications carriers
24	517210	Wireless telecommunications carriers (except satellite)

25	518200	Data processing, hosting, and related services
26	519130	Internet publishing and broadcasting and Web search portals
27	524200	Insurance agencies, brokerages, and related activities
28	525000	Funds, trusts, and other financial vehicles
29	531000	Real estate
30	532100	Automotive equipment rental and leasing
31	532400	Commercial and industrial machinery and equipment rental and leasing
32	533000	Lessors of nonfinancial intangible assets
33	541100	Legal services
34	541200	Accounting, tax preparation, bookkeeping, and payroll services
35	541300	Architectural, engineering, and related services
36	541400	Specialized design services
37	541511	Custom computer programming services
38	541512	Computer systems design services
39	541800	Advertising, public relations, and related services
40	541920	Photographic services
41	541940	Veterinary services
42	561100	Office administrative services
43	561200	Facilities support services
44	561300	Employment services
45	561400	Business support services
46	561600	Investigation and security services
47	561700	Services to buildings and dwellings
48	561900	Other support services
49	562000	Waste management and remediation services
50	611100	Elementary and secondary schools
51	621100	Offices of physicians
52	621200	Offices of dentists
53	621300	Offices of other health practitioners
54	621400	Outpatient care centers
55	621600	Home health care services
56	621900	Other ambulatory health care services
57	622000	Hospitals
58	624100	Individual and family services
59	624400	Child day care services
60	711100	Performing arts companies
61	711200	Spectator sports
62	712000	Museums, historical sites, zoos, and parks
63	713100	Amusement parks and arcades
64	713200	Gambling industries (except casino hotels)
65	713900	Other amusement and recreation industries
66	722110	Full-service restaurants
67	722211	Limited-service restaurants
68	811100	Automotive repair and maintenance
69	811200	Electronic and precision equipment repair and maintenance
70	811300	Commercial and industrial machinery and equipment repair and maintenance
71	811400	Personal and household goods repair and maintenance
72	812100	Personal care services
73	812200	Death care services
74	812300	Dry-cleaning and laundry services
75	812900	Other personal services
76	813100	Religious organizations
77	2332A0	Commercial structures, including farm structures
78	2332B0	Other nonresidential structures
79	2334A0	Other residential structures
80	4A0000	Other retail
81	517A00	Satellite, telecommunications resellers, and all other telecommunications

82	5191A0	News syndicates, libraries, archives and all other information services
83	522A00	Nondepository credit intermediation and related activities
84	523A00	Securities and commodity contracts intermediation and brokerage
85	52A000	Monetary authorities and depository credit intermediation
86	532A00	Consumer goods and general rental centers
87	54151A	Other computer related services, including facilities management
88	5419A0	Marketing research & other miscellaneous professional, scientific, & tech. services
89	611B00	Other educational services
90	623A00	Nursing and community care facilities
91	623B00	Residential mental retardation, mental health, substance abuse and other facilities
92	624A00	Community food, housing, and other relief services, including rehabilitation services
93	722A00	All other food and drinking places
94	813A00	Grantmaking, giving, and social advocacy organizations
95	813B00	Civic, social, professional, and similar organizations
96	S00201	State and local government passenger transit
97	S00202	State and local government electric utilities
98	S00203	Other state and local government enterprises
99	S00700	State and local general government

In contrast to the industry categories used in the previous (2002) version of the benchmark input-output tables, the 2007 version shows considerably more detail in the construction sector, and breaks retail trade into several categories.

In the input-output accounts, commodities generally correspond to industries, with the exception of "state and local government passenger transit" and "state and local government electric service," for which there is no distinct commodity (passenger transit and electric services are defined as input-output commodities irrespective of which industry produces them), so the local economy as defined in the NAHB model consists of 99 industries and 97 commodities.

The above list includes industries in trade, construction, finance, transportation, and services—but excludes virtually all manufacturing, mining, and agriculture, under the presumption that the markets for these products are regional—if not national or international—in nature.

The exclusion of many industries is a distinguishing feature of the NAHB local impact model and is consistent with the overall intent of the model: to analyze the impact of locating a housing unit and the household that occupies it in one place rather than another. From this perspective, a house built in Seattle, Washington should not cause additional airplanes to be built or additional software to be produced, even though the occupants of a home built in Seattle may use software produced in Seattle and travel on planes built in Seattle. Because these households would be likely to use these products the same way even if they lived in some other metropolitan area, use of these products is not a function of the home's location. Hence, industries like software publishing and aircraft manufacturing are excluded from the model.

Based on the industries and commodities described above, a "total local requirements" matrix is constructed that shows the total output required from each of the local industries to produce $1 of each local commodities.

To show the derivation of this matrix, let

$\boldsymbol{c}$ = a 97-element column vector of commodity outputs

$\boldsymbol{g}$ = a 99-element column vector of industry outputs

$\boldsymbol{V}$ = a 99×97 subset of the benchmark make table that shows how much of each commodity is produced by each industry

$\boldsymbol{h}$ = a 99-element column vector showing how much scrap is produced by each industry

$\boldsymbol{U}$ = a 97×99 subset of the benchmark use table that shows how much of each commodity used as an input by each industry. Coefficients for the wholesale trade commodity are set to zero, assuming that these transactions are often non-local in nature. The wholesale trade industry produces a considerable amount of the retail trade commodity. The effect of this is to retain retail trade in the model, irrespective of which industry produces it, but to exclude wholesale trade activities.

The following matrices can then be defined through standard input-output algebra:

$\boldsymbol{B} = \boldsymbol{U}\,\hat{\boldsymbol{g}}^{-1}$ the direct requirements matrix, showing the amount of each commodity needed as a direct input to produce $1 of each industry's output. (The symbol ˆ indicates a matrix created from a vector by placing the vector=s elements on the matrix diagonal.) This is simply the use table scaled by industry output.

$\boldsymbol{j} = \hat{\boldsymbol{g}}^{-1}\boldsymbol{h}$ a vector showing scrap as a fraction of each industry's output. Many of the elements of this vector are zero in the NAHB local impact model, which excludes most of the manufacturing sector.

$\boldsymbol{D} = \boldsymbol{V}\hat{\boldsymbol{c}}^{-1}$ a 99×97 market share matrix, or the make table scaled by commodity output. $\boldsymbol{D}$ shows the fraction of each commodity (excluding scrap) produced by each industry.

$\boldsymbol{F} = (\boldsymbol{I}-\hat{\boldsymbol{j}})^{-1}\boldsymbol{D}$ a 99×97 matrix showing, for $1 worth of each commodity, the fraction produced by each industry. In short, $\boldsymbol{F}$ is $\boldsymbol{D}$ adjusted for scrap. $\boldsymbol{F}$ is often called a transformation matrix, because it can be used to transform commodities into the output of industries and vice versa.

$$\textit{Total Local Requirements} = \boldsymbol{F}(\boldsymbol{I}-\boldsymbol{BF})^{-1}$$

The total local requirements matrix translates local commodities into the output of local industries. The NAHB model is designed to capture only a fraction of the output: the fraction that becomes either income for local households or revenue for local governments. These fractions are estimated from a combination of value added components of the input-output tables, plus information taken from other BEA industry accounts. In the BEA accounts, the final price of a commodity is the sum of intermediate outputs plus value added by the industry. To avoid double counting, the NAHB model retains only the value added in each local industry for further analysis.

BEA's input-output accounts break value added into three components: compensation of employees, taxes on production and imports (TOPI), and gross operating surplus. In the NAHB model, local income is derived from compensation of employees and gross operating surplus.

The following table shows information taken from BEA accounts used in this derivation:

	Wages & Salaries per $ of Employee Compensation	Other Corp. as a % of Gross Operating Surplus	Other Non-Corp. as a % of Gross Operating Surplus
Farms	85.98%	77.63%	28.12%
Mining, except oil and gas	82.18%	12.40%	71.60%
Utilities	74.17%	9.32%	84.32%
Construction	83.11%	68.10%	29.88%
Miscellaneous manufacturing	71.19%	10.16%	87.83%
Printing and related support activities	81.90%	11.75%	85.14%
Wholesale trade	85.93%	15.89%	82.08%
Motor vehicle and parts dealers	85.39%	27.06%	69.55%
Food and beverage stores	81.55%	27.06%	69.55%
General merchandise stores	81.30%	27.06%	69.55%
Other retail	84.09%	27.06%	69.55%
Transit and ground passenger transportation	81.66%	76.22%	22.04%
Other transportation and support activities	81.76%	23.56%	74.53%
Warehousing and storage	81.97%	34.38%	63.45%
Publishing industries (includes software)	84.22%	14.36%	84.75%
Broadcasting and telecommunications	81.49%	26.07%	71.94%
Information and data processing services	84.23%	24.24%	74.30%
Federal Reserve banks, credit intermediation, related act.	85.01%	1.98%	87.89%
Securities, commodity contracts, and investments	87.89%	-2.28%	107.02%
Insurance carriers and related activities	84.36%	6.88%	120.64%
Funds, trusts, and other financial vehicles	57.88%	-16.43%	114.13%
Real estate (estimated by NAHB)	85.90%	100.00%	0.00%
Rental & leasing services and lessors of intangible assets	86.04%	32.70%	64.08%
Legal services	84.92%	76.96%	21.03%
Computer systems design and related services	87.90%	42.09%	53.54%
Misc. professional, scientific, and technical services	86.62%	57.56%	40.53%
Administrative and support services	84.67%	57.36%	40.59%
Waste management and remediation services	79.35%	13.44%	84.75%
Educational services	81.12%	39.22%	54.48%
Ambulatory health care services	82.70%	53.75%	42.32%
Hospitals	82.54%	42.00%	45.89%
Nursing and residential care facilities	80.79%	42.00%	45.89%
Social assistance	82.09%	48.30%	47.41%
Performing arts, spectator sports, museums, related act.	86.80%	70.36%	28.48%
Amusements, gambling, and recreation industries	84.18%	8.46%	90.01%
Food services and drinking places	85.50%	38.55%	58.57%
Other services, except government	85.92%	82.52%	15.81%
State and local government enterprises	68.40%	NA	NA
State and local general government	68.17%	NA	NA

Due to data limitations, ratios from relatively broad categories are sometimes applied to more narrowly defined local industries. For example, ratios for the broad categories "farms" is applied to a much more narrowly defined local industry "Greenhouse, nursery, and floriculture production."

Treatment of real estate is less straightforward than it might be, because the input-output accounts provide one set of estimates for real estate with no detail within that relatively broad industry. When analyzing a local housing economy, it is desirable to account for residential real

estate brokers and property managers, each which has well-known distinctive characteristics. NAHB uses data from the U.S. Census Bureau's 2007 Economic Census to estimate a separate set of coefficients for residential real estate brokers. Coefficients derived this way allocate a relatively small 8 percent of value added to wages and salaries, because most realtor offices are organized as a group of businesses where each broker legally counts as proprietor rather than an employee. The modified coefficients are applied to broker fees that arise in the transaction of single-family homes built for sale (as opposed to custom homes built by a general contractor on home owners' land) and individual multifamily condominiums to the ultimate owner-occupants. Any broker fees that that may be charged in the sale of multifamily rental buildings are assumed to be paid to non-local entities and excluded from the model.

Similarly, owners of rental buildings are considered non-local and excluded. However, for obvious reasons, managing the properties needs to be done locally. To handle this, except for the broker fees mentioned above, the NAHB model treats payments made to the real estate sector (primarily rental payments made by tenants in new multifamily buildings) as revenue for non-local property lessors (the federal government's term for what is elsewhere typically called a rental property owner) who then employ local businesses to manage the property. In practice this means subtracting about 57 percent of the rental payment and treating the remaining 43 percent as a local payment for management services. Again, this ratio was computed using detailed industry data from the 2007 Economic Census.

A key feature of the NAHB local impact model is the way it translates the wages and salaries from BEA accounts into local jobs, measured in full-time equivalents (FTEs); i.e., enough work to keep a person employed full-time for a year, based on the hours typically worked by full-time employees in a given industry. Indeed, when users of NAHB's local impact studies cite a single number from one of the studies, it is usually this one.

In general, the translation is accomplished using data on wages per job in each local industry from the Quarterly Census of Employment and Wages (QCEW) produced by the U.S. Bureau of Labor Statistics (BLS). The QCEW provides data for each county in the country, although it may be suppressed in particular cases for some industries due to a small sample size. To reduce the chances of missing data and produce an estimate that can more easily be adjusted for inflation, annual rather than quarterly QCEW data are used. If annual data for a particular industry in a particular local area are missing, they are imputed based on national wages per job in that industry, adjusted by the ratio of local to national wages per job across all industries. If QCEW data are not yet available for the year of construction being analyzed (as is typically the case), wages per job in each industry is inflated using HUD's estimates of median family income, which are available for the current year and for each state and local area in the country. Job counts in the QCEW are based on payroll employment and therefore include part-time as well as full-time workers. The QCEW job counts are converted to FTEs using the ratio of FTEs to jobs in each industry from BEA's national industry accounts.

The estimates of local income in the NAHB model exclude most corporate profits, based on the rationale that ownership of most corporations is national or international in scope. Even if a household living in a particular metropolitan area buys a product manufactured by a corporation located in in that metropolitan area, profits derived from the sale are likely to be distributed to shareholders living in other locations.

The model makes an exception for subchapter S corporations, which tend to be smaller and more local in nature than C corporations. S corporations also tend to be relatively common in particular industries, such as residential construction. The Internal Revenue Service (IRS) provides information on business receipts by form of business and industry, and this is used to decompose corporate profits into profits for S-corporations and C-corporations. The IRS tables provide relatively limited industry detail, so again percentages for a broadly defined industry are sometimes applied to several 6-digit NAICS industries. The S-corporation profits by industry are then counted as part of local income.

In general, local government revenue is estimated industry by industry, as a function of both local income and TOPI. TOPI includes taxes imposed at the federal, state and local level. BEA national accounts show that, in the year of the most recent Census of Governments, 9.2 percent of TOPI is federal (almost all excise taxes and custom duties). The Census of Governments is then used to further decompose TOPI into 42.4 percent collected by state governments and 48.4 collected by local governments (the largest components of state and local TOPI being sales and property taxes). Thus, the NAHB model uses a base of 90.8 or 48.4 percent of TOPI in each local industry as a starting point, depending on whether a state or local economy is being analyzed.

A distinctive feature of the NAHB model is the way it further employs Census of Governments data to customize the government finances to a particular area. Census of Governments data are available for each of the roughly 89,000 units of government in the U.S., and the NAHB model reads in every line item for every government within the local area being analyzed. Aggregated across all local (or state and local) governments in the U.S., the ratio of TOPI to personal income is 2.776 (or 6.595) percent. This ratio is also calculated for the area being analyzed and used to adjust TOPI by industry up or down. Personal income is used as the base of the ratio, because this is a measure that is available for every local area in the country.

There are two substantial exceptions to this procedure, as discussed below in the sections on Phase I and Phase III. In the case of residential property taxes and sales taxes paid on construction materials, specific information is collected for the construction being analyzed and fed into the model instead.

Census of Governments data is also used to customize taxes and fees paid by the workers and local proprietors who receive income as a result of the home building activity, and, where applicable, corporate income taxes to a local area. Aggregated over all local (or state and local) governments in the U.S., taxes and fees paid by individuals sum to 4.198 (or 7.843) percent of personal income. Again, equivalent ratios are calculated for the area being analyzed and used to customize the government revenue estimates.

To the extent that S corporations pay taxes to state and local governments, these taxes are also counted on the assumption that stockholders of S corps reside in the same area as the company income.

The general procedure for customizing government revenue to a specific local area (or state) can be summarized as follows:

Personal taxes =
4.198% (or 7.843%) × Local Personal Income × Local Factor 1

Business taxes =
48.4% (or 90.8%) × TOPI in Local Industries × Local Factor 2 +
6.349% × Corporate Profits in Local Industries × Local Factor 3

where the three local factors are derived on a case by case basis from data in the most recent Census of Governments. In practice, Local Factor 3 will usually be zero, as few local governments impose a tax on corporate profits.

The distinguishing aspect of this procedure is that it preserves the industry structure of the input-output accounts while being consistent with revenue being collected by all governments in the area of analysis, as reported by the governments themselves to the U.S. Census Bureau.

Phase I: Construction

As shown diagrammatically in "Background and a Brief Description of the Model Used to Estimate the Economic Benefits", Phase I of the model feeds the dollar amount of construction and ancillary locally produced items into the income and tax matrices derived from the model total local requirements. Accounting for everything that goes into building a home and delivering it to its customer is more complicated than it may at first appear.

For one thing, the Census Bureau subtracts several items from construction value before providing the numbers to BEA for use in the input-output and related GDP accounts. On new homes built for sale, the Census Bureau subtracts 1.1 percent of the sales price for landscaping, 0.5 percent for appliances, 2.9 percent for realtor and brokers fees, and 2.7 percent for marketing and finance costs. There are equivalent subtractions for custom homes (i.e., homes where the builder functions as a general contractor for a home built on the customer's lot).

However, the landscaping and purchases of appliances and marketing/broker services associated with a newly built home clearly are attributable to the construction of the home. Phase I of the NAHB model therefore accounts for these items as separate purchases of the local construction, retail trade, and real estate industries. For retail trade, only the gross margin of appliance purchases are counted. Gross margins for different types of retailers are available from the Census Bureau's Annual Retail Trade Survey.

In addition, there are settlement or closing costs associated with transferring property from a builder to the ultimate owner. In a typical case, these costs are shared between buyers and sellers. Construction value as defined in the input-output accounts includes closing costs if they are paid by the seller, but not the buyer. When the local impact model was first developed, NAHB verified these details with economists at BEA.

In order to estimate both closing costs as a fraction of the home's price and the share of these costs the buyer pays, the NAHB model uses national average data compiled by the U.S.

Department of Housing and Urban Development.[6] The share of settlement costs paid for by the buyer for loan origination and discount fees, title and private mortgage insurance, and legal fees are counted as output of the local depository credit intermediation, insurance, and legal services industries, respectively.

Another category of closing costs sometimes paid by the buyer is mortgage or deed transfer taxes. Phase I of the NAHB model does not automatically include an amount for transfer taxes. In most (but not all) instances, these taxes are imposed by state, rather than local, governments. To the extent that transfer taxes apply in a specific case, that information needs to be supplied by the local entity requesting the analysis.

The local entity requesting the analysis is also asked to provide information on whether or not sales taxes are imposed on construction materials and supplies; and, if so, the relevant sales tax rate. The model then applies the relevant rate to 34.1 percent of construction value, assuming that materials account for that share of the final value of a housing unit. The figure of 34.1 was calculated from the ratio of materials to construction value for several categories of construction businesses in the Economic Census, including trade contractors. The calculation takes subcontracing into account, as a large fraction of the final construction value of a housing unit is subcontracted to businesses that may also purchase materials.

Phase II: The Construction Ripple

Phase I of the model translates home building activity into income for local workers and business proprietors, and revenue for local governments. This output serves as the input for Phase II, as part of the local income generated will be spent, generating more income, generating more spending, and so on. These spending ripples damp and eventually converge to a limit, which is the ultimate ripple or multiplier effect.

To convert local income to local spending, the model requires information about local household spending tendencies. Detailed spending information at the household level is available from the Consumer Expenditure (CE) Survey, produced by the U.S. Bureau of Labor Statistics (BLS) primarily for the purpose of determining the weights for the Consumer Price Index.[7]

The CE consists of two different types of surveys: 1) an interview survey that collects data on monthly expenditures as well as information on income and household characteristics, and 2) a diary survey that collects data on weekly expenditures of frequently purchased items. These are two separate surveys, each designed individually with weights that aggregate to an estimate of total spending in the U.S. When it estimates aggregate measures of consumer spending, BLS combines results from the two different types of surveys in a manner it does not disclose.

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[6] Report to Congress on the Need for Further Legislation in the Area of Real Estate Settlements, 1981, Exhibits II-1 and II-6.

[7] Technically, in the Consumer Expenditure Survey, the unit of measurement is actually not a household, but a *Consumer Unit*, a group of individuals who live in the same house and make joint purchasing decisions. There may be more than one Consumer Unit in a household.

The NAHB local impact model uses only data from the interview survey, primarily to avoid the need for arbitrary decisions about which spending items to take from which survey. Based on its CE interview survey, BLS produces a public use microdata set consisting of quarterly files with household characteristics (including income), another set of quarterly files with income and other characteristics for each member of the household, and a set of fifty-one annual "EXPN" files with detailed information about various categories of expenditures.

These detailed files allow NAHB to maintain a conservative approach and exclude spending on items that may often be purchased from a vendor outside the local area. For example, BLS collects information on spending while on trips and vacations away from home in a separate "ETRV" and "ETRE" file. The NAHB local impact model does not include any spending information at all from these files. NAHB processes the information from the EXPN files along with information on household characteristics and income to estimate spending tendencies on 52 locally produced commodities, as shown in the following table:

Local Spending Extracted from the CE EXPN Files

	Local commodity	IO Code	CE File	Description of items included in local spending
01	Greenhouse, nursery, and floriculture production	111400	ECRB	Costs of all items and services for planting shrubs or trees, or otherwise landscaping the ground of the housing unit in which the consumer unit lives.
02	Electric power generation, transmission, and distribution	221100	EUTC	Electricity bills for the housing unit in which the consumer unit lives, including if combined with natural gas and/or water, sewerage. This is also the default category for generally combined expenses with particular utility not specified.
03	Natural gas distribution	221200	EUTC	Gas bills for the housing unit in which the consumer unit lives.
04	Water, sewage and other systems	221300	EUTC	Water and/or sewage bills, including water combined with trash collection, for the housing unit in which the consumer unit lives.
05	Residential maintenance and repairs	230302	ECRB	Costs of all items and services associated with building or repairing an addition to the house or a new structure including porch, garage or new wing; finishing a basement or an attic or enclosing a porch; remodeling one or more rooms; building outdoor patios, walks, fences, or other enclosures, driveways, or permanent swimming pools, inside painting or papering; outside painting; plastering or paneling; plumbing or water heating installations and repairs; electrical work; heating or air-conditioning jobs; flooring repair or replacement; insulation; roofing, gutters, or downspouts; siding; installation, repair, or replacement of window panes, screens, storm doors, awnings, etc.; and masonry, brick or stucco work; or other improvements or repairs for the housing unit in which the consumer unit lives.
For the four categories of retail trade, only gross margins rather than total spending is put into the model. Gross margins are applied industry by industry. A single factor is used to reduce the amount to account for loss of business to local retailers to E-commerce and mail order business. The source is the most recent data in the Census Bureau's 2012 Annual Retail Trade Report, released in 2014,				
06	Motor vehicle and parts dealers	441000	EOVB	Purchases of automobiles, including down payment and payment of principle on loans × 17.6% (gross margin for automobile dealers).
07	Food and beverage stores	445000	ETRF	Cost of food or beverages at grocery, convenient or liquor stores during local overnight stays x 27.9% (gross margin for food and beverage stores).

	Local commodity	NAICS Code	EXPN File	Description of items included in local spending
07	Food and beverage stores (cont.)	445000	EXPA	Expenditure for food, non-alcoholic beverages and nonfood items at grocery stores, food and non-alcoholic beverages from places other than grocery stores, and all alcohol to be served at the home × 27.9% (gross margin for food and beverage stores).
08	General merchandise stores	452000	EAPA	50 percent of major appliance purchases (assuming other 50 percent purchased from other retail) x 26.3% (gross margin for general merchandise stores), adjusted for losses to E-commerce and mail order business.
			EAPB	50 percent of purchases of other households appliances and other selected items (assuming other 50 percent purchased from other retail) x 26.3% (gross margin for general merchandise stores), adjusted for losses to E-commerce and mail order business.
			EFRA	50% of purchases of home furnishings (assuming other 50 percent purchased from other retail) x 32.1% (gross margin for department stores), adjusted for losses to E-commerce and mail order business
			ECLA	50% of purchases of clothing and accessories (assuming other 50 percent purchased from other retail) x 32.1% (gross margin for department stores), adjusted for losses to E-commerce and mail order business.
			EENT	50% of purchases of CDs or audio tapes, photographic film, video cassettes or tapes or discs, and books, but not through a mail order club or subscription x 32.1% (gross margin for department stores), adjusted for losses to E-commerce and mail order business.
09	Other retail	4A0000	EUTC	Bills for fuel oil, bottle or tank gas, or fuels not specifically identified, for the home in which the consumer unit lives x 37.8% (gross margin for nonstore retailers).
			ECRA	Purchase of building materials and supplies, either for or not for a specific project x 34.7% (gross margin for building materials and supplies dealers).
			EAPA	50 percent of major appliance purchases (assuming other 50 percent purchased from general merchandise stores) × 28.2% (gross margin for electronics and appliance stores), adjusted for losses to E-commerce and mail order business.
			EAPB	50 percent of purchases of other households appliances and other selected items (assuming other 50 percent purchased from general merchandise stores) × 28.2% (gross margin for electronics and appliance stores), adjusted for losses to E-commerce and mail order business.
			EFRA	50% of purchases of home furnishings (assuming other 50 percent purchased from general merchandise stores) × 46.6% (gross margin for furniture and home furnishing stores), adjusted for losses to E-commerce and mail order business.
			ECLA	50% of purchases of clothing and accessories (assuming other 50 percent purchased from general merchandise stores) × 45.8% (gross margin for clothing and clothing accessories stores), adjusted for losses to E-commerce and mail order business.
			EVOT	Purchases of gasoline and other fuels and fluids used in vehicles × 10.8% (gross margin for gasoline stations)
			EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to purchase prescription drugs and durable medical equipment × 30.0% (gross margin for health and personal care stores), adjusted for losses to E-commerce and mail order business.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for prescription drugs, other nondurable medical products, and durable medical equipment × 30.0% (gross margin for health and personal care stores), adjusted for losses to E-commerce and mail order business.

	Local commodity	NAICS Code	EXPN File	Description of items included in local spending
09	Other retail (cont)	4A0000	EMDB	Direct purchases of glasses, hearing aids, prescription medication, convalescent equipment, or other medical equipment × 30.0% (gross margin for health and personal care stores), adjusted for losses to E-commerce and mail order business.
			EEDA	Purchases of books or other equipment for elementary or high school for members of the consumer unit × 41.6% (gross margin for sporting goods, hobby, book and music stores), adjusted for losses to E-commerce and mail order business.
			EENT	50% of purchases of CDs or audio tapes, photographic film, video cassettes or tapes or discs, and books, but not through a mail order club or subscription (assuming other 50 percent purchased from general merchandise stores) × 41.6% (gross margin for sporting goods, hobby, book and music stores), adjusted for losses to E-commerce and mail order business.
			EMIS	Expenses for flowers, potted plants, pet supplies and medicines, toys, and games, and hobbies, including if combined with computer software for games × 45.4% (gross margin for miscellaneous store retailer), and adjusted for losses to E-commerce and mail order business.
			EXPB	Expenditures for cigarettes and other tobacco products × 29.4% (gross margin for all retailers excluding motor vehicle and parts dealers), adjusted for losses to E-commerce and mail order business.
10	Transit and ground passenger transportation	485000	EXPB	Costs for taxis, limousine service, and public transportation, except while on a trip.
11	Newspaper publishers	511110	EENT	Expenses for newspapers and other periodicals not through a subscription.
12	Wired telecom-munications carriers	517110	EUTA	Bills from telecommunications companies for residential service, internet access, non-telephone rental and purchases, and 71.2% of bills for cable or satellite television service (financial data compiled ions Multimedia Research Group, Inc indicates that satellite had a 28.8% share of the combined cable/satellite market).
			EUTP	Pre-paid phone card or public pay phone services.
			EUTI	Bills from internet service providers for internet connection and service (excluding those away from home), miscellaneous combined expenses, and 71.2% of bills for cable or satellite television service.
13	Wireless tele-communications carriers (except satellite)	517210	EUTA	Bills for mobile/cellular telephone service.
			EUTP	Pre-paid cellular minutes.
14	Satellite, telecommunications resellers, and all other tele-communications	517A00	EUTA	28.8% of the bills from telecommunications for cable or satellite television service, plus bills for Voice over IP service.
			EUTI	Bills from internet service providers for satellite radio, plus 28.8% of the bills for cable or satellite television service.
15	Data processing, hosting, and related services	518200	EUTA	Bills paid to providers of applications, games or ringtones.
16	Monetary authorities and depository credit intermediation	52A000	EHEL	Interest paid on lump sum home equity loans, based only on the home in which the consumer unit lives.

	Local commodity	NAICS Code	EXPN File	Description of items included in local spending
16	Monetary authorities and depository credit intermediation (cont)	52A000	EOPH	Interest paid on home equity lines of credit, based only on the home in which the consumer unit lives.
			EXPB	Charges for safe deposit boxes, checking accounts, and other banking services.
17	Nondepository credit intermediation and related activities	522A00	EOVB	Interest payment on automobile loans.
18	Insurance agencies, brokerages, and other insurance related activities	524200	EINB	Percent of premiums for all types of insurance other than health (percentage based on agent/brokers' share of industry).
			EIHB	Percent of premiums for health insurance (percentage based on agent/brokers' share of industry).
19	Real estate	531000	RNT	Total rental payments for the housing unit in which the consumer unit lives.
			OPI	Ground or land rent, regular HOA fees, special payments for property management services—for the property in which the consumer unit lives.
20	Automotive equipment rental and leasing	532100	ERTV	Expenses for renting vehicles, except if rented while on a vacation.
			ELSD	Expenses for leasing vehicles.
21	Consumer goods and general rental centers	532A00	EAPA	Expenses for renting major appliances.
			EAPB	Expenses for renting other household appliances and selected items.
			EFRB	Expenses for renting furniture.
			ECLD	Expenses for renting clothing.
			EMDB	Expenses for renting convalescent or other medical equipment.
			EENT	Amount paid for rental of Blu-ray Discs, DVDs, or VHS tapes.
22	Legal services	541100	EMIS	Expenses for services of lawyers or other legal professionals.
23	Accounting, tax preparation, bookkeeping, and payroll services	541200	EMIS	Accounting fees.
24	Photographic services	541920	EENT	Amount paid for film processing or printing digital photographs.
			EMIS	Amount paid for professional photography fees.
25	Veterinary services	541940	EMIS	Veterinarian expenses, including if combined with other pet services.
26	Investigation and security services	561600	EMIS	Home security service fees.
27	Services to buildings and dwellings	561700	EAPA	Charges for installing major appliances.

	Local commodity	NAICS Code	EXPN File	Description of items included in local spending
27	Services to buildings and dwellings (cont.)	561700	EEQB	Costs for pest control or repairing and servicing heating and air conditioning equipment.
			EMIS	Gardening or lawn care, housekeeping, or other home services and small repair jobs around the house.
28	Waste manage-ment and remed-iation services	562000	EUTC	Trash/garbage collection bills, including if combined with sewerage, and septic tank cleaning services, for the housing unit in which the consumer unit lives.
29	Elementary and secondary schools	611100	EEDA	Tuition and other expenses for elementary or high school for members of the consumer unit.
30	Offices of physicians	621A00	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for physician and clinical services.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for physician and clinical services.
			EMDB	Direct payments for eye care or physician services.
31	Offices of dentists	621200	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for dental services.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for dental services.
			EMDB	Direct payments for dental care
32	Offices of other health practitioners	621B00	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for other professional services.
			IHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for other professional services.
			EMDB	Direct payments for services by medical professionals other than physicians, lab tests, and other medical care.
33	Home health care services	621600	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for home health care.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for home health care.
34	Hospitals	622000	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for hospital care.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for hospital care.
			EMDB	Direct payments for hospital rooms or services.
35	Nursing and residential care facilities	623000	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for nursing home care.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures used to pay for nursing home care.
			EMDB	Direct payments for care in convalescent of nursing home.
36	Child day care services	624400	EEDA	Expenses for nursery school or child day care centers for members of the consumer unit.

	Local commodity	NAICS Code	EXPN File	Description of items included in local spending
36	Child day care services	624400	EMIS	Expenses for babysitting, nanny services, or child care in the consumer unit's or someone else's home.
37	Performing arts companies	711100	ESUB	Theater or concert season tickets.
			EENT	Single admissions to movies, theaters, and concerts.
38	Spectator sports	711200	ESUB	Season tickets to sporting events.
			EENT	Single admissions to spectator sporting events.
39	Gambling industries (except casino hotels)	713200	EMIS	Expenses for lotteries and games of chance.
40	Other amusement and recreation industries	713900	EEDA	Recreational lessons and instruction for members of the consumer unit.
			ESUB	Expenses for membership in golf courses. Country clubs, health clubs, fitness centers, or other sports and recreational organizations.
			EENT	Fees for participating in sports.
			ETRF	Amount paid for entertainment or admissions during local overnight stays
41	Full-service restaurants	722110	ETRF	50% of cost of meals, snacks, or beverages at restaurants, bars or fast food places during local overnight stays.
			EXPA	50% of expenditures for food and beverages at restaurants, cafeterias, cafes, drive-ins, etc. or t school for or pre-school for school-age children.
42	Limited-service restaurants	722211	ETRF	50% of cost of meals, snacks, or beverages at restaurants, bars or fast food places during local overnight stays.
			EXPA	50% of expenditures for food and beverages at restaurants, cafeterias, cafes, drive-ins, etc. or t school for or pre-school for school-age children.
43	All other food and drinking places	722A00	EMIS	Food and beverage for catered affairs.
44	Automotive repair and maintenance, except car washes	8111A0	EVEQ	Expenses for vehicle maintenance and repair.
			EVOT	Expenses for towing and automobile repair service policies.
45	Electronic and precision equipment repair and maintenance4	811200	EEQB	Cost for repairs and services to AV equipment (except if installed in a vehicle) and to computers and related equipment.
46	Personal and household goods repair and maintenance	811400	EEQB	Costs for repairing or servicing miscellaneous items such as appliances, tools, photographic, sports, and lawn and garden equipment.
			EFRB	Costs for repairing furniture.
			ECLD	Costs for repairing or altering clothing and accessories, or repairing watches or jewelry.
47	Personal care services	812100	EIHB	Share of health insurance premiums, after broker/agent share is subtracted, used to pay for other health, residential and personal care services.
			EIHC	Number of persons covered by Medicare if in a senior household x Medicare expenditure per enrollee x the share of Medicare expenditures for other health, residential and personal care services.

	Local commodity	NAICS Code	EXPN File	Description of items included in local spending
48	Death care services	812200	EMIS	Expenses for funerals, burials, cremation, and purchase and upkeep of cemetery lots or vaults.
49	Dry cleaning and laundry services	812300	EXPB	Expenses for clothing and other items at sent to drycleaners and laundry, as well as coin operated dry cleaning and laundry machines.
50	Other personal services	812900	ECLD	Costs of clothing storage services.
			EVOT	Fess for vehicle parking, boat docking and plane landing.
			EMIS	Pet services.
			EXPB	Expenses for haircuts, hair styling, manicures, massages, and other salon services.
51	Religious organizations	813100	ECNT	Contributions to religious organizations.
52	Civic, social, professional and similar organizations	813B00	ESUB	Expenses for membership in civic, service, or fraternal organizations.

There is somewhat more detail in a few input-output industries than is available in a spending line from the CE files. For example, the CE files do not distinguish spending in limited service eating places from spending in full service restaurants. According to the 2007 Economic Census, total sales in each category was $182 to $192 billion—close to a 50-50 split. Therefore, half of spending in eating places is allocated to full service restaurants; the other half to the limited service places. Similarly, the CE files don't distinguish items purchased in general merchandise stores from those purchased in more specialized retail outlets. For goods that likely could be purchased in either, again a 50-50 split is used, as shown for local commodities 08 and 09 in the table above.

For all items included under any retail sales category, only the gross margins are included, and in most cases a further adjustment is made to account for loss of local sales to E-commerce and mail order business. These adjustments are based on information in the Census Bureau's Annual Retail Trade Report for 2012. The report includes a table on gross margins by 6-digit NAICS code that can be used directly. The report also contains separate tables on total sales and mail order & E-commerce. An adjustment factor is calculated based on total E-commerce & mail order sales as a fraction of total retail sales, excluding food and beverage service and motor vehicle and parts dealers. For 2012, the adjustment factor is 1-322,543/4,344,140. In the above table, "adjusted for E-commerce and mail order loss" means that particular category of retail spending is multiplied by this factor.

Insurance payments are separated into a share going to brokers and agents and the insurance companies, based on the proportional share of revenue reported in the latest Economic Census. The share going to brokers and agents is counted as local income. However, it is also assumed that the share going to insurance companies comes back in some cases as these companies pay medical costs for policy holders that go to health care providers in the local area. This is estimated using "Personal Health Care Expenditures by object & Source of Payment" reported by the Census Bureau in the Table 138 of the 2012 Statistical Abstract of the United States. A similar calculation is made for expenses covered by Medicare. The CE data include the number of household members covered by Medicare. Payments made by Medicare to local

health care providers are estimated using statistics on Medicare Enrollees from Table 146 of the 2012 Statistical Abstract, combined with the health care expenditure information from Table 138.

The consumer spending variables used in the model are all in the form of average propensities to consume—that is, average fractions of before-tax income spent on various items. As shown in the table above, The EXPN files generate consumer spending estimates for 52 locally produced commodities. In addition, seven categories of local commodities produced by local government enterprises are appended to the list:

1 Local government electric service
2 Local government natural gas distribution
3 Local government water & sewerage
4 Local government passenger transit
5 Local government liquor stores
6 Local government sanitary services
7 Local government hospitals

Although these seven extra commodities do not increase local spending in total, they allow the model to allocate consumption between the publicly produced and privately produced commodities based on information from the Census of Governments. In this sense, the model is consistent with both national household consumption patterns and revenue collected by all government enterprises in a particular local area.

To this is added one other local commodity, general government, to account for tax and fee payments (computed in Phase II primarily from BEA personal income estimates and Census of Governments revenue data).

The results can be collected in the 2×60 matrix, $\boldsymbol{A}$:

$$\boldsymbol{A} = \begin{bmatrix} a_1 & a_2 & a_3 & \cdots & a_{59} & 0 \\ 0 & 0 & 0 & \ldots & 0 & 1 \end{bmatrix}$$

The elements in the first row of $\boldsymbol{A}$ show the average fraction of income spent on each of the 59 local commodities (including those produced by local government enterprises such as publicly owned utilities or hospitals). The "O"s and "1" in the second row indicates that no taxes are spent directly by the household on any of the first 59 commodities; 100 percent is spent on the local general government commodity. This two-row structure is designed to align with the output from Phase I of the model, which comes in the form of before-tax local income and local tax estimates.

Several other matrices and vectors derived from the above concepts are needed to calculate the Phase II ripple or multiplier effect:

$\boldsymbol{W}$: a 60×99 matrix that translates local commodities into local income,

$\boldsymbol{G}$: a 60×99 matrix that translates local commodities into local government general revenue collected from persons, and

$\boldsymbol{T}$: a 60×99 matrix that translates local commodities into local government general revenue collected from businesses

$\boldsymbol{L} = \begin{bmatrix} \boldsymbol{W} & \boldsymbol{G} & \boldsymbol{T} \end{bmatrix}$ therefore defines a 60×297 matrix

$\boldsymbol{x}$ = a two element column vector containing local income and local taxes generated in Phase I

$$\boldsymbol{Y} = \begin{bmatrix} \boldsymbol{i} & \boldsymbol{0} & \boldsymbol{0} \\ \boldsymbol{0} & \boldsymbol{i} & \boldsymbol{0} \\ \boldsymbol{0} & \boldsymbol{0} & \boldsymbol{i} \end{bmatrix}$$ a 297×3 matrix where $\boldsymbol{i}$ is a 99-element unit column vector,

$$\boldsymbol{Z} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 0 & 1 \end{bmatrix}$$

In summary, $\boldsymbol{x}$ is the income and tax output from Phase 1, $\boldsymbol{A}$ translates income and taxes into spending on particular commodities, $\boldsymbol{L}$ translates the detailed commodity spending into income and taxes in each of 99 local industries, and $\boldsymbol{Y}$ and $\boldsymbol{Z}$ are technical devices for summing results. $\boldsymbol{Y}$ collapses the components of a 297-element vector into a 3-element vector of income, personal taxes, and business taxes. $\boldsymbol{Z}$ converts a 3-element vector of this form into a 2-element income and tax vector.

The row vector defined as $\boldsymbol{x}'\boldsymbol{A}$ shows how much, in dollar terms, people who earn income during Phase I spend on each of the 60 local commodities (including local government employees, whose paychecks are supported by taxes and charges for particular government-run enterprises).

The calculation $\boldsymbol{x}'\boldsymbol{ALYZ}$ produces a 2-element local income and local tax vector of the same form as $\boldsymbol{x}'$. Postmultiplying a vector of this type by $\boldsymbol{ALYZ}$ will always produce a similar, 2-element income and tax vector. Either by construction, or by checking that both eigenvalues are smaller than 1, it is possible to show that $\boldsymbol{ALYZ}$ is a contracting matrix. This implies that the rounds below show successively smaller increments of income and taxes added to the local economy:

$$\begin{aligned}
&\textit{Round } 0: \ \boldsymbol{x}' \\
&\textit{Round } 1: \ \boldsymbol{x}'\,\boldsymbol{ALYZ} \\
&\textit{Round } 2: \ \boldsymbol{x}'\,\boldsymbol{ALYZ}\ \boldsymbol{ALYZ} \\
&\textit{Round } 3: \ \boldsymbol{x}'\,\boldsymbol{ALYZ}\ \boldsymbol{ALYZ}\ \boldsymbol{ALYZ} \\
&\qquad\qquad \vdots \\
&\textit{Round } K: \ \boldsymbol{x}' \prod_{k=1}^{K} \boldsymbol{ALYZ}
\end{aligned}$$

The terms of this sequence can be summed in the usual manner to create an infinite series. Because $\boldsymbol{ALYZ}$ is a contracting matrix, the result is a convergent series, the limit of which is

$$\boldsymbol{x}' \; [\boldsymbol{I} - \boldsymbol{ALYZ}]^{-1}$$

This is the final multiplied effect on local income and local taxes at the end of Phase II. The factor $[\boldsymbol{I}\text{-}\boldsymbol{ALYZ}]^{-1}$ is a matrix version of the conventional Keynesian spending multiplier. Because $\boldsymbol{x}'$ is reported in Phase I, it is subtracted from the effect reported in Phase II.

For some purposes, especially estimating employment impacts, we are interested in tracking income in Phase II by industry. Calculations to accomplish this are based on the following sequence of 1×297 vectors:

$$\begin{aligned} &\textit{Round } 1: \; \boldsymbol{x}'\boldsymbol{AL} \\ &\textit{Round } 2: \; \boldsymbol{x}'\boldsymbol{AL}\,\boldsymbol{YZAL} \\ &\qquad\vdots \\ &\textit{Round } K: \; \boldsymbol{x}'\boldsymbol{AL} \prod_{k=1}^{K-1} \boldsymbol{YZAL} \end{aligned}$$

Note that sequence begins with the spending vector $\boldsymbol{x}'\boldsymbol{AL}$—that is, it excludes the income and taxes that have already been captured in Phase I. The limit of the series defined based on this sequence is

$$\boldsymbol{x}'\boldsymbol{AL}\,[\boldsymbol{I} - \boldsymbol{YZAL}]^{-1}$$

This is a 297-element row vector, the first 89 elements containing the final, multiplied effect on local income by industry generated during Phase II. As explained above, income by industry can be separated into business owners' income and wages and salaries, and the wages and salaries converted to full-time job equivalents.

From the standpoint of local governments, it may be desirable to track individual sources of revenue, such as particular fees and taxes. To facilitate this, it is useful to have a three element local income and local tax vector, where the tax revenue is decomposed into taxes collected from persons and taxes collected from businesses.

Consider the following sequence of such 3-element vectors:

$$\begin{aligned} &\textit{Round } 1: \; \boldsymbol{x}'\boldsymbol{ALY} \\ &\textit{Round } 2: \; \boldsymbol{x}'\boldsymbol{ALY}\;\boldsymbol{ZALY} \\ &\qquad\vdots \\ &\textit{Round } K: \; \boldsymbol{x}'\boldsymbol{ALY} \prod_{k=1}^{K} \boldsymbol{ZALY} \end{aligned}$$

This sequence begins after *Round 0*, implicitly excluding income earned and taxes paid during Phase I. The limit of the infinite series defined by this sequence is

$$x' ALY\,[I - ZALY]^{-1}$$

This is the final, multiplied effect on local income, local government revenue collected from persons, and local government revenue collected from businesses in Phase II of the model. The tax structure for a particular local area, derived primarily from Census of Governments data as described above, can be applied to this result in order to decompose local government revenue into particular types of taxes and fees.

Phase III: Ongoing Impacts

Another distinctive feature of the NAHB model is the way it uses CE and other data to model the average behavior of occupants that differs based on the type of housing being built. At present, there are six basic variants of the NAHB model designed to handle the following types of construction:

1. Generic Single-Family
2. Generic Multifamily
3. Active Adult
4. Family Low-Income Housing Tax Credit (LIHTC)
5. Elderly LIHTC
6. Remodeling

The remodeling version of the model does not in general incorporate ongoing impacts, so it requires no occupant income estimates. For the other five versions of the model, separate occupant income estimates are derived in a way that vary with location as well as with the type of units being built. The derivations are based on relationships between average income and standard variables that are typically available at the local level. The methods for establishing these relationships are summarized below.

Generic Single-Family. Regression of average income of home owners on area median family income and average value of the units using American Community Survey (ACS) microdata.

Generic Multifamily. Regression of average income of home owners on area median family income and average rent using ACS microdata.

Active Adult. Average income of movers into age-restricted owner occupied units and average income of all home buyers are computed from American Housing Survey (AHS) microdata, and the ratio of the two averages is used to adjust home buyers' income for the active adult case.

Family LIHTC. Average incomes of all movers into rental units who have less than 60 percent of median family income for the U.S. as a whole, computed from CE data.

Elderly LIHTC. Average incomes of all elderly movers into rental units who have less than 60 percent of median family income for the U.S. as a whole, computed from CE data.

The ACS is the Census Bureau's replacement for the long form questionnaire that until 2000 was used to collect information on income and structure type in the decennial Census. The AHS, funded by the U.S. Department of Housing and Urban Development (HUD) and conducted by the Census Bureau, is the federal government's primary vehicle for collecting detailed information about housing units and their occupants at the national level.

The ratios and regression results listed above allow the model to be simultaneously customized to a particular area and a particular type of construction by inputting specific local information that is generally available. When customizing to a local area, median family income for that particular area is used. HUD produces median income estimates for all parts of the country in a timely fashion as part of the process it uses to establish income limits for various housing programs.

When it is necessary to translate rents into value or vice versa, the median cap rate from the Rental Housing Finance Survey (RHFS), also funded by HUD and conducted by the Census Bureau, is used.

In addition to average income, estimated spending tendencies for movers into each type of construction are needed. Separate spending vectors are estimated for each using household information available in the CE data. The table on the following page shows average local propensities to consume computed from the 2012 CE.

This modeling of average spending by different types of households soon after they move in is another distinguishing feature of the NAHB local impact model. In addition to the function they serve in the local model, average spending tendencies computed from CE data have also proven to be of interest for their implications at the national level.[8]

Compared to home buyers, renters tend to spend more of their incomes locally—partly due to the tendency of lower-income households to spend a greater fraction of their incomes on necessities, but also due to rental payments that go to a local owner, or owner employing a management company with a local presence. The equivalent housing expense for a home buyer would be a mortgage payment. Because mortgage payments typically are made to non-local owners of the mortgage through non-local servicers, they are excluded from the spending estimates in the NAHB local impact model.

Average propensities to spend on virtually all categories of local health care services are higher for households moving into construction designed for older residents (age-restricted active adult and elderly LIHTC).

As was described in Phase II, seven categories of commodities produced by local government enterprises are added to the model, and a share of local spending (which may be zero) is allocated to these enterprises instead of private producers based on revenues reported in the Census of Governments for each local government enterprises in the area.

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[8] See, for example, the December 2008 Special Study "Spending Patterns of Home Buyers," written by Natalia Siniavskaia and published by NAHB in Housing Economics.com.

Average Local Spending Computed from CE Data

	Output of industry purchased locally	All House-holds	New Home Buyers	New Multifamily Renters	Active Adult Buyers	New Family LIHTC	New Elderly LIHTC
1	Greenhouse, nursery, and floriculture production	0.129%	0.172%	0.000%	0.176%	0.000%	0.000%
2	Electric power generation, transmission, and distr.	2.689%	2.410%	0.002%	3.428%	0.000%	0.000%
3	Natural gas distribution	0.674%	0.499%	0.000%	0.723%	0.000%	0.000%
4	Water, sewage and other systems	0.793%	0.802%	0.000%	1.108%	0.000%	0.000%
5	Residential maintenance and repair	3.059%	2.087%	0.000%	3.567%	0.170%	0.072%
6	Motor vehicle and parts dealers	1.218%	1.439%	5.098%	1.447%	1.408%	1.190%
7	Food and beverage stores	4.829%	3.303%	4.446%	3.567%	8.573%	8.793%
8	General merchandise stores	0.745%	0.840%	1.271%	0.723%	1.129%	0.437%
9	Other retail	3.119%	2.494%	3.088%	2.906%	3.896%	4.069%
10	Transit and ground passenger transportation	0.190%	0.030%	0.269%	0.028%	0.990%	0.990%
11	Newspaper publishers	0.027%	0.016%	0.042%	0.042%	0.057%	0.096%
12	Wired telecommunications carriers	2.392%	1.770%	1.878%	2.588%	2.868%	4.441%
13	Wireless telecom. carriers (except satellite)	2.081%	1.809%	3.565%	1.811%	3.323%	2.435%
14	Satellite, telecom. Resellers & all other telecom.	0.323%	0.249%	0.620%	0.335%	0.472%	0.494%
15	Data processing, hosting, and related services	0.003%	0.002%	0.000%	0.002%	0.006%	0.000%
16	Monetary authorities, depository credit intermediation	0.437%	0.298%	0.000%	0.366%	0.000%	0.000%
17	Nondepository credit intermediation+related activities	0.417%	0.616%	0.906%	0.463%	0.381%	0.327%
18	Insurance agencies, brokerages, and related activities	0.407%	0.387%	0.722%	0.462%	0.291%	0.288%
19	Real estate	8.301%	2.048%	27.078%	1.292%	33.130%	34.324%
20	Automotive equipment rental and leasing	0.795%	0.775%	0.000%	0.348%	0.426%	0.000%
21	Consumer goods and general rental centers	0.070%	0.055%	0.041%	0.046%	0.104%	0.030%
22	Legal services	0.335%	1.185%	0.006%	0.163%	0.852%	0.055%
23	Accounting, tax preparation, bookkeeping, and payroll	2.512%	1.939%	0.250%	1.691%	4.895%	0.904%
24	Photographic services	0.045%	0.039%	0.257%	0.017%	0.054%	0.015%
25	Veterinary services	0.236%	0.199%	0.006%	0.209%	0.149%	0.104%
26	Investigation and security services	0.024%	0.042%	0.055%	0.066%	0.009%	0.015%
27	Services to buildings and dwellings	0.385%	0.389%	0.093%	0.666%	0.181%	0.119%
28	Waste management and remediation services	0.219%	0.217%	0.000%	0.283%	0.000%	0.000%
29	Elementary and secondary schools	0.212%	0.314%	0.000%	0.134%	0.060%	0.022%
30	Offices of physicians	4.361%	2.732%	3.879%	5.881%	3.595%	10.321%
31	Offices of dentists	0.787%	0.693%	0.416%	1.036%	0.698%	1.082%
32	Offices of other health practitioners	0.670%	0.387%	0.280%	0.812%	0.453%	1.269%
33	Home health care services	0.884%	0.395%	0.625%	1.123%	0.755%	2.585%
34	Hospitals	3.761%	2.482%	5.133%	5.953%	2.682%	9.324%
35	Nursing and community care facilities	0.974%	0.386%	0.592%	1.140%	0.791%	2.808%
36	Child day care services	0.202%	0.345%	0.632%	0.013%	0.183%	0.000%
37	Performing arts companies	0.191%	0.235%	0.353%	0.403%	0.279%	0.062%
38	Spectator sports	0.070%	0.071%	0.109%	0.020%	0.156%	0.007%
39	Gambling industries (except casino hotels)	0.068%	0.036%	0.005%	0.083%	0.128%	0.351%
40	Other amusement and recreation industries	0.335%	0.490%	1.146%	0.416%	0.350%	0.058%
41	Full-service restaurants	2.415%	1.902%	3.289%	2.020%	4.756%	2.625%
42	Limited-service restaurants	2.415%	1.902%	3.289%	2.020%	4.756%	2.625%
43	All other food and drinking places	0.107%	0.699%	0.007%	2.638%	0.034%	0.008%
44	Automotive repair and maintenance	1.713%	1.289%	2.595%	1.961%	1.799%	1.746%
45	Electronic and precision equip. repair & maintenance	0.022%	0.019%	0.000%	0.031%	0.012%	0.005%
46	Personal and household goods repair & maintenance	0.105%	0.078%	0.027%	0.131%	0.084%	0.154%
47	Personal care services	0.144%	0.070%	0.107%	0.183%	0.121%	0.403%
48	Death care services	0.278%	0.067%	0.029%	0.163%	0.524%	0.259%
49	Dry-cleaning and laundry services	0.264%	0.103%	0.225%	0.116%	0.886%	0.752%
50	Other personal services	0.745%	0.707%	0.678%	0.859%	1.163%	0.988%
51	Religious organizations	0.746%	0.821%	0.746%	1.205%	0.337%	0.415%
52	Civic, social, professional, and similar organizations	0.011%	0.005%	0.000%	0.009%	0.000%	0.002%

Also as described in Phase II, Census of Governments data are used to estimate most categories of tax and fee revenue generated for general (non-enterprise) governments in the area. The exemption is residential property taxes. Perhaps surprisingly, residential and non-residential property taxes are not reported separately. Moreover, some states have restrictions on rate increases, or other laws that tend to make property tax rates different on new construction. Particular developments (for example, those financed by the LIHTC program) may also be granted special forms of property tax relief.

For these reasons, when customizing the local impact model to a specific area, information about property taxes on the units being built must be supplied by the entity requesting the analysis. Phase III of the model counts only property tax on the value of construction. Unless specific information is provided for an individual project or jurisdiction, this is calculated assuming that the raw land would be taxed at the same rate if not developed. Any residential property tax from existing units is treated as unrelated to the new homes being analyzed and excluded from the government revenue impact estimates.

Non-residential property taxes are treated much like other categories of government revenue, except that the aggregate for a jurisdiction to be estimated from a larger aggregate in the government data that does not distinguish residential from non-residential. This is accomplished by subtracting an estimated 53.37 percent from total property taxes to account for residential share of property taxes. The estimate is calculated as follows, from data available for 2012 in the ACS, RHFS and the Census Bureau's Summary of State and Local Government Tax Revenue (SSLGTR):

Aggregate real estate taxes paid by homeowners:	$206.04 billion (ACS)
Estimate for homeowners not reporting:	5.93 billion
Estimated real estate taxes paid on rental housing	41.85 billion (ACS and RHFS)
Total residential real estate taxes	$253.82 billion
Total property taxes	$475.83 billion (SSLGTR)
Residential share	53.37%

The estimate for homeowners not reporting in the ACS is based on the number of non-reporters multiplied by median tax payment for those who do report. The estimate for rental units is based on the number of rental units in the ACS multiplied by median tax per rental unit in the RHFS.

Multifamily Phase III impacts are reduced to account for vacant units. By default, the single-family version of the model assumes that units are intended for owner-occupancy and have negligible vacancies. In the Census Bureau's Housing Vacancy Survey homeowner vacancy rates are usually in the neighborhood of only one percent.

For multifamily units, the average multifamily rental annual vacancy rate over the prior decade and average annual multifamily homeowner vacancy rate over the prior decade are used, depending on whether the units are condominiums or rental apartments. In other respects, Phase III treats condo buyers the same as single-family home buyers (the income and spending tendencies discussed above being based on buyers of owner-occupied housing units, irrespective of structure type).

Although vacancy rates are known to fluctuate, the model estimates annual ongoing impacts that are expected to persist for an extended period, so a long-term "natural" measure of vacancy rates is more appropriate for Phase III than a very current, possibly anomalous, number. The reduction for vacancies is applied to all Phase III multifamily impacts except for property taxes, which are assumed to be paid by the owner of the property, whether the units are occupied or not.

Local spending and taxes (including fees and charges paid to local government entities) generate income for local residents, and this income will be spent and recycled in the local economy, much as in Phase II of the model.

Let $\boldsymbol{x}_n$ denote the initial income and tax column vector for new home occupants, $\boldsymbol{A}_n$ denote the matrix formed from the consumption spending patterns of new home occupants, and otherwise maintain the notation used in Phase II of the model. Then consider the following sequence:

$$
\begin{aligned}
&Round\ 0: \ \boldsymbol{x_n}' \\
&Round\ 1: \ \boldsymbol{x}_n' \boldsymbol{A_n LYZ} \\
&Round\ 2: \ \boldsymbol{x_n}' \boldsymbol{A_n LYZ\ ALYZ} \\
&Round\ 3: \ \boldsymbol{x_n}' \boldsymbol{A_n LYZ\ ALYZ\ ALYZ} \\
&\qquad\qquad \vdots \\
&Round\ K: \ \boldsymbol{x_n}' \boldsymbol{A_n LYZ} \prod_{k=1}^{K} \boldsymbol{ALYZ}
\end{aligned}
$$

The sum of these terms forms an infinite series that converges to the limit

$$\boldsymbol{x_n}'\ [\boldsymbol{I}+(\boldsymbol{A_n}-\boldsymbol{A})\boldsymbol{LYZ}][\boldsymbol{I}-\boldsymbol{ALYZ}]^{-1}$$

When results are reported for Phase III the income earned by the occupants is subtracted from the final multiplied effect, so that only income generated for occupants of housing units already existing in the area is counted.

Note that, were new home occupants to spend the same fraction of their incomes on the various local commodities as average households, $\boldsymbol{A}_n = \boldsymbol{A}$ and the formula would simplify to

$$\boldsymbol{x_n}'\ [\boldsymbol{I}-\boldsymbol{ALYZ}]^{-1}$$

The formula that produces a 297-element vector, the first 99 of which contain the added income by industry, for Phase III is

$$\boldsymbol{x_n}'\ \boldsymbol{A_n L}\ [\boldsymbol{I}-\boldsymbol{YZAL}]^{-1}$$

Again, the income in each industry can be disaggregated into business owners' income and wages and salaries, and the wages and salaries converted to full time jobs. These exclude any jobs filled by occupants of the new housing units.

The formula that produces a 3-element vector showing the final, multiplied effect on local income, local government general revenue from persons, and local general government revenue from business generated in Phase III is

$$\boldsymbol{x_n}' \boldsymbol{A_n LY} \, [\boldsymbol{I} - \boldsymbol{ZALY}]^{-1}$$

As in Phase II, the last two elements of the final 3-element vector can be disaggregated to show revenue generated by particular types of taxes, fees, and charges. The primary difference in Phase III is that the increase in residential property tax revenue (which is introduced into the model as a separate input independent of the Census of Government computations) needs to be subtracted before the decomposition procedure can be applied.

Final Notes

All of the matrix operations in the NAHB local impact model are performed using the O-Matrix package provided by Harmonic Software. The O-Matrix code used to generate Phase III impacts for single-family construction and the code used to compute a local total requirements matrix for a previous iteration of the NAHB model are published on the Harmonic Software web site as notable uses of the O-Matrix package (http://www.omatrix.com/userstories.html).

The technical documentation on the NAHB model used to estimate the local income, jobs, and taxes generated by home building was prepared by Paul Emrath, Vice President of Survey and Housing Policy Research. For questions on the technical documentation, or on NAHB's impact of home building models in general, he may be contacted in NAHB's Economics and Housing Policy Group by phone at 202-266-8449, or by email at pemrath@nahb.org.

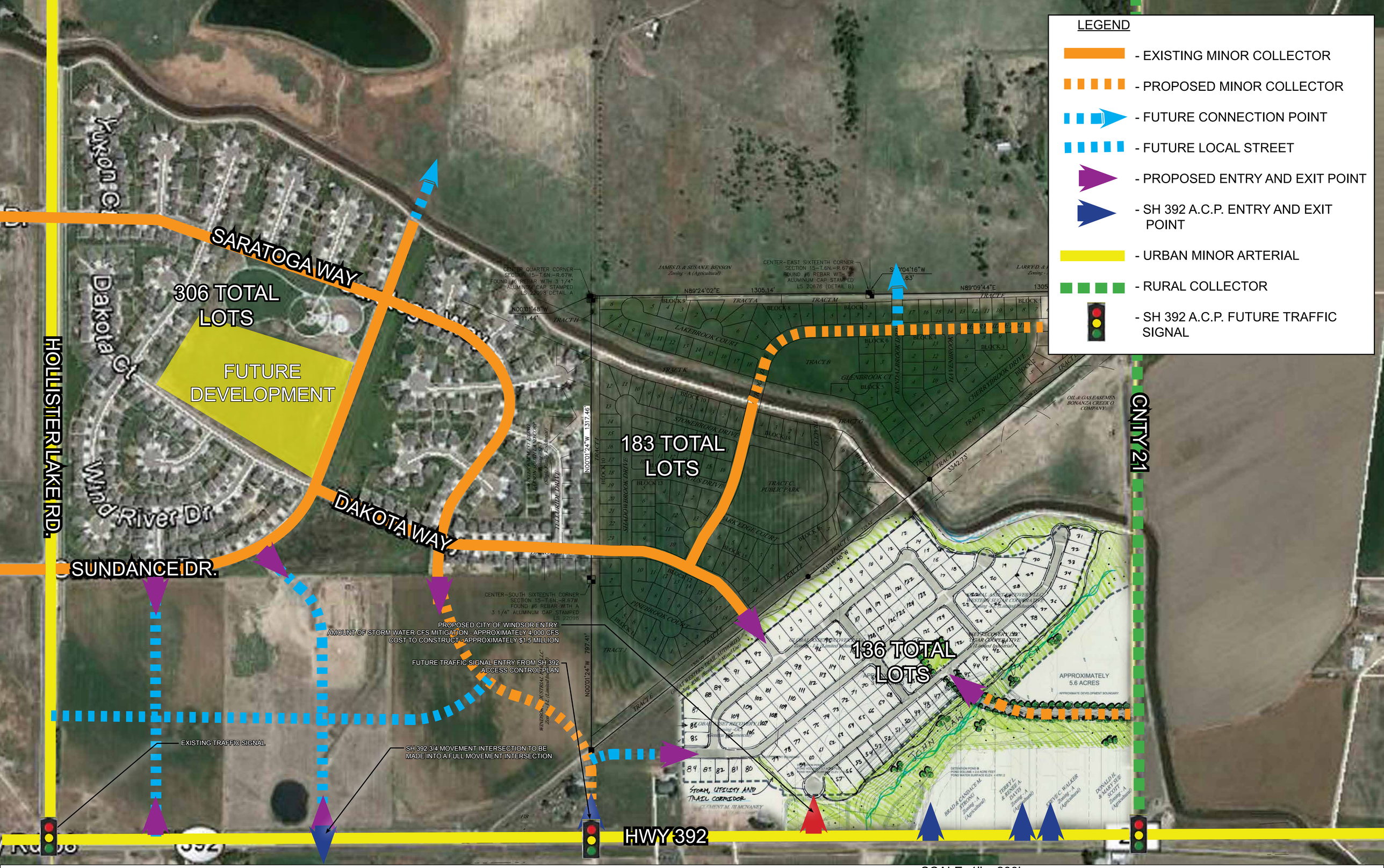
VILLAGE EAST - CONCEPT PLAN

DATE: 8.18.2016

SCALE: 1" = 100'

0' 100' 200' 400'

CONSILIUM DESIGN



VILLAGE EAST - CONCEPT VICINITY MAP

DATE: 8.18.2016

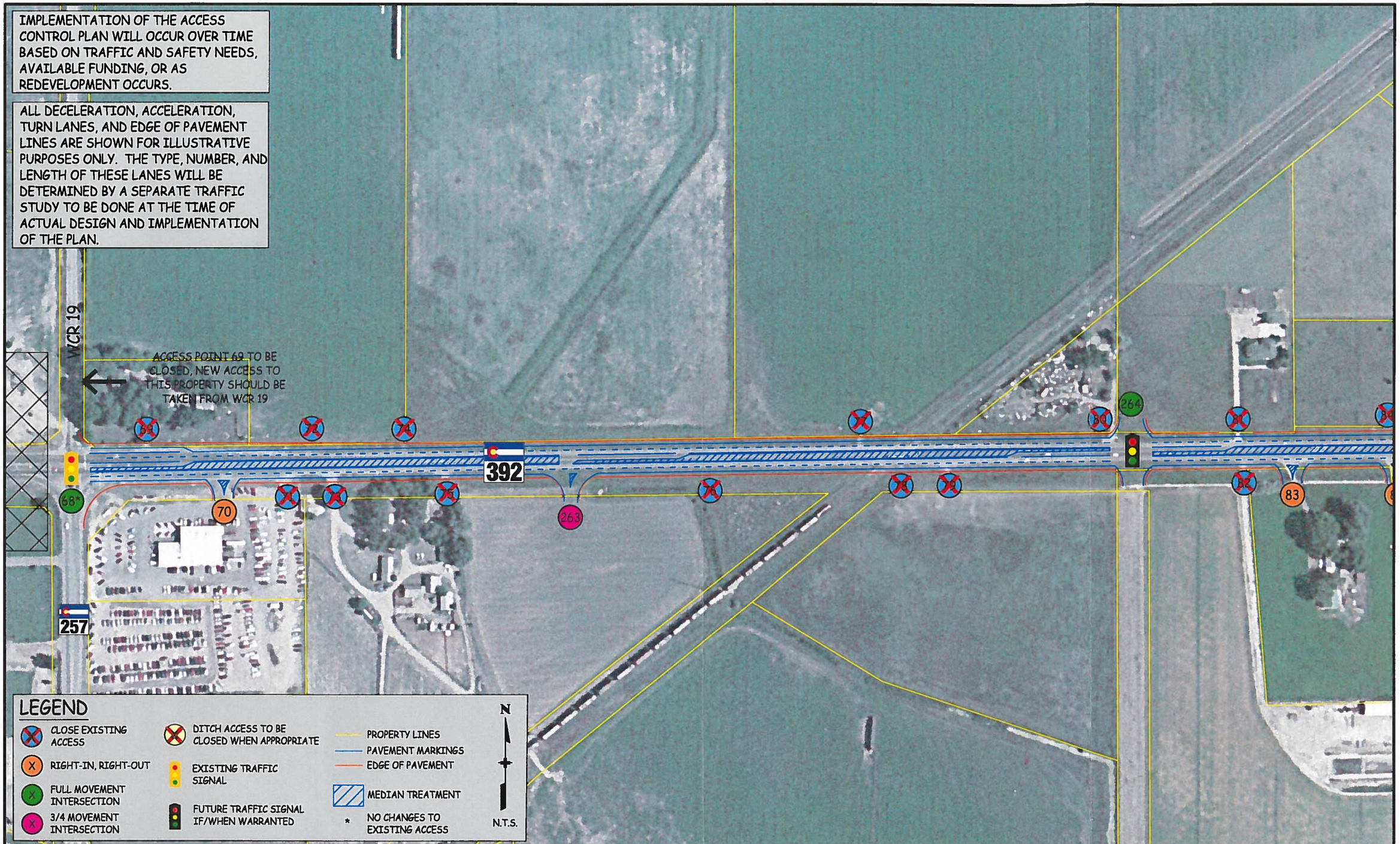
SCALE: 1" = 200'

0' 200' 400' 800'

CONSILIUM DESIGN

IMPLEMENTATION OF THE ACCESS CONTROL PLAN WILL OCCUR OVER TIME BASED ON TRAFFIC AND SAFETY NEEDS, AVAILABLE FUNDING, OR AS REDEVELOPMENT OCCURS.

ALL DECELERATION, ACCELERATION, TURN LANES, AND EDGE OF PAVEMENT LINES ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. THE TYPE, NUMBER, AND LENGTH OF THESE LANES WILL BE DETERMINED BY A SEPARATE TRAFFIC STUDY TO BE DONE AT THE TIME OF ACTUAL DESIGN AND IMPLEMENTATION OF THE PLAN.



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Last Modification Date: 08/07/06	Initials: JLA	
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Drawing File Name:		
Acad Ver. ACAD2000 Scale:	Units: ENGLISH	

Index of Revisions

DOT DEPARTMENT OF TRANSPORTATION
REGION IV

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PBSJ
WILSON & COMPANY Engineers & Architects

As Constructed
No. Revisions:
Revised:
Void:

SH 392 Access Control Plan

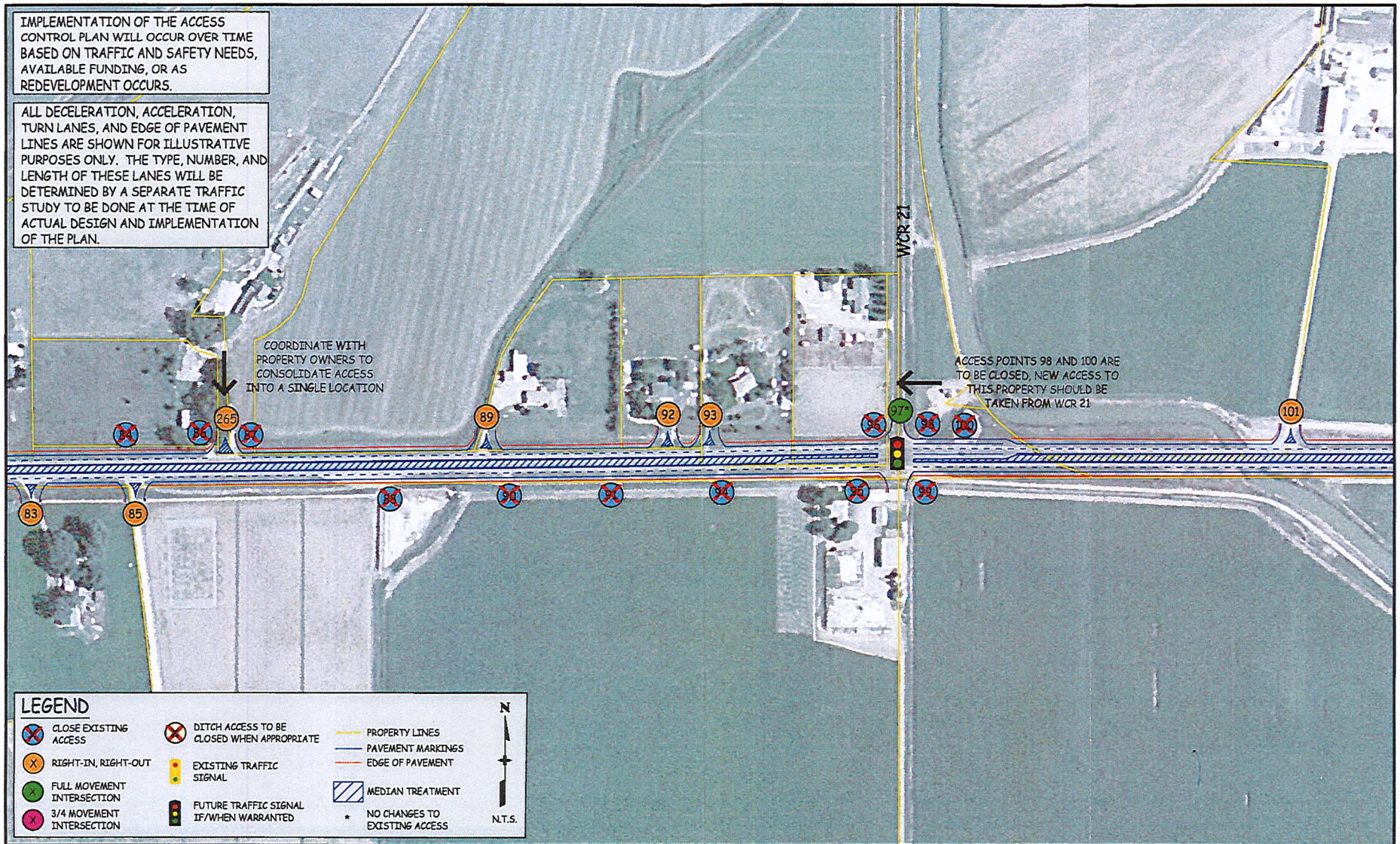
Designer: DJS
Detailer: JLA
Sheet Subset:
Structure Numbers
Subset Sheets: 11 of 27

Project No./Code

Sheet Number: 38

IMPLEMENTATION OF THE ACCESS CONTROL PLAN WILL OCCUR OVER TIME BASED ON TRAFFIC AND SAFETY NEEDS, AVAILABLE FUNDING, OR AS REDEVELOPMENT OCCURS.

ALL DECELERATION, ACCELERATION, TURN LANES, AND EDGE OF PAVEMENT LINES ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. THE TYPE, NUMBER, AND LENGTH OF THESE LANES WILL BE DETERMINED BY A SEPARATE TRAFFIC STUDY TO BE DONE AT THE TIME OF ACTUAL DESIGN AND IMPLEMENTATION OF THE PLAN.



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CDOT DEPARTMENT OF TRANSPORTATION
1420 2nd Street
Greeley, CO 80631
Phone: (970) 350-2148
FAX: (970) 350-2198
REGION IV

PBSJ
WILSON & COMPANY Engineers & Architects

As Constructed	SH 392 Access Control Plan		Project No./Code
No. Revisions:			
Revised:	Designer: DJS	Structure Numbers	
Void:	Detailer: JLA		
	Sheet Subset:	Subset Sheets: 12 of 27	Sheet Number: 39

DISCUSSION DRAFT ONLY - - NOT FOR EXECUTION

FIRST AMENDMENT TO INTERGOVERNMENTAL AGREEMENT REGARDING RESIDENTIAL LAND USE IN THE COOPERATIVE PLANNING AREA ESTABLISHED PURSUANT TO THE INTERGOVERNMENTAL AGREEMENT DATED DECEMBER 11, 2000, BETWEEN THE TOWN OF WINDSOR AND TOWN OF SEVERANCE

THIS FIRST AMENDMENT TO INTERGOVERNMENTAL AGREEMENT REGARDING RESIDENTIAL LAND USE IN THE COOPERATIVE PLANNING AREA ESTABLISHED PURSUANT TO THE INTERGOVERMENTAL AGREEMENT DATED DECEMBER 11, 2000, BETWEEN THE TOWN OF WINDSOR AND TOWN OF SEVERANCE ("Amendment") is entered into this ____ day of _____, 20___, by and between THE TOWN OF WINDSOR, a home rule municipality and political subdivision of the State of Colorado ("Windsor") and THE TOWN OF SEVERANCE, a statutory town and political subdivision of the State of Colorado ("Severance"). The parties hereto, when referring to both, may also be referred to herein as "municipalities" or "parties." Either party hereto may also be referred to as "municipality" or "party."

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RECITALS

WHEREAS, the Windsor Town Board and the Severance Town Board have a long history of intergovernmental cooperation; and

WHEREAS, in 2000, the parties entered into that certain Intergovernmental Agreement dated December 11, 2000 ("2000 Agreement"), under which development along a defined corridor lying on the north and south sides of State Highway 392 east of downtown Windsor would be government by a statutory Comprehensive Development Plan to be later adopted; and

WHEREAS, the parties adopted the Comprehensive Development Plan dated January 12, 2004, in which the parties forth their understandings concerning development which is expected to occur within the Cooperative Planning Area ("CPA") established under the 2000 Agreement; and

WHEREAS, both the 2000 Agreement and Comprehensive Development Plan prohibit residential development in the CPA; and

WHEREAS, Windsor has seen significant residential development occurring in the first filing of a subdivision known as "Village East", which lies north and outside of the CPA in Windsor; and

WHEREAS, the developer of Village East has urged that residential development be allowed to occur in a portion of the CPA, on the basis that commercial and industrial development are not economically feasible under current market conditions; and

WHEREAS, Windsor desires to approve limited residential development in a portion of the CPA, and Severance is willing to amend the Agreement to allow limited residential development as generally proposed by the developer of Village East; and

WHEREAS, the parties acknowledge that residential development carries a greater net cost to municipalities in terms of municipal services and infrastructure maintenance; and

WHEREAS, the 2000 Agreement calls for tax revenue sharing in the CPA; and

WHEREAS, Severance is willing to forego its share of property tax and construction use tax revenue in the portions of the CPA in which residential development will occur under this Amendment; and

WHEREAS, the statutes of the State of Colorado, specifically the Local Government Land Use Control Enabling Act, Colorado Revised Statutes, 29-20-101*, et seq.,* authorize the parties to enter into mutually binding and enforceable agreements regarding land use and the sharing of revenue under these circumstances; and

WHEREAS, this Amendment is entered into by Windsor and Severance pursuant to the aforesaid constitutional and statutory authority as well as other powers inherently granted to statutory and home rule municipalities by the State of Colorado;

NOW, THEREFORE, in consideration of the covenants and obligations expressed herein, it is hereby agreed by and between Windsor and Severance as follows:

1. **Preamble.** Both municipalities hereby acknowledge that the recitals set forth above are true and correct, and those recitals are incorporated into the body of this Amendment. Both municipalities, further, acknowledge and reaffirm the 2000 Agreement and the Comprehensive Development Plan adopted in accordance therewith.

2. **Residential Development within the CPA.** Attached hereto and incorporated herein is Exhibit A, which identifies the land area within the CPA in which residential development may occur under this Amendment. Except as described in Exhibit A, no residential development shall be approved by either party in the CPA unless the parties specifically agree otherwise in writing.

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3. **Modification of Revenue Share (Residential Development Only)**.

(a) Notwithstanding the requirements for sharing of all sales, use and property tax revenue generated within the CPA under the 2000 Agreement, the Town shall be entitled to retain any and all construction use tax and property tax generated by residential development occurring within the CPA under this Amendment. The parties reaffirm that, except as set forth herein and as set forth in that certain Intergovernmental Agreement (Sanitary Sewer Line Cost Recovery) dated December 7, 2015, the requirements for revenue sharing under the 2000 Agreement shall remain in full force and effect.

(b) Nothing herein shall preclude the parties from reaching other agreements with respect to infrastructure cost-sharing, revenue sharing and other items of cooperation available under Colorado law.

4. **Parties to Exercise Good Faith**. Windsor and Severance agree to devote their best efforts and to exercise good faith in implementing and adhering to the provisions of this Amendment throughout its term.

5. **Intent of Amendment**. This Amendment is intended to describe rights and responsibilities only as between the named parties hereto. It is not intended to and shall not be deemed to confer rights to any persons or entities not named as parties hereto nor to require Windsor or Severance to approve development of any property or to provide any services to any land within the CPA or otherwise. This Agreement is not intended to limit in any way the powers or responsibilities of Weld County or of any other political subdivision of the State of Colorado not a party hereto.

6. **Rights upon Default and Mediation provisions**. The Local Government Land Use Enabling Act, earlier referred to in this Amendment, provides that agreements between municipalities for the purposes set forth herein are mutually binding and enforceable. Both parties hereby acknowledge the binding and enforceable nature of this Agreement. Should either party fail to comply with the provisions of this Amendment, the other party, after providing written notification to the non-complying party, and upon the failure of the non-complying party to achieve compliance within ninety (90) days after said notice, may at its option, either terminate this Amendment or maintain an action in a court of competent jurisdiction for specific performance, injunctive, or other appropriate relief. In the event of such litigation, each party shall be responsible for its own costs, including attorney fees. It shall be the obligation of the parties to submit to mediation any issue of non-compliance prior to declaring this Amendment terminated or prior to commencing an action in court as aforesaid. The parties shall agree on the appointment of a mediator who shall be experienced in matters of local government and the legal

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obligations of local government entities. In the event the parties are unable to agree upon a mediator, each party shall appoint an independent third party, and the third parties so appointed shall select a single mediator. The procedures and methodology for mediation shall be determined by the mediator. Appointment of the mediator shall take place no later than thirty (30) days following written notification as provided in this paragraph, and mediation shall be completed no later than sixty (60) days thereafter.

By the provisions of this paragraph it is the express intention of the parties to establish fully enforceable consequences upon the breach of this Amendment, while not in any way limiting the ability of the parties to freely exercise legislative discretion.

7. **Effective Date**. This Amendment shall be presented to the governing board of the respective municipalities for adoption by resolution, following notice as required by the Colorado Open Meetings Law, § 24-6-401, *et. seq*. This Amendment shall become effective upon its adoption by both municipalities.

8. **Term.** The parties intend this Amendment to remain in full force and effect indefinitely.

9. **Modification.** All modifications to this Amendment must be made in writing and approved by the governing bodies of both municipalities by resolution.

10. **Notices.** Requirements of notice hereunder shall be deemed satisfied upon mailing to the parties as follows:

To Windsor:
Town Manager
301 Walnut Street
Windsor, CO 80550

Copy to:
Town Attorney
301 Walnut Street
Windsor, CO 80550

To Severance:
Town Administrator
3 South Timber Ridge Parkway
PO Box 339
Severance, CO 80546

Copy to:
Severance Town Attorney
Gregory Bell, Esq.
Bell, Gould, Linder & Scott, P.C.
322 East Oak Street
Fort Collins, CO 80524

11. **Effect of Invalidity**. If any portion of this Amendment is held invalid or unenforceable by a court of competent jurisdiction as to either party or as to both parties, such invalidity or unenforceability shall not affect the remainder of this Amendment, except that if a

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requirement or limitation is declared invalid as to one party, any corresponding requirements or limitation shall be deemed invalid as to the other party.

IN WITNESS WHEREOF, the above parties hereto have caused this Amendment to be executed the day and year first above written.

[Remainder of this page intentionally left blank - - signature page to follow]

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DISCUSSION DRAFT ONLY - - NOT FOR EXECUTION

TOWN OF WINDSOR

By:_____
Kristie Melendez, Mayor

ATTEST:

_____
Patti Garcia, Town Clerk

[Seal]

APPROVED AS TO FORM:

_____
Ian D. McCargar, Town Attorney

TOWN OF SEVERANCE

By:_____
Donald Brookshire, Mayor

ATTEST:

_____
Betty Mauch, Town Clerk

[Seal]

APPROVED AS TO FORM:

_____
Gregory Bell, Town Attorney

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