DEVELOPING THE BUSINESS AS USUAL (BAU) SCENARIO FOR VIBRANT NEO 2040

The Business As Usual (BAU) scenario was developed during the early part of 2013 as part of the NEOSCC Vibrant NEO 2040 initiative to show residents and other stakeholders of Northeast Ohio what the future may look like in 2040 if current trends and policies continue. The BAU output included maps showing the likely type of development and its disbursement throughout the region based on running current trends out through 2040. Additionally, the BAU also included other graphics depicting themes and quantitative analysis of key indicators, including fiscal impacts, which would likely be experienced under this scenario. The BAU was presented at a round of workshops in late April and early May 2013 to elicit feedback and comments from the people of Northeast Ohio about what they did and did not like about the BAU that will be used to build alternative scenarios of what the future could be for the region.

Summary of Scenario Inputs: The team of consultants working on the project, in consultation with researchers from Northeast Ohio, created a methodology for developing the baseline forecasts and inputs that drive the scenario. These include historic trends that drive expected control totals, development typologies, drivers of development, drivers of abandonment, development constraints, and indicators. This methodology was vetted with NEOSCC Board of Directors and staff and local experts between February and April 2013 so that it was tailored to the conditions in Northeast Ohio.

Historic Trends: For most variables, the team determined there was not a 'general accepted' forecast for the region, so the decision was made to generate a set of forecasts by projecting out demonstrated growth trends for the region. The NEOSCC Technical Steering Committee chose to use the 20-year time period from 1990-2010 to use as the baseline from which to forecast future growth. This time period was selected as the best representation of the region as 'stabilized yet challenged' and was long enough to capture several 'market cycles', a critical factor for a long-range forecast. The team generated a set of growth forecasts for the 12-county northeast Ohio region over the next 30 years. The forecasts cover population, households, employment, building permits and units of residential abandonment.

Control Totals for 2040: One of the fundamental scenario inputs was the set of expected number of future households and employment through the region, called control totals. Control totals were also established for population, building permits, and abandonment. Beyond establishing net-change totals, building the BAU required an understanding of the spatial patterns of new construction and abandonment and how these relate to macro socio-economic forecasts.

- Population Control Totals: The consultant team used the 1990-2010 trend (US Census data) as the basis to forecast the future. Specifically, the percent annual population growth/decline is run-out over the 30-year forecast period to determine the net growth/decline figure for each of the counties. The forecast yields a net population increase of approximately 93,000 people for the region by 2040.

POPULATION	Ashtabula	Cuyahoga	Geauga	Lake	Lorain	Mahoning	Medina	Portage	Stark	Summit	Trumbull	Wayne	TOTAL	Net
1990	99,821	1,412,140	81,129	215,499	271,126	264,806	122,354	142,585	367,585	514,990	227,813	101,461	3,821,309	
2000	102,728	1,393,978	90,895	227,511	284,664	257,555	151,095	152,061	378,098	542,899	225,116	111,564	3,918,164	96,855
2010	101,497	1,280,122	93,389	230,041	301,356	238,823	172,332	161,419	375,586	541,781	210,312	114,520	3,821,178	-96,986
annual rate 1990-2010	0.1%	-0.5%	0.7%	0.3%	0.5%	-0.5%	1.7%	0.6%	0.1%	0.3%	-0.4%	0.6%	0.0%	
2020	102,346	1,218,815	100,198	237,676	317,713	226,803	204,525	171,750	379,652	555,695	202,072	121,668	3,838,914	17,736
2030	103,201	1,160,444	107,505	245,566	334,959	215,388	242,734	182,744	383,762	569,967	194,154	129,263	3,869,686	30,772
2040	104,065	1,104,868	115,345	253,717	353,141	204,546	288,083	194,441	387,916	584,605	186,546	137,332	3,914,606	44,921

- Employment Control Totals: The consultant team used the 1990-2010 trend (Bureau of Labor Statistics data) to drive the forecast. Like the population forecast described above, the percent annual employment growth/decline is run-out over the 30-year forecast period to determine the

net growth/decline figure for each of the counties. The forecast yields a net employment increase of approximately 108,000 jobs for the region by 2040.

EMPLOYMENT	Ashtabula	Cuyahoga	Geauga	Lake	Lorain	Mahoning	Medina	Portage	Stark	Summit	Trumbull	Wayne	TOTAL	Net
1990	29,344	779,932	24,652	85,659	90,924	105,048	36,309	41,116	156,707	231,577	89,122	40,367	1,710,757	
2000	40,376	840,764	35,273	106,869	111,805	113,990	56,039	56,251	183,534	278,172	96,873	55,679	1,975,625	264,868
2010	31,932	714,251	34,073	97,474	97,330	100,992	59,788	53,335	156,539	266,402	73,976	45,606	1,731,698	-243,927
annual rate 1990-2010	0.4%	-0.4%	1.6%	0.6%	0.3%	-0.2%	2.5%	1.3%	0.0%	0.7%	-0.9%	0.6%	1.2%	
2020	33,311	683,514	40,061	103,980	100,701	99,023	76,726	60,748	156,455	285,733	67,396	48,476	1,756,124	24,426
2030	34,750	654,100	47,103	110,922	104,189	97,092	98,466	69,192	156,371	306,467	61,401	51,528	1,791,580	35,456
2040	36,252	625,951	55,385	118,327	107,798	95,198	126,369	78,812	156,287	328,707	55,938	54,772	1,839,796	48,215

- Households Control Totals: The forecast for households uses a slightly different methodology in that it 'pivots' off of employment forecast rather than using a historic trend. The logic used by the consultant team and panel of advisors was that the rapid level of household expansion over the past twenty years, in the face of declining population, is a trend that cannot extend unabated. For this reason households are forecast using the average regional jobs to household ratio (1.2) for the past 20 years. This means that for every 1.2 new jobs that are expected to come to the region over the next 30 years, the region will grow by 1 household. This methodology yields a forecast of 90,000 new households by 2040.

HOUSEHOLDS	Ashtabula	Cuyahoga	Geauga	Lake	Lorain	Mahoning	Medina	Portage	Stark	Summit	Trumbull	Wayne	TOTAL	Net
1990	36,760	563,243	26,906	80,421	96,064	101,136	41,742	49,229	139,573	199,998	86,056	35,619	1,456,747	
2000	39,397	571,457	31,630	89,700	105,836	102,587	54,542	56,449	148,316	217,788	89,020	40,445	1,547,167	90,420
2010	39,363	545,056	34,264	94,156	116,274	98,712	65,143	62,222	151,089	222,781	86,011	42,638	1,557,709	10,542
share 1990	2.5%	38.7%	1.8%	5.5%	6.6%	6.9%	2.9%	3.4%	9.6%	13.7%	5.9%	2.4%		
share 2000	2.5%	36.9%	2.0%	5.8%	6.8%	6.6%	3.5%	3.6%	9.6%	14.1%	5.8%	2.6%		
share 2010	2.5%	35.0%	2.2%	6.0%	7.5%	6.3%	4.2%	4.0%	9.7%	14.3%	5.5%	2.7%		
rate	0.0%	-1.8%	0.2%	0.3%	0.4%	-0.3%	0.7%	0.3%	0.1%	0.3%	-0.2%	0.1%		
share 2020	2.5%	33.2%	2.4%	6.3%	7.9%	6.0%	4.8%	4.3%	9.8%	14.6%	5.3%	2.9%		
share 2030	2.5%	31.3%	2.6%	6.6%	8.3%	5.7%	5.5%	4.6%	9.8%	14.9%	5.1%	3.0%		
share 2040	2.5%	29.5%	2.7%	6.8%	8.8%	5.4%	6.2%	4.9%	9.9%	15.2%	4.9%	3.2%		
2020	39,911	523,263	37,499	99,534	124,675	95,236	76,392	67,897	154,017	230,242	84,102	45,506	1,578,276	20,567
2030	40,694	503,623	41,044	105,629	134,028	92,168	88,423	74,127	157,882	239,203	82,591	48,716	1,608,129	29,853
2040	41,751	486,053	44,987	112,615	144,584	89,503	101,509	81,069	162,843	249,963	81,496	52,354	1,648,726	40,597

- Building Permits Control Totals: The team established a ratio of building permits to household growth for each county in the region. This metric is applied to the forecast for household growth in order to predict the level of building permits over the next thirty years. One exception to the methodology is for counties that had significant building over the last 20 years despite a significant decline in households. For these four counties, the forecast assumes that building permits will happen at a rate of 80% of what occurred during the 2000's. This methodology yields a forecast of 292,000 new building permits by 2040, a rate slightly below 100,000 per decade.

BUILDING PERMITS	Ashtabula	Cuyahoga	Geauga	Lake	Lorain	Mahoning	Medina	Portage	Stark	Summit	Trumbull	Wayne	TOTAL
1990-1999	2,746	26,335	5,219	10,311	12,084	8,488	14,005	8,405	13,070	26,245	5,644	5,436	137,988
2000-2009	2,322	16,526	3,309	7,477	15,650	4,842	12,463	5,904	10,729	17,733	3,744	4,246	104,945
%change	-15.4%	-37.2%	-36.6%	-27.5%	29.5%	-43.0%	-11.0%	-29.8%	-17.9%	-32.4%	-33.7%	-21.9%	-23.9%
permits per new hh	1.9	80% of 2010	1.2	1.3	1.4	80% of 2010	1.1	1.1	2.1	1.9	80% of 2010	1.4	
2010-2019 forecast	1,066	13,221	3,750	6,965	11,528	3,874	12,724	6,250	6,052	14,402	2,995	3,956	86,783
2020-2029 forecast	1,525	13,221	4,108	7,894	12,836	3,874	13,608	6,861	7,986	17,296	2,995	4,427	96,632
2030-2039 forecast	2,057	13,221	4,570	9,047	14,485	3,874	14,800	7,645	10,252	20,770	2,995	5,018	108,735

- Abandonment: The forecast is calculated as the difference between building permits and net new household growth. The forecast also accounts for natural vacancy and unit replacement at a level of 7%. This means that a county forecast to have 10,000 new permits over the next decade and 8,000 new households would generate approximately 1,300 units of abandonment. The forecast assumes that as the new units come online and there are not enough new households to fill them, that existing households will transfer into newer properties leaving a portion of the older housing stock abandoned. This methodology yields a forecast of 180,000 additional abandoned units by 2040, about 60,000 per decade.

ABANDONMENT	Ashtabula	Cuyahoga	Geauga	Lake	Lorain	Mahoning	Medina	Portage	Stark	Summit	Trumbull	Wayne	TOTAL
1990-1999	109	18,121	495	1,032	2,312	7,037	1,205	1,185	4,327	8,455	2,680	610	47,568
2000-2009	2,356	42,927	675	3,021	5,212	8,717	1,862	131	7,956	12,740	6,753	2,053	94,403
2010-2019 forecast	444	34,088	252	1,099	2,321	7,078	584	137	2,700	5,933	4,694	811	60,142
2020-2029 forecast	635	31,935	276	1,246	2,584	6,670	624	151	3,563	7,125	4,297	908	60,014
2030-2039 forecast	857	29,865	307	1,428	2,916	6,268	679	168	4,574	8,556	3,881	1,029	60,527

Development Typologies: The team used typical kinds of development styles, also called typologies, which are prevalent or emerging throughout Northeast Ohio as one of the building blocks for the scenario model. This ensured that future development shown in the BAU was firmly rooted in the types of communities, neighborhoods, and blocks that exist here and are representative of the region.

Drivers of Development: In order to locate new typologies accurately in the BAU scenario, the team had to understand the drivers of development in Northeast Ohio. Many of these drivers follow generalizable patterns and were relatively straightforward for the team to analyze and summarize, but other drivers were unique to Northeast Ohio and required local knowledge. Existing parcel zoning for the region was used at face value to distribute growth under the BAU. Driver, which include things like known large residential or commercial developments and major infrastructure investments, were translated into mapping inputs for scenario allocation.

Drivers of Abandonment: The BAU assumes that current household trends will continue, resulting in abandonment in tracts that lost households over the past two decades. For the BAU, "residential abandonment" occurs when a household leaves a residential structure and the structure remains unoccupied or is demolished and remains a vacant through 2040, the end date of the scenario. "Abandonment risk" means that a census tract is likely to see abandonment in the future. County-level control totals were used to determine the total quantity of abandoned units per county. See below for a more detailed explanation of what this means and how it was developed.

Development Constraints: Identifying locations where development is prohibited was an essential step in creating the BAU scenario. These constraints, which include things like land that is highly prone to flooding, public park systems, or lands in conservation, were used as inputs into the model.

Indicators: Spatially based indicators provide a way to measure the scenario outputs and compare them against current conditions to understand the impacts of the policies and assumptions used to construct the BAU and the alternative scenarios that will be developed. Fiscal impacts are the most prominent of the indicators used to see how the way in which the region develops in the future affect long-term individual, township, municipal, county, and regional costs. A group of local experts helped identify key inputs into the fiscal impact model so that it would be tailored to the situation in Northeast Ohio. It is driven by data from the State Auditor of Ohio - summarized 2011 Annual Financial Data for all jurisdictions; the Ohio Department of Taxation - sales tax and property tax rates for all jurisdictions; County Assessor's Offices - assessed land and building valuation at the parcel level as an input to property tax calculations; and Longitudinal Employer-Household Dynamics Data (US Census) - counts of employment by location as an input to municipal income tax calculations.


VIBRANT NEO 2040 BAU ABANDONMENT METHODOLOGY DETAIL

The abandonment risk methodology is the result of intensive mapping, data analysis, and feedback from the NEOSCC staff and other local experts between February and April 2013. This included initial research with the consultant team and NEOSCC staff. After this preliminary analysis and comparison of factors that contribute to locations of abandonment risk at the census tract level, the review team was widened to include the following local experts: Dr. Ziona Austrian (Cleveland State University), David Beach (GreenCityBlueLake Institute at the Cleveland Museum of Natural History), Dr. Tom Bier (Cleveland State University), Tom Finnerty (Youngstown State University), Frank Ford (Neighborhood Progress

Incorporated), Jim Rokakis (Western Reserve Land Conservancy), and Dr. Mark Salling (Cleveland State University) and the NEOSCC Technical Steering Committee. During this period, the methodology was refined to be focused on household change as the primary variable for possible future risk, noting that abandonment is the result of household loss combined with over-building, and it is abandonment is most likely to occur at the weakest areas in the real estate market. The NEOSCC Board of Directors vetted the methodology and results at its March meeting, including "ground-truthing" areas of high abandonment risk, resulting in adjustments to the outputs.

The Household Change Method was decided upon to drive the location of vacant units in the BAU scenario. The relative amount of household decline, furthermore, correlates with the magnitude of abandoned units. The higher the percentage of household decline per census tract, the greater the number of abandoned units predicted through 2040. For instance, more vacant units will be "painted," or added, in a census tract that lost 30% of its households than one that lost 5%. Manual adjustments were made to household totals for census tracts that changed between 1990-2010 so that the data available for this method included the entire region. The Household Change Method, therefore, allows all census tracts to be evaluated for future population change, whether or not tract boundaries changed between 1990 and 2010, allowing for the most accurate prediction of future abandonment risk (tracts that will have abandoned units created 2010-2040 as households leave). The map below is a visual representation of this abandonment risk.
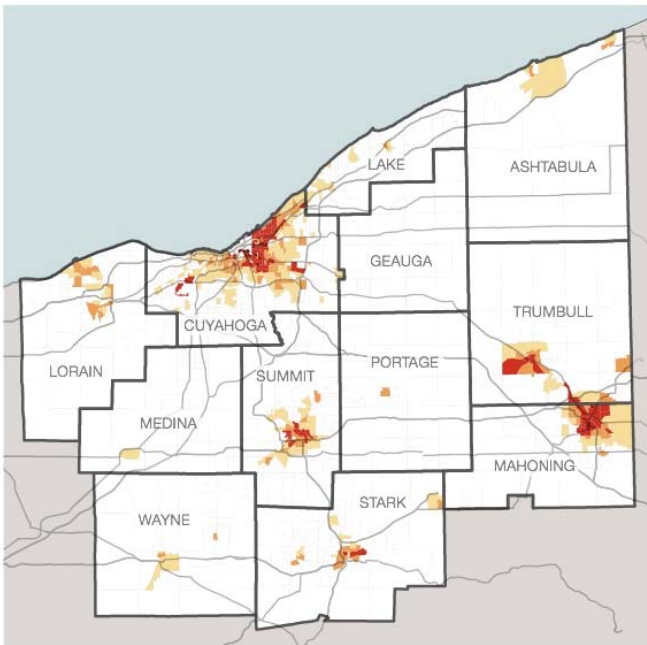
ABANDONMENT RISK BY CENSUS TRACT
Based on Household Change 1990-2010

EXTREMELY HIGH ABANDONMENT RISK (>50% decrease in households)

VERY HIGH ABANDONMENT RISK (25-49% decrease in households)

HIGH ABANDONMENT RISK (10-24% decrease in households)

MODERATE ABANDONMENT RISK (2.6% - 9% decrease in households)

NO SIGNIFICANT RISK (less than 2.6% decrease or increase in households)

data source: 1990, 2000, and 2010 census; discrepancies between census tract geometry from 1990-2010 were manually adjusted