



SCENARIO PLANNING SUMMARY

A Supporting Document of the Livable Frederick Strategic Plan

Frederick County, Maryland 2017



Comprehensive plans serve a number of purposes. From one perspective, they are tools for allocating resources, focusing on issues of capacity and functioning as instruments of the government bureaucracy. From another perspective, they are tools for communicating the shared values and aspirations of the community, focusing on issues of policy and functioning as instruments of the community.

One problem with policy focused plans is that they often do not have the means available to rationally and quantitatively evaluate different policy options. However, the Livable Frederick Strategic Plan does. This plan is a component of comprehensive planning in Frederick County, it is a policy focused plan, and it uses a scenario planning process (administered by Renaissance Planning) to evaluate policy choices.

Planning For Our Future – Scenario Planning

The future of Frederick County does not unfold in time like the workings of a perfect machine, foreseeable and certain. Our future is inevitable, but it is generated by interactions, movements, and choices that are complex and unpredictable. Therefore, attempts to foresee the future shape of our cities, towns, places, and landscapes - even if informed by evidence and rational inference - have never attained the level of foreknowledge.

However, the future of our county is of intense practical concern. There is a lot on the line. It will dictate how we must dispense and deploy our resources, and it will shape the quality of our day-to-day lives. Therefore the uncertainty of our future, and our inability to know it, does not disqualify the practice of forecasting and prediction. Rather it reinforces their need and importance. Today is when we must prepare for the future, but we can only do so if we have a notion of what may be coming and of where we want to be.

In order to root our plans in plausible futures despite uncertainty and unpredictability, objectivity is sought through the use of trend forecasts, projections, and modeling that are rational and that use empirical methods. This approach does not equate to the possession of foreknowledge. However it does allow for planning that is based on empirical data and logic, which at the very least allows for assumptions that are reflections of actual conditions and methods that are broadly coherent.

Beyond planning for *plausible* futures, our planning must also account for *desirable* futures. This proceeds by defining our shared values as a community and our shared preferences for the form of our physical places. Rather than being at the whim of the currents of time, movement toward intentional outcomes by conceiving of desired futures provides communities the clarity of purpose that allows more control over our forward progress.

Our view of the future lies at the interface between intuition, educated guesswork, and scientific method. This mixture of objective and evidenced-based **methodologies**, rational and logical **assumptions** about trends, and values-based **aspirations** about the type of community Frederick County wants to become is at the essence of the scenario planning process employed by Livable Frederick.

Scenario Planning

Livable Frederick employed a scenario planning process and modeling tool to create an objective base of knowledge for consciously creating a future Frederick County that embodies our values and our shared vision. The scenario planning process is **not simply about projections of data** or linear and simplistic views of the future. At its core, it is an endeavor in **understanding how different forces interact** and may create a future that is different from the system of land and community development in which developers, public officials, and communities have operated since the rise of the automobile.



The alternative growth scenarios modeled for Livable Frederick provided a systematic means of comparing the impacts that different development policies may have on the county's environment, economy, demographics, and travel patterns. Led by planning consultant Renaissance Planning, three phases of analysis were involved:

1. Broad and large-scale regional trends (macroeconomic analysis): Developing countywide totals of possible growth. How much growth is expected based on regional trends? What industry sectors/ market segments are likely to come here?
2. Specific factors and individual decisions (microeconomic dynamics): Distributing new growth within the county. What kinds of places will new jobs and residents prefer? How does land development policy shape their preferences/satisfaction? What industries are we trying to target?
3. Outcomes analysis: Estimating the impacts of new growth across various indicators. How will new growth impact the environment, economy, transportation system, etc.? How sensitive are these impacts to different growth scenarios? What public policy refinements get us the growth we want?

Macroeconomic Analysis

The Livable Frederick scenario planning process is based on the premise that our county's growth and economic development is influenced by both regional and local dynamics while also considering changing market demands for both housing types and employment locations. Therefore one of the first steps in scenario development entailed an examination of the greater Washington-Baltimore economic trends. Specifically of the kinds of jobs, people and households that would likely drive demand for growth in Frederick County over the next several decades.

Growth Forecasting

Assumptions regarding future growth were based upon the jobs and economic activity that Frederick County residents desire. With economic prosperity as a basis for the Livable Frederick Strategic Plan, assumptions about how and where the County will grow in future decades were made clear and became an important building block in all of the Scenarios.

Several plausible growth forecasts were considered in the development of the scenarios: Maryland Department of Planning population growth projections, Metropolitan Washington Council of Governments Cooperative Forecasts, and shift share growth projections developed by Renaissance Planning. Of these, the growth projections developed by Renaissance Planning provided the basis for the scenario analysis because they provided detail by job and household type that was not available in other projections. Additionally, the Renaissance Planning projections applied shift-share forecasting methods to support the community vision of creating the jobs and economic activity that Frederick County residents want to retain, nurture, and attract.

Process Design

The macroeconomic analysis makes several assumptions about what will drive growth in the county over time:

- Frederick County is economically and demographically tied to the Washington and Baltimore region. As such, economic and demographic changes within the region will typically fuel similar changes within Frederick County. Examples include:
- If the region at large is expected to add health care jobs, it is reasonable for forecasting purposes to suppose that Frederick County will add health care jobs too.



- If the regional mix of jobs by type is changing such that industrial jobs are declining as a share of all regional jobs, we can expect the same trend (either of decline or of slower than average growth) in industrial jobs in Frederick County.
- Frederick County's historical role within the region is a reasonably reliable indicator of the role that it will play in the region's future. For example, if Frederick County has historically demonstrated a local competitive advantage in agriculture compared to the rest of the region, we can suppose that local advantage will persist, and local growth in agricultural jobs will be faster (or decline in those jobs will be slower) in Frederick County than in the region at large.
- Recent or expected changes in Frederick County's role within the region provide the basis for framing how local trends might deviate from regional trends. For example, if Frederick County has recently experienced growth in science and technology jobs at a rate significantly higher than the region at large, this may suggest an evolving role in the regional economy such that Frederick County would be expected to attract a higher percentage new science and technology jobs coming to the region than would be expected based on its historical role within the region. In such a case, Frederick County may expect continued growth and specialization in scientific jobs even while the region may expect stabilization within this industry sector.
- Finally, regional and local changes in demographics are driven primarily by changes in the economy. Many industries pull workers from certain segments of the workforce, and as industries thrive in a given region, they attract workers from other regions, altering the demographic composition of their own region. For example, if industrial and manufacturing jobs are growing in a region, they will attract workers from different segments of the workforce than, say, education jobs. Thus, the mix of jobs added regionally is expected to influence the types of households being added to the region as well as those being added locally (in the county). The mix of jobs being added locally will further influence the types of households being added locally.

Shift Share Model

The premises outlined above are operationalized through a forecasting technique called "shift share analysis." This is a common forecasting approach that emphasizes regional dynamics and local trends to forecast local changes. The shift share approach consists of the following steps:

1. Estimate total regional growth from the base year to the horizon year as a share of existing regional activity (jobs or housing units). For example, Woods and Poole estimates the MWCOG region had 4,156,859 jobs in 2015 and will have 6,700,986 jobs in 2050, an increase of 61.2%. Recognizing the significance of regional trends in local growth dynamics, it is reasonable to suppose that jobs of all types in Frederick County could increase by 61.2% from 2015 to 2050, before accounting for industry mix changes (step 2) and local competitive affects (step 3).
2. Estimate trends in regional industry or household type mix. Each industry sector or household type's trend should be expressed in terms of its proportionate change minus the total regional growth estimate. These trends can be based on recent history or on exogenous independent forecasts, when available. For example, Woods and Poole estimates the MWCOG region experienced a 30.81% increase in health care jobs from 2005 to 2015. During that same period, total jobs in the region increased by 11.66%. Health care jobs are, therefore, assumed to be a major driver of regional growth, outpacing total regional job growth by 19.15 percentage points. Assuming this trend persists, health care jobs could reasonably be expected to grow by 80.35% (61.20% + 19.15%) across the region.



3. Estimate local competitive effects for each industry sector or household type. Local competitiveness expresses the extent to which local trends for a given industry sector or household type lag or exceed regional growth for the same industry or household type. It is similar to the regional industry or household type mix estimate, but applied at the local rather than the regional level. For example, Woods and Poole estimates that health care jobs in Frederick County increased by 32.14% from 2005 to 2015. During this same period, the same industry sector increased by 30.81% in the MWCOG region, while total jobs increased by 11.66% regionally. Thus, while health care jobs are growing rapidly throughout the region, they are growing even more rapidly in Frederick County, suggesting a local competitive advantage. If this trend persists, health care jobs in Frederick County could reasonably be assumed to increase by 81.68% ($61.2\% + 19.5\% + (32.14\% - 30.81\%)$).

These steps may be applied to estimate the expected percentage growth rate for jobs by industry sector and households by type. These percentage growth rates are then applied to baseline estimates of each respective job and household type to forecast the increments of growth in each segment to allocate within Frederick County.

Various Model Configurations Are Possible

The previous section describes the basic steps for implementing the shift share model and offers illustrations of the model's logic based on example data for Frederick County from Woods and Poole. However, there are several possible sources and options for entering data into the shift share model (see "Data sources" section below for more information on each potential source).

- The estimation of future regional growth (total jobs and total households that will be added to the region) could be based on MWCOG's cooperative regional forecasts or an independent economic forecast, such as Woods and Poole or Moody's. It may also be possible to cobble together a regional forecast from state sources such as Maryland Department of Planning (MDP) (for Maryland counties), the Weldon Cooper Center (for Virginia Counties), and the District of Columbia's Office of Planning.
- Regional trends in jobs mix may be estimated based on several sources, depending on the level of detail in job types required/desired. For the Livable Frederick scenarios, eight categories of job types were identified, and these were aggregations of major industry groups expected to have similar location preferences and growth dynamics. MWCOG forecasts do not cover these diverse job types, so the best available sources are Woods and Poole or Longitudinal Employer-Household Dynamics (LEHD). The regional jobs mix trends can be based on recent history or on forecasted shifts. If the forecast for regional jobs mix trends is desired, only Woods and Poole provides the required level of detail to develop model inputs. Additionally, while LEHD data are available for most states from 2002 to 2014, the District of Columbia did not begin reporting LEHD data until 2010, making it difficult to derive historical trends for changes in regional jobs mix based on that source.
- Local trends in jobs mix may be estimated based on the same sources used for estimating regional trends in jobs mix, and the same considerations and limitations noted above apply at the local level. There is an exception for historical trends, which in the case of Frederick County, can be derived either from LEHD or from Woods and Poole, since LEHD data are available across the state of Maryland from 2002 and later.
- Forecasts of new households by type are based on the inputs and outputs of the shift share model for estimating future jobs by type. The translation from jobs mix to household type mix is driven by a series of linear regression models that estimate the latter as dependent variables based on the former as independent variables. Thus, the configuration used to develop the jobs forecast will influence the estimates of new households by type.
- Baseline estimates of jobs by type (for the eight job types analyzed in the Livable Frederick scenarios) can be obtained from Woods and Poole or LEHD.

- Baseline estimates of households by type can be obtained from ESRI’s Business Analyst website (registration and payment required). As a Business Analyst subscriber, Renaissance Planning gathered market “tapestry” data for 2016 from ESRI to use in the Livable Frederick project.

Forecasting demographic changes based on economic changes

Renaissance has developed a series of linear regression models to estimate the share of households in a given housing market segment based on the share of jobs by type in a county. The models are based on 3,084 counties across the US. Only job types having a statistically significant influence (using a 99% confidence interval) on a given market segment’s expected share of total households were used in applying these models. Model parameters are outlined in the table below.

Share of jobs by type	Model Parameters for Households by Type					
	Retirees	Low to middle income singles	Middle income urban no kids	Wealthy urban/suburban	Middle income suburban families	Low to middle income families
	$R^2=0.22$	$R^2=0.54$	$R^2=0.52$	$R^2=0.38$	$R^2=0.65$	$R^2=0.60$
Resource		-0.2	-0.12	-0.14	0.77	0.7
Industrial	-0.09	0.09	0.04	-0.07	0.7	0.34
Consumption	0.18	0.13	0.2		0.36	
Science/tech			0.79	1.47	-0.52	-0.86
Office					0.8	
Health care	0.09	0.44	0.28	-0.09		0.25
Education	-0.1	0.15	-0.19	-0.12	0.31	0.95
Other	0.08			0.19		0.6

Since each household type’s share of all households is estimated independently, there is no inherent constraint to ensure the estimates for all household types sum to 100 percent. For each application of the model, the results are proportionately distributed in a subsequent step to equal 100 percent. Thus, if the respective model applications resulted in household type share estimates of 4.5%, 6.8%, 18.9%, 27.7%, 24.1%, and 4.8%, the sum for all households would come to only 86.9%. The results would then be increased in equal proportion so that they would sum to 100 percent (5.2%, 7.8%, 21.8%, 31.9%, 27.8%, 5.5%).

The residential mix regression models are applied to estimate the expected shift in regional mix of households by type and local mix of households by type (steps 2 and 3 of the shift share model). The configurations of data utilized to run the employment-end shift share models are mirrored in the residential-end shift share model, after applying the regression models as described above. Thus, if the expected shift in regional mix of jobs by type is based on recent trends (shifts from 2005 to 2015, e.g.), the residential regression models are applied first based on the 2005 jobs mix and then based on the 2015 jobs mix, providing a consistent basis for estimating an expected shift in households by type over that period. The table below illustrates this process (for demonstration purposes only).



Household type	Estimate of HH type shares 2005 (normalized regression outputs)	Estimate of HH type shares 2015 (normalized regression outputs)	Estimate of HHs by type 2005	Estimate of HHs by type 2015	Percent Change
Retirees	6.00%	6.20%	4,766	5,377	12.80%
Low Mod Income Singles	8.30%	9.00%	6,598	7,771	17.80%
Middle Income Urban No Kids	16.70%	18.10%	13,310	15,592	17.10%
Wealthy Urban / Suburban	21.10%	22.00%	16,829	18,986	12.80%
Middle Income Suburban Families	32.20%	31.60%	25,741	27,249	0.06%
Low to Middle Income Families	15.90%	12.90%	12,681	11,146	-12.10%
TOTAL HOUSEHOLDS	79,925	86,120	79,925	86,120	7.75%

For application in estimating regional shifts in housing mix (step 2 of the shift share model), the final column in the table would be compared to regional total household growth rate from 2005 to 2015 growth rate to estimate regional market shifts, identifying residential market segments that are outpacing or lagging regional growth as a whole. For application in estimating local competitiveness effects (step 3 of the shift share model), the final column in the table would be compared to regional total household growth rates and regional shifts to identify residential market segments that are especially attracted to the local area.

Preferred configuration

Given the options available for providing input data to drive the shift share model, it is possible to model multiple scenarios that are based on multiple different configurations of the macroeconomic analysis. Doing so would potentially multiply the number of scenarios to be analyzed (during the microeconomic and outcomes phases), and as such, we determined to develop a single preferred configuration for the macroeconomic analysis. The preferred configuration is presented below.

Shift Share Phase	Jobs Forecast	Households Forecast
Step 1: total regional growth	Woods and Poole	Woods and Poole
Step 2: shifts in regional mix	Woods and Poole – forecasted regional shifts from 2015 to 2050	Residential regression models based on jobs forecast source
Step 3: local competitiveness effects	Woods and Poole – recent growth trends from 2005 to 2015	Residential regression models based on jobs forecast source

- Woods and Poole was preferred as the primary data source driving the macroeconomic analysis and application of the shift share model for several reasons:
- The total increment of growth expected for the MWCOG region and for Frederick County was higher in the Woods and Poole forecast than in the MWCOC forecast. A major focus of the scenario modeling effort was to estimate the impacts of future growth on the county’s environment, agricultural lands, transportation infrastructure, energy consumption, etc. While the Woods and Poole forecast is not assumed to be more accurate than the MWCOC forecast, the higher growth increment represented the upper range of plausible future growth that the county would need to accommodate while minimizing/mitigating impacts across various indicators.
- The Woods and Poole data includes relatively detailed breakdowns of jobs by type. The Livable Frederick scenario modeling effort focused on eight generalized industry sectors to frame how growth and development policies would shape growth in light of the location preferences of different industries. Moreover, these industry groups were related to the estimated mix of household types

expected to be added to the county. These detailed job breakdowns could only be analyzed using Woods and Poole or LEHD data, as MWCOG data only includes four basic employment categories. The Woods and Poole data were preferred to the LEHD data for this purpose for two reasons: (1.) the LEHD data could not provide a trend for the region since data for the District of Columbia are not available for years earlier than 2010, and (2.) Woods and Poole provides a forecast of jobs by type (whereas LEHD has only historical data), allowing expected future shifts in the regional jobs mix to factor into the macro-economic analysis.

- Finally, Livable Frederick is a comprehensive planning updated, testing various policy choices against expected growth totals and framing decisions for revising planning policies to accommodate that growth efficiently, protect the county’s natural and agricultural resources and unique communities, while promoting place-making and economic evolution. To the extent that the WCOG forecasts may be built on prevailing planning policies, it may presuppose or implicitly impose limitation of the county’s growth potential that were likely not considered or treated in the same way in the development of the Woods and Poole forecast. That is, the use of a more aggressive independent forecast suits the spirit of the larger planning effort.

Data sources

MWCOG –MWCOG produces/updates it’s cooperative regional forecasts on a regular basis. The forecasts summarize future jobs, housing, and population at the TAZ level (allowing summarization to the county and regional levels). The round 9.0 forecasts were obtained at the outset of the scenario planning process for potential use in the macroeconomic phase of analysis. These forecasts provide projections of total jobs, housing units, population, as well as jobs by four types (“office”, “retail”, “industrial”, and “other”) with a base year of 2010 and forecast year of 2045.

Woods and Poole Economics, Inc. –Woods and Poole produces the Complete Economic and Demographic Data Source (CEDDS) data product on an annual basis. CEDDS is an independent economic forecast available for purchase at the county level (allowing summarization to the regional level). The 2015 CEDDS tables for all counties in the US were purchased by Renaissance Planning for use in multiple project applications and were thus available for potential use in the macroeconomic phase of analysis. The CEDDS provide both historical estimates and future forecasts of total jobs, households, population, and jobs by type (for all major industry sectors defined by two-digit NAICS codes) at five year intervals starting with 1950 and extending forecasts to 2050. For the Livable Frederick scenario analysis, summaries of jobs by type were created from the detailed job type categories. The consolidation of major industry groups into the job clusters analyzed in Livable Frederick is outlined in the below.

Consolidated Industry Sector	Specific Industry Sectors
Resource Jobs	Farming
	Forestry, Fishing
	Mining
Industrial Jobs	Manufacturing
	Wholesale Trade
	Transportation and Warehousing
Consumption Jobs	Retail Trade
	Arts, Entertainment and Recreation
	Accommodation and Food Services
Science and Tech Jobs	Professional and Technical
	Information



Office Jobs	Finance and Insurance
	Real Estate, Rental and Lease
	Management of Companies and Enterprises
	Federal Civilian Government
	State and Local Government
Health Care Jobs	Health Care and Social Assistance
Education	Educational Services
Other Jobs	Utilities
	Construction
	Administrative and Waste Services
	Other Services
	Federal Military Employment

Longitudinal Employer-Household Dynamics (LEHD) – LEHD provides estimates of the number of workers (at their residential and employment locations) by wage group, sex, age, industry group (major industries based on two-digit NAICS codes), race, ethnicity, and educational attainment at the census block level. Data are available from 2002 to 2014 for most states. Jobs data by industry group were available for Livable Frederick, using the same consolidation rubric detailed above for Woods and Poole jobs data.

ESRI Business Analyst – ESRI provides generalized psychographic information about households in counties across the US by type through the online Business Analyst platform. The “Tapestry Segmentation” data organizes households into 14 major categories and 64 detailed groups identifying common characteristics related to household composition, neighborhood location preferences and housing unit types, spending patterns, vehicle ownership, etc. The 14 major categories were organized into seven household types for the Livable Frederick scenario analysis, according to the table below.

Consolidated Residential Market Segment	ESRI Residential Market Segment
Retirees	Senior Styles
Low to middle income families	Middle Ground
	Rustic Outposts
	Ethnic Enclaves
	Next Wave
Middle income suburban families	Cozy Country
	Family Landscapes
Wealthy suburban	Affluent Estates
Wealthy urban	Upscale Avenues
Middle income urban no kids	Gen-X Urban
	Uptown Individuals
Low to middle income singles	Hometown
	Midtown Singles
	Scholars and Patriots

**Psychographics: the study and classification of people according to their attitudes, aspirations, and other psychological criteria, especially in market research.*

Microeconomic Dynamics

A basic premise of this scenario planning process is that the livability of our communities and our long-term prosperity is not solely determined by broad, large-scale economic trends. Our choices, decisions, intentions, and aspirations also influence our future. We can actively seek to strategically invest in the many kinds of capital (assets and advantages) in our community - be it human, social, cultural, or natural – that can leverage our intentions and help steer us toward our goals.

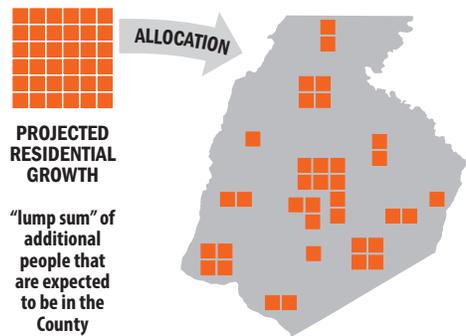
Place Capital and Location Preference

Strategically investing in our community is a critical element of long-term economic development and quality of life, and this depends in part on our ability to attract and retain knowledge-based workers, entrepreneurs, and growing industries. Central to attracting these and other important assets is the concept of “place capital.”

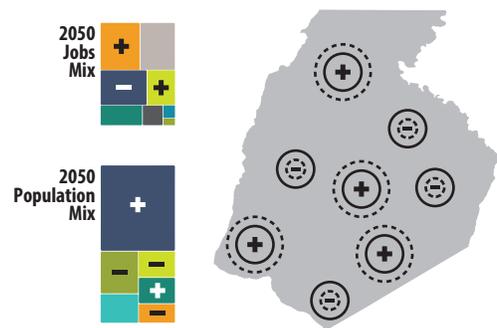
Place capital is the idea that physical place in our county is a resource for investing in our community. This is rooted in the premise that different industries and demographic groups have different preferences for types of physical places, that there is a natural attraction between different types of physical places and different industries and demographic groups. Our “place capital” in Frederick County is a resource that can help us influence the currents of our growth.

The scenario planning process focuses on aspects of this key form of capital. While the macroeconomic analysis above analyzed our growth by industry and market segment, the microeconomic aspect of the scenario planning process, through the use of a GIS-based software model developed by Renaissance Planning, relates the locational preferences of those industries and groups to specific place-based attributes of Frederick County.

This is a significant departure from past growth allocation methods of comprehensive plans in the county. With customary methods, projected population growth over a certain time period provided an anonymous “lump sum” of additional people that are expected to be in the county in the future. This number would then be then translated into land use and allocated throughout the county based on technical knowledge, tacit knowledge, and political concerns. With this approach, there is no analytical method for connecting the physical attributes of places to the different preferences of the industries and market groups that are growing. In some respects, planning using this method is regressive because the only method for determining how we should plan for the future is replicating what we have done in the past.



The scenario planning model and process provide more foresight and understanding into the details and dynamics of our growth, allowing us to take a more proactive approach to planning our future. It does this by connecting the attributes of existing and potential future physical places in the county with the specific location preferences of the industries and market groups that are expected to grow. This allows us to think about how we provide the types of places that will attract the types of industries and market groups that we want to have in the County. So in a real way, we can begin to exercise some informed control over our own destiny.





The Scenario Model

The scenario planning model generalizes the attractiveness of physical places to different industries and market groups according four categories. Referred to as “attractiveness drivers,” they are:

Trend Growth: Measures the recent growth of an activity using specific and general growth rates “smoothed” over specific areas. The central assumption of this driver is that areas that have undergone a recent change or intensification have a stronger likelihood that future development will occur in proximity, as long as there is a supply of available land.

Accessibility: Measures access to economic activity. The central assumption of this driver is that growth is more likely to locate in areas that have greater accessibility to either jobs or workforce population. Employers tend to locate where other jobs are highly accessible and in areas that have higher accessibility to a workforce-age population. Future residential development will gravitate where there is good accessibility to jobs.

Cost: Measures real property cost as a blend of home values and contract rents smoothed over specific areas. The central assumption of this driver is that location decisions are impacted by the income of groups and the cost of resources.

Place Type: Composed of measures of different policies that define growth patterns. The central assumption of this driver is that different places types are suitable for different activities.

The county is analyzed according to each of the four attractiveness factors. This results is a database where the county is divided into a grid of locations with every location having different values of all of the four attractiveness drivers.

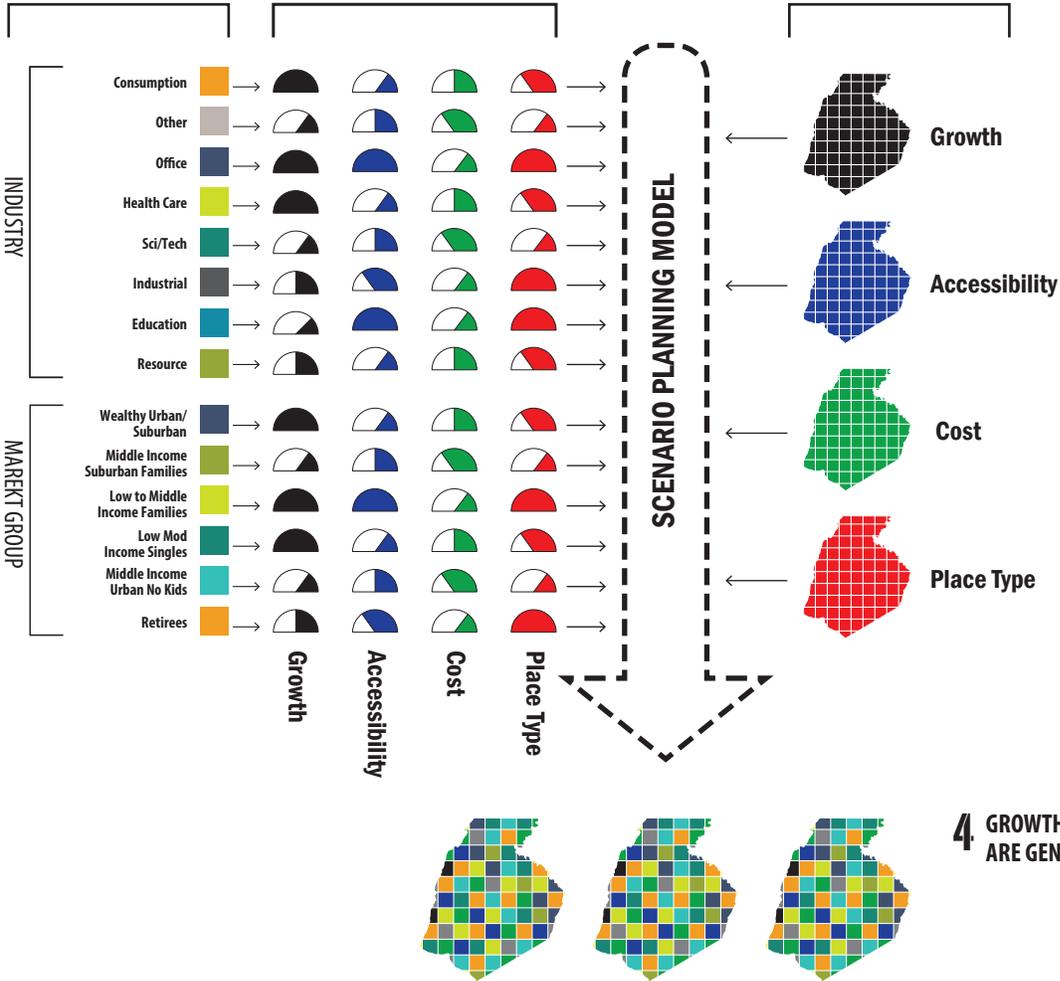


Then, each driver is weighted based on how important it is in determining where a specific industry or market group is likely to locate. The result is an allocation of growth across the county that places jobs and people in locations that support the preferences of that industry or market group. This process is illustrated in the diagram on the following page.

1 GROWTH IS PARSED BY INDUSTRY AND MARKET GROUP

2 THE IMPORTANCE OF ATTRACTIVENESS DRIVERS TO SPECIFIC INDUSTRIES AND MARKET SEGMENTS IS EVALUATED AND WEIGHTED

3 THE EXISTING COUNTY AND POTENTIAL FUTURE GROWTH SCENARIOS ARE ANALYZED ACCORDING TO ATTRACTIVENESS DRIVERS



4 GROWTH ALLOCATIONS ARE GENERATED



Outcomes Analysis

Four Scenarios Developed

As hypothetical stories about the future, the following four distinct scenarios emerged to help illustrate how different configurations of future growth might influence some of the goals and aspirations articulated in the Livable Frederick Common Vision. Some of the questions considered in the development of these scenarios are as follows: How might different scenarios affect housing and transportation choices? How might different patterns of growth affect Frederick County’s ability to attract businesses and workforce talent? How might each different scenario affect our environment and natural resources?

Additionally, upon analysis of the goals and aspirations defined in the Common Vision, it was found that the Common Vision was best supported by a pattern of development characterized by multi-modal accessibility. For example:

Our Health is supported by providing walkable neighborhoods that allow for active lifestyles and reduce the reliance of the car, and by making services more accessible to those who need them.

Our Community is supported by encouraging housing that is serviced by transit to reduce transportation costs, and by ensuring that streets are walkable and accessible to foster social interaction and reduce social isolation.

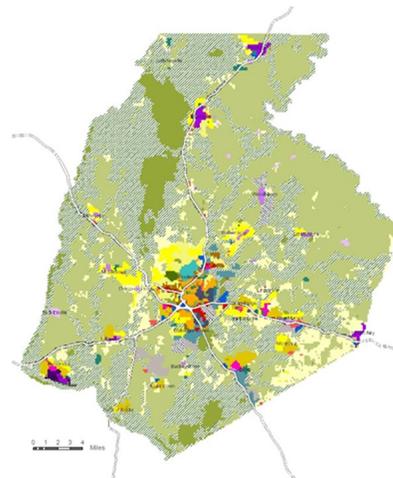
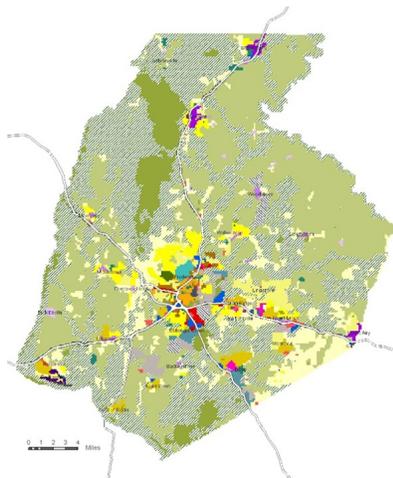
Our Economy is supported by providing the types of walkable, transit-oriented places that employers are seeking when they make location decisions. This will help make Frederick County communities centers of employment in the region, and will create livable places for our future workforce.

Our Environment is supported by reducing the number of vehicle miles traveled, and by reducing the need for major road expansion into natural areas.

The overarching strategy of the scenarios is to analyze the implications of a more multi-modal pattern of growth, while leveraging the existing pipeline of conventional suburban development. Therefore, the scenarios focuses on opportunities to enhance existing places and create new places that are less auto-dependent, and more walkable, bikable, and transit supportive. The scenarios included:

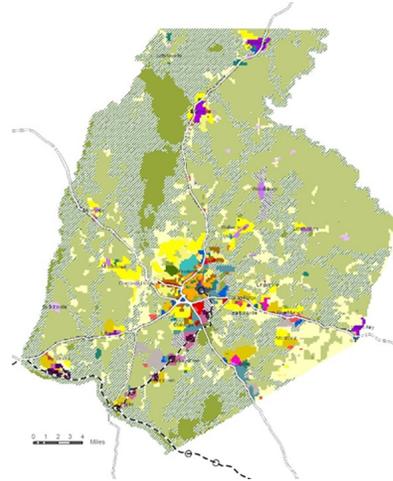
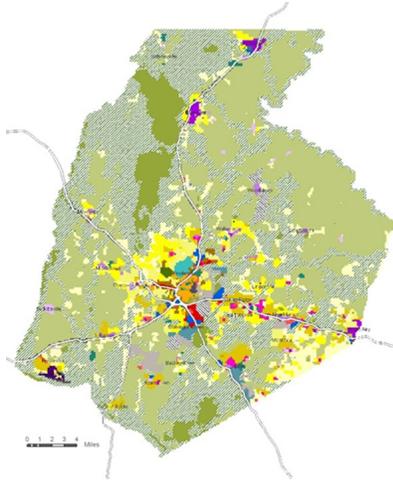
Business As Usual (BAU): Let’s keep our policies “as is.” The future direction should reflect past trends.

City Center Rises (CCR): The City of Frederick is a major urban and cultural center. Let’s maximize the growth potential in and around the city to create an even stronger place for walkable, urban living and working while retaining our historic sense of place.



Suburban Placemaking (SUB): Many of our residents love suburban living. Let’s make our suburban communities even stronger by reinvesting in them with infill development that creates more opportunities to walk, shop, work, and recreate closer to home.

Multi-modal Places and Corridors (MPC): Our county has existing rail service that connects us to the greater Baltimore Washington Region. Let’s leverage this asset and create more multimodal corridors to help catalyze the redevelopment of aging retail and office, and create new mixed use places in the southern part of the county.

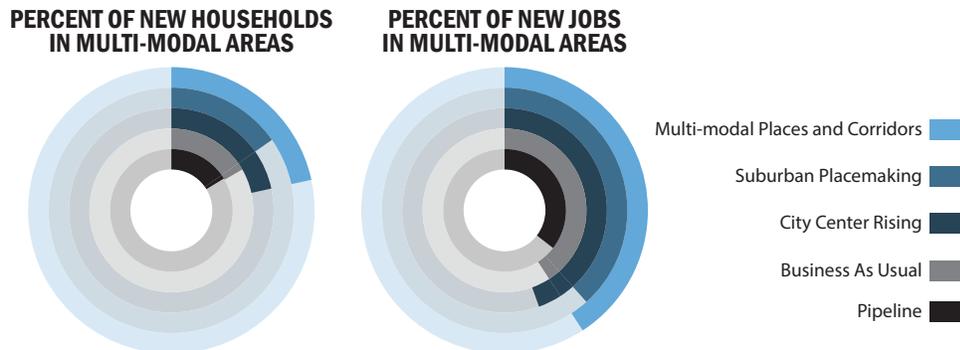


All four scenarios make the following assumptions. First, existing pipeline development in the county – i.e. planned development that currently has some form of approval, be it through rezoning, subdivision, site plan, or developers rights and responsibilities agreements - is incorporated into each of the scenarios. None of the scenarios proposes out-right removal of pipeline development in the County. Secondly, agriculture and green infrastructure lands are delineated upfront and are shielded from the intrusion of new growth. This assumption is “baked in” to all scenarios and is intended to counteract the tendency to conceive of agricultural and natural infrastructure as “undeveloped” land that serves as a vessel for future growth, a.k.a. as a “holding zone” for future growth. However, the scenarios uphold the essential role these parts of our county play in our productivity, health, and quality of life.

Evaluation and Key Findings

Based on the hypothetical location of growth and the configuration of different place-types, the scenarios were evaluated to demonstrate how growth might influence different county wide goals or aspirations using specific indicators or performance measures. Some of these evaluation metrics and benchmarks are summarized below:

Percent of new development (housing and jobs) located in walkable, multi-modal centers



Attractiveness of new growth to different market segments (household types and job types)

The attractiveness of the different scenarios to the different categories of the scenario projected growth increment was evaluated and is summarized in the following chart:

Vehicle Miles Traveled (VMT) and mode split (percent auto vs. non-auto travel)

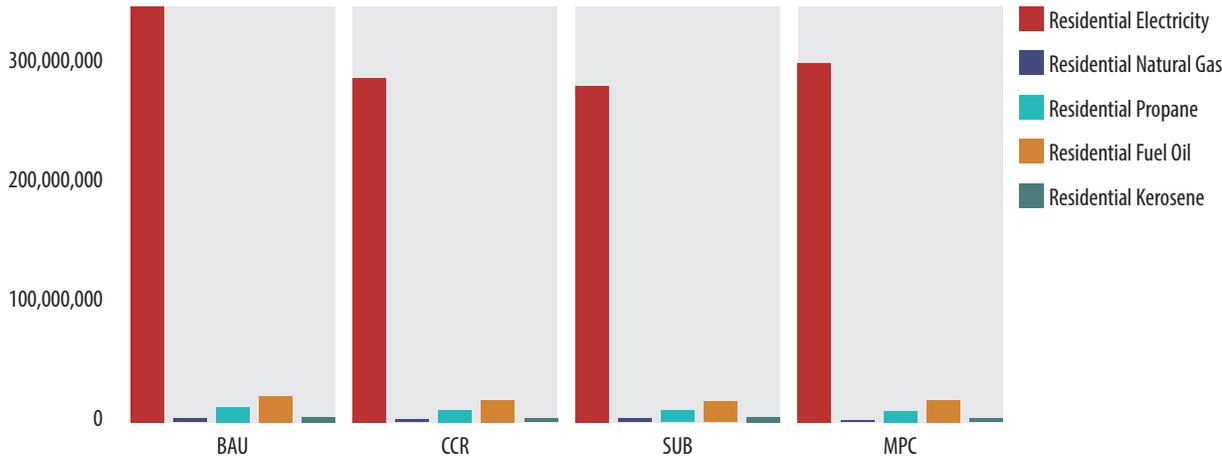
Countywide statistics for transportation are difficult to influence without a more aggressive reshaping of development patterns to bring more jobs to the county (strengthen jobs/housing balance) and bring more destinations closer to where people live. **However, there is opportunity to strategically improve multimodal characteristics at the subarea level.**

	Existing	Pipeline	BAU	CCR	SUB	MPC
VMT per Household	38.46	37.12	39.07	38.97	39.09	38.96
Mode Choice (home to work)						
Walk	3.05%	2.75%	2.50%	2.61%	2.51%	2.62%
Transit	4.74%	4.80%	3.71%	3.77%	3.73%	3.78%
Auto	92.21%	92.45%	93.79%	93.62%	93.76%	93.60%
Mode Choice (home to other)						
Walk	1.99%	1.84%	1.72%	1.76%	1.71%	1.76%
Transit	1.58%	1.85%	1.90%	1.91%	1.90%	1.91%
Auto	96.43%	96.32%	96.38%	96.33%	96.39%	96.33%

Environmental performance and energy consumption

Alternatives to the BAU perform better because of compact patterns of development (which are more energy efficient) and the direction of growth away from critical green infrastructure areas.

RESIDENTIAL ENERGY CONSUMPTION



DEVELOPED RESOURCE ACREAGE



*Keep in mind that the preceding analysis is **not a statement about anticipated quantities**, but rather it is **analysis of the relative differences** between strategies for growth. The important take-away from these results is the degree to which the performance of one strategy is preferable to the performance of other strategies, not the notion that the outcome of a certain strategy will precisely reflect the quantities described in the analysis.



Overall, the scenario process illuminated several key findings that ultimately can be incorporated into updates to the comprehensive plan. These include the following:

- A significant amount (40%) of our future household growth is likely to occur in currently planned developments known as the “pipeline growth.” However the traditional suburban patterns assumed with this growth may not be matching up with future market demands for greater housing choices and more walkable communities. Therefore is there an opportunity to revisit some of the policy assumptions associated with the pipeline development?
- Creating more multimodal places and corridors (compact, walkable and transit ready) positions the county well for different job sectors – but doesn’t noticeably change travel behavior in terms of reducing countywide Vehicle Miles Traveled (VMT) or use of non-auto modes (walking, biking or transit) to get around. Therefore are there certain corridors or subareas of the county where new growth, infill or redevelopment could be targeted with more compact, mixed use patterns supportive of a less auto-dependent lifestyle?
- Affordability of housing within the county will continue to be an issue with demand for wealthier households remaining high. Therefore where are the specific opportunities where we can target production of more housing options with ample access to more transportation choices so that we can continue to attract the workforce needed for the creative economy, healthcare jobs and other service industries?
- The scenarios intentionally push development away from sensitive natural resources, green infrastructure and working lands. However are there more policies needed to create greater incentives for contiguous natural spaces and working lands preservation?
- Infill development within our existing suburban neighborhoods can create more amenities closer to where people live and provide more opportunities for walkable neighborhoods. Where are the best opportunities for this type of infill development?
- The creation of job centers within walkable, multimodal centers is aligned with the workforce talent in the creative and high-tech industries. Therefore where are the best locations for future job centers that can achieve this type of development patterns?

Based on these key takeaways, the scenarios and the associated place-types provide an analytical framework for refining the policies within the comprehensive plan.



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