



**ECONOMIC
DEVELOPMENT
OPPORTUNITIES
ANALYSES
TECHNICAL
DOCUMENT**



PREPARED FOR:

TOWN OF
Arundel
MAINE

PREPARED BY: **THE CHESAPEAKE GROUP, INC.**

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BUILDING A FOUNDATION FOR THE FUTURE

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Introduction

The following document was prepared for the Town of Arundel and their Economic Development Committee by The Chesapeake Group, Inc. The purpose of the document is to define Arundel's assets, realistically achievable opportunities and obstacles to achieving the opportunities.

The analysis is based on information gathered through a variety of means including those that follow.

- ✓ Face-to-face or in-person interviews with stakeholders.
- ✓ Small focus group sessions with stakeholder interests.
- ✓ A survey of households that reside in Arundel.
- ✓ Review of secondary available data, such as that from the U.S. Census Bureau, the Town of Arundel, regional planning organizations and the State of Maine.
- ✓ Independent research.
- ✓ Proprietary computer modeling.
- ✓ Experience of the principals involved with the effort.

All estimates of potential in the analyses are conservative in nature, tending to understate demand, opportunities and activity. The estimates and suggested activity are based on conservative assumptions for the markets potentially served and represent only The Chesapeake Group's opinion based on the analyses and experiences of the organization. Throughout the document specific names of organizations and businesses are mentioned. This neither reflects an endorsement by The Chesapeake Group or the Town of Arundel; nor any expression of interest by the entities.

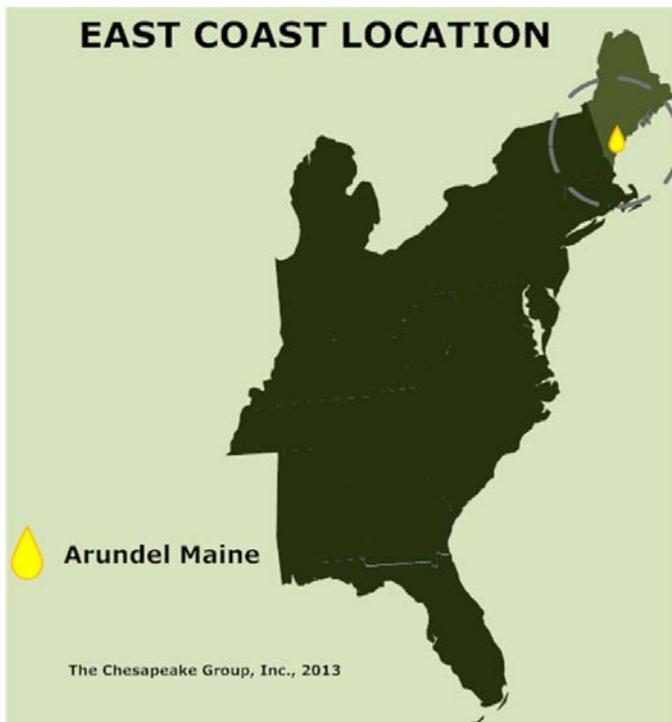
Context

There are demographic and other changes within the global economy, the United States, and Maine that impact the opportunities and the future for the Town of Arundel. These include but are not limited to those that follow.

- ✓ Birth rates have fallen to the lowest level in the history of the country and in Maine.
- ✓ Fertility rates are at the lowest or near lowest level in history as well.
- ✓ The marriage rates continue to decline and are also at the lowest level in the country's history.
- ✓ The average age of residents continues to increase nationally, regionally and in Maine.
- ✓ The population in the country continues to diversify in terms of origin, ethnicity, race and other related factors. The same level of diversification occurring elsewhere has not occurred in Maine.
- ✓ "Baby Boomers" and younger households between the ages of 21 and 30 are seeking different housing options and environments than past generations.
- ✓ "Baby Boomer" households and households composed of individuals between the ages of 21 and 30 – the two fastest growing components of the population – are increasingly seeking and participating in passive and other recreational activity in growing numbers.
- ✓ "Baby Boomers" have been a driving substantial market force for the past fifteen years. However, in the commercial and residential markets, their importance will dwindle in the next eight to ten years as they continue to age.
- ✓ The aging population likely increases the demand for office space and related services in various professional areas while diminishing demand in others.

- ✓ Manufacturing is changing significantly through changing technology, technology application and the introduction of new materials. The changing technology diminishes the importance of labor as a cost factor and increases the importance of transportation relative to other cost factors. Therefore and for many products, production facilities located in major population centers or adjacent areas will have competitive advantages in the future.
- ✓ The technological change in manufacturing will result in the return of production of many products to the United States.
- ✓ Manufacturing changes will impact retail and related space in significant ways in the future, resulting in lowering space needs.
- ✓ In the short-term, countering the need for lower inventories as a result of increased “on demand” production and the internet is the trend among major box stores and others to fulfill online orders from stores versus warehouses.
- ✓ The global population continues to grow. Demand for food changes with rising incomes in developing countries and with increased health concerns in the United State.
- ✓ Agricultural production continues to be an industry in which this country is in a dominant position in the world.

Background



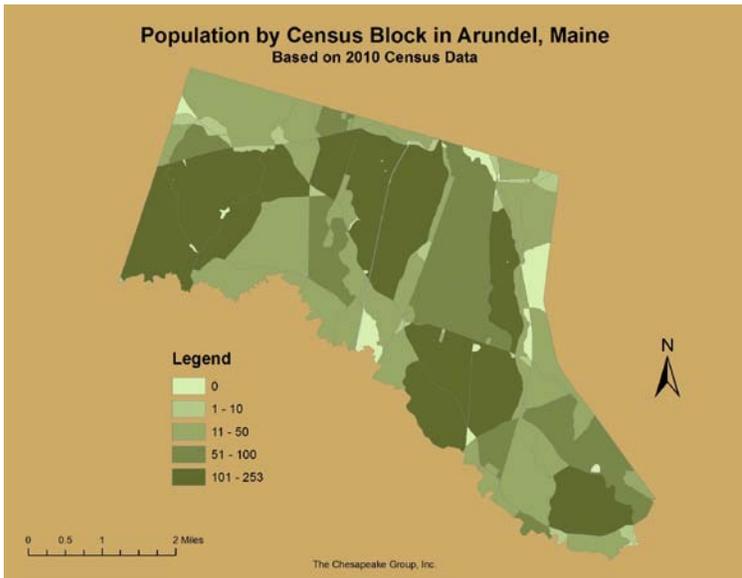
The Town of Arundel consists of approximately 24 square miles with 45 miles of Town roads.

As with any jurisdiction, location is a critical factor. Arundel is located in the southern most section of Maine along the East Coast of the United States. It is within a reasonable driving distance of much of Maine, New Hampshire, Vermont, and greater population centers in Massachusetts and New York. The proximity to Massachusetts has been an important factor in recent development of the community.

Its location within York County in the southern most portion of Maine is also of strategic importance because this region in Maine continues to grow in terms of households and economic activity.

The community was originally incorporated as North Kennebunkport in 1915. The name was changed to Arundel in September of 1957.

Arundel's population is estimated at 4,100 people. This estimate is based upon the 2010 census figures, identifiable housing development and population patterns since the most recent national census. Yet, Arundel is a part of a larger regional population located in numerous jurisdictions in York County, including Kennebunk, Biddeford, Old Orchard Beach, Saco and Wells.



In addition, Arundel is situated adjacent to Kennebunkport. That community is an internationally known visitor attraction. However, it is smaller than the Town of Arundel in terms of residential population. The City of Biddeford and the Towns of Kennebunk, Lyman and Dayton also border Arundel.

Arundel’s transportation network and connections to other areas is significant. It is served by airports in Portland, Manchester and Boston for national and international commercial carrier flights. The Portland facilities are about a 20 to 30 minute drive from Arundel.

airports including those in Sanford and Biddeford in York Arundel’s border.

Three major roads run through Arundel providing connections to communities well beyond Maine and to neighboring communities of Biddeford, Sanford, Kennebunk, and Kennebunkport. These routes include Interstate-95, which is the primary interstate roadway that spans the East Coast; Route-1 or US-1, which is known as Portland Road in Arundel and extends from Maine to the tip of the Florida Keys; and Route 111 or Alfred Road. The combination of I-95 and Route-1 provides a dual alternative even in the worst case traffic conditions.

In addition to the air and road network, there is rail freight and passenger service within and near Arundel. Furthermore, the Town is in close proximity to other operations.

The existing system provides quality alternatives for any type of business operation.

DEMOGRAPHIC PATTERNS

As noted, the Town’s population is small, currently consisting of about 4,100 people. Yet, there has been consistent growth in terms of population since at least 1920. This is reflective of the pattern in York County and in the southern most sections of Maine beyond York County.

Population of Arundel & Surrounding Municipalities 1920-2010										
Town	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Arundel	564	546	866	939	907	1,322	2,150	2,669	3,571	4,142
Biddeford	18,008	17,633	19,790	20,836	19,255	19,983	19,638	20,710	20,942	21,432
Dayton	391	379	454	502	451	546	882	1,197	1,805	2,054
Kennebunk	3,138	3,302	3,698	4,273	4,551	5,646	6,621	8,004	10,476	11,542
Kennebunkport	1,431	1,184	1,448	1,552	1,851	2,160	2,952	3,356	3,720	4,018
Lyman	415	370	385	499	529	864	2,509	3,390	3,796	4,279
Sub-Region	23,947	23,414	26,641	28,601	27,544	30,521	34,752	39,326	44,310	47,467
York County	70,696	72,914	85,750	93,541	99,402	111,596	139,666	164,587	186,724	203,560
Source: Arundel Comp Plan										
2010 Estimates: Projected from 2009 Census Bureau estimates										

While the population has historically increased; the average rate of change in population has generally declined since 1970. There are likely a number of factors that have impacted the pattern of population growth, including but not limited to the aging of the population, lower birth rates, smaller household size, and the desire to maintain rural character. The average growth rate of population peaked between 1970 and 1980.

Population Change in Arundel & Surrounding Municipalities 1920-2010										
ARUNDEL SUBREGION w/o BIDDEFORD										
	ARUNDEL			ARUNDEL SUBREGION						
	Population	Change	% Change	Population	Change	% Change	Population	Change	% Change	
1920	564			23,947			5,939			
1930	546	-18	-3.2%	23,514	(433)	-1.8%	5,881	(58)	-1.0%	
1940	866	320	58.6%	26,641	3,127	13.3%	6,851	970	16.5%	
1950	939	73	8.4%	28,601	1,960	7.4%	7,765	914	13.3%	
1960	907	-32	-3.4%	27,544	(1,057)	-3.7%	8,289	524	6.7%	
1970	1,322	415	45.8%	30,521	2,977	10.8%	10,538	2,249	27.1%	
1980	2,150	828	62.6%	34,752	4,231	13.9%	15,114	4,576	43.4%	
1990	2,669	519	24.1%	39,326	4,574	13.2%	18,616	3,502	23.2%	
2000	3,571	902	33.8%	44,310	4,984	12.7%	23,368	4,752	25.5%	
2010	4,142	571	16.0%	47,467	3,157	7.1%	26,034	2,666	11.4%	

Unlike many other communities around the country, the population in Arundel continues to be largely homogenous according to the 2010 Census. About 97% of the population were defined as being “White” in 2010.

As can be seen in the chart that follows, the proportion of residents over the age of 45, having much lower birth and fertility rates, has increased well above increases in other age groups. (This is not atypical and reflects larger national and state patterns.) It is noted that:

- ✓ About 8% of the population is at least 70 years of age.
- ✓ About 11.6% are between the ages of 60 and 69.
- ✓ Less than 25% of the population is 19 year old or younger.

AGE DISTRIBUTION											
	1990		2000		2010		2000-2010		1990-2010		
Age	#	0%	#	0%	#	0%	#	0%	#	0%	
Under 5	158	6%	234	7%	278	7%	44	19%	120	76%	
5-19	603	23%	776	22%	834	20%	58	7%	231	38%	
20-34	570	21%	621	17%	649	16%	28	5%	79	14%	
35-44	527	20%	683	19%	751	18%	68	10%	224	43%	
45-64	546	20%	966	27%	1,168	28%	202	21%	622	114%	
65 & Over	265	10%	291	8%	463	11%	172	59%	198	75%	
Total	2,669		3,571		4,143		572		1,474		

Also according to the 2010 Census, there were about 1,600 households residing in 1,692 housing units. About 93% of the housing units were owner-occupied. Of the units defined as vacant in the 2010 Census, almost one-half are used seasonally. The owner occupied vacancy rate was estimated to be 1.7%; while the rental unit occupancy rate was estimated at 4.8%. Only 4% of the total housing units are in duplex or multi-family structures. The Town has three mobile home parks.

Reflecting the aging of the population and other lesser factors and in spite of the growth in population, both the labor force size and employment of residents of Arundel has changed little throughout the 2000 to 2010 time period. Even during 2008 and 2009, or the peak of the “Great Recession,” the labor force and employment level changed little.

Town of Arundel											
Size of Labor Force 2001-2010											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Labor Force	2,114	2,195	2,231	2,305	2,351	2,397	2,442	2,474	2,466	2,462	2,475
Unemployment Rate	2.1	2.9	3.3	4.1	3.4	3.4	3.3	3.7	4.2	6.7	7.8
Employed	2,070	2,131	2,157	2,210	2,271	2,316	2,361	2,382	2,362	2,297	2,282
Unemployed	44	64	74	95	80	81	81	92	104	165	193

According to published figures, the number of unemployed and the unemployment rate rose in Arundel as it did in general in York County, Maine and the country during the time period from 2000 to 2010.

UNEMPLOYMENT RATES											
ARUNDEL & SURROUNDING COMMUNITIES											
2000-2010											
Town	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Arundel	2.1	2.9	3.3	4.1	3.4	3.4	3.3	3.7	4.2	6.7	7.8
Biddeford	2.7	3.7	3.7	4.0	4.2	4.3	4.0	4.1	5.2	7.5	7.5
Dayton	2.0	2.2	2.9	3.0	2.9	3.6	3.6	3.6	3.9	6.4	7.0
Kennebunk	2.7	2.9	3.3	3.9	4.0	3.9	3.6	3.7	4.4	7.0	6.6
Kennebunkport	3.3	3.5	4.0	4.4	3.9	4.4	3.5	3.6	4.3	6.8	6.5
Lyman	2.2	2.8	3.2	3.8	3.4	3.7	3.7	3.8	4.6	8.1	7.4
Sub-Region	2.5	3.0	3.4	3.9	3.6	3.9	3.6	3.8	4.4	7.1	7.1
York County	2.6	3.3	4.2	4.6	4.0	4.2	4.0	4.0	4.7	7.6	7.5

Estimates of the 2013 household incomes reportedly derived from the off-decade census sampling of the Census Bureau show Arundel with a median income of \$61,266. This is above the average reported for York County, Biddeford, Kennebunkport, Ogunquit, Saco, Sanford, Waterboro and others.

Table 1 - Estimated 2013 Median Household Income

Geography	Estimate	Error % (+/-)*
Maine	\$46,933	1.0%
York County, Maine	\$55,008	1.9%
Arundel, York County, Maine	\$61,266	9.9%
Biddeford city, York County, Maine	\$42,752	7.1%
Kennebunk, York County, Maine	\$69,353	6.6%
Kennebunkport, York County, Maine	\$60,244	9.5%
Kittery, York County, Maine	\$52,878	10.6%
Lebanon, York County, Maine	\$56,227	11.2%
Ogunquit, York County, Maine	\$53,438	31.9%
Old Orchard Beach, York County, Maine	\$41,403	10.1%
Saco city, York County, Maine	\$58,068	11.2%
Sanford, York County, Maine	\$44,275	7.2%
Waterboro, York County, Maine	\$60,288	13.9%
Wells, York County, Maine	\$62,896	7.2%

EXISTING CHARACTER

Arundel is unique within the region. While having quality transportation access and a relatively central location in the southern Maine area; it has maintained its rural character. Whether along the linear travel routes, residential area, or other locations; the character is very apparent and likely to be maintained for a variety of reasons including:

- ✓ Changed national demographic patterns coupled with the larger regional population demographics surrounding Maine and neighboring states.
- ✓ Large sections of land associated with conservation organizations or programs.
- ✓ State, federal and local regulatory issues.
- ✓ The cost of providing certain utilities in non-dense settings.
- ✓ The cost of redevelopment.
- ✓ Land development constraints.
- ✓ The desires of the current residents.

There is land within areas of Arundel that are not considered to be easily developed because of soil conditions, slopes, costs and other factors.

Furthermore, the aquifer is somewhat unique and complicates development utilizing well systems and complicates some agricultural activity. The aquifer is infiltrated with salt.

The Town of Arundel's economy has in the past and continues at present to be driven by its agricultural and natural resources. While agricultural production is not plentiful, it contributes to the character. As stated, current residents want the rural character to be maintained.

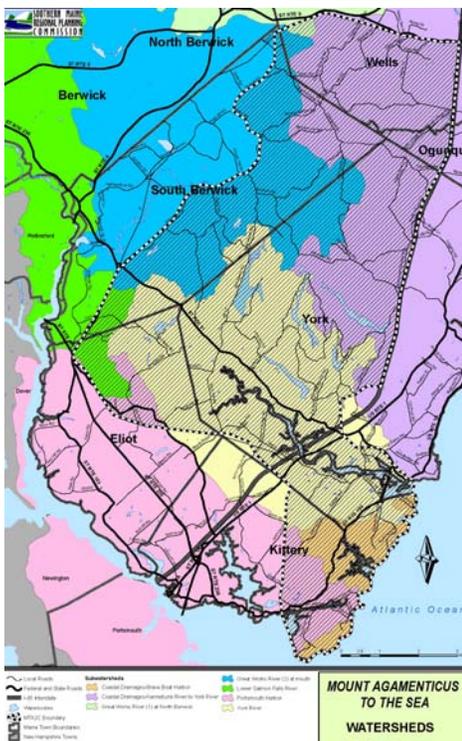
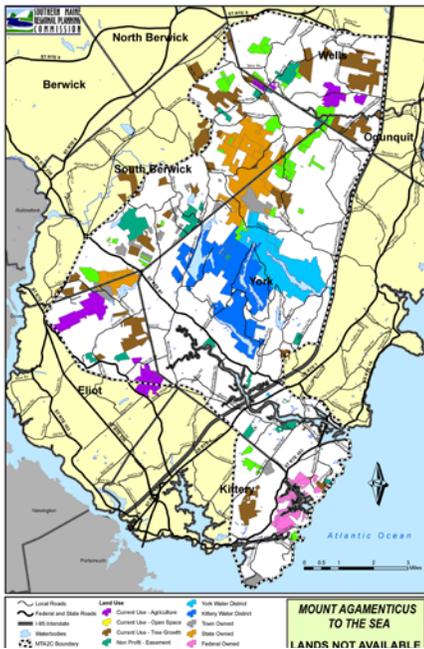
SURVEY OF RESIDENTS

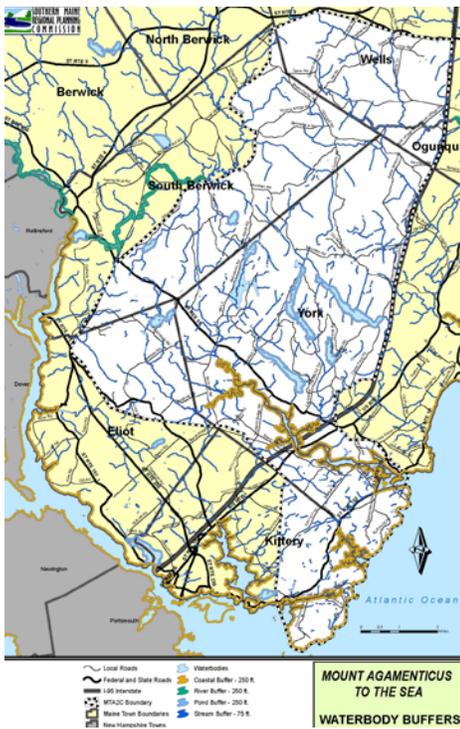
As part of this process, a survey of just over 300 households was conducted. This represents about 22% of all resident households. That survey indicates that more than one-half the residents define Arundel as a very good place to live. The proportion defining it as either a very or fairly good place to live represents the overwhelming preponderance of residents.

Table 2 - Overall Description of Arundel as a Place to Live*

Best Overall Description	Percent
Very good place to live	51.3%
Fairly good place to live	43.7%
Not a very good place to live	2.9%
Not a good place to live	2.1%

*Developed by The Chesapeake Group, Inc., 2013.





Almost two-thirds of the residents define the quality of life in Arundel as being either very good or excellent

Table 3 - Feelings Toward Quality of Life in Arundel*

	Poor	Fair	Good	Very Good	Excellent	Total
Quality of Life	2.54%	10.17%	24.58%	46.61%	16.10%	100.00%

*Developed by The Chesapeake Group, Inc., 2013.

Analyses

Multiple analyses, including cluster analyses, demand forecasting and a research opportunities assessment were performed in an effort to define future opportunities within the context of the current conditions, surrounding activity and the ability to draw patronage from both Arundel and a larger area. To determine additional potential uses without bias, the property must be placed within (a) the context of the larger geographic area or market, and (b) the local population. The overall purpose is to define opportunities and niches that are un-met, under-served, or could potentially be successful in the future in Town of Arundel.

GAP/CLUSTER ANALYSIS

A cluster analysis utilizing comparative assessment or gap methodology was performed to identify business "gaps" and "opportunities." The U.S. Census Bureau provides annual information on business patterns throughout the nation in three different geographical formats. Those are by county, zip code, or Metropolitan Statistical Area. This analysis includes assessments of local business patterns at both the zip code and county level. The identified business gaps defined in this process may or may not be appropriate for Arundel because of the nature of operations, scale, or other factors.

It is noted that all population and household estimates upon which the comparisons are made were derived from the same source for comparability. That source was the 2010 U.S. Census. For consistency purposes, a single source, the U.S. Census Bureau's County Business Patterns, was employed to define the business structure and activity within all areas.

The North American Industry Classification System (NAICS) was introduced in 1997 as a more effective business classification system that identifies and groups establishments according to the activities in which they are primarily engaged. NAICS identifies and groups 1,170 different types of "industries" or establishments into twenty major industry sectors ranging from Agriculture (Sector 11) to Public Administration (Sector 92). This analysis examined and extracted data from all twenty sectors for all areas. These twenty sectors follow.

- ✓ Agriculture, Forestry, Fishing and Hunting (Sector 11): Crop and animal production, forestry and logging, fishing, hunting, trapping, support activities for agriculture and forestry.
- ✓ Mining (Sector 21): oil and gas extraction, mining, support activities for mining.

- ✓ Utilities (Sector 22): power generation, transmission, and distribution, water, sewage, and other systems.
- ✓ Construction (Sector 23): building, developing, general contracting, heavy construction, special trade contractors.
- ✓ Manufacturing (Sector 31-33): food, beverage and tobacco product, textile and textile product mills, apparel, leather and allied products, wood product, paper, printing and related support activities, petroleum and coal products, chemicals, plastics and rubber products, nonmetallic mineral products, primary metals, fabricated metal products, machinery, computer and electronic products, electronic equipment, appliances, and components, transportation equipment, furniture and related products.
- ✓ Wholesale Trade (Sector 42): durable and nondurable goods.
- ✓ Retail Trade (Sector 44-45): Motor vehicle and parts, furniture and home furnishings, electronics and appliances, building material and garden equipment and supplies, grocery and beverage, health and personal care, gasoline stations, clothing and accessories, sports, hobby, books and music, general merchandise and miscellaneous store retailers.
- ✓ Transportation and Warehousing (Sector 48-49): air, rail, water, and truck transportation, transit and ground passenger transportation, pipeline transportation, scenic and sightseeing transportation, support activities for transportation, postal service, couriers and messengers, warehousing and storage.
- ✓ Information (Sector 51): Publishing, motion picture and sound recording and exhibition, broadcasting and telecommunications, information services and data processing.
- ✓ Finance and Insurance (Sector 52): Monetary authorities, credit intermediation, securities, commodities, insurance, funds, trusts, and other financial vehicles.
- ✓ Real Estate, Rental and Leasing (Sector 53): Real estate, rental centers and leasing services.
- ✓ Professional, Scientific and Technical Services (Sector 54): Lawyers, accountants, engineers, computer services, veterinary services, etc.
- ✓ Management of Companies and Enterprises (Sector 55): Management, holding companies, corporate and regional offices.
- ✓ Administrative and Support, Waste Management and Remediation Services (Sector 56): Administrative and facilities support services, employment and business support services, travel arrangements, investigative and security systems and other business services.
- ✓ Educational Services (Sector 61): Public sector schools, business, technical, trade schools and instruction.
- ✓ Health Care and Social Assistance (Sector 62): Ambulatory health care services, hospitals, nursing and residential care facilities and social assistance.
- ✓ Arts, Entertainment, and Recreation (Sector 71): Performing arts, spectator sports, museums, historical sites, amusement, gambling and recreation industries.
- ✓ Accommodation and Food Services (Sector 72): Accommodations, food service and drinking places.
- ✓ Other Services (Sector 81): Repair and maintenance, personal and laundry services, and religious, grant making, civic and professional organizations.

- ✓ Public Administration (Sector 92): executive, legislative, and other general government support, justice, public order, and safety activities, administration of human resource programs, administration of environmental quality programs, administration of housing programs, urban planning, and community development, administration of economic programs, space research and technology, national security and international affairs.

The initial cluster analysis compared the business structure of Zip Code Tabulation Area (ZCTA) 04046, encompassing Arundel and other communities, to that associated with other ZCTAs and communities that are “similar.” In determining communities for which the comparison can be made, the following criteria were used.

- ✓ The population had to be similar in scale to that associated with the Town of Arundel as demand for many goods and services are ultimately dependent largely upon the size of the market served.
- ✓ The number of households had to be similar to that associated with the Town of Arundel as demand for many goods and services are ultimately dependent largely upon the size of the market served.
- ✓ The selected areas all have median household incomes that are comparable to reported incomes.
- ✓ Transportation and interstate highway access had to be similar.

Furthermore, consideration was also given to climate and proximity to water.

Based on the criteria, eight communities defined by their zip codes were identified for which the comparison in economic structure was made. These eight communities follow.

*Table 4 - Comparable Zip Codes**

Zip Code	General Community	Pop.	HH	Income	Hwy
04032	Freeport, ME	X	X	X	X
06052	New Britain, CT	X	X	X	X
01583	West Boylston, MA	X	X	X	X
06498	Westbrook, CT	X	X	X	X
08086	Thorofare, NJ	X	X	X	X
43619	Northwood, OH	X	X	X	X
48048	New Haven, MI	X	X	X	X
48734	Frankenmuth, MI	X	X	X	X

*Developed by The Chesapeake Group, Inc., 2013.

Under-represented “industries” were then defined as those where ZCTA 04046 had a lesser number of businesses than at least six of the other eight communities. Thus, the number of businesses in zip code 04046 compared to the other communities was below what might be expected.

It is also noted that in some cases the differences are great, or no businesses in the under-represented categories were identified in ZCTA 04046. Once again, under-representation does not mean that the identified categories of businesses are desirable for Arundel.

The following are the “industries” or businesses identified as being under-represented in ZCTA 04046

Table 5 - Under-represented in Zip Code 04046*

NAICS Code	Industry Code Description
236220	Commercial and institutional building construction
442110	Furniture stores
444130	Hardware stores
445310	Beer, wine, and liquor stores
446120	Cosmetics, beauty supplies, and perfume stores
522130	Credit unions
523120	Securities brokerage
524210	Insurance agencies and brokerages
541211	Offices of certified public accountants
541512	Computer systems design services
541611	Administrative management consulting services
541613	Marketing consulting services
621310	Offices of chiropractors
621340	Offices of specialty therapists
623210	Residential mental retardation facilities
624120	Services for the elderly and persons with disabilities
713990	All other amusement and recreation industries
722211	Limited-service restaurants
811310	Commercial machinery repair and maintenance
812112	Beauty salons

*Developed by The Chesapeake Group, Inc., 2013.

Those over-represented are defined in the table that follows.

Table 6 - Over-represented in Zip Code 04046*

NAICS Code	Industry Code Description
236115	New single-family general contractors
236117	New housing operative builders
236118	Residential remodelers
238110	Poured concrete foundation and structure contractors
238210	Electrical contractors and other wiring installation contractors
238220	Plumbing, heating, and air-conditioning contractors
238310	Drywall and insulation contractors
238320	Painting and wall covering contractors
238910	Site preparation contractors
238990	All other specialty trade contractors
424460	Fish and seafood merchant wholesalers
425120	Wholesale trade agents and brokers
441110	New car dealers
441320	Tire dealers
442299	All other home furnishings stores
445110	Supermarkets and other grocery (except convenience) stores
445120	Convenience stores
447110	Gasoline stations with convenience stores
448120	Women's clothing stores
448140	Family clothing stores
448150	Clothing accessories stores

Table 6 - Over-represented in Zip Code 04046 Continued*

NAICS Code	Industry Code Description
453220	Gift, novelty, and souvenir stores
453310	Used merchandise stores
453920	Art dealers
454311	Heating oil dealers
531120	Lessors of nonresidential buildings (except mini-warehouses)
531210	Offices of real estate agents and brokers
541110	Offices of lawyers
541219	Other accounting services
541940	Veterinary services
551114	Corporate, subsidiary, and regional managing offices
561612	Security guards and patrol services
561720	Janitorial services
561730	Landscaping services
624410	Child day care services
713910	Golf courses and country clubs
713930	Marinas
713940	Fitness and recreational sports centers
721110	Hotels (except casino hotels) and motels
721191	Bed-and-breakfast inns
721211	RV (recreational vehicle) parks and campgrounds
722110	Full-service restaurants
722213	Snack and nonalcoholic beverage bars
722320	Caterers
811111	General automotive repair
811121	Automotive body, paint, and interior repair and maintenance
812910	Pet care (except veterinary) services

*Developed by The Chesapeake Group, Inc., 2013.

As previously defined, a second set of comparisons was also made. The business structure of York County was compared to the business structure in other counties that are similar. In determining counties for which the comparison could be made, the criteria employed for the zip code level analysis was employed. Once again, these are as follows.

- ✓ The population size and household numbers had to be similar to those associated with York County, since demand for most goods and services are ultimately dependent largely upon the size of the market served.
- ✓ The selected areas all have median household incomes that are comparable to York County reported incomes.
- ✓ Transportation and interstate highway access had to be similar.

Consideration was also given to climate.

Based on the criteria, seven counties were identified for which the comparison in economic structure of was made. These counties follow.

Table 7 - Comparable Counties*

County	Pop.	HH	Income	Hwy	Water
Niagara County, NY	X	X	X	X	X
Washington County, PA	X	X	X	X	X
Clermont County, OH	X	X	X	X	No
Linn County, IA	X	X	X	X	No
Racine County, WI	X	X	X	X	X
Weber County, UT	X	X	X	X	X
Whatcom County, WA	X	X	X	X	X

*Developed by The Chesapeake Group, Inc., 2013.

Under-represented “industries” were then defined as those where York County had a lesser number of businesses than at least five of the other seven counties. Thus, the number of businesses in York County compared to the other communities was below what might be expected.

It is also noted that in some cases the differences are great, or no businesses in the under-represented categories were identified in York County. Once again, under-representation does not mean that the identified categories of businesses are desirable for the Town of Arundel.

The following are the majority of “industries” or businesses identified as being under-represented in York County.

Table 8 - Under-represented in York County*

NAICS Code	Industry Code Description
115210	Support activities for animal production
221112	Fossil fuel electric power generation
221122	Electric power distribution
236210	Industrial building construction
236220	Commercial and institutional building construction
237110	Water and sewer line and related structures construction
238160	Roofing contractors
238170	Siding contractors
238290	Other building equipment contractors
311612	Meat processed from carcasses
311811	Retail bakeries
312130	Wineries
315212	Women's, girls', and infants' cut and sew apparel contractors
321214	Truss manufacturing
321912	Cut stock, resawing lumber, and planting
322211	Corrugated and solid fiber box manufacturing
323110	Commercial lithographic printing
323113	Commercial screen printing
323115	Digital printing
324110	Petroleum refineries
325411	Medicinal and botanical manufacturing
325412	Pharmaceutical preparation manufacturing

Table 8 - Under-represented in York County (Continued)*

NAICS Code	Industry Code Description
327112	Vitreous china, fine earthenware, and other pottery product manufacturing
327991	Cut stone and stone product manufacturing
332313	Plate work manufacturing
332420	Metal tank (heavy gauge) manufacturing
332710	Machine shops
333220	Plastics and rubber industry machinery manufacturing
333514	Special die and tool, die set, jig, and fixture manufacturing
333515	Cutting tool and machine tool accessory manufacturing
333922	Conveyor and conveying equipment manufacturing
334418	Printed circuit assembly (electronic assembly) manufacturing
335313	Switchgear and switchboard apparatus manufacturing
335314	Relay and industrial control manufacturing
339920	Sporting and athletic goods manufacturing
339950	Sign manufacturing
423120	Motor vehicle supplies and new parts merchant wholesalers
423320	Brick, stone, and related construction material merchant wholesalers
423330	Roofing, siding, and insulation material merchant wholesalers
423420	Office equipment merchant wholesalers
423450	Medical, dental, and hospital equipment and supplies merchant wholesalers
423460	Ophthalmic goods merchant wholesalers
423510	Metal service centers and other metal merchant wholesalers
423610	Elect. apparatus & equip., wiring supplies, & related equipment merch. wholesalers
423710	Hardware merchant wholesalers
423730	Warm air heating and air-conditioning equipment and supplies merchant wholesalers
423810	Construction & mining machinery and equipment merchant wholesalers
423820	Farm and garden machinery and equipment merchant wholesalers
423830	Industrial machinery and equipment merchant wholesalers
423840	Industrial supplies merchant wholesalers
423850	Service establishment equipment and supplies merchant wholesalers
423930	Recyclable material merchant wholesalers
423940	Jewelry, watch, precious stone, and precious metal merchant wholesalers
424130	Industrial and personal service paper merchant wholesalers
424210	Drugs and druggists' sundries merchant wholesalers
424310	Piece goods, notions, and other dry goods merchant wholesalers
424320	Men's and boys' clothing and furnishings merchant wholesalers
424410	General line grocery merchant wholesalers
424420	Packaged frozen food merchant wholesalers
424480	Fresh fruit and vegetable merchant wholesalers
424710	Petroleum bulk stations and terminals
424720	Petroleum & petroleum products merchant wholesalers
424810	Beer and ale merchant wholesalers
424910	Farm supplies merchant wholesalers
425120	Wholesale trade agents and brokers
441221	Motorcycle, ATV, and personal watercraft dealers
441320	Tire dealers
442110	Furniture stores

Table 8 - Under-represented in York County (Continued)*

NAICS Code	Industry Code Description
443112	Radio, television, and other electronics stores
443120	Computer and software stores
444110	Home centers
444210	Outdoor power equipment stores
444220	Nursery, garden center, and farm supply stores
445291	Baked goods stores
445310	Beer, wine, and liquor stores
446110	Pharmacies and drug stores
446120	Cosmetics, beauty supplies, and perfume stores
446130	Optical goods stores
446191	Food (health) supplement stores
448150	Clothing accessories stores
451120	Hobby, toy, and game stores
451140	Musical instrument and supplies stores
452111	Department stores (except discount department stores)
452112	Discount department stores
453210	Office supplies and stationery stores
454111	Electronic shopping
454210	Vending machine operators
481211	Nonscheduled chartered passenger air transportation
484110	General freight trucking, local
484121	General freight trucking, long-distance, truckload
484122	General freight trucking, long-distance, less than truckload
485113	Bus and other motor vehicle transit systems
485410	School and employee bus transportation
485510	Charter bus industry
485991	Special needs transportation
488410	Motor vehicle towing
488510	Freight transportation arrangement
488991	Packing and crating
492110	Couriers and express delivery services
511130	Book publishers
512110	Motion picture and video production
512240	Sound recording studios
515112	Radio stations
517110	Wired telecommunications carriers
517210	Wireless telecommunications carriers (except satellite)
518210	Data processing, hosting, and related services
522110	Commercial banking
522130	Credit unions
522220	Sales financing
522291	Consumer lending
523120	Securities brokerage
523920	Portfolio management
524114	Direct health and medical insurance carriers
524127	Direct title insurance carriers
524210	Insurance agencies and brokerages

Table 8 - Under-represented in York County (Continued)*

NAICS Code	Industry Code Description
524291	Claims adjusting
524292	Third party administration of insurance and pension funds
531110	Lessors of residential buildings and dwellings
531390	Other activities related to real estate
532111	Passenger car rental
532210	Consumer electronics and appliances rental
532220	Formal wear and costume rental
532412	Construction, mining, and forestry machinery and equipment rental and leasing
541110	Offices of lawyers
541211	Offices of certified public accountants
541213	Tax preparation services
541330	Engineering services
541350	Building inspection services
541360	Geophysical surveying and mapping services
541511	Custom computer programming services
541613	Marketing consulting services
541614	Process, physical distribution, and logistics consulting services
541810	Advertising agencies
541850	Display advertising
541860	Direct mail advertising
541921	Photography studios, portrait
541930	Translation and interpretation services
551112	Offices of other holding companies
551114	Corporate, subsidiary, and regional managing offices
561110	Office administrative services
561210	Facilities support services
561312	Executive search services
561320	Temporary help services
561520	Tour operators
561611	Investigation services
561740	Carpet and upholstery cleaning services
561910	Packaging and labeling services
562211	Hazardous waste treatment and disposal
562212	Solid waste landfill
562910	Remediation services
611210	Junior colleges
611420	Computer training
611511	Cosmetology and barber schools
611512	Flight training
611513	Apprenticeship training
611620	Sports and recreation instruction
611710	Educational support services
621210	Offices of dentists
621310	Offices of chiropractors
621391	Offices of podiatrists
621493	Freestanding ambulatory surgical and emergency centers

Table 8 - Under-represented in York County (Continued)*

NAICS Code	Industry Code Description
621511	Medical laboratories
621991	Blood and organ banks
624210	Community food services
624221	Temporary shelters
711211	Sports teams and clubs
712190	Nature parks and other similar institutions
713950	Bowling centers
722212	Cafeterias, grill buffets, and buffets
722310	Food service contractors
722410	Drinking places (alcoholic beverages)
811112	Automotive exhaust system repair
811113	Automotive transmission repair
811121	Automotive body, paint, and interior repair and maintenance
811191	Automotive oil change and lubrication shops
811192	Car washes
811310	Commercial machinery repair and maintenance
812112	Beauty salons
812113	Nail salons
812320	Dry-cleaning and laundry services (except coin-operated)
812331	Linen supply

*Developed by The Chesapeake Group, Inc., 2013.

There are several clusters that may be of importance to Arundel while also being compatible with the rural character and resources in the area. These include those that follow

- ✓ Medicinal, botanical and pharmaceutical manufacturing.
- ✓ China, fine earthenware and pottery product manufacturing.
- ✓ Subsets of mechanical shops.
- ✓ Subsets of sporting and athletic goods manufacturing.
- ✓ Computer, software and electronics retail.
- ✓ Beer and wine, baked goods and health supplement and food stores.
- ✓ Select business services.

DEMAND FORECASTING

The second methodology employed to define opportunities is demand forecasting. The potential for all goods and services is based on the ability of the market to purchase those goods and services.

To facilitate data that can be used to project demand for goods and services in computer modeling, a survey of residents was conducted. The focus of the survey was on current spending and activity patterns otherwise not available from other sources. The current spending is used to forecast future spending, with growth in revenues or sales and related supportable space derived from growth in the market. Theoretically, none of the growth in revenues or sales indicated is extracted from any existing operation. The following is also noted.

- ✓ All survey methodologies, including those employed by the U. S. Census Bureau, have inherent biases. Online surveys have a tendency to be biased toward higher income households and those without pre-school aged children.

- ✓ Grocery shopping is used as a surrogate for convenience shopping in general; while apparel shopping is used for non-convenience shopping.
- ✓ Food for home consumption is generally purchased from supermarkets or box operations containing food space.
- ✓ People also purchase food from food service establishments. There is a relationship between the type of food service establishment and the typical price of the meal.
- ✓ There are certain forms of entertainment and recreation which are often associated with food consumption.
- ✓ Regardless of income, most households spend the majority of the income on three basic commodities. These are food, housing and transportation.

The following are highlights of the survey of resident households.

ADDITIONAL SELECT SAMPLE DEMOGRAPHICS

With more than 300 households responding, the sample is diverse from a demographic perspective and large, representing about one-fourth of the resident households. Demographics that impact spending patterns, expenditures and opportunities follow.

- ✓ More than one-half of the households are small in size, having only one or two members.

*Table 9 - Number of People Residing in Household**

Number in Household	Percent
1	9.0%
2	42.4%
3	14.7%
4	22.0%
5	7.8%
6 or more	4.1%

*Developed by The Chesapeake Group, Inc., 2013.

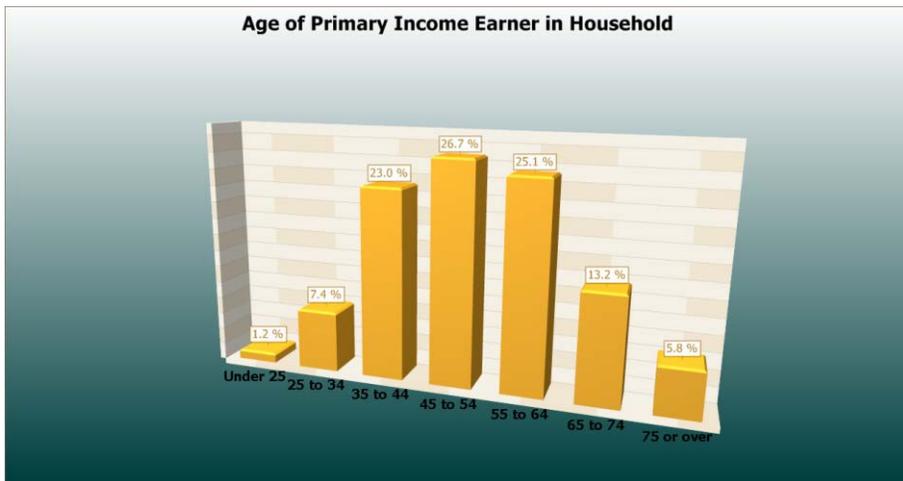
- ✓ The small household size is indicative of few households having pre-school age children.

*Table 10 - Households With Children Under the Age of Six**

Number	Percent
0	87.2%
1	9.5%
2	3.3%
3	0.0%
4 or more	0.0%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Many primary income earners in households in Arundel are seniors. About two in ten primary income earners are 65 years of age or older. Almost one-fourth is between the ages of 55 and 65.

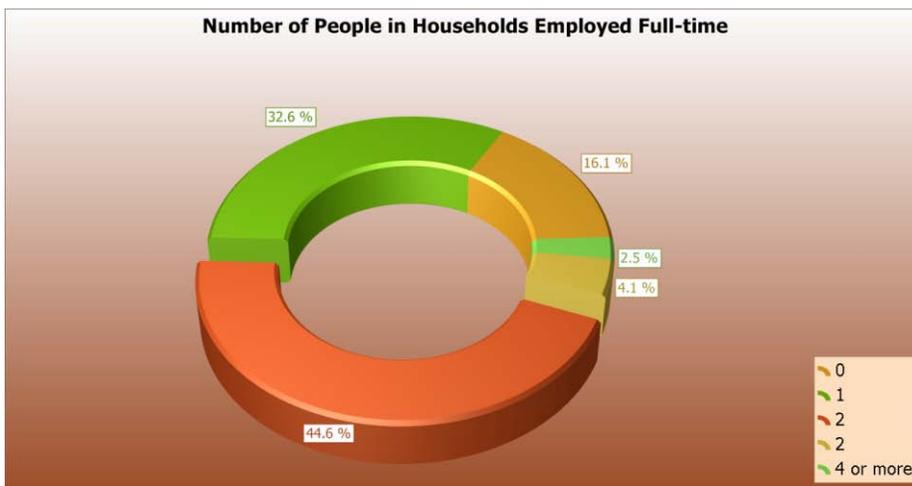


*Table 11 – Age of Primary income Earner in Household**

Age Category	Percent
Under 25	1.2%
25 to 34	7.4%
35 to 44	23.0%
45 to 54	26.7%
55 to 64	25.1%
65 to 74	13.2%
75 or over	5.8%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ About 16% of the households has no member employed on a full-time basis. This is clearly reflective of age of the residents.



*Table 12 - Number Employed Full-time in Household**

Number	Percent
0	16.1%
1	32.6%
2	44.6%
3	4.1%
4 or more	2.5%

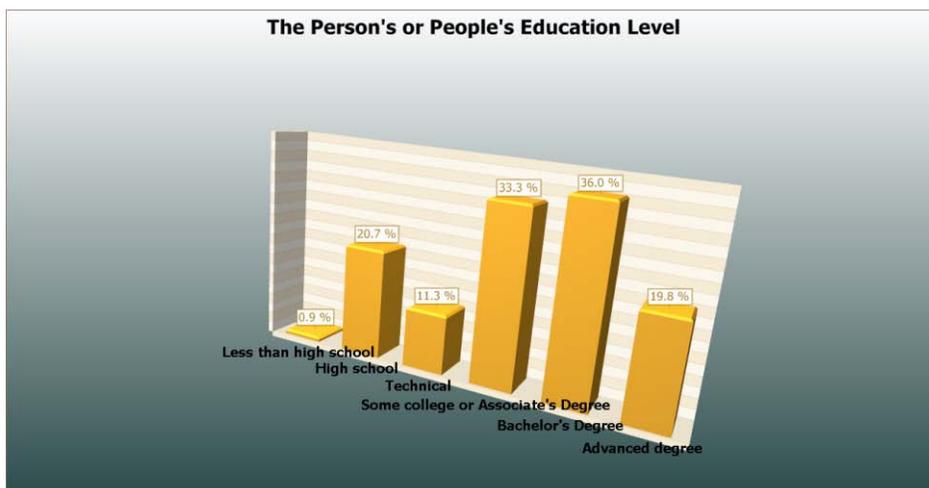
*Developed by The Chesapeake Group, Inc., 2013.

- ✓ While 16% of the households has no one employed full-time; only 12% of the households has someone employed part-time desiring full-time employment or someone unemployed seeking full-time employment.

*Table 13 - Household Members Employed Part-time or Not Employed Desiring Full-time Employment**

Desiring Full-time Employment	Percent
No	88.1%
Yes, 1 person	10.6%
Yes 2 or more people	1.3%

*Developed by The Chesapeake Group, Inc., 2013.



- ✓ It is also noted that the educational level of those desiring full-time employment is generally high. While included are those with only high school educations; it generally involves those having some college if not at least a Bachelor's Degree.
- ✓ Of all the demographic factors impacting spending, expenditures and opportunities; none is arguably more important than annual household income. The average (mean) household income level is estimated at \$84,200 for 2013. This is substantially above the median household income levels identified in the 2010 Census.

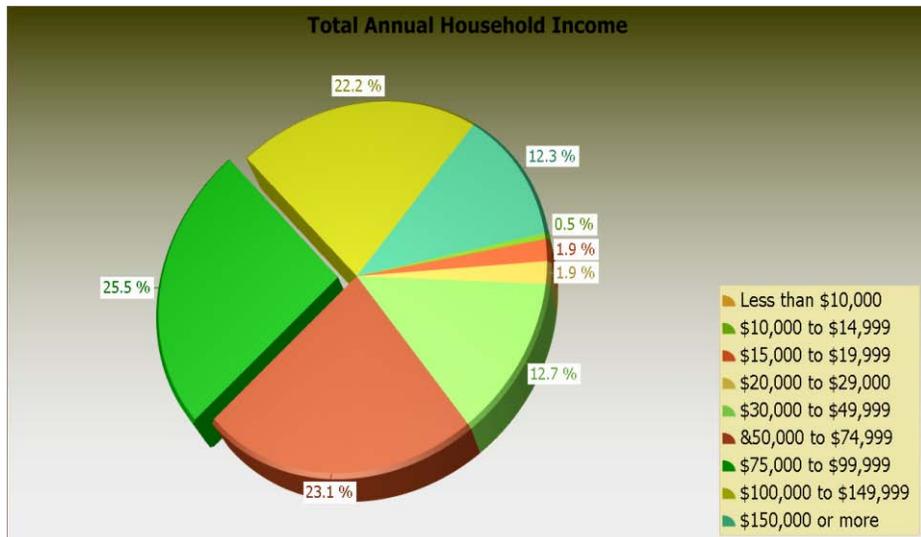


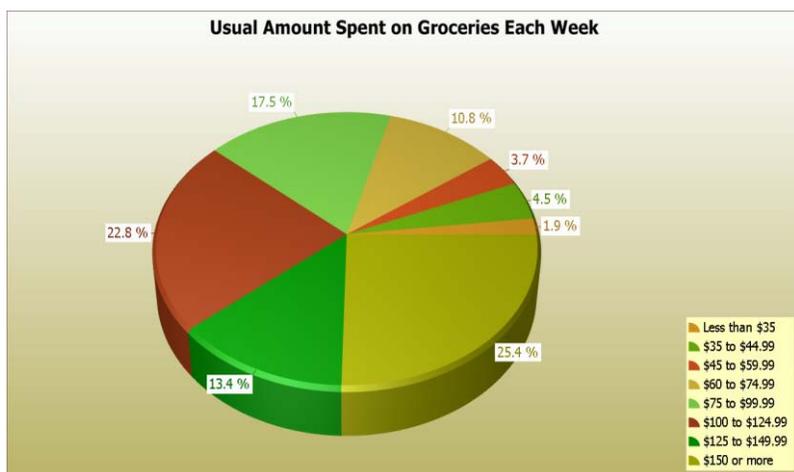
Table 14 - Average Total Annual Household Income Level*

Income Range	Percent
Less than \$19,999	2.4%
\$20,000 to \$29,999	1.9%
\$30,000 to \$49,999	12.7%
\$50,000 to \$74,999	23.1%
\$75,000 to \$99,999	25.5%
\$100,000 to \$149,999	22.2%
\$150,000 or more	12.3%

*Developed by The Chesapeake Group, Inc., 2013.

SPENDING RELATED INFORMATION

The three major goods upon which most households spend their resources and assets are food, transportation and housing. Food is generally purchased for home consumption or consumed at a food service establishment. The following provides a synopsis of spending by Arundel households.



- ✓ The typical Arundel household spends on average roughly \$112 a week on groceries and related merchandise most often purchased at supermarkets, markets, or box/warehouse types of operations. About one-fourth of the residents spends more than \$150 in a typical week.

Table 15 - Amount Spent on Groceries Per Week*

Spending	Percent
Less than \$35	1.9%
\$35 to \$44.99	4.5%
\$45 to \$59.99	3.7%
\$60 to \$74.99	10.8%
\$75 to \$99.99	17.5%
\$100 to \$124.99	22.8%
\$125 to \$149.99	13.4%
\$150 or more	25.4%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ The following table contains the information on the names of the operations associated with food shopping.

Table 16 - Name of Store Often Frequented for Grocery Shopping

Operation	Percent
Hannaford	58.46%
Walmart	16.91%
Shaws	14.34%
Market Basket	4.41%
Whole Foods	1.84%
New Morning Natural Foods	0.74%
Sam's Club	0.74%
Trader's Joe	0.74%
Others	1.84%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Most grocery shopping is done in either Kennebunk or Biddeford.

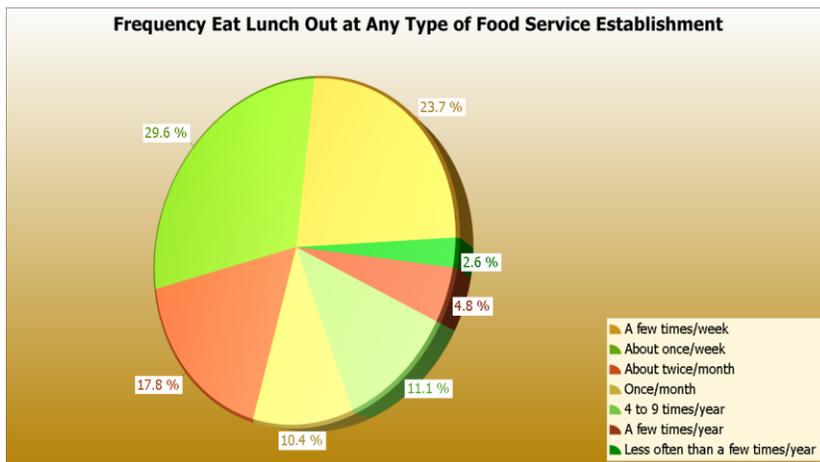
Table 17 - General Location of the Store

Location	Percent
Kennebunk	44.12%
Biddeford	40.81%
New Hampshire	4.41%
Portland	4.41%
Rt. 1	1.84%
Saco	0.74%
Sanford	0.74%
Scarborough	0.74%
Arundel	0.74%
Waterboro	0.37%
Westbrook	0.37%
Brunswick	0.37%

*Developed by The Chesapeake Group, Inc., 2013.

Food is also purchased at food service establishments that prepare food for on-site or carryout consumption.

- ✓ The majority (54%) of households has one or more members that eat lunch outside the home at least once per week. An additional 18% eat lunch outside of the home or work about twice per month.



*Table 18 - Frequency of Eating Lunch Out**

Frequency	Percent
A few times/week	23.7%
About once/week	29.6%
About twice/month	17.8%
Once/ month	10.4%
4 to 9 times/year	11.1%
Once or twice/year	4.8%
Less often than once/year	2.6%

*Developed by The Chesapeake Group, Inc., 2013.

There is a relationship between the type of food service establishment and the amount generally spent for lunch, dinner, or on other occasions.

- ✓ For lunch, about one-third of the residents eats at full-service restaurants when eating lunch outside the home. On the other hand, roughly the same proportion generally purchases their lunch from sub shops.

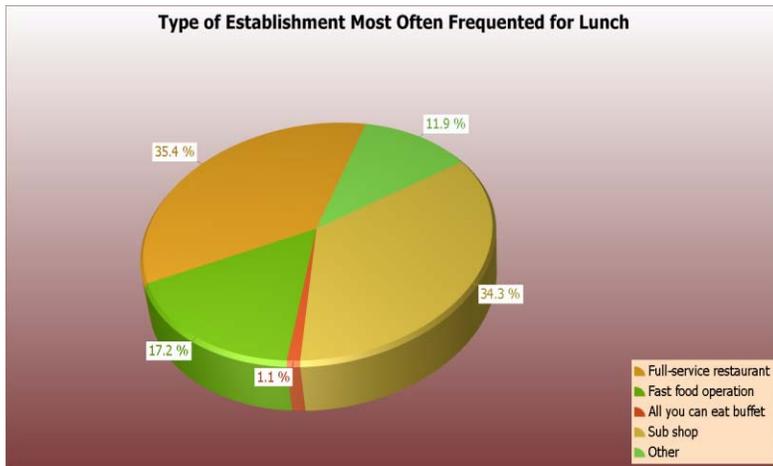


Table 19 - Type of Food Establishment Frequented for Lunch*

Type of Establishment	Percent
Full-service restaurant	35.4%
Fast food operation	17.2%
All you can eat buffet	1.1%
Sub shop	34.3%
Other	11.9%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Lunch dollars are generally spent outside of the Town of Arundel, thus exporting the dollars and jobs to other communities within the region including Kennebunk, Saco, Biddeford and other locations. It is noted that less than 12% eats lunch at establishments in Arundel as found in Table 20.

Table 20 - Location of the Lunch Food Establishment*

General Location	Percent
Town of Arundel	11.6%
Kennebunk	29.7%
Kennebunkport	3.5%
Other	55.2%

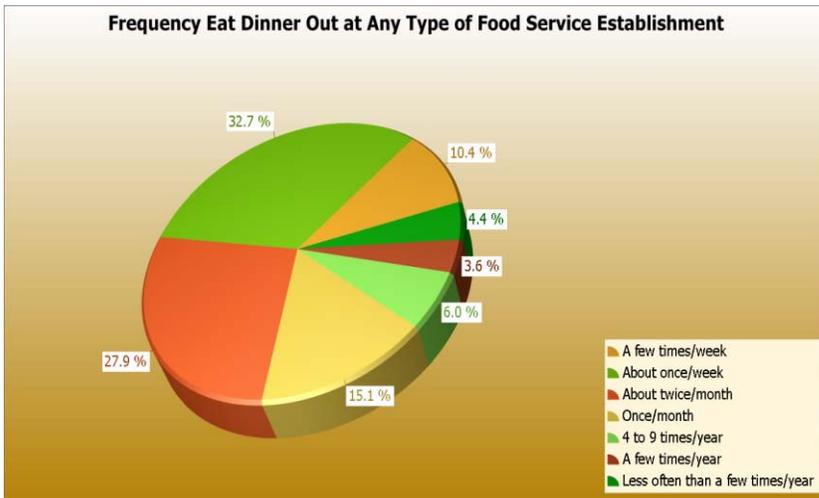
*Developed by The Chesapeake Group, Inc., 2013.

- ✓ The particular food service establishments frequented for lunch follow.

Table 21 - Name of Establishment Most Often Frequented for Lunch*

Establishment	Percent
Subway	14.94%
Applebee's	5.81%
Wendy's	5.81%
Ashby's	4.15%
Panera	3.73%
J Brothers	3.73%
McDonalds	3.73%
Amato	3.32%
Arundel Market	3.32%
Sebago Brewery	2.90%
Burger King	2.07%
Federal Jack	2.07%
Olive Garden	2.07%
Landing Store	1.67%
Dunkin' Donuts	1.67%
Duffy's	1.24%
Perfecto's	1.24%
99	1.24%
Ruby Tuesday	1.24%
Others	33.20%

*Developed by The Chesapeake Group, Inc., 2013.

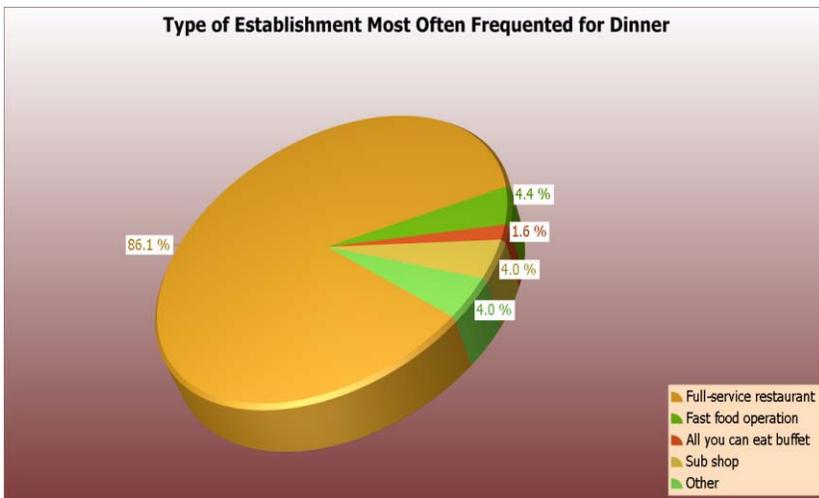


- ✓ Roughly 43% of the residents typically eats dinner outside of the home at food service establishments at least once per week, with about three-fourths of these eating dinner out generally once per week.

Table 22 - Frequency of Eating Dinner at Food Service Establishments*

Frequency	Percent
A few times/week	10.4%
About once/week	32.7%
About twice/month	27.9%
Once/ month	15.1%
4 to 9 times/year	6.0%
A few times/year	3.6%
Less often than a few times/year	4.4%

*Developed by The Chesapeake Group, Inc., 2013.



- ✓ The overwhelming majority eats at full-service establishments when eating dinner out.

Table 23 - Type of Establishment Frequented for Dinner*

Type of Establishment	Percent
Full-service restaurant	86.1%
Fast food operation	4.4%
All you can eat buffet	1.6%
Sub shop	4.0%
Other	4.0%

*Developed by The Chesapeake Group, Inc., 2013..

Table 24 - Name of Establishment Most Often Frequented for Dinner*

Establishment	Percent
Sebago Brewery	8.26%
Varies	7.34%
Applebee's	6.42%
Longhorn Steakhouse	5.96%
Olive Garden	5.50%
99	5.05%
Federal Jack	5.05%
Duffy's	3.67%
Ruby Tuesday	3.67%
Village Tavern	3.67%
Subway	2.29%
Mullgains	2.29%
Wendy's	1.38%
Kobe	1.38%
Others	31.65%

- ✓ The table to the left contains the establishments most often frequented for dinner.

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Kennebunk establishments attract about three out of every ten Arundel households.

*Table 23 - Location of the Dinner Food Establishment**

General Location	Percent
Town of Arundel	2.5%
Kennebunk	28.8%
Kennebunkport	4.9%
Other	63.8%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ In general, people eat lunch out with greater frequency than dinner.

*Table 24 - Frequency of Eating Lunch and Dinner at Food Service Establishments**

Frequency	Lunch Percent	Dinner Percent
A few times/week	23.7%	10.4%
About once/week	29.6%	32.7%
About twice/month	17.8%	27.9%
Once/ month	10.4%	15.1%
4 to 9 times/year	11.1%	6.0%
Once or twice/year	4.8%	3.6%
Less often than once/year	2.6%	4.4%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ While people eat lunch out with greater frequency, they typically spend more dollars on food associated with the dinner trips than the lunch trips.

*Table 25 - Type of Establishment Frequented for Lunch and Dinner**

Type of Establishment	Lunch Percent	Dinner Percent
Full-service restaurant	35.4%	86.1%
Fast food operation	17.2%	4.4%
All you can eat buffet	1.1%	1.6%
Sub shop	34.3%	4.0%
Other	11.9%	4.0%

*Developed by The Chesapeake Group, Inc., 2013.

In addition to purchasing food for home consumption from supermarkets, box and warehouse operations; Arundel residents also purchase a range of fresh merchandise from non-traditional sources such as farmers' markets, bakeries and others.

- ✓ About one-fourth of the residents purchases a range of products from non-traditional supermarkets and related operations at least once per week when available. More than four in ten make such purchases at least twice per month.

*Table 26 - Frequency of Purchases of Fresh Merchandise at Non-traditional Operations**

Frequency	Percent
A few times/week	4.9%
About once/week	21.5%
About twice/month	15.8%
Once/ month	11.3%
4 to 9 times/year	21.5%
Once or twice/year	15.0%
Less often than once/year	10.1%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Most purchase fresh produce and fruit in season. However, at least one-fourth of all residents also purchase meats, fresh or smoked fish, and breads.

*Table 27 - Type of Merchandise Purchased at Non-supermarket or Non-box Operations**

Product	Percent
Fresh produce in season	76.1%
Fresh fruit in season	58.5%
Fresh or smoked fish	37.2%
bread	26.5%
other baked goods	23.5%
meats	39.3%
other	14.5%

*Developed by The Chesapeake Group, Inc., 2013.

As noted, transportation and housing are the two other additional major expenditures on commodities for most households. In areas with minimal public transportation, private vehicles are dominant. Furthermore, cost factors are most often impacted by the age of the vehicle.

- ✓ Few households do not own or lease a private vehicle. (Some of these likely have a vehicle available through employment.) One half of all households have two personal vehicles which are owned or leased; and almost four in ten households have three or more vehicles.

*Table 28 - Number of Vehicles Owned**

Number	Percent
0	0.4%
1	11.8%
2	49.4%
3	22.0%
4 or more	16.3%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ About one half of all households have two or more vehicles that are at least five years of age. (In general, vehicle payments are less or non-existent on such vehicles. However, maintenance costs are generally higher.)

Table 29 - Vehicles Five Years or Older*

Number	Percent
0	14.7%
1	32.7%
2	29.4%
3	13.1%
4 or more	10.2%

*Developed by The Chesapeake Group, Inc., 2013.

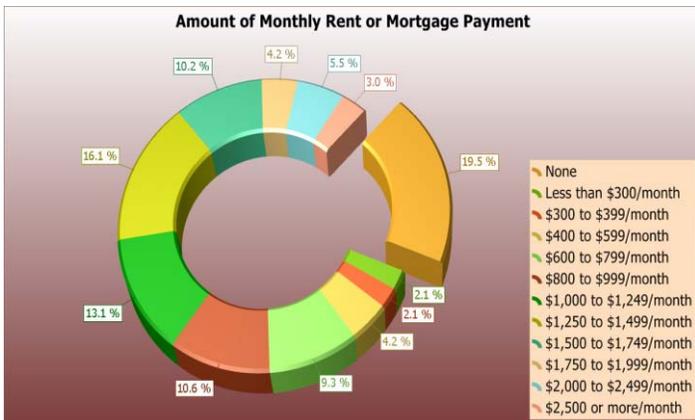
The following is salient information with respect to existing housing.

- ✓ Roughly 94% of the households own the units in which they reside in Arundel.
- ✓ Roughly 60% of the households have lived in their current housing units for at least ten years, with about one-half of these living in their units for more than 20 years.

Table 30 – Tenure in Current House In Arundel*

Years Living in Unit	Percent
2 years or less	10.3%
3 to 4 years	11.1%
5 to 9 years	18.5%
10 to 19 years	30.0%
20 or more years	30.0%

*Developed by The Chesapeake Group, Inc., 2013.



About two in ten households do not have a monthly rent or mortgage payment. In some ways this reflects the tenure. However, it also reflects a number of other factors including but not limited to property inheritance and moves to Arundel from other areas later in life. The average monthly payment for those with and without monthly payments is \$1,003.00. The average for only those with payments is \$1,245.00.

Table 31 - Monthly Rent or Mortgage Payment*

Monthly Payment	Percent
None	19.5%
Less than \$300/month	2.1%
\$300 to \$399/month	2.1%
\$400 to \$599/month	4.2%
\$600 to \$799/month	9.3%
\$800 to \$999/month	10.6%
\$1,000 to \$1,249/month	13.1%
\$1,250 to \$1,499/month	16.1%
\$1,500 to \$1,749/month	10.2%
\$1,750 to \$1,999/month	4.2%
\$2,000 to \$2,499/month	5.5%
\$2,500 or more/month	3.0%

*Developed by The Chesapeake Group, Inc., 2013.

The survey indicates for food and food services that many food and food service establishment dollars of residents are exported to other neighboring communities. Today, many dollars also leave communities through online and catalog purchases.

- ✓ About 11% of the residents shop online at least once per week; and about one-half shop online or through catalogs once a month or more often.

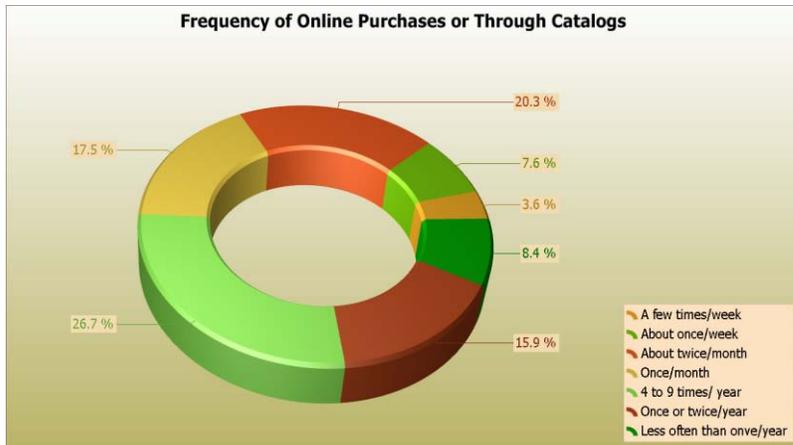


Table 32 - Frequency of Online or Catalog Purchases*

Frequency	Percent
A few times/week	3.6%
About once/week	7.6%
About twice/month	20.3%
Once/ month	17.5%
4 to 9 times/year	26.7%
Once or twice/year	15.9%
Less often than once/year	8.4%

*Developed by The Chesapeake Group, Inc., 2013.

Households also spend resources on entertainment activity. The following provides some of the information on entertainment spending by Arundel households.

- ✓ About 15% of the households have at least one member that goes to movie theaters at least once per month. About one-fourth goes four to nine times a year.

Table 33 - Frequency of Trips to Movie Theaters*

Frequency	Percent
A few times/week	0.4%
About once/week	1.2%
About twice/month	2.4%
Once/ month	11.0%
4 to 9 times/year	24.4%
Once or twice/year	29.3%
Less often than once/year	31.3%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ About one in ten households have one or more members that have an interest in and attend crafts, art, guns and other shows at least once per month.

Table 34 - Frequency of Attendance at Crafts, Gun, Art or Other Shows*

Frequency	Percent
A few times/week	1.2%
About once/week	1.6%
About twice/month	2.4%
Once/ month	4.5%
4 to 9 times/year	15.4%
Once or twice/year	31.6%
Less often than once/year	43.3%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ The specific interests held by residents when attending shows is contained in the table that follows.

*Table 35 - Type of Collectables When Attending Shows**

Collectables	Percent
Art	10.91%
Cars	7.27%
Guns	6.36%
Plants	5.45%
Tools	4.55%
Furniture	3.64%
Coins	3.64%
Animals	2.73%
Jewelry	2.73%
Others	34.54%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ In addition, few attend any type of youth activities on a regular basis, reflecting noted population demographics.

*Table 36 - Frequency of Attendance at Youth Activities**

Frequency	Percent
A few times/week	0.8%
About once/week	0.0%
About twice/month	2.0%
Once/ month	2.4%
4 to 9 times/year	10.6%
Once or twice/year	33.3%
Less often than once/year	50.8%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ More than one-third of the residents shop for clothes at Kohl's. Other operations from which apparel is purchased are found in Table 37.

*Table 37 - Name of Store Often Frequented for Clothes Shopping**

Store	Percent
Kohl's	37.50%
Walmart	7.81%
Goodwill	7.03%
TJ Maxx	5.86%
LL Beans	5.47%
Target	4.30%
Macy's	4.30%
Online	3.91%
Reny's	1.95%
Gap	1.56%
Talbots	1.56%
Sears	1.17%
Others	11.72%

*Developed by The Chesapeake Group, Inc., 2013

MARKETS

There are four general markets for the full range of goods and services in Arundel. The primary market consists of Arundel residents. The secondary market is composed of residents in an area outside of the Town but in other parts of York County. The third market are visitors to the general area; and the fourth are residents of other communities outside of York County. For analysis purposes, the later two are combined into that defined as the visitor market.

No matter the success of any region, jurisdiction, commercial center, or any other area or facility where consumers invest or spend dollars; none will be able to capture all the dollars of any market. As examples, people employed often spend resources at or near their places of employment. At other times, people make visits and spend money with relatives and friends living in other locations or while on vacations. As noted, the rapidly increasing exportation of dollars today is from “online” or catalog activity.

HOUSING ESTIMATES

As defined, the primary market consists of the population living within the Town of Arundel. The following related information impacts the potential for additional housing units or households in Arundel as generated from the survey of existing residents.

- ✓ As much as 46% of the residents anticipate or see some potential for a move from their current Arundel residences in the next five years.

*Table 38 - Anticipate Change in Housing in Next Five Years**

Anticipate Change	Percent
Yes	23.2%
No	53.7%
Maybe	23.2%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Should such a move occur, 35% anticipate the move would be to an area outside of the Arundel-Kennebunk-Kennebunkport area.

*Table 39 - Change Would Likely Result in Move from Arundel-Kennebunk-Kennebunkport Area**

Likelihood of Moving From Area	Percent
Yes	35.1%
No	40.5%
Uncertain	24.4%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ Irrespective of the location, should such a move occur about four in ten would seek a smaller housing unit than the one which they currently occupy. Only one in ten believe they would seek a larger unit.

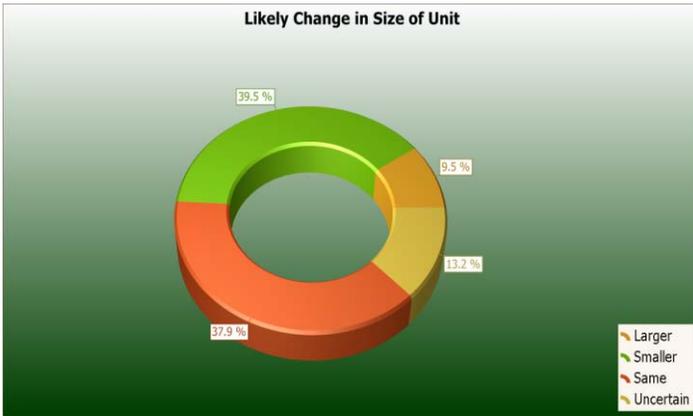


Table 40 - Anticipated Change in Size of Unit*

New Size	Percent
Larger	9.5%
Smaller	39.5%
Same	37.9%
Uncertain	13.2%

*Developed by The Chesapeake Group, Inc., 2013.

In addition to the survey results, historical growth in housing or “roof tops” is an indicator of future growth in an area where land remains available for development or redevelopment. Both the primary and secondary markets have grown and are expected to continue to grow.

Table 41 - Change in Housing Units by Select Towns and York County from 1990 to 2010*

Select Community	Total Housing Units			Change in HU	Change in HU	Change In HU	% Change in HU	% Change in HU	% Change in HU
	1990 Census	2000 Census	2010 Census	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010
Arundel	1,036	1,415	1,692	379	277	656	37%	20%	63%
Biddeford	9,051	9,631	10,064	580	433	1,013	6%	4%	11%
Kennebunk	4,021	4,985	5,906	964	921	1,885	24%	18%	47%
Kennebunkport	2,244	2,555	2,897	311	342	653	14%	13%	29%
Kittery	3,927	4,375	4,942	448	567	1,015	11%	13%	26%
Lebanon	1,750	2,090	2,540	340	450	790	19%	22%	45%
Ogunquit	1,469	2,114	2,009	645	-105	540	44%	-5%	37%
Old Orchard Beach	5,668	6,222	6,886	554	664	1,218	10%	11%	21%
Saco	6,826	7,424	8,508	598	1,084	1,682	9%	15%	25%
Sanford	8,315	8,807	9,452	492	645	1,137	6%	7%	14%
Waterboro	2,144	2,828	3,574	684	746	1,430	32%	26%	67%
Wells	5,217	7,794	8,557	2,577	763	3,340	49%	10%	64%
York	6,504	8,053	8,649	1,549	596	2,145	24%	7%	33%
Total York County	79,941	94,234	105,773	14,293	11,539	25,832	18%	12%	32%

Source: 2010 Census and Arundel’s or Southern Maine Regional Planning Organizations’ planning documents.

According to the published data:

- ✓ The number of housing units in Arundel grew from 1,036 in 1990 to 1,692 in 2010. The greatest growth in units occurred between 1990 and 2000.
- ✓ York County grew from 79,941 units in 1990 to 105,773 units in 2010.
- ✓ Like Arundel, York County’s greatest growth was from 1990 to 2000.
- ✓ For both Arundel and York County growth slowed from 2000 to 2010 in spite of substantially greater housing growth nationally from 2000 to 2010.

- ✓ Arundel's growth rate during both decades was almost twice the growth rate of York County.
- ✓ Of the York County cities and towns examined, Arundel grew at a faster pace than all but one or two other jurisdictions between both 1990 to 2000 and 2000 to 2010 as well as from 1990 through 2010.

Based on the historical development patterns and the desire or likelihood of current Arundel residents to move to new residences in the foreseeable future; additional growth is anticipated in both Arundel and York County, albeit at a slower pace than previous decades. It is estimated that Arundel will add between 150 and 200 housing units between 2013 and 2023.

This pace is well below growth in the past twenty-years as a result of previous noted factors as well as other national factors. That factor follows.

- ✓ More restrictive financing than the previous decade.

York County, excluding Arundel, is expected to add between 8,500 and 10,000 additional housing units and related households between 2013 and 2023.

For Arundel and irrespective of whether new households are internally or externally generated, the largest proportion of new households and units will be composed of primary income earners who are 50 or older.

RETAIL ESTIMATES ASSOCIATED WITH THE RESIDENTS

Growth in housing units and households will result in increased demand for retail goods and related services. Countering the increased demand for goods and services generated from household growth will be increased growth of online sales and technological change that will result in changes in required inventories within "bricks and mortar" operations.

It is also noted that:

- ✓ All sales estimates are in 2013 dollars.
- ✓ Focusing on opportunities associated with growth is important from a public sector perspective since the opportunities are not derived from any existing operations or activities.
- ✓ There have been some substantial changes nationally in consumer spending in the past five years that are anticipated to remain relatively constant over the next few years if not longer. They include a significant shift away from discretionary spending that impacts what is often termed "shopper goods" categories of retail associated with general merchandise, furniture, apparel and many miscellaneous operations.

Aggregate retail sales figures represent a compilation of sales associated with ten major categories and the types of operations within those categories. The ten major categories of retail goods and related services follow.

- ✓ Food, such as groceries and related merchandise generally purchased for home preparation or consumption.
- ✓ Eating and drinking, consisting of prepared food and beverages generally consumed on the premises or carried to another location.
- ✓ General merchandise, including variety stores, department stores, and large value oriented retail operators.
- ✓ Furniture and accessories, including appliances and home furnishings.

- ✓ Transportation and utilities, including the sale of new and used automotive and other personal vehicles and parts and basic utilities for the home.
- ✓ Drugstores, including those specializing in health and beauty aids or pharmaceuticals.
- ✓ Apparel and accessories.
- ✓ Hardware & building materials, including traditional hardware stores & garden & home improvement centers.
- ✓ Auto services, including gasoline and vehicle repair.
- ✓ Miscellaneous, including a plethora of retail goods and services ranging from florists to paper goods.

Many of today’s better known operations in fact fall into more than one category. For example, many of the “big box” general merchandisers, such as Walmart, have traditional supermarket components within their operations.

A productivity level is the sales per square foot figure essential to pay all costs of operation and provide a reasonable return on investment. Sales productivity levels vary for each sub-category, type of business operation, or store-type. The productivity levels vary from low figures for bowling centers to thousands of dollars for others. Supportable space is derived by dividing the amount of sales by the appropriate productivity level.

Based on current spending, Arundel households are estimated to generate an average (mean) retail goods and related sales of roughly \$43,790 at any and all locations within Arundel, York County, Maine and elsewhere in 2013.

Aggregate or total sales generated by Arundel resident spending is estimated at \$68.7 million in 2013. In total and at any and all locations, this supports roughly 200,000 square feet of retail goods and related services space.

*Table 42 - Estimated Retail Goods and Related Services Supportable Space for Arundel Residents (in Square Feet)**

Category	2013	2013
Food	\$8,410,000	15,706
Eat/Drink	8,094,000	20,235
General Merchandise	10,904,000	35,569
Furniture	1,195,000	3,680
Transportation	10,299,000	29,969
Drugstore	5,064,000	10,128
Apparel	2,604,000	8,103
Hardware	5,998,000	25,497
Vehicle Service	7,716,000	18,784
Miscellaneous	8,423,000	32,533
TOTAL	\$68,707,000	200,204

*Developed by The Chesapeake Group, Inc., 2013.

Table 43 contains the breakdown of sales and space by sub-category or type of operation for the primary market for 2013.

Table 43 - Estimated Retail Goods and Related Services Supportable Space for Arundel Residents by Category and Sub-category (in Square Feet)*

Sub-category	2013	2013
Food	\$8,410,000	15,706
Supermarkets	7,022,350	11,902
Independents	672,800	1,682
Bakeries	185,020	617
Dairies	109,330	304
Others	420,500	1,201
Eat/Drink	8,094,000	20,235
General Merchandise	10,904,000	35,569
Dept. Stores	3,860,016	12,867
Variety Stores	785,088	3,020
Jewelry	752,376	1,060
Sporting Goods/Toys	1,188,536	3,962
Discount Dept.	4,089,000	13,630
Antiques, etc.	54,520	237
Others	174,464	793
Furniture	1,195,000	3,680
Furniture	180,445	582
Home Furnishings	248,560	710
Store/Office Equip.	188,810	629
Music Instr./Suppl.	51,385	257
Radios, TV, etc.	525,800	1,502
Transportation	10,299,000	29,969
New/Used Vehicles	3,604,650	9,012
Tires, Batt., Prts.	4,541,859	15,140
Marine Sales/Rentals	545,847	1,475
Auto/Truck Rentals	1,606,644	4,342
Drugstore	5,064,000	10,128
Apparel	2,604,000	8,103
Men's and Boy's	341,124	853
Women's and Girl's	864,528	2,337
Infants	54,684	182
Family	723,912	2,413
Shoes	544,236	1,979
Jeans/Leather	10,416	35
Tailors/Uniforms	46,872	234
Others	18,228	70
Hardware	5,998,000	25,497
Hardware	2,903,032	11,612
Lawn/Seed/Fertil.	113,962	335
Others	2,981,006	13,550
Vehicle Service	7,716,000	18,784
Gasoline	2,623,440	1,809
Garage, Repairs	5,092,560	16,975
Miscellaneous	8,423,000	32,533
Advert. Signs, etc.	134,768	490
Barber/Beauty shop	513,803	2,569
Book Stores	387,458	1,047
Bowling	193,729	1,937
Cig./Tobacco Dealer	58,961	118
Dent./Physician Lab	336,920	1,037
Florist/Nurseries	631,725	1,486
Laundry, Dry Clean	286,382	955
Optical Goods/Opt.	202,152	578
Photo Sup./Photog.	581,187	1,661
Printing	682,263	2,481
Paper/Paper Prod.	362,189	1,811
Gifts/Cards/Novel.	1,204,489	4,015
Newsstands	67,384	135
Others	1,684,600	6,738
TOTAL	\$68,707,000	200,204

*Developed by The Chesapeake Group, Inc., 2013.

Focusing on growth opportunities, the primary market or residents of the Town of Arundel will support an additional 22,000 square feet of new retail goods and related services space over the next ten years. This is insufficient to support any additional retail activity without consideration of the secondary or other markets.

*Table 44 - Estimated Retail Goods and Related Services Sales and Supportable Space for Arundel Residents for 2013 and 2023 and the Change Between 2013 and 2023 (in Square Feet)**

Category	2013 Sales	2023 Sales	2013-2023 Sales	2013 Space	2023 Space	2013-2023 Space
Food	\$8,410,000	\$9,348,000	\$938,000	15,706	17,459	1,753
Eat/Drink	8,094,000	8,996,000	903,000	20,235	22,490	2,258
General Merchandise	10,904,000	12,120,000	1,216,000	35,569	39,534	3,966
Furniture	1,195,000	1,329,000	133,000	3,680	4,094	410
Transportation	10,299,000	11,448,000	1,149,000	29,969	33,313	3,343
Drugstore	5,064,000	5,628,000	565,000	10,128	11,256	1,130
Apparel	2,604,000	2,894,000	290,000	8,103	9,006	902
Hardware	5,998,000	6,667,000	669,000	25,497	28,341	2,843
Vehicle Service	7,716,000	8,576,000	861,000	18,784	20,878	2,096
Miscellaneous	8,423,000	9,363,000	940,000	32,533	36,162	3,631
TOTAL	\$68,707,000	\$76,369,000	\$7,664,000	200,204	222,533	22,332

*Developed by The Chesapeake Group, Inc., 2013.

A breakdown of the change in sales and space by sub-category or type of business operation generated by residents of the Town of Arundel can be found in Table 46 on the next page.

The secondary market dwarfs the primary market. 2013 secondary market generated sales are estimated at roughly \$4.2 billion. They are expected to rise to almost \$4.6 billion by 2023. The amount of supportable space derived from residents of the secondary market at any and all locations is expected to grow by about 1.1 million square feet between 2013 and 2023.

*Table 45 - Estimated Retail Goods and Related Services Sales and Supportable Space for Other York County Residents for 2013 and 2023 and the Change Between 2013 and 2023 (in Square Feet)**

Category	2013 Sales	2023 Sales	2013-2023 Sales	2013 Space	2023 Space	2013-2023 Space
Food	\$511,632,000	\$558,144,000	\$46,512,000	955,501	1,042,366	86,864
Eat/Drink	492,404,000	537,168,000	44,764,000	1,231,010	1,342,920	111,910
General Merchandise	663,366,000	723,672,000	60,306,000	2,163,838	2,360,550	196,713
Furniture	72,732,000	79,344,000	6,612,000	224,030	244,395	20,366
Transportation	626,582,000	683,544,000	56,962,000	1,823,270	1,989,021	165,751
Drugstore	308,066,000	336,072,000	28,006,000	616,132	672,144	56,012
Apparel	158,422,000	172,824,000	14,402,000	492,965	537,780	44,816
Hardware	364,914,000	398,088,000	33,174,000	1,551,240	1,692,261	141,022
Vehicle Service	469,414,000	512,088,000	42,674,000	1,142,780	1,246,670	103,889
Miscellaneous	512,468,000	559,056,000	46,588,000	1,979,312	2,159,249	179,935
TOTAL	\$4,180,000,000	\$4,560,000,000	\$380,000,000	12,180,078	13,287,356	1,107,278

*Developed by The Chesapeake Group, Inc., 2013.

A breakdown of the change in sales and space by sub-category or type of business operation generated by the remainder of the residents of York County can be found in Table 47.

*Table 46 - Estimated Retail Goods and Related Services Sales and Supportable Space for Arundel Residents for 2013 and 2023 and the Change Between 2013 and 2023 by Category and Sub-category (in Square Feet)**

Sub-category	2013 Sales	2023 Sales	2013-2023 Sales	2013 Space	2023 Space	2013-2023 Space
Food	\$8,410,000	\$9,348,000	\$938,000	15,706	17,459	1,753
Supermarkets	7,022,350	7,805,580	783,230	11,902	13,230	1,328
Independents	672,800	747,840	75,040	1,682	1,870	188
Bakeries	185,020	205,656	20,636	617	686	69
Dairies	109,330	121,524	12,194	304	338	34
Others	420,500	467,400	46,900	1,201	1,335	134
Eat/Drink	8,094,000	8,996,000	903,000	20,235	22,490	2,258
General Merchandise	10,904,000	12,120,000	1,216,000	35,569	39,534	3,966
Dept. Stores	3,860,016	4,290,480	430,464	12,867	14,302	1,435
Variety Stores	785,088	872,640	87,552	3,020	3,356	337
Jewelry	752,376	836,280	83,904	1,060	1,178	118
Sporting Goods/Toys	1,188,536	1,321,080	132,544	3,962	4,404	442
Discount Dept.	4,089,000	4,545,000	456,000	13,630	15,150	1,520
Antiques, etc.	54,520	60,600	6,080	237	263	26
Others	174,464	193,920	19,456	793	881	88
Furniture	1,195,000	1,329,000	133,000	3,680	4,094	410
Furniture	180,445	200,679	20,083	582	647	65
Home Furnishings	248,560	276,432	27,664	710	790	79
Store/Office Equip.	188,810	209,982	21,014	629	700	70
Music Instr./Suppl.	51,385	57,147	5,719	257	286	29
Radios, TV, etc.	525,800	584,760	58,520	1,502	1,671	167
Transportation	10,299,000	11,448,000	1,149,000	29,969	33,313	3,343
New/Used Vehicles	3,604,650	4,006,800	402,150	9,012	10,017	1,005
Tires, Batt., Prts.	4,541,859	5,048,568	506,709	15,140	16,829	1,689
Marine Sales/Rentals	545,847	606,744	60,897	1,475	1,640	165
Auto/Truck Rentals	1,606,644	1,785,888	179,244	4,342	4,827	484
Drugstore	5,064,000	5,628,000	565,000	10,128	11,256	1,130
Apparel	2,604,000	2,894,000	290,000	8,103	9,006	902
Men's and Boy's	341,124	379,114	37,990	853	948	95
Women's and Girl's	864,528	960,808	96,280	2,337	2,597	260
Infants	54,684	60,774	6,090	182	203	20
Family	723,912	804,532	80,620	2,413	2,682	269
Shoes	544,236	604,846	60,610	1,979	2,199	220
Jeans/Leather	10,416	11,576	1,160	35	39	4
Tailors/Uniforms	46,872	52,092	5,220	234	260	26
Others	18,228	20,258	2,030	70	78	8
Hardware	5,998,000	6,667,000	669,000	25,497	28,341	2,843
Hardware	2,903,032	3,226,828	323,796	11,612	12,907	1,295
Lawn/Seed/Fertil.	113,962	126,673	12,711	335	373	37
Others	2,981,006	3,313,499	332,493	13,550	15,061	1,511
Vehicle Service	7,716,000	8,576,000	861,000	18,784	20,878	2,096
Gasoline	2,623,440	2,915,840	292,740	1,809	2,011	202
Garage, Repairs	5,092,560	5,660,160	568,260	16,975	18,867	1,894
Miscellaneous	8,423,000	9,363,000	940,000	32,533	36,162	3,631
Advert. Signs, etc.	134,768	149,808	15,040	490	545	55
Barber/Beauty shop	513,803	571,143	57,340	2,569	2,856	287
Book Stores	387,458	430,698	43,240	1,047	1,164	117
Bowling	193,729	215,349	21,620	1,937	2,153	216
Cig./Tobacco Dealer	58,961	65,541	6,580	118	131	13
Dent./Physician Lab	336,920	374,520	37,600	1,037	1,152	116
Florist/Nurseries	631,725	702,225	70,500	1,486	1,652	166
Laundry, Dry Clean	286,382	318,342	31,960	955	1,061	107
Optical Goods/Opt.	202,152	224,712	22,560	578	642	64
Photo Sup./Photog.	581,187	646,047	64,860	1,661	1,846	185
Printing	682,263	758,403	76,140	2,481	2,758	277
Paper/Paper Prod.	362,189	402,609	40,420	1,811	2,013	202
Gifts/Cards/Novel.	1,204,489	1,338,909	134,420	4,015	4,463	448
Newsstands	67,384	74,904	7,520	135	150	15
Others	1,684,600	1,872,600	188,000	6,738	7,490	752
TOTAL	\$68,707,000	\$76,369,000	\$7,664,000	200,204	222,533	22,332

*Developed by The Chesapeake Group, Inc., 2013.

Table 47 – Estimated Retail Goods and Related Services Sales and Supportable Space for Other York County Residents for 2013 and 2023 and the Change Between 2013 and 2023 by Category and Sub-category (in Square Feet)*

Sub-category	2013 Sales	2023 Sales	2013-2023 Sales	2013 Space	2023 Space	2013-2023 Space
Food	\$511,632,000	\$558,144,000	\$46,512,000	955,501	1,042,366	86,864
Supermarkets	427,212,720	466,050,240	38,837,520	724,089	789,916	65,826
Independents	40,930,560	44,651,520	3,720,960	102,326	111,629	9,302
Bakeries	11,255,904	12,279,168	1,023,264	37,520	40,931	3,411
Dairies	6,651,216	7,255,872	604,656	18,476	20,155	1,680
Others	25,581,600	27,907,200	2,325,600	73,090	79,735	6,645
Eat/Drink	492,404,000	537,168,000	44,764,000	1,231,010	1,342,920	111,910
General Merchandise	663,366,000	723,672,000	60,306,000	2,163,838	2,360,550	196,713
Dept. Stores	234,831,564	256,179,888	21,348,324	782,772	853,933	71,161
Variety Stores	47,762,352	52,104,384	4,342,032	183,701	200,401	16,700
Jewelry	45,772,254	49,933,368	4,161,114	64,468	70,329	5,861
Sporting Goods/Toys	72,306,894	78,880,248	6,573,354	241,023	262,934	21,911
Discount Dept.	248,762,250	271,377,000	22,614,750	829,208	904,590	75,383
Antiques, etc.	3,316,830	3,618,360	301,530	14,421	15,732	1,311
Others	10,613,856	11,578,752	964,896	48,245	52,631	4,386
Furniture	72,732,000	79,344,000	6,612,000	224,030	244,395	20,366
Furniture	10,982,532	11,980,944	998,412	35,428	38,648	3,221
Home Furnishings	15,128,256	16,503,552	1,375,296	43,224	47,153	3,929
Store/Office Equip.	11,491,656	12,536,352	1,044,696	38,306	41,788	3,482
Music Instr./Suppl.	3,127,476	3,411,792	284,316	15,637	17,059	1,422
Radios, TV, etc.	32,002,080	34,911,360	2,909,280	91,435	99,747	8,312
Transportation	626,582,000	683,544,000	56,962,000	1,823,270	1,989,021	165,751
New/Used Vehicles	219,303,700	239,240,400	19,936,700	548,259	598,101	49,842
Tires, Batt., Prts.	276,322,662	301,442,904	25,120,242	921,076	1,004,810	83,734
Marine Sales/Rentals	33,208,846	36,227,832	3,018,986	89,754	97,913	8,159
Auto/Truck Rentals	97,746,792	106,632,864	8,886,072	264,181	288,197	24,016
Drugstore	308,066,000	336,072,000	28,006,000	616,132	672,144	56,012
Apparel	158,422,000	172,824,000	14,402,000	492,965	537,780	44,816
Men's and Boy's	20,753,282	22,639,944	1,886,662	51,883	56,600	4,717
Women's and Girl's	52,596,104	57,377,568	4,781,464	142,152	155,075	12,923
Infants	3,326,862	3,629,304	302,442	11,090	12,098	1,008
Family	44,041,316	48,045,072	4,003,756	146,804	160,150	13,346
Shoes	33,110,198	36,120,216	3,010,018	120,401	131,346	10,946
Jeans/Leather	633,688	691,296	57,608	2,112	2,304	192
Tailors/Uniforms	2,851,596	3,110,832	259,236	14,258	15,554	1,296
Others	1,108,954	1,209,768	100,814	4,265	4,653	388
Hardware	364,914,000	398,088,000	33,174,000	1,551,240	1,692,261	141,022
Hardware	176,618,376	192,674,592	16,056,216	706,474	770,698	64,225
Lawn/Seed/Fertil.	6,933,366	7,563,672	630,306	20,392	22,246	1,854
Others	181,362,258	197,849,736	16,487,478	824,374	899,317	74,943
Vehicle Service	469,414,000	512,088,000	42,674,000	1,142,780	1,246,670	103,889
Gasoline	159,600,760	174,109,920	14,509,160	110,069	120,076	10,006
Garage, Repairs	309,813,240	337,978,080	28,164,840	1,032,711	1,126,594	93,883
Miscellaneous	512,468,000	559,056,000	46,588,000	1,979,312	2,159,249	179,935
Advert. Signs, etc.	8,199,488	8,944,896	745,408	29,816	32,527	2,711
Barber/Beauty shop	31,260,548	34,102,416	2,841,868	156,303	170,512	14,209
Book Stores	23,573,528	25,716,576	2,143,048	63,712	69,504	5,792
Bowling	11,786,764	12,858,288	1,071,524	117,868	128,583	10,715
Cig./Tobacco Dealer	3,587,276	3,913,392	326,116	7,175	7,827	652
Dent./Physician Lab	20,498,720	22,362,240	1,863,520	63,073	68,807	5,734
Florist/Nurseries	38,435,100	41,929,200	3,494,100	90,436	98,657	8,221
Laundry, Dry Clean	17,423,912	19,007,904	1,583,992	58,080	63,360	5,280
Optical Goods/Opt.	12,299,232	13,417,344	1,118,112	35,141	38,335	3,195
Photo Sup./Photog.	35,360,292	38,574,864	3,214,572	101,029	110,214	9,184
Printing	41,509,908	45,283,536	3,773,628	150,945	164,667	13,722
Paper/Paper Prod.	22,036,124	24,039,408	2,003,284	110,181	120,197	10,016
Gifts/Cards/Novel.	73,282,924	79,945,008	6,662,084	244,276	266,483	22,207
Newsstands	4,099,744	4,472,448	372,704	8,199	8,945	745
Others	102,493,600	111,811,200	9,317,600	409,974	447,245	37,270
TOTAL	\$4,180,000,000	\$4,560,000,000	\$380,000,000	12,180,078	13,287,356	1,107,278

*Developed by The Chesapeake Group, Inc., 2013.

RETAIL ESTIMATES ASSOCIATED WITH THE NON-RESIDENTS

While the estimates of demand generated by residents was based on primary data generated through surveys; the estimates derived from visitors, or those coming from outside of York County, is based on secondary sources. The major sources utilized include the Maine Office of Tourism’s Visitor Tracking 2010, “Birding and Maine Beaches, and the third chapter of the “Outdoor Recreation Demand, 2009-2014 Maine State Comprehensive Outdoor Recreation Plan.”

The following salient information was derived from those sources.

- ✓ In 2010, there were over 7 million non-unique overnight trips and 17.7 million non-unique overnight visitors to Maine, representing 7% and 11% increases respectively from the previous year. These include trips associated with leisure, business, and visitations with friends or relatives.
- ✓ There were 8.4 million non-unique day trips and 19.8 million non-unique day trip visitors in the same period. This represents a 9% increase in the number of trips and a 7% increase in the number of visitors over 2009.
- ✓ For both overnight travel and day trips, those coming for leisure represent the largest proportion of trips. Yet, in both cases, the proportion associated with business activity is substantial.
- ✓ The majority of trips and visitors are associated with the short summer season. However, the number of fall trips and visitors is about one-half the number associated with the summer.

	Overnight Travel					Day Travel				
	Leisure	Business	VFR	Total	Y/Y Change	Leisure	Business	VFR	Total	Y/Y Change
Net 2010 Maine Trips	3,150,758	2,736,318	1,127,174	7,014,250	7.3%	4,324,106	2,460,777	1,648,098	8,432,982	8.9%
Net 2010 Visitors	8,964,856	6,509,794	2,242,496	17,717,145	10.9%	11,402,375	5,871,276	2,594,713	19,868,458	6.5%
Summer Trips	1,747,563	1,256,061	565,017	3,568,640	9%	3,054,081	1,708,363	1,044,242	5,806,687	13%
Summer Visitors	5,190,261	3,228,076	1,096,133	9,514,470	14%	8,123,856	4,014,653	1,576,806	13,715,316	8%
Fall Trips	931,819	962,879	341,667	2,236,365	2.0%	752,232	440,291	367,180	1,559,703	1.1%
Fall Visitors	2,506,593	2,127,964	683,334	5,317,890	5.1%	1,963,324	1,091,922	613,191	3,668,530	3.4%
Winter Trips	471,376	517,378	220,490	1,209,245	12.1%	517,793	312,123	236,676	1,066,592	-1.6%
Winter Visitors	1,268,002	1,153,754	463,029	2,884,785	10.9%	1,315,195	764,701	404,716	2,484,612	2.6%

- ✓ New York and Massachusetts residents accounted for roughly 40% of all overnight visitors on a statewide basis and 44% of overnight visitors to the Maine Beaches Region that includes Arundel.

Table 48 - Residence of Overnight Visitors -2010

Area	Maine	Maine Beaches
New York	21%	12%
Massachusetts	20%	32%
New Jersey	9%	5%
Maine	7%	2%
Ontario	7%	10%
Connecticut	6%	10%
New Hampshire	5%	7%
New Brunswick	5%	3%
Pennsylvania	5%	2%
Quebec	4%	11%
Maryland	3%	0.5%
Rhode Island	2%	2%
Delaware	2%	1%
Washington DC	2%	-
Vermont	2%	3%
Nova Scotia	-	0.5%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ The Southern Coast (Maine Beaches Region) was the most popular destination for overnight visitors in Maine with 22% of all visitations to the Southern Coast.

Table 49 - Popular Destination Areas for Overnight Visitors*

Area	Percent
Maine Beaches	22
Greater Portland	16
Downeast & Arcadia	18
Mid-Coast	13
Maine Highlands	11
Lakes & Mountains	10
Kennebec and Moose River Valley	6
Aroostook	3
Other	1

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ The residences of day visitors based on people living within 100 miles, including leisure, visits to friends and relatives, and business trips, are found in the table that follows.

Table 50 - Residence of Day Visitors*

Area	Percent
Massachusetts	37%
Maine	35%
New Hampshire	14%
New Brunswick	7%
Quebec	2%
Rhode Island	2%
Vermont	1%
Nova Scotia	1%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ The Maine Beaches Region is the primary area visited by day visitors as well.

*Table 51 - Popular Destinations for Day Visitors**

Area	%
Maine Beaches	38
Greater Portland	15
Downeast & Arcadia	8
Mid-Coast	10
Maine Highlands	8
Lakes & Mountains	8
Kennebec and Moose River Valley	8
Aroostook	4

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Spending opportunities are directly linked to activities in which visitors participate. While outdoor recreation was the primary purpose for trips for leisure visitors; about one-third identified touring and two in ten identified shopping as their primary trip purpose.

*Table 52 - Primary Purpose of Overnight Leisure Visitors in 2010**

Purpose	Maine	Maine Beaches
Outdoor Recreation	33%	29%
Touring	26%	23%
Shopping	16%	19%
Special Event	11%	6%
Cultural/Heritage Tourism	4%	3%
Other	11%	20%

*Maine Office of Tourism's Visitor Tracking 2010.

*Table 53 - Top Trip Activities Maine in 2010**

Purpose	Percent
Shopping	57
Outdoor Activities	54
Resting/relaxing	49
Enjoyed ocean view	40
Sightseeing	33
Visiting family/friends	31
Driving for pleasure	30
Local cuisine, dining	26
Enjoyed mountain views	23
State and national parks	16
Nightlife, evening entertainment	15
Visiting historic sights	14
Wildlife viewing	13
Viewing fall colors	10
Tours of communities	7
Fairs, festival	7
Nature cruises	6
Art museums	5
Botanical gardens	4
Plays, musicals	4
Zoos or aquariums	4
Amusement park	4
Casinos	3
Popular music events	3
Operas, classical music	2
Car/boat shows	1
Other	4

- ✓ Shopping and outdoor activities were the top activities for all overnight visitors including leisure, visitors to friends and relatives, and business travelers.

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Combined walking, hiking, and bicycling and water related activity dominated the activity associated with outdoor trips.

*Table 54 - Top Outdoor Trip Activities in Maine in 2010**

Activity	Percent
Going to the beach	21
Hiking, climbing	18
Outdoor swimming	14
Pool swimming	12
Biking	8
Kayaking	7
Motor boating	5
Golfing	5
Lake, stream, river fishing	5
Canoeing	4
Ocean fishing	3
Sailing	3
White water rafting	2
Water/jet skiing	2
Downhill skiing, snowboarding	2
Cross country skiing	1
Snowshoeing	1
Riding all terrain vehicles	1
Ice fishing	1
Hunting	1
Snowmobiling	1

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Consistent with previous reports from 2008 and 2009, more Canadian visitors reported shopping as their primary purpose (77%) than did American visitors (34%) in 2010.

*Table 55 - Primary Purpose of Leisure Day Trips**

Activity	2009	2010
Outdoor Recreation	25%	26%
Touring	14%	15%
Shopping	43%	40%
Special Event	8%	8%
Cultural/Heritage Tourism	1%	3%
Other	9%	10%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Shopping was the top trip activity for all day visitors.

Table 56 - Top Trip Activities for Day Visitors*

Activity	Percent
Shopping	53
Outdoor Activities	34
Resting/relaxing	33
Enjoyed ocean view	31
Sightseeing	25
Visiting family/friends	24
Driving for pleasure	24
Local cuisine, dining	20
Trying to find the best Lobster Roll	9
Enjoyed mountain views	11
State and national parks	9
Nightlife, evening entertainment	5
Visiting historic sights	5
Wildlife viewing / bird watching	7
Viewing fall colors	7
Tours of communities	4
Fairs, festival	5
Nature cruises	2
Art museums	2
Botanical gardens	2
Plays, musicals	2
Zoos or aquariums	2
Amusement park	4
Casinos	2
Popular music events	2
Sporting events	3
Operas	1
Car/boat shows	1
Other	8

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ The top activities for those making day trips follow.

Table 57 - Top Outdoor Trip Activities for Day Visitors*

Activity	Percent
Going to the beach	17
Hiking, climbing	7
Outdoor swimming	10
Pool swimming	4
Biking	3
Kayaking	3
Motor boating	2
Golfing	3
Lake, stream, river fishing	3
Canoeing	2
Ocean fishing	1
Sailing	1
Water/jet skiing	1
Downhill skiing, snowboarding	1

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Visitor spending was estimated to be over \$4.2 billion in 2010. This represented an increase of over 6% from 2009.

Overnight Travel					
	Leisure	Business	VFR	Total	Year-Over-Year Change
Net Spending	\$ 2,483,774,039	\$ 963,512,294	\$ 792,279,333	\$ 4,239,565,666	5.8%
Spending by Category:					
Lodging	\$ 819,197,080	\$ 164,179,080	\$ 338,152,200	\$ 1,321,528,360	23.5%
Transportation	\$ 274,115,946	\$ 205,223,850	\$ 101,445,660	\$ 580,785,456	8.9%
Food	\$ 630,151,600	\$ 273,631,800	\$ 169,076,100	\$ 1,072,859,500	-2.6%
Retail Goods	\$ 606,016,794	\$ 238,278,571	\$ 151,154,033	\$ 995,449,399	-6.8%
Recreation	\$ 154,292,619	\$ 82,198,993	\$ 32,451,339	\$ 268,942,951	14.7%
Day Travel					
Net Spending	\$ 877,923,241	\$ 348,101,514	\$ 165,469,039	\$ 1,391,493,795	6.2%
Spending by Category:					
Transportation	\$ 142,695,498	\$ 95,970,303	\$ 52,739,136	\$ 291,404,937	4.6%
Food	\$ 216,205,300	\$ 123,038,850	\$ 32,961,960	\$ 372,206,110	4.4%
Retail Goods	\$ 449,577,301	\$ 104,189,298	\$ 64,341,746	\$ 618,108,345	6.8%
Recreation	\$ 69,445,142	\$ 24,903,063	\$ 15,426,197	\$ 109,774,403	14.1%

- ✓ The average overnight leisure visitor to Maine spent about \$788 per trip in 2010. Almost one-half went to food and retail, with another roughly 5% on recreation. For business visitors most of the spending was for lodging or food and retail, with the dollars roughly evenly split between lodging and food with retail.

Table 58 - 2010 Overnight Travel Spending in Maine*

Type of Spending	Leisure	Visit Friends/Rel.	Business
Lodging	\$260	\$60	\$300
Transportation	\$87	\$75	\$90
Food	\$200	\$100	\$150
Retail Goods	\$192	\$87	\$134
Recreation	\$49	\$30	\$29
Net Spending	\$788	\$352	\$703

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ As would be expected, day travelers spend significantly less on their trip as a result of it being of shorter duration and not requiring lodging.

Table 59 - 2010 Day Travel Spending in Maine*

Type of Spending	Leisure	VFR	Business
Lodging	NA	NA	NA
Transportation	\$33	\$39	\$32
Food	\$50	\$50	\$20
Retail Goods	\$104	\$42	\$39
Recreation	\$16	\$10	\$9
Net Spending	\$203	\$141	\$100

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ The following table contains basic demographic information on the overnight leisure visitor to the Arundel area region or the Maine Beaches.

*Table 60 - Overnight Leisure Visitors to Maine Beaches**

Demographic	2009	2010
Mean Age	45.6	48.2
Mean Income	\$102,700	\$104,300
Female	47%	47%
College degree or Higher	73%	71%
Married	62%	64%
Employed Full Time	57%	56%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Shopping was the most popular activity for leisure overnight visitors to the Maine Beaches Region.

*Table 61 - Leisure Overnight Visitor Top Trip Activities to Maine Beaches**

Activity	Percent
Shopping	82%
Outdoor Activities	64%
Resting/relaxing	61%
Sightseeing	40%
Visiting family/friends	13%
Driving for pleasure	41%
Local cuisine, dining	42%
Nightlife, evening entertainment	16%
Visiting historic sights	14%
Wildlife viewing	11%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ The following table contains the primary communities visited by the overnight visitors to the Maine Beaches Region or Arundel area. It is noted that Arundel is not identified as being significant.

*Table 62 – Towns and Cities Visited in the Maine Beaches Region**

Town/City	2009	2010
Kittery	48%	52%
Ogunquit	48%	47%
Kennebunkport	42%	42%
York	38%	41%
Wells	35%	37%
Old Orchard Beach	29%	33%
Kennebunk	32%	24%
Saco	15%	20%
Biddeford	13%	18%
Sanford	3%	4%
Berwick	4%	3%
South Berwick	4%	3%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Table 63 provides demographic information for the day leisure visitors to the Maine Beaches Region. It is noted that the household income is substantially above the average household income for residents of York County and Arundel.

*Table 63 - Select 2009 and 2010 Demographics for Day Leisure Visitors to the Maine Beaches**

Demographic	2009	2010
Mean Age	43.8	47.1
Mean Income	\$96,700	\$98,130
Female	54%	51%
College degree or Higher	75%	74%
Married	57%	61%
Employed Full Time	64%	57%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Shopping and outdoor recreation are the two primary purposes for the leisure day trippers.

*Table 64 - Day Leisure Visitors to Maine Beaches Primary Purpose of Trips in 2010**

Purpose	Percent
Shopping	36%
Outdoor Activities	29%
Touring	18%
Special events	5%
Cultural/Heritage tourism	2%
Other	10%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Day trippers visits to communities are different than those staying overnight. However and once again, Arundel is not a significant destination or of note.

*Table 65 - Day Leisure Visitors to Maine Beaches' Towns/Cities Visited**

City/Town	2009	2010
Kittery	57%	54%
York	47%	43%
Ogunquit	35%	40%
Wells	28%	35%
Kennebunkport	33%	22%
Old Orchard Beach	25%	21%
Kennebunk	16%	14%
Saco	9%	8%
Biddeford	8%	6%
South Berwick	5%	2%

*Maine Office of Tourism's Visitor Tracking 2010.

- ✓ Visitor spending was estimated to be over \$4.2 billion in 2010. This represented an increase of over 6% from 2009. For 2013, the amount spent is estimated to be \$4.8 billion.

Based on the defined spending patterns, number of overnights, proportion of leisure overnight visitors, and proportion of day trippers; the greater Arundel area in Southern Maine has an annual estimated total spending by visitors of more than \$1.64 billion in 2013. This amount is conservatively estimated to increase to \$2.25 billion by 2023.

The following table breaks down these sales for key related categories including retail without food, food and recreation for 2013 and 2023.

*Table 66 – Estimated Visitor Spending in the Greater Arundel Area for 2013 and 2023**

Type of Spending	2013	2023	2013-2023
Food	\$410,068,000	\$570,825,000	\$160,757,000
Other Retail Goods	\$400,016,000	\$549,000,000	\$148,984,000
Recreation	\$101,844,000	\$139,725,000	\$37,881,000

*Developed by The Chesapeake Group, Inc., 2013.

As noted and like the demographics of residents, the characteristics of visitors have changed and are likely to continue to change as the populations in the geographic areas from which the visitors are drawn changes. One of the key changes is the continuing aging of the population whose needs are often met by passive recreation activity.

Birding is a growing interest among seniors seeking passive recreation. York County in Southern Maine has some of the most easily accessible birding in all of New England. The coastline is dotted with parks and refuges. There are vast stretches of public sand beaches. Even those hot spots that are not on the coast are a short fifteen minutes from main routes. Interstate 95 and US Route 1 enable a quick transit from site to site.

Breeding season is rich in habitat diversity. York County boasts a greater number of species than anywhere else. Migration season also has its share of opportunities. Several of the migrant traps in Spring and one of Maine’s best hawk-watching mountains in Autumn - Mount Agamenticus - are in York County. Unlike frozen portions of Maine’s interior, birding opportunities in York County in winter equals and sometimes surpasses those associated with summer. The following table contains trends in passive recreation in the Northeastern section of the United States.

*Table 67 - Outdoor Recreation in the Northeast with the Most Participants Added or Lost (1995-2009)**

Activity	Participants gained (millions)	Participants lost (millions)
View wildlife (besides birds)	2.71	-
Family gatherings outdoors	2.46	-
Walk for pleasure	2.44	-
Handball/racquetball outdoors	2.17	-
Day hiking	1.97	-
yard games (e.g. croquet, etc.)	1.94	-
Kayaking	1.73	-
View/photograph fish	1.51	-
View/photograph birds	1.44	-
Swimming in lakes and streams	1.39	-
Running or jogging	-	-1.05
Softball	-	-0.38
Ice skating outdoors	-	-0.38
Volleyball outdoors	-	-0.29
Downhill skiing	-	-0.26
Anadromous fishing	-	-0.13
Rowing	-	-0.1
Waterskiing	-	-0.1
Caving	-	-0.1

*Maine’s Comprehensive Outdoor Recreation Plan

TRADITIONAL OFFICE SPACE

To accommodate the needs for both employment activity and services for an anticipated growth of at least 8,500 housing units in York County over the next ten years will require roughly 5,900 additional jobs. It is expected that roughly 1,475 of these positions would be associated with office space.

Assuming 200 square feet of gross space per employee and continued increases in the proportion of space situated in non-traditional locations or home-based operations; there is opportunity for roughly 250,000 additional square footage of office space in the region over the next ten years.

NON-TRADITIONAL OFFICE OPPORTUNITIES AND RELATED SPACE

For much of its recent history and with few exceptions, Maine’s natural resources have been utilized as attractions for tourists, for extraction purposes, or for use in manufacturing in industries once dependent upon those resources. In fact, the resources have the potential to be the focus of research and product development activity along with agricultural activity.

The following was developed exclusively using internet searches and resources. It details existing Town of Arundel and York County cultivated and indigenous natural resources and research related to the resources. The potentials include but are not limited to: research and development for identified needs within an industry or further exploration on an established path. There are also potential new concepts for current Arundel agricultural and manufacturing businesses or for potential start-ups.

The following business categories are included in the research activity.

Commercial and small business farming	Animal husbandry
Agricultural dairy farming	Poultry manufacturing and processing

Existing agricultural and natural resources that can contribute to the new business potential include but are not limited to: Animal Husbandry (cattle, beef, sheep/lambs, goats, pharming), Poultry (chickens, turkeys), Dairy, (milk products, milk components and dairy cattle), Fruits (apples, strawberries and blueberries, raspberries, plums, pears, peaches, nectarines), Vegetables (potatoes, corn, hay and oats, squash, cucumbers, corn for silage, haylage, grass silage, green chop, garlic, tomatoes, sugar snap peas, winter squash), Bees/Beekeeping, Floriculture (plants, cut flowers, sod), and Pine Trees.

Animal Husbandry

York County has commercial rankings in Maine as follows.

Cattle/calves, #10	Horses/ponies/mules/burros/ donkeys, #3
Sheep/goats and their products, #5	Other animals and their products, #7.

York County is ranked #8 of Maine’s counties for milk and other dairy products from cows.

Cattle’s increased commercial potential include those that follow.

- ✓ The improved molecular genetics breeding capabilities, taking advantage of the DNA-based tests for genes or markers affecting desirable traits, such as meat quality and disease resistance.

- ✓ The beef slaughtering process has a significant environmental impact, contributing to stressors of air, biota, water and land. Studies have drawn attention to the horizontal linkages in the transformative process from feed-grains, to feedlots and to beef processing. Typically government policies have only focused on each individual part of the process. The slaughtering process generates pollutants, requiring oversight and monitoring; biological oxygen demand; and total suspended solids, which are especially important and are already key components in EPA environmental monitoring and compliance. Taking the process as a whole, new policies and commercial procedures can be designed to mitigate the “life cycle” of food production from farm to table.
- ✓ Milk from transgenic farm animals can be a source of novel drugs for medical and commercial value. One specific example is the current production system for blood products using human blood which is limiting because of disease concerns, lack of qualified donors, and regulatory issues. Cattle carrying human antibody genes, which are able to produce human polyclonal antibodies, have the potential to provide a steady supply of polyclonal antibodies for treatment of various infectious and medical conditions like organ transplant rejection, cancer, and autoimmune diseases and other diseases.
- ✓ Another valuable medical therapy is porcine fetal neural cells which have been transplanted into the brain of patients suffering from Parkinson’s disease, Huntington’s disease, stroke and focal epilepsy. The porcine neural cells advantages over their human counterparts are their abundant availability.
- ✓ Dairy cows experience a remarkable shift in metabolism after calving, after which milk production typically increases so rapidly that feed intake alone cannot meet energy requirements. Cows with a poor adaptive response to negative energy balance may develop hyperketonemia and ketosis in early lactation. Feeding a higher forage diet pre-partum decreases incidences of subclinical ketosis in transition dairy cows. The aim of specific trials has been to compare the metabolic status of transition Holstein dairy cows fed a 77% forage diet versus those fed an 87% forage diet.
- ✓ Milk ingredients represent an important area of research for domestic as well as export markets. There is a clear indication of currently unmet demand. Furthermore, the relocation of Kate’s to Arundel could be catalytic to various research activities.
- ✓ Recent advances in processing research and membrane technology have made the fractionation of milk both economically and technically feasible. Existing and emerging milk ingredients and fractions have many food and beverage applications and can be considered as value-added processing which improves the functionality and broadens the use of dairy proteins as ingredients. An area of active research is associated with understanding the processing variables impacting the quality of these products.
- ✓ Whey proteins can be separated into individual proteins that offer their own benefits. Lactoferrin is an iron-binding whey protein, which appears to increase iron absorption and transport. Added to infant formulas, lactoferrin offers a protein composition similar to that of human milk. An anti-microbial and anti-viral agent, lactoferrin may inhibit a diverse range of organisms, including bacteria, yeast, fungi, parasitic protozoa, E. coli, HIV, herpes viruses and Hepatitis C. Preliminary research appears to show it stimulates growth of beneficial bacteria in the intestinal tract. Animal studies suggest lactoferrin may also decrease bone breakdown, helping sustain bone density.
- ✓ Milk protein co-precipitates are produced by the precipitation of casein and whey proteins using a combination of heat treatments and the addition of acid with or without additional calcium salts. Advances in protein co-precipitation technology offer powerful ways to improve the use of protein-rich raw materials and oil seed meals and byproducts, according to early studies in food and bio-products processing.

- ✓ Researchers associated with a recent study (1/14/13) assert it may be possible to find new approaches to obtain high protein yields from protein co-precipitates to deliver commercially viable solutions. They claim the co-precipitates may have positive effects on the allergenicity of food proteins and suggest more needs to be done to look into this area with further investigation into several aspects including the use of protein-based by-products from sectors such as brewing, dairy and oilseed processing. Additionally, more work also needs to be done on combining more than two sources of protein co-precipitate and the evaluation of the effects of protein co-precipitate fortification on various diseases. Co-precipitated products can be directly used for supplementing and enrichment of low quantity and poor quality food sources.
- ✓ Proteins are known to bind to flavorings and much research is geared to better understanding the types of bonds that occur. One study investigated how the binding of various flavor chemicals by whey protein isolates was impacted by heat and high pressure denaturation of the protein. Other research studied the binding capacities of various whey proteins for 2-nonanone, an aroma reported to be strongly present in ultra-heat treated milk as well as naturally occurring in blue and cheddar cheese, fish and coconut. The whey fractions vary greatly in how or whether they are used as food additives. For example industrially, Glycomacropeptide (GMP) are generally used for their health benefits and not for their gelling, foaming or emulsifying abilities. The evolving understanding of protein functionality and increasing market availability of novel protein ingredients means they will continue to provide both challenges and answers to creative development of new foods and beverages.
- ✓ Whey protein may also have beneficial effects on some symptoms of metabolic syndrome, including, but not limited to, type 2-diabetes and cardiovascular disease.
- ✓ The major problem for long-term shelf life of baked goods is contamination with fungi. Several antimicrobial compounds have been identified, especially proteins or peptides from plants, as well as metabolites derived from fermentation by lactic acid bacteria. Antifungal lactic acid bacteria (ALAB) were evaluated in raw milk from ewe, cow and goat over one year period. Raw milk, especially cow and goat milks from the summer and fall appeared to be productive reservoirs for antifungal lactobacilli. These bacteria isolate and inhibit the growth of the spoilage yeast in refrigerated foods.
- ✓ The specialized equipment required to make Greek yogurts and the low yields per kilogram of milk used have been major barriers to entry into this lucrative market for many dairy companies. Arla Foods Ingredients® has launched an innovative protein solution that enables yogurt manufacturers to produce Greek-style yogurts on their existing plants for the first time, with dramatically reduced levels of wastage. The new range of Nutrilac® proteins developed by Arla Foods Ingredients® means manufacturers can now enter the profitable Greek-style yogurt category cost-effectively and without investing in new processing lines.
- ✓ A research study by an affiliate of Harvard Medical School has found dairy intake, specifically milk and yogurt, is associated with higher bone mineral density (BMD) in the hip, but not the spine. Cream, on the other hand, may be associated with lower BMD overall. Published in the journal Archives of Osteoporosis, these findings suggest that not all dairy products are equally beneficial in promoting bone strength. More research is needed to examine the role of cheese intake, some of which can be high in fat and sodium; and whether individual dairy foods have a significant impact in reducing fractures.

- ✓ Cognitive measures of vasomotor speed, coding speed and immediate memory recall were assessed from a simple reaction time task (SRTT), symbol-digit substitution test (SDST), and serial digit learning task in adults 20 to 59 years of age. The results indicated that cognitive scores for the SRTT were not different between consumers and non-consumers of dairy foods. However, there were associations observed between 20 and 59 year old consumers of total dairy foods and a higher SDST percentile score and a calculated global cognitive percentile score compared with non-consumers. A similar significant association was observed with cheese consumers. In adults over 60 years of age, an association between total dairy product consumption and higher DSST percentile scores was also observed. This research is part of ongoing efforts by the Dairy Research Institute to expand scientific understanding of the benefits of dairy foods.

Swine production

- ✓ Swine production is severely impacted by pernicious Porcine Reproductive and Respiratory Syndrome (PRRS) disease. This is pandemic in pigs causing significant losses in the pig industry, due to reproductive disorders and growth retardation. Studies are on-going to develop effective methods to eliminate and mitigate the risk of the disease's spread among the breeding population. Specific projects include a bio-filter vs. antimicrobial filter to reduce the quantity of PRRSV excretion. The results indicate a need for further development of commercial technologies to reduce the risk of environmental contamination with PRRSV-positive exhausted air.
- ✓ The Production Animal Disease Risk Assessment Program (PADRAP) has produced new research indicating that using oral fluids as a surveillance tool can be effective in the fight against PRRS. Diagnostic tests and surveillance strategies led to the development of rapid and accurate tests and are giving the industry the ability to detect new and emerging strains of the PRRS virus. There is also an effort to genetically breed for disease resistance, using the discovery of genotypes that can predict the susceptibility and/or resistance to the disease.
- ✓ Commercially desirable consumer preferences for a tender pork-meat product is driving the need for further research to determine the associations of the calpain enzyme and five calpastatin genes with other economically important traits such as growth and lean meat yield and to devise selection programs for a more tender product.
- ✓ Pharming, or the genetic engineering of farm animals, is an extended business opportunity for commercial breeders. The global market for recombinant proteins from domestic animals is expected to reach \$18.6 billion in 2013/2014.

Goats

- ✓ Goats are another highly positive trans-genially bred resource. The mammary gland is the preferred production site because of the protein quantities that can be produced and established methods for extraction and purification of these proteins. It is proven that the amount of human anti-thrombin III, a protein that helps control blood clotting, obtained from transgenic goats per year is equivalent to 90,000 human blood samplings. Another novel transgenic goat project takes spider's silk cells and injects them into the animals creating re-engineered goats, producing milk with the same protein as the spider's silk. By isolating those proteins, they are able to spin the silk. Spider silk is five times stronger than steel and about three times stronger than man-made fibers such as Kelvar. That makes the material ideal for many uses from better lighter bullet-proof vests to safer suspension bridges. This silk, with unique biological materials like polymers, may also be useful as suture or plastic materials in facial and orthopedic restorative surgery. The scientists have only produced a few strands so far; and those are only 20% to 40% as strong as the natural spider silk. Therefore, more development is necessary to reach an ultimate goal of producing lightweight body armor made of the artificial silk.

Poultry

York County is ranked #1 in the total number of poultry farms and 9th in Maine counties for poultry/egg production in the layers, broilers and other meat-type chickens, turkeys, ducks and geese category.

- ✓ Poultry genomics information can be used to improve all traits in the breeding program including live performance, critical feed conversion rate, health, disease resistance and welfare. With genomics, the exact genetic configuration of each bird has been inherited from its parents, with which researchers can make even more accurate selection decisions to improve all aspects of the bird's performance at every generation.
- ✓ Genetic selection for improved chicken performance has been successful in making permanent changes in breeder and broiler performance. Improvements in the feed efficiency have led to reductions in broiler waste production and also in climate change gasses. Breeding for a sustainable future will require the continued addition and integration of more accurate and effective trait measurements and new applications of molecular genetics and genomics to help solve the challenges of increasing both production and efficiency in broilers while helping to balance and improve bird health, animal well-being and the environment.
- ✓ Improved primary screening of poultry wastewater offers not only a potential environmental improvement but also ample opportunity for reducing overall wastewater costs. Georgia Tech researchers have been addressing methods to improve solids separation performed by primary and secondary mechanical screens with a current research focus on smaller sieve sizes.
- ✓ Researchers are considering ways to enable water reuse and recycling. Screens used in poultry processing are internally fed rotating drums with fine openings that are constantly sprayed. The purpose of the filtration research is aimed at ensuring particles are stopped before the filter and removed as quickly and cost-effectively as possible. An ongoing challenge is developing cost-effective technologies that achieve needed physical, chemical, or micro-biological improvements in reuse water. The poultry industry's goal has an evolving focus on corporate social responsibility and sustainability.
- ✓ Transgenic hen's eggs provide a non-invasive harvesting medium, similar to milk. Significant quantities of two human proteins were expressed in the whites of eggs and are being developed for malignant melanoma. They have also been generated and approved to treat cancer, cardiovascular disease, inflammatory diseases, macular degeneration, transplant rejection, multiple sclerosis, and viral infection.
- ✓ Avian vocal expressiveness could improve poultry production. A collaborative university project is investigating whether the birds' volubility can provide clues to how healthy and comfortable they are. Recent research at the University of Connecticut indicates it is possible to differentiate how the birds react to various conditions based on their vocalizations. Temperature sensors might report things are fine, but the birds could be expressing they think it's too warm or other changes that make the conditions less than ideal. Chickens take only six weeks to go from hatching to finished weight. Stressful conditions can retard their growth, reducing their value when they go to market.
- ✓ Contract poultry producers are paid by the pound of birds sent to market, therefore information to improve the overall health and productivity of the birds will also help to improve the bottom line for individual producers. A research team conducted several experiments exposing flocks to mildly stressful environmental changes. For example, temperature or ammonia levels might be increased from their initial settings for a few hours and then returned to the original level. In addition to ensuring high yield flocks, bird-vocalization analysis could save poultry growers' money in equipment costs. Commercial ammonia sensors are both expensive and short-lived. If a system consisting of a few microphones and the right computer algorithms could take over ammonia-detection tasks, it would help reduce costs for the entire industry.

- ✓ Poultry researchers and nutritionists are looking for viable alternative feed additives since conventional supplements have been criticized for their potential negative impact on the food chain. Garlic is one potential feed supplement which has been reported as having a wide range of beneficial effects on the production performance and physiological biochemistry of broilers and laying hens.

Confirming and mitigation research is still needed in those previously noted as well as those that follow.

- ✓ An infectious circumstance in poultry manufacturing is bacterial contamination of raw processed poultry. This can limit shelf-life and may include food-borne pathogens. A collaborative study evaluated different combinations of organic acid (OA) wash solutions for reductions in bacterial contamination of raw chicken and their effect on recovered colony-forming units of pathogens and aerobic bacteria during cold storage. In all experiments, significant differences were observed when skin samples were treated with the OA wash solution. No spoilage organisms were recovered at any given time-point; while increasing log numbers of spoilage organisms were recovered over time in Phosphate buffered saline treated skin samples. These results suggest that concentrations of an equal-percentage mixture of this OA combination may reduce pathogens and spoilage organisms and improve food safety properties of raw poultry.
- ✓ Since raw poultry contamination is such a health threat to consumers, several other mitigating treatments have been tested including one that hypothesized foaming cleaners and disinfectants applied via a compressed air foam system that might present a means to rapidly clean and disinfect poultry rearing facilities. The conclusions demonstrated that foaming cleaners and disinfectants may be used to reduce the environmental load of Salmonella Typhimurium (ST) on surfaces commonly found in a poultry house.
- ✓ Scientists are endeavoring to create specific mutations in Salmonella and Shigella. The on-going efforts are trying to identify protein products that repress the expression of the Salmonella regulatory genes and thereby inhibit the ability of the bacteria to cause infection. The long-term goal is to try to identify alternative substances that could be used for protection and treatment of Salmonella infections.
- ✓ Because the broiler industry is rapidly expanding and selection for greater body weight in broilers has been at the expense of egg laying; the production of more eggs is becoming increasingly important. In an effort to meet global demands at current expansion rates, an extra 15 million broiler breeders will be needed annually to produce 1.5 billion more broilers for human consumption. Researchers have demonstrated the feasibility of increasing egg production in broiler breeder hens using chicken inhibin-based immunopharmaceuticals (vaccines). The development of these patented vaccines has led to the recent discovery of a more practical synthetic vaccine. When appropriately administered; producers who use the vaccine could experience an increase in egg lay of about two dozen eggs per hen.
- ✓ Active immunization against inhibin holds significant promise in enhancing the fertilizing capacity of broiler breeder roosters as well. In another preliminary study, this new vaccine was found to accelerate puberty and increase fertility in aged males. Greater body weight most likely contributes to the decreased gonadal function and copulation efficiency of large-bodied males. Marked declines in fertility are now commonly seen in flocks with aged males, or those more than 36-weeks old. This has caused producers to “spike” their old flocks with young males to increase fertility. That method is expensive because additional flocks of males have to be maintained and risky from a bio-security standpoint because the standard “all-in, all-out” practice used in poultry is violated when young outsider males are introduced into established flocks. Inhibin immunoneutralization of broiler breeders is a revolutionary approach that holds promise to change the poultry industry.

- ✓ Chicken egg albumin is the major protein constituent of egg whites and is a key reference protein for immunization and biochemical studies. It can be used for ELISA testing which is the preferred method to determine if a particular protein is present in a sample and if so, how much. Clinicians can determine how much antibody is in a sample, or how much protein is bound by an antibody. It has been used a screening test for AIDS, for many years to detect gonorrhea bacteria, testing for the presence of antibodies in patients to numerous food allergen, and in antibody technology in the home pregnancy tests. Other applications are yet to be tested.
- ✓ Several of the egg white proteins have been found to have anti-bacterial properties. Lysozyme and avidin are now being commercially separated using cation-exchange resins. A combination of lysozyme and EDTA was effective against Salmonella typhimurium on broiler legs. Avidin is used widely as a medical diagnostic tool.
- ✓ Efficient deboning is paramount to optimizing commercial poultry production yield, maximizing the amount of meat removed from a chicken frame while reducing the presence of bones. Many processors evaluate the efficiency of their deboning lines through manual yield measurements, which involves a line staff using a special knife to scrape the chicken frame for any remaining meat after it has been deboned. Scraping is not ideal for getting a consistent estimation of yield as the amount of meat measured can vary depending on the skill and fatigue level of the operator. It is also time-consuming, limiting the number of frames that can be evaluated and potentially affecting the accuracy of the statistical predictions.

Georgia Tech Researchers have developed an automated vision system for estimating yield loss by correlating image characteristics with the amount of meat left on a frame. A patent is pending and refinements are underway for commercialization. The research team is establishing a calibration method by characterizing light transmission through the meat to compensate for birds of various ages and breeds and the time between slaughter and deboning. Tests to evaluate and characterize the variations in light transmission based on the age of the birds and the various breeds are planned.

- ✓ Another computer-aided production method employed is fixed automation combined with specialized robotics and perception techniques. The tasks involve deformable chicken products that must be manipulated (gripped, pulled, flipped, cut, etc.). Therefore, this fixed “perception then manipulation” process is no longer valid. Combined with robotics and manipulation research, current studies will enable advanced robotics platforms for the next generation of poultry processing. Development will take place in four steps: sensing, segmentation, tracker and model.

There is still additional research potential for improved robotic manufacturing processes, which can be studied and developed at or with University of Maine’s School of Engineering Technology. A University of Maine engineering research project or one performed in cooperation with that or another entity could develop methodologies to improve the pre-op procedures. Speed would greatly increase productivity.

- ✓ A significant, mechanized step in poultry’s production is integrating the slaughter and evisceration plants manufacturing facilities with normal manufacturing considerations of through-puts, labor costs, overtime rates, utility costs, etc. Processors must have systems in place to monitor and control these costs and throughputs.

The key metric in the processing plant is throughput. Since the production lines generally run at 90 birds per minute, down time is a key determinate of throughput and, therefore, a key performance measurement in a processing plant. Since each plant conducts a thorough cleaning each day; there are standard pre-operation (“pre-op”) procedures and inspections required before a plant begins production each day. Not completing the pre-op in a timely manner or failing an inspection can lead to a delayed start-up and a shortened work day.

Fruits

York County ranks #6 among Maine's counties in "fruits, tree nuts and berries" production. Its crops include, but are not limited to apples, blueberries, nectarines, peaches, pears, plums, pumpkins, raspberries, and strawberries.

- ✓ Hand harvesting of blueberry is labor intensive and costly. Commercial over-the-row mechanical harvesters improve labor productivity by nearly 60 times, cutting the harvest cost by 85%. In the southeastern section of the United States, most mechanical harvesters are currently used for the processing market and not for harvesting fruit for fresh market because high-bush blueberries that have been machine harvested lose firmness and become much softer than hand-harvested blueberries. Improved design of harvesting equipment, such as reducing the drop height, and horticultural practices, such as crown restriction, will help to increase harvest efficiency by capturing more fruit in lugs, leaving less fruit in the field and maintaining better fruit quality in cold storage. Additional research is necessary to determine how blueberry quality can be affected by physical damage incurred at harvest.

Studies showed that ground-loss occurring during machine harvesting can be reduced by modifying the blueberry plant architecture. Fruit drop tests from a 40-inch height on plastic surface showed a soft-textured, conventional-flesh genotype (Scintilla) was more susceptible to bruising than the crispy-flesh genotypes (Farthing, Sweetcrisp). When the contact surface was cushioned with 'Poron' foam sheet; bruise incidence was significantly reduced in all genotypes. Further modifications to mechanical harvesters and blueberry plant architecture are necessary to improve the quality of machine-harvested blueberries and the overall harvest efficiency.

Genetic improvement of cranberries and blueberries include germplasm collection and evaluation, inter-specific gene transfer, and reproductive biology. Germplasm, the organisms genetic resource, is being analyzed for genetic diversity and structure; disease and insect resistance; DNA content; fruit biochemistry profiles; and sexual and asexual reproductive characteristics. Another area of interest is inter-specific gene transfer through sexual hybridization.

In addition, DNA damage in 18 human male volunteers was reduced following daily consumption of an anthocyanin-rich blueberry juice for six weeks. Under experimental conditions, the wild blueberry drink reduced the level of oxidized DNA bases and increased the protection from the ex vivo, hydrogen peroxide, H₂O₂-induced DNA damage.

- ✓ Research is being done on transferring wild strawberry genes to domesticated berries. The strawberry has a huge wealth of wild germplasm and traits in North America. One of the pigments that makes up the red color in strawberries (cyanidin) has a much higher antioxidant potential than others. Researchers have identified the source of genes for high cyanidin content from a strawberry that grows wild in the coast of Oregon.

Strawberries grown for processing need to be concerned with how they freeze and thaw in the product and how they taste in ice cream. New genetic tools will hopefully allow breeders to select parents or seedlings that have desirable traits without going through the typical time-consuming, expensive processes.

Modern strawberry varieties are highly dependent on soil dis-infestation to maximize yields. The most common insecticide methyl bromide (MB) is a highly toxic substance. Much research is underway to find non-fumigant alternatives.

- ✓ Apples are very useful for bone protection, asthma, Alzheimer's prevention, lowering cholesterol and breast cancer prevention. Okanagan Specialty Fruits claims the non-browning apple will prove popular with consumers and food service companies and help increase sales by making sliced apples more attractive to serve or sell. Its theory is "a whole apple is for many people too big a commitment. If you had a bowl of apples at a meeting, people wouldn't take an apple out of the bowl. But if you had a plate of apple slices, everyone would take a slice." Another benefit is growers would have fewer apples rejected by supermarkets because of the minor bruising that is common from handling of the fruit.
- ✓ Antimicrobial packaging as the final defense against human pathogens will be developed for a variety of food products to reduce or control the re-growth of surviving pathogens during storage. The impact of efficacious chemical and physical intervention technologies on sensory properties, nutrients, and shelf-life will be determined using the intensity (time, concentration, and dose) that achieves a reduction of the pathogens.
- ✓ In addition, new anti-browning antimicrobial formulas will be developed to minimize risk of food poisoning bacterial contamination during processing of cut fruit while inhibiting tissue browning. Additionally, the accumulation of chemical by-products as a result of chemical sanitizers and physical interventions will be investigated. Combinations of efficacious intervention technologies with antimicrobial packaging will also be evaluated for additive or synergistic inhibition of pathogens and preservation of product quality.
- ✓ Effects of common organic acids and electrolyzed water have been investigated as alternatives to chemical sanitizers for decontamination of fresh fruits and vegetables. Results indicate that organic acids such as acetic, lactic, malic, and citric acid can reduce the population of Salmonella inoculated onto tomatoes by 96.8% to 99.9%.
- ✓ An alternative to the antimicrobial methodology may be ultra-violet light used to decontaminate fresh tomatoes. Researchers have integrated ultraviolet C (UV-C) light with low dose gamma radiation to control human pathogens on tomato fruits. Results indicated greater than 99.999% of E. coli and Salmonella enterica strains inoculated onto tomato fruits was inactivated by a combined treatment of low dose UV-C and gamma radiation. This treatment significantly reduced the population of native microbes during three weeks of storage at 10-degrees Celsius without causing substantial quality changes in tomatoes.

Vegetables

York County is ranked #4 in the state for vegetables harvested for sale. Its crop vegetables include broccoli, brussel sprouts, cabbage, cauliflower, chard, collards, corn, cucumbers, eggplant, kale, leeks, lettuce, onions, peppers, potatoes, pumpkins, shallots, summer and winter squash, tomatoes, hay and oats.

- ✓ Vegetable grafting is commonplace in Asian countries. However, the practice is just gaining a foothold in North America. The three main benefits of grafting are improved disease resistance, higher yields and sometimes quality, and increased ability to adapt to harsh environmental conditions like temperature extremes, floods and drought. Among greenhouse tomato growers, grafting is quickly being adopted as a way to manage root diseases and increase fruit production. Utilizing rootstocks for grafting has resulted in increased yields, fruit quality, and tolerance to abiotic ("non-living" threats such like high wind, extreme temperature, and drought) and biotic stresses. Grafting can overcome tissue damage and/or plant mortality caused by soil-borne diseases, bacterial wilt and nematodes. Grafting may also reduce or eliminate the use of certain pesticides (especially soil fumigants) because the rootstocks will provide tolerance to many soil insect and disease pests. The technique can also help meet the challenge from new strains of soil-borne disease pathogens. Interest is increasing in the U.S. due to the rising cost of soil fumigation and mounting disease pressure from certain soil-borne pathogens such as bacterial wilts and soil-borne pests.

Japan now utilizes extensive grafting in the production of watermelon, cucumber, melon, tomato and eggplant. The use of grafting technology to produce disease resistant vegetable seedlings has been used for many years in other parts of the world to overcome disease pressure on limited arable land. Some commercial nurseries are starting to feature grafted transplants. As a rule, they are substantially more expensive than conventional transplants, so there needs to be reasonable assurance of the benefit.

- ✓ Most agricultural crops are inherently inefficient nitrogen users. Less than one-half of nitrogen fertilizer applied to fields globally is used by plants. Much of the remainder enters water systems or converts into nitrous oxide, which is a greenhouse gas nearly 300 times more potent than carbon dioxide. Globally, agriculture is the second-largest industrial source of greenhouse gas (GHG) emissions; and the use of nitrogen fertilizer is typically the largest source of those emissions. The ability to earn carbon credits in any crop utilizing Nitrogen Use Efficient (NUE) technology under approved methodology may add a significant new source of revenue for farmers and further stimulate the use of environmentally beneficial genetic improvements. Nitrogen Use Efficiency (NUE) crops use significantly less nitrogen fertilizer, up to two-thirds less than conventional varieties without sacrificing yield. The approved methodology provides for three distinct options through which farmers can claim carbon credits, ranging from the use of default nitrous oxide emission rates to direct monitoring of emissions in fields.

Arcadia Bioscience's[®] NUE technology[™], anticipated 2016, has demonstrated its effectiveness in achieving high crop yields while significantly reducing the requirement for nitrogen fertilizer applications. The company develops and commercializes agriculture-based technologies. It has licensed its NUE technology* to seed companies worldwide for use in all major agricultural crops.

- ✓ Green technology research is maturing rapidly. As it couples with technology innovators and investors, companies are emerging that have the ability to change the way we live our lives bring substantial returns to their founders and funders. Arcadia[®] has partnered with Bioceres[®], the latter being a South American soybean company, to form an agricultural technology joint venture called Verdeca[®]. Their goal is to develop soybean varieties with next-generation agricultural technologies that will increase crop productivity and make more efficient and sustainable use of land and water resources around the world.
- ✓ University of Georgia researchers are developing a resource tool show-casing common plants that exhibit improved environmental adaptation and tolerance or resistance to key diseases and pests.
- ✓ Reduced fresh water supplies are predicted for use in agriculture. The expanding urban population as well as potential political developments will likely further reduce the fresh water supply for agriculture. A more significant part of annual crops will be grown under cover, where recycling will become routine. The concepts of ultra-low irrigation rate and vegetable monitoring have to be further examined for their contribution to higher efficiency of water utilization.

The University of Missouri's Research Center has been testing a tile drainage system that controls the flow of water during the course of a season. Unlike most tile drainage systems with a gate at the discharge point, this system controls the flow of water rather than draining wide open year-round. The yield payoff for managed drainage combined with sub-irrigation depends on the weather. In wet years, drainage alone is likely to be sufficient. In dry years, the payoff will come from sub-irrigation. In one five-year comparison of overhead irrigation to sub-irrigation, the overhead system gave about 10 more bushels an acre on average. Overhead irrigation took four times the volume of water.

- ✓ A Grand Valley State University's Sustainable Agriculture Project focus is on sustainable food systems. The project has been using a hoop house, an unheated structure covered by two layers of poly, to assist in creating a micro-climate that allows its plantings to have an extended growing season. The house has allowed the team to grow an extra 500 lbs of food per year.

- ✓ Cornell University's study of season extension technologies, such as high tunnels and greenhouses, are important to farmers in the Northeast that want to capitalize on the "eat local" movement. Greenhouses help farmers by extending their season and are great for consumers by keeping a supply of local fruits and vegetables available year-round. High tunnel tomatoes continue to grow in popularity with vegetable growers because of disease control, earliness and fruit quality. Variety selection is one of the most important management decisions for tunnels.

Should a York County business want to start up a new agricultural technology development company, a regional resource is the University of Southern Maine's, Maine Small Business Development Centers (Maine SBDC).

Cultivating Natural Pollinators/Bees

The University of Maine's Cooperative Extension Service reports that there are more than 270 species of native bees in Maine. Bees are essential for maintaining the integrity, productivity and sustainability of many types of ecosystems from the forest understory; to pastures, fields, meadows, and roadsides; to many agricultural crops; to fruit orchards; and backyard vegetable and flower gardens. The York County Beekeepers Association is a Local Chapter of the Maine State Beekeepers Association.

- ✓ A New England research project comes at a time when wild honey bee populations have all but disappeared and commercial honey bee populations are shrinking because of parasites, pesticides and landscapes that are insufficient to provide sufficient wild flower food resources such as pollen and nectar for the bees and their young. This can mean starvation of the following and future years bees. During the next five years, the project will construct an assessment of native bees' role in the pollination of low-bush blueberries in Maine, cranberries in Massachusetts, squash in Connecticut and apples in New York. In addition, ecological factors that enhance bee conservation will be another focus of the research being done with bees in Maine's blueberry fields. The project will be among the most extensive of its kind.

Hive rental is one of the biggest and increasing costs for fruit growers. The project will also help to determine ways to reduce dependence on commercial bees by relying more on native bees, which are a largely untapped resource, and create environments favorable to bees. Researchers will provide insight into how to enhance environments for sustainable wild bee populations, along with recommendations on pesticide use or avoidance by growers to protect both wild and commercial honey and bumble bees. The latter also assists in crop pollination.

Bee colony collapse disorder has had a devastating effect on the bee population. There are pesticides approved for use in organic agriculture that may have adverse effects on bees depending upon factors such as method of application and persistence. Recent laboratory studies suggest compounds such as fungicides and surfactants may be causing bee mortality in the field and merit further study. On average, it is estimated that beekeepers are losing 30% of their colonies every growing season.

Researchers concluded neonicotinoid pesticides impaired the homing ability of bees. Exposed bees were two to three times more likely to die away from the hive. The high mortality could put a colony at risk of collapse, within a few weeks of exposure, especially in combination with other stressors. Honey bee populations have been crashing around the world; and pesticides have been suspected along with other potential factors such as parasites, disease and habitat loss.

A University of Minnesota entomologist is advancing effective strategies that help bees help themselves. Researchers are working with bee breeders to help them select for hygienic behavior from among their genetically diverse and "tried-and-true" lines of commercial bees. Their research has demonstrated that colonies bred for hygienic behavior have good resistance to chalk-brood and American foulbrood diseases, and partial resistance to *V. destructor*.

The varroa mite is currently the most severe pest of managed honey bees worldwide. Understanding the mite's reproductive biology will allow for better management of this important pest. Researchers have begun breeding bees for mite resistance. The bees that researchers have been producing can smell the mites inside the brood cells and kill the offspring to keep the mite population from exploding inside the colony. While they have been breeding for Varroa Sensitive Hygiene (VSH); a bee specialist at Purdue University, has been genetically selecting bees for increased grooming behavior. They are selecting for increased grooming behavior by looking at the proportion of chewed mites that fall from bees. Two teams are working to map gene regions in Honey bee DNA for VSH.

It has been found that foraging bees encounter variable floral resources and need to constantly assess the relative risk marked by variability. As a result, researchers have developed a paradigm to study the risk-sensitivity of harnessed honey bees. This allows great control over the parameters of the resource distribution and lends itself to neuro-pharmacological and genetic manipulations. One university's scientists found honey bees are risk-averse to variability in the amount of nectar reward. A better understanding of the decision-making processes of pollinators can be directly applied to solving agricultural problems related to crop pollination.

While honey bees are important pollinators in many crops, native bees are also important and under-appreciated pollinators. This is particularly true in apple pollination. There are many species of native solitary bees that are essentially adapted to pollination of apples. Understanding how to manage, conserve, enhance, and monitor these natural pollinators is extremely important. Native bees or wild bees that occur naturally in the environment surrounding agricultural areas are contributing significantly to crop pollination. However, it is difficult to estimate their exact contribution. Furthermore, limited resources exist for farmers who want to preserve their native bee fauna. A 2012

Cornell University project is the first attempt to examine the role that the native bee community plays in commercial apple production in the eastern United States. Preliminary results suggest native bees are providing economically important levels of apple pollination. Native bees are both abundant and diverse in apple orchards; and previous studies indicate some species are more effective pollinators than honey bees on a per-visit basis. Researchers are currently investigating the role of native bees in apple pollination by examining the impact of orchard size, management, and surrounding landscape. They will also identify how management practices, such as pesticide/herbicide use, impact the species richness and abundance of native bees in apple orchards.

Floriculture

York County is rated #2 of all Maine counties in floricultural production. Included are nursery stock, bedding/garden plants, sod harvested, potted flowering plants, mushrooms and other varieties.

- ✓ In the U.S., methyl bromide is used in agriculture, primarily for soil fumigation, as well as for commodity and quarantine treatment and structural fumigation. Both chemical and non-chemical alternatives to methyl bromide exist, and several pest control tools can manage the pests currently controlled with methyl bromide. There is a need for Methyl Bromide Alternatives. USDA/ARS National Program 308 is sponsoring research on alternatives; and EPA continues to prioritize the registration of alternatives to methyl bromide. Continuing research aims to: 1) develop environmentally compatible and economically feasible alternatives to the use of methyl bromide as a soil and postharvest commodity treatment; 2) develop pre-planting soil fumigation alternatives; and 3) develop post-harvest alternatives.

- ✓ In vitro tissue culture is a tool for the study and breeding of plants subjected to abiotic stress conditions. Abiotic stress factors are the main limitation to plant growth and yield in agriculture. Among them, drought stress caused by water deficit is probably the most impacting adverse condition and the most widely encountered by plants. Conventional breeding programs are being used to integrate genes of interest from inter crossing genera and species into crops to induce stress tolerance. However and in many cases, these conventional breeding methods have failed to provide desirable results. Among the available biotechnological tools for crop breeding, genetic engineering based on genes known to be involved in plant stress response and in vitro selection through the application of selective pressure in culture conditions for developing stress tolerant plants have proved to be the most effective approaches. Somaclonal variation is defined as the genetic and phenotypic variation among clonally propagated plants of a single donor clone. The cause of variation is mostly attributed to changes in the chromosome number and structure.
- ✓ *Tecoma stans*, or yellow trumpet bush is a potential new floriculture crop for greenhouse growers in the northern United States. The new varieties have been developed to suit the changing demands of the world market, from fragrant, colorful and fruit-bearing branches, to flowers that are considered environment friendly. Israeli flower growers have joined a project sponsored by the Netherlands to promote environment friendly flower production.
- ✓ The window of opportunity for domestic cut flower production lies in the field of specialty cut flowers. Purdue University lab's research compared two cut-flower growing environments, field to high tunnel production aimed at determining if yield and quality parameters can be improved and the growing season extended. Future research opportunities can explore the economics of specialty cut flower production and marketing.

Israel's rapid research and short development period for new flower varieties until they become commercial is due to the combined efforts of floriculture extension workers, the Flower Board, the Growers' Association, researchers, and the growers themselves. New varieties include acclimatized "summer flowers" from Europe, which are picked and exported mainly during Europe's winter season; various acclimatized flowers indigenous to the Southern Hemisphere; and local varieties and acclimatized native wild flowers that have commercial potential.

- ✓ Consumers increasingly place a great emphasis on sustainable product packaging which has carried over to the greenhouse industry in the form of biodegradable pots. With the recent availability of more attractive biodegradable plant containers, a renewed interest in their suitability in the floriculture sector and their consumer acceptance has emerged. Research is aimed at determining the characteristics of biodegradable pots that consumers deem most desirable and to solicit their willingness-to-pay for this type of product.
- ✓ Plant growth regulators (PGRs) are an important tool in ornamental plant production. For many containerized crops, plant height or stem length must be controlled to produce a plant that is both aesthetically appealing when sold and meets size specifications for shipping and display. In order to meet these requirements PGRs are applied to control stem elongation. A number of commercialized chemical retardants and several in development are available for this purpose.

In the greenhouse productions of chrysanthemums, the root systems of container-grown plants are restricted to small volumes of media that must provide physical support while acting as a reservoir for nutrients, water and oxygen. A University of Massachusetts study with marigolds is part of a larger, ongoing project which is evaluating several commercial organic growing media, liquid fish emulsion fertilizer, and alfalfa pellets for growing bedding plants and other annuals. The initial results indicate the organic materials showed promise. Since there is almost no readily available information on what levels of fish and alfalfa fertilizers to use, it's likely that applying higher levels of fish fertilizer or alfalfa pellets will produce better results.

York County ranked #2 in the state for nursery, greenhouse, floriculture and sod. According to the 2007 Agricultural Census, York County had five harvested sod farms.

- ✓ Sod is an expensive enterprise, with the cost of harvesting and installation far outweighing the cost of actually producing the sod to maturity. Considerable risk is also involved, including potential losses due to poor establishment, serious erosion, flooding, perennial weed invaders, drought, market decline, saturated markets and customer satisfaction. Water conservation concerns and economics have prompted many to investigate grasses that thrive with little water or no supplemental water. Native grasses are the foundation of many native ecosystems. A large scale tissue culture experiment was conducted with St. Augustine grass, an important turf grass species for the southern United States, to induce somaclonal variation to enlarge the germplasm pool for breeding efforts. Similar research can develop new, water-conserving Maine appropriate species.
- ✓ Conventional breeding programs are being used to integrate genes of interest from intercrossing genera and species into sod crops to induce stress tolerance. In many cases, the conventional breeding methods have failed to provide desirable results. In recent decades, in vitro plant tissue culture techniques have made possible the development of biotechnological tools for addressing the critical problems of crop improvement for sustainable agriculture. Among the available biotechnological tools for sod breeding, genetic engineering based on introgression of genes known to be involved in plant stress response and in vitro selection developing stress tolerant plants has proven to be the most effective approaches.

Transgenic grass that has been modified for resistance to an environmentally friendly herbicide could serve as a powerful tool for initiating and maintaining high-quality turf grass for sports applications. Herbicide resistance could be an effective alternative when planting fairways, greens, or athletic fields. Currently, genes conveying resistance to commercial pesticides have been shown to be extremely effective in agronomic crops such as corn, soybeans, and cotton. For high-performance greens and fairways, creeping bent grass in the north and hybrid Bermuda grass in the south produce the highest quality turf.

- ✓ A three-year research project (2010-2013) is underway to compare traditional balled and burlapped (B and B) shrubbery tree production, in northern New England. The objective is to gather economic data on production costs and returns as well as compare production time and resulting plant growth and quality. All will contribute to a decision-making model useful to nurseries considering producing trees for the local landscape market. The Southern Maine Pine Tree Zone, including sites in York and Cumberland counties, is bordered by the Atlantic to the east and New Hampshire to the west and south.
- ✓ Research being conducted by the Canadian Forest Service and other agencies focuses on gaining greater understanding of the ecology and population dynamics of Mountain Pine Beetle (MPB) in the insect's new environment. The northern forest is a novel environment for this beetle and many questions; such as how quickly populations will spread and what their impact will be on forest ecological, economics and social values; have yet to be answered.

According to a new study in the Proceedings of the National Academy of Sciences, climate change has produced a novel threat for high-altitude forests. Tree-killing insects were long held in check by cold spells; but with rising temperatures, especially more mild winters, they been able to feast their way through the region's forests. A warming climate has allowed beetles not only to make it through the winter, but to move higher up mountain slopes to white-bark pine forests. Unlike, lodge-pole pines, white-barks have no defenses against the beetles. A subject of concern in the scientific community is the potential for cascading effects of white-bark pine loss on mountain ecosystems. Loss of the canopy will lead to greater desiccation during the winter and faster melting in the summer. By destroying forests, mountain pine beetles are also responsible for significant carbon emissions, creating a positive feedback cycle.

Lodge-pole pine has coevolved with MPB. Therefore, it is hypothesized that the defense system of this species has evolved in the presence of selective pressures imposed by the pest; and there is evidence of population structure for resistance to MPB in lodge-pole pine populations. Furthermore, adaptive differences have been documented for lodge-pole pine. Trees that have not been exposed previously to epidemic MPB populations support higher beetle reproductive success than do trees that are within epidemic areas. Together, these data demonstrate that MPB reproductive success can be influenced by pine genotype and suggest that there is a genetic basis for the capacity of pines to affect MPB reproductive success. These differences could translate into different spread rates in jack pine and hybrid stands than in lodge-pole pine, making accurate distribution maps important for predicting the impact of MPB.

Since the lodgepole pine forests evolved alongside the mountain beetles, and have many natural mechanisms to fend off the predators, it is likely these defenses can be genetically manipulated to develop protections for other pine species.

- ✓ Pine trees are one of the biggest contributors to air pollution. They give off gases that react with airborne chemicals, many of which are produced by human activity, creating tiny, invisible particles that muddy the air. New research from Carnegie Mellon University shows that the biogenic particles formed from pine tree emissions are much more chemically interesting and dynamic than previously thought. The study provides the first experimental evidence that such compounds are chemically transformed by free radicals, the same compounds that age our skin, after they are first formed in the atmosphere. It has shown conclusively that biogenics are chemically transformed in the atmosphere.

The air we breathe is full of aerosols. These tiny liquid or solid particles come from hundreds of sources including trees, volcanoes, cars, trucks and wood fires. The small particles influence cloud formation and rainfall, impacting climate and human health. Each year in the United States, 50,000 premature deaths from heart and lung disease are attributable to excess concentrations of aerosols, especially particles less than 2.5 micrometers in diameter. The atmosphere is a highly oxidizing and highly reactive place, which means the aerosols are transformed rapidly into particles that can have completely different chemical compositions. Carnegie Mellon together with several European entities set out to test this hypothesis, using fake atmospheres. The researchers gathered data from four different smog chambers and fed it into a computer model. They discovered that hydroxyl (OH) ages the particles, altering their properties and concentrations and producing three times more particulate matter than what was originally released into the atmosphere. The implications from this are humans may influence the way that chemistry plays out. The trees emit the pollution; but human activity changes the chemistry taking place in the atmosphere. Those changes can affect the amount and properties of the natural aerosols. There is significant evidence that even when organic gases come from natural sources, the aerosol levels emanating from them are controlled by human activity.

Lyme disease is the most common vector-borne disease in Maine and the second most commonly reported reportable infectious disease in Maine. It is a bacterial infection carried by the deer tick. Cases have been increasing each year in Maine, occurring in all 16 counties.

- ✓ A project entitled "Mining the genome of cattle tick, to develop novel tick control technology and vaccines" has been initiated. Multi-disciplinary approaches are being used to understand the molecular mechanisms of interactions among the host, the vector, and the pathogen to identify physiological and molecular targets for development of novel pesticides and to develop and evaluate candidate vaccine antigens. USDA, ARS, Knippling-Bushland U.S. Livestock Insects Research Laboratory (KBUSLIRL) in Kerrville, Texas are involved.

A multi-year “Northeast Area-wide Tick Control Project” was completed recently by the KBUSLIRL scientists and their university collaborators. The acaricide/pesticide self-treatment device invented by a KBUSLIRL scientist was proven highly effective in eliminating ticks from the white tailed deer. Controlling ticks on deer by self-application of acaricide resulted in a decrease in the risk to human’s exposure to Lyme disease in the treated areas. The 4-Poster device is a passive feeding station designed to control ticks that utilize white-tailed deer as a host. As deer feed on corn bait at the station, tickicide-treated rollers brush against the animals' neck, head and ears where many adult ticks feed. In a similar study, the Yale School of Medicine’s Department of Epidemiology and Public Health concluded that controlling ticks on deer by self-application of acaricide results in an overall decrease in the human risk for exposure to these three bacterial agents, which is due to a reduction in tick density.

TRADITIONAL INDUSTRIAL SPACE

The following is a list of businesses found in zip code 04046 that includes the Town of Arundel. Highlighted are manufacturing related operations. It is noted that the zip code currently contains very few such operations with no clusters or concentrations.

*Table 68 - Operations Located in Zip Code 04046**

Industry Code	Industry Code Description	04046
524210	Insurance agencies and brokerages	1
722211	Limited-service restaurants	4
812112	Beauty salons	1
114112	Shellfish fishing	1
236115	New single-family general contractors	20
236117	New housing operative builders	3
236118	Residential remodelers	7
238110	Poured concrete foundation and structure contractors	2
238210	Electrical contractors and other wiring installation contractors	7
238220	Plumbing, heating, and air-conditioning contractors	5
238310	Drywall and insulation contractors	5
238320	Painting and wall covering contractors	6
238910	Site preparation contractors	9
238990	All other specialty trade contractors	3
424460	Fish and seafood merchant wholesalers	4
425120	Wholesale trade agents and brokers	3
441110	New car dealers	3
441320	Tire dealers	2
442299	All other home furnishings stores	3
445110	Supermarkets and other grocery (except convenience) stores	4
445120	Convenience stores	4
447110	Gasoline stations with convenience stores	3
448120	Women's clothing stores	5
448140	Family clothing stores	4
448150	Clothing accessories stores	2
453220	Gift, novelty, and souvenir stores	15
453310	Used merchandise stores	4
453920	Art dealers	3
454311	Heating oil dealers	2
531120	Lessors of nonresidential buildings (except mini-warehouses)	2
531210	Offices of real estate agents and brokers	8
541110	Offices of lawyers	3
541219	Other accounting services	2

Table 68 - Operations Located in Zip Code 04046 Continued*

Industry Code	Industry Code Description	04046
541940	Veterinary services	3
551114	Corporate, subsidiary, and regional managing offices	2
561612	Security guards and patrol services	2
561720	Janitorial services	2
561730	Landscaping services	8
624410	Child day care services	7
713910	Golf courses and country clubs	2
713930	Marinas	3
713940	Fitness and recreational sports centers	2
721110	Hotels (except casino hotels) and motels	11
721191	Bed-and-breakfast inns	11
721211	RV (recreational vehicle) parks and campgrounds	2
722110	Full-service restaurants	15
722213	Snack and nonalcoholic beverage bars	3
722320	Caterers	2
811111	General automotive repair	6
811121	Automotive body, paint, and interior repair and maintenance	3
812910	Pet care (except veterinary) services	2
813110	Religious organizations	5
237130	Power and communication line and related structures construction	1
237210	Land subdivision	1
238130	Framing contractors	1
238190	Other foundation, structure, and building exterior contractors	1
238350	Finish carpentry contractors	1
311712	Fresh and frozen seafood processing	1
314121	Curtain and drapery mills	1
314911	Textile bag mills	1
314999	All other miscellaneous textile product mills	1
327993	Mineral wool manufacturing	1
332323	Ornamental and architectural metal work manufacturing	1
332721	Precision turned product manufacturing	1
336612	Boat building	1
337122	Non-upholstered wood household furniture manufacturing	1
337127	Institutional furniture manufacturing	1
339116	Dental laboratories	1
423110	Automobile and other motor vehicle merchant wholesalers	1
423140	Motor vehicle parts (used) merchant wholesalers	1
423220	Home furnishing merchant wholesalers	1
423450	Medical equipment merchant wholesalers	1
423910	Sporting and recreational goods and supplies merchant wholesalers	1
423920	Toy and hobby goods and supplies merchant wholesalers	1
424330	Women's and children's clothing merchant wholesalers	1
424990	Other miscellaneous nondurable goods merchant wholesalers	1
441120	Used car dealers	1
441222	Boat dealers	1
441310	Automotive parts and accessories stores	1
442210	Floor covering stores	1
444190	Other building material dealers	1
444210	Outdoor power equipment stores	1
445220	Fish and seafood markets	1
445292	Confectionery and nut stores	1
446110	Pharmacies and drug stores	1
448130	Children's and infants' clothing stores	1

Table 68 - Operations Located in Zip Code 04046 Continued*

Industry Code	Industry Code Description	04046
448190	Other clothing stores	1
448310	Jewelry stores	1
451110	Sporting goods stores	1
452990	All other general merchandise stores	1
453998	All other miscellaneous store retailers (except tobacco stores)	1
454312	Liquefied petroleum gas (bottled gas) dealers	1
484122	General freight trucking, long-distance, less than truckload	1
484230	Specialized freight (except used goods) trucking, long-distance	1
487110	Scenic and sightseeing transportation, land	1
487210	Scenic and sightseeing transportation, water	1
488510	Freight transportation arrangement	1
492110	Couriers and express delivery services	1
493190	Other warehousing and storage	1
518210	Data processing, hosting, and related services	1
519120	Libraries and archives	1
522110	Commercial banking	1
522120	Savings institutions	1
524126	Direct property and casualty insurance carriers	1
531110	Lessors of residential buildings and dwellings	1
531130	Lessors of mini-warehouses and self-storage units	1
531190	Lessors of other real estate property	1
531311	Residential property managers	1
533110	Lessors of non-financial intangible assets	1
541310	Architectural services	1
541330	Engineering services	1
541370	Surveying and mapping (except geophysical) services	1
541410	Interior design services	1
541490	Other specialized design services	1
541511	Custom computer programming services	1
541690	Other scientific and technical consulting services	1
541820	Public relations agencies	1
561110	Office administrative services	1
561312	Executive search services	1
561710	Exterminating and pest control services	1
561790	Other services to buildings and dwellings	2
561990	All other support services	1
611110	Elementary and secondary schools	1
611519	Other technical and trade schools	1
621111	Offices of physicians (except mental health specialists)	2
621112	Offices of physicians, mental health specialists	1
621210	Offices of dentists	2
621420	Outpatient mental health and substance abuse centers	1
621910	Ambulance services	1
711110	Theater companies and dinner theaters	1
711510	Independent artists, writers, and performers	1
712110	Museums	1
712120	Historical sites	1
721199	All other traveler accommodation	2
811122	Automotive glass replacement shops	1
813312	Environment, conservation and wildlife organizations	1
813410	Civic and social organizations	1
813990	Other similar organizations	1

*Developed by The Chesapeake Group, Inc., 2013.

Manufacturing is undergoing a metamorphous, much like the type associated with the evolution of the computer for homes and offices in the 1990’s. The combination of the application of technology, including but not limited to multi-tasking robotics with 3-D printing and new materials, is changing dynamics rapidly. It is mitigating traditional “blue-collar” labor costs, increasing the importance of transportation costs to the production and “bottom line.” In many cases, it is also mitigating utility needs and costs other than electric. Thus, locations closer to large population centers having a full-range of population options gain increased importance and work to the advantage of Arundel in the foreseeable future.

Employment and training needs will change, but the opportunity exists to increase the manufacturing component of the Arundel area. This will include but not be limited to opportunities associated with those that previously existed in the area.

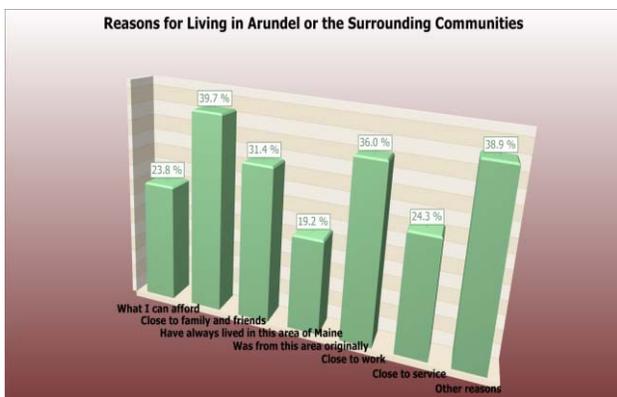
There is opportunity for multi-tenant small spaces, such as flex space. Based on the anticipated previously defined growth in the labor force and changing space needs based on the changes in the amount and types of labor, 120,000 to 170,000 square feet of manufacturing space that does not require heavy utility use could be developed at present. Furthermore, additional expansion in the future is reasonable.

Areas, upon which the added space could focus include but are not limited to: smaller-scale medical, botanical and pharmaceutical manufacturing; pottery product manufacturing; drone and related product development and subsets of sporting goods for winter activity.

Additional Factors

Numerous studies have been done highlighting that arguably the primary factor in location decisions by corporate entities is associated with quality of life in the community. Information was generated on the opinions of the quality of life in Arundel. The following is related information generated through the survey of residents, one-on-one or face-to-face interviews and focus group sessions. They reflect a composite of opinions from current residents or businesses in Arundel.

- ✓ Proximity is the primary defined reason for residing in Arundel; whether the proximity is to friends, family, work, or other activity.



*Table 69 - Reasons for Residing in Arundel**

Reasons	Percent
What I can afford.	23.8%
Close to family and friends	39.7%
Have always lived in this area of Maine	31.4%
Was from this area originally	19.2%
Close to work	36.0%
Close to services	24.3%
Other reasons	38.9%

*Developed by The Chesapeake Group, Inc., 2013.

- ✓ About 18% of the households define the housing options in Arundel to be very good or excellent.
- ✓ Shopping options and shopping experience in Arundel (not the regional area) are defined as being excellent or very good by 15% to 20% of the population.

Table 70 - Feelings toward Various Community Components*

	Poor	Fair	Good	Very Good	Excellent	Total
Housing Options	9.13%	25.22%	47.83%	13.91%	3.91%	100.00%
Local Employment Options	50.00%	34.82%	12.50%	0.89%	1.79%	100.00%
Shopping Options	41.28%	27.23%	16.60%	12.77%	2.13%	100.00%
Shopping Experience	31.60%	22.94%	28.14%	15.15%	2.16%	100.00%
Range of Food Service Services	41.20%	30.47%	16.31%	9.44%	2.58%	100.00%
Quality of food service options	23.35%	26.87%	32.60%	14.98%	2.20%	100.00%

*Developed by The Chesapeake Group, Inc., 2013.

The public defined the following business issues. It is important to note that perceptions are reality to those who hold them whether or not they are based on fact.

Public Defined Business Issues

1. Not business friendly
2. Without public sewer and water
3. Too conservative to change
4. High taxes
5. Surrounding communities meet most needs
6. No sense of community or town center
7. Conflicted
8. Difficult regulations

In addition, the business community through the interviews defined “Inconsistent information” as a significant issue.

The qualities making Arundel a good place to live follow.

Qualities Making It a Good Place to Live

1. Quiet
2. Rural, Small Town
3. Nice/Friendly people
4. Safe
5. Proximity/Close to things + places + ocean
6. Accessible
7. Beauty
8. Quality of Life
9. Good schools now
10. Close to other places but less traffic/Not congested
11. Green
12. Inexpensive
13. Affordable
14. Peaceful
15. Good place to raise children
16. Pleasant
17. Open spaces
18. Close knit
19. “Warm” community
20. Reasonably priced housing

Table 71 - Reasons Arundel is a Good Place to Live*

Reasons	Percent
Rural, but close to conveniences	25.88%
Small and Friendly Community	21.18%
Quiet/Rural	20.00%
Good School System	10.59%
Close Proximity to the Beach	8.24%
Safe	4.71%
Reasonable Prices	3.53%
Low Taxes	1.18%
Others	4.12%

*Developed by The Chesapeake Group, Inc., 2013.

The following are publicly defined “reasons” which make Arundel a good place to operate a business. It is noted that whether through the survey of residents or interviews, most people think only of retail related activity when they think of “business.”

Reasons Arundel Good Place to Operate a Business

1. Desire of residents to shop local
2. Route 1 exposure
3. Business friendly
4. Affordable
5. Central location in larger area
6. Lower tax burden
7. Connection to Biddeford, Kennebunk, Sanford
8. Seasonal Tourists
9. Access
10. Not far from cities
11. A lot of space
12. Friendly
13. I-95 access

*Table 72 - Reasons to Believe Arundel is a Good Place to Open and Operate a Business**

Reasons	Percent
It is Not a Good Location	23.24%
Close to Population Centers	16.90%
Open and Friendly Community	14.79%
Not Sure	13.38%
Open Space/No Competition	9.86%
Rt. 111 & Rt. 1 Needs Expansion	8.45%
Easy Access to Turnpike (I-95)	7.04%
Affordable/Low Taxes	2.82%
Depends Upon the Business	2.11%
Others	1.41%

*Developed by The Chesapeake Group, Inc., 2013.

The following are elements defined by the public that they believe would make Arundel a “better place to live.”

*Table 73 - Elements That if Changed Would Make Arundel a Better Place to Live**

Reasons	Percent
Less Tax	15.73%
More Businesses	15.17%
Greater Sense of Community	8.99%
Better School System	8.99%
Build a Town Center	8.43%
Keep It Rural	5.62%
Improve Infrastructure	5.06%
More Public Services (Trash, Recycle, etc.)	3.93%
More/Affordable Restaurants	3.37%
Better Police Force	3.37%
Better Library Access	2.25%
Control Bentley's Saloon	2.25%
More Job Opportunities	2.25%
More/Affordable Housing	1.69%
Others	12.36%

*Developed by The Chesapeake Group, Inc., 2013.

People were also asked to describe Arundel. The following was generated. It is noted that the overwhelming proportion of respondents described it as “rural” or used terminology often associated with the rural character.

*Table 74 - How to Describe Arundel**

Reasons	Percent
Rural, but close to conveniences	22.60%
Rural/Quiet Town	17.81%
Open and Friendly Community	14.38%
It is Not a Good Location	7.53%
Good Location	6.85%
Not Sure	6.85%
Good School System	6.16%
Not "Business-Friendly"	6.16%
High Taxes	4.11%
Difficult Regulations	3.42%
Others	4.11%

*Developed by The Chesapeake Group, Inc., 2013.