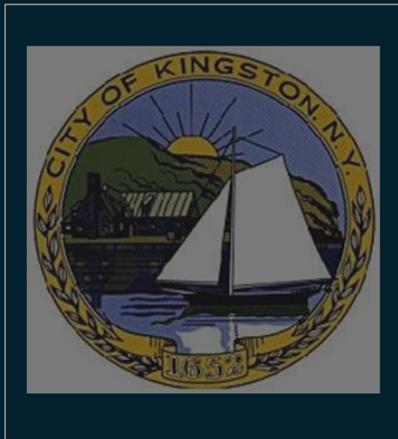
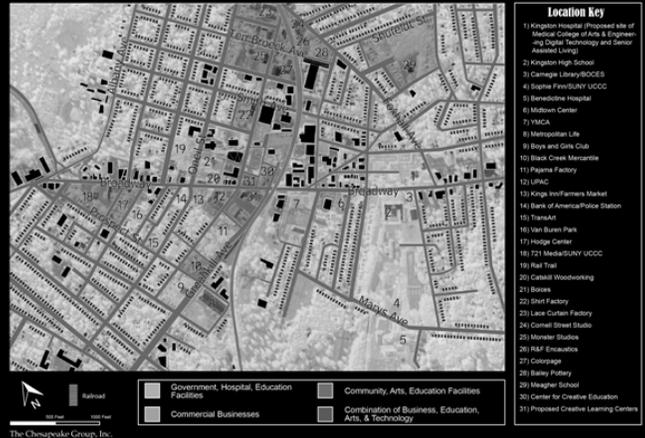




DRAFT REVITALIZATION PLAN FOR MIDTOWN IN KINGSTON, NEW YORK



The Midtown BEAT Plan



BUSINESS, EDUCATION, ART & TECHNOLOGY

FOR THE ENHANCEMENT OF HUMAN CAPITAL IN MIDTOWN

Context

There are demographic and other changes within the global economy, the United States, New York, Kingston that impact the opportunities and the future for the Midtown area of Kingston. The demographic changes include but are not limited to those that follow.

- ✓ **Birth Rates** - Birth rates have fallen to the lowest level in the history of the country.
- ✓ **Fertility rates** - Fertility rates are at the lowest or near lowest level in history as well.
- ✓ **Marriage rates** - marriage rates continue to decline and are also at the lowest level in the country's history.
- ✓ **Population Aging** - The average age of residents continues to increase nationally and regionally.
- ✓ **Increased Population Diversity** - The population in the country continues to diversify in terms of origin, ethnicity, race and other related factors.
- ✓ **Housing Transition** - "Baby Boomers" and younger households between the ages of 21 and 30 are seeking different housing options and environments than past generations.
- ✓ **Recreational Needs Expansion** - "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.
- ✓ **Diminishing Impact of "Boomers"** - "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.
- ✓ **Changing Needs of the Population** - The aging population likely increases the demand for office space and related services in various professional areas while diminishing demand in others.

The following additional "mega factors" will also influence the future economic structure of the community as well.

- ✓ **"On Demand" Production for Consumer Goods** - Virtually all apparel to most items used in the household on a regular basis will not be "stocked" in a warehouse or retailer shelves but made "over night" for the customer and either picked up from the retailer or delivered to the home. Shirts, blouses, etc. will be made for the individual based on their specific body type and need. This will result in lesser and smaller retail spaces. Locations near major markets with quality transportation access will become increasingly important as transportation costs become a greater factor in overall product costs.
- ✓ **Additive Manufacturing/3D Printing** - The above change results from dramatic and evolutionary changes in technology applications for manufacturing. Those changes are growing exponentially and are now just beginning to be recognized by the public. Manufacturing is shifting back to the United State because of technological change is diminishing the cost of labor in the overall cost of the product. A 3D manufacturing may require traditional looking and scaled manufacturing space; while others will operate and look no different than a traditional professional office. 3D printing is evolving rapidly, increasing in potential function and decreasing in cost. It is and will be employed extensively from medicine to household goods and to military applications.
- ✓ **New Materials Development** - New materials, such as graphine and composites that visually look like glass but are as strong and resilient as metals, and many other compounds are being employed in "3D Printing" and in other technological adaptive products.

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- ✓ **Multi-tasking Intuitive Robotics** - Along with additive manufacturing, which involves a printer much like that found in any office, intuitive multi-tasking robots is evolving rapidly, impacting location of production of household appliances and many other products. The technology use is growing exponentially and will stimulate industrial space demand in major population areas well beyond that projected simply a few years ago.
- ✓ **Changes in Delivery Form** - Many future products will be delivered by drones or by rail for larger production of units within metro areas. The drones need to be produced and maintenance creating demand for space. The drones will need operation headquarters creating demand for space. Products delivered will need space even if for short durations ("on demand" product development).

All of the above open opportunities for Kingston and the residents of the Midtown area.

A Quality Neighborhood

Within this context, the definition of a quality neighborhood changes to meet changing demand. Quality neighborhoods have always been defined as those having the characteristics that follow.

1. Feeling of safety.
2. Education that provides opportunities for achievement and enhancement.
3. Infrastructure that supports lifestyles and aspirations.
4. Amenities reflecting the desire of the community.
5. Employment opportunities within or nearby.
6. Services
7. Economic integration of the population within the larger economy

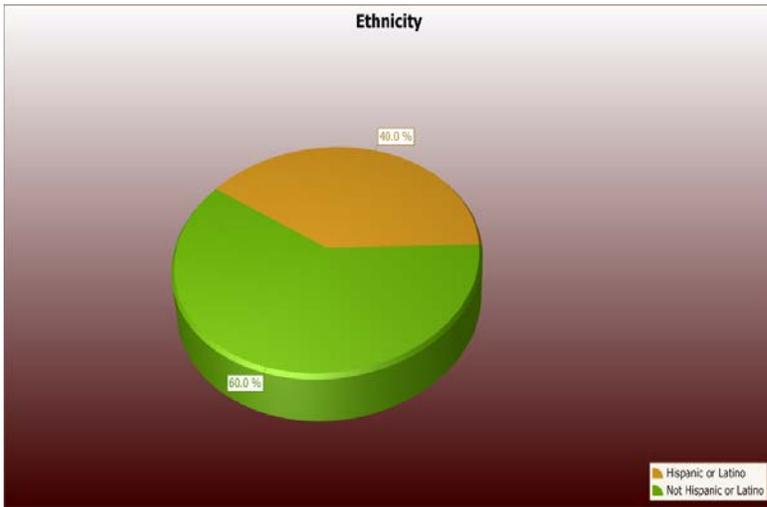
These will remain important, but how they are defined may change; and some become more important than others to different demographic groups. For example, quality of schools is important to senior households that own their own residents because it impacts their property values. However, for younger households having children or anticipating children in the future, it is important for the same reason but for additional reasons as well. Amenities increasingly will include a walkable environment with recreational opportunities in their own community.

Background

In an effort to better understand the Midtown population, community needs and desires, their current commercial and housing patterns, and economic and other issues; a survey of more than 240 residents was conducted in the Midtown area. This yielded significant information essential to formulating a new plan for the Midtown area of Kingston.

Sample Demographics - A survey of residents of the area was conducted. Of the more than 240 resident respondents, 40% defined themselves as being either Hispanic or Latino.

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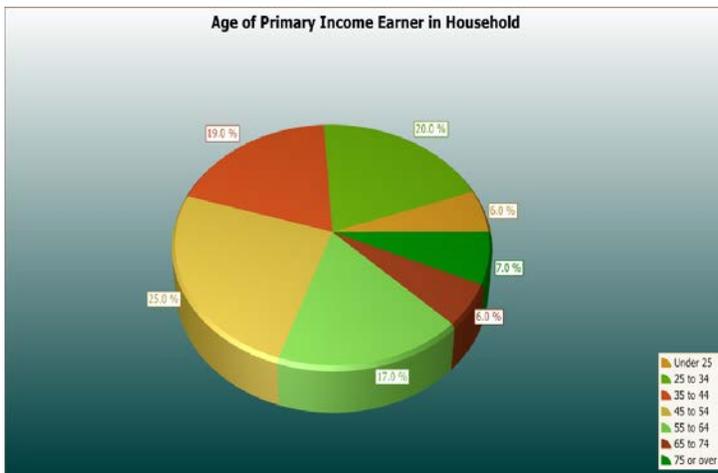


*Table 1 – Ethnicity of Respondents**

Ethnicity	Percent
Hispanic or Latino	40.0%
Not Hispanic or Latino	60.0%

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

About 13% are senior citizens at least 65 years of age. On the other hand, about one-fourth (26%) are younger than 35.

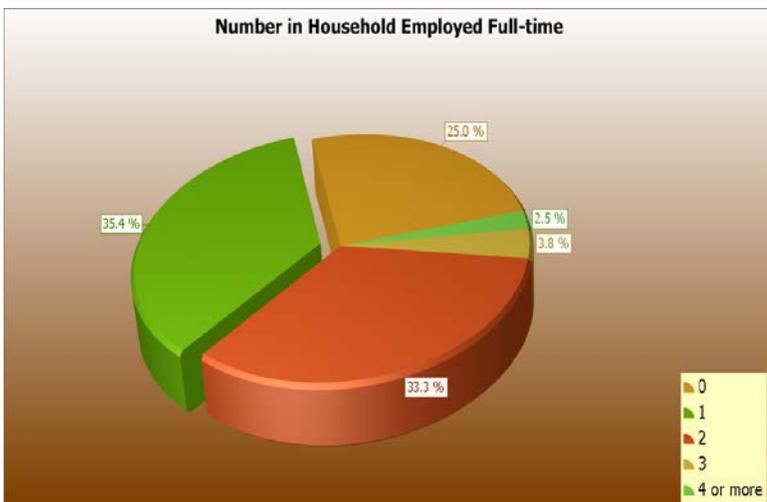


*Table 2 – Age of the Primary Income Earner in Household**

Age Range	Percent
Under 25	5.7%
25 to 34	20.1%
35 to 44	19.2%
45 to 54	24.9%
55 to 64	17.5%
65 to 74	5.7%
75 or over	7.0%

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

About one-fourth of the households have no individual employed on a full-time basis; while more than an additional one-third have only one person employed full-time.



*Table 3 - Number in Household Employed Full-time**

Number Employed Full-time	Percent
0	25.0%
1	35.4%
2	33.3%
3	3.8%
4 or more	2.5%

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

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Additionally, 61% of the households have no one employed part-time.

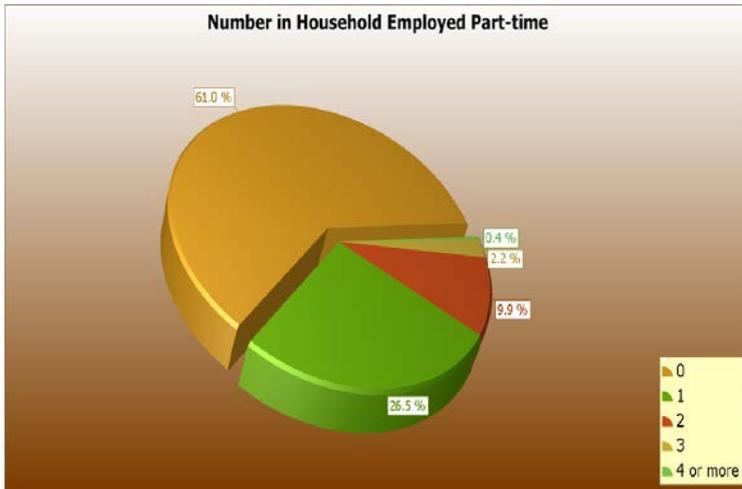


Table 4 - Number in Household Employed Part-time*

Number Employed Full-time	Percent
0	61.0%
1	26.5%
2	9.9%
3	2.2%
4 or more	0.4%

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

For those that are unemployed or underemployed, more than four in ten households (44%) have only a high school or lesser education.

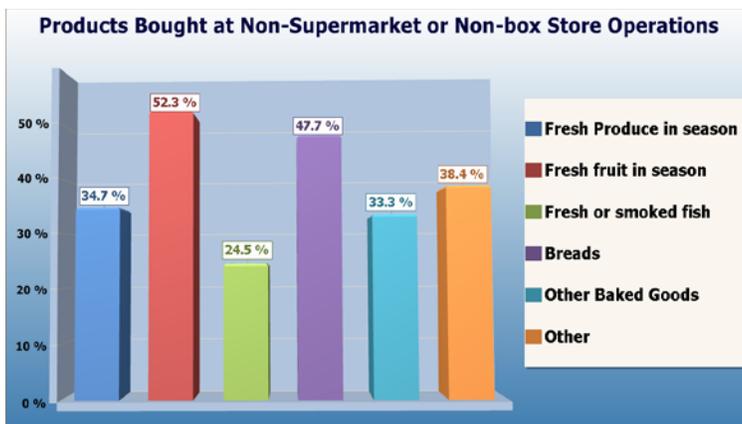


Table 5 - The Under-employed or Unemployed Person's Or People's Education Level*

Education Level	Percent
Less than high school	7.1%
High school	36.6%
Technical	3.6%
Some college or Associate's Degree	35.3%
Bachelor's Degree	12.5%
Advanced degree	4.9%

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

Lack of employment opportunities near home as well as insufficient pay are primary reasons for the level of unemployment and under-employment.

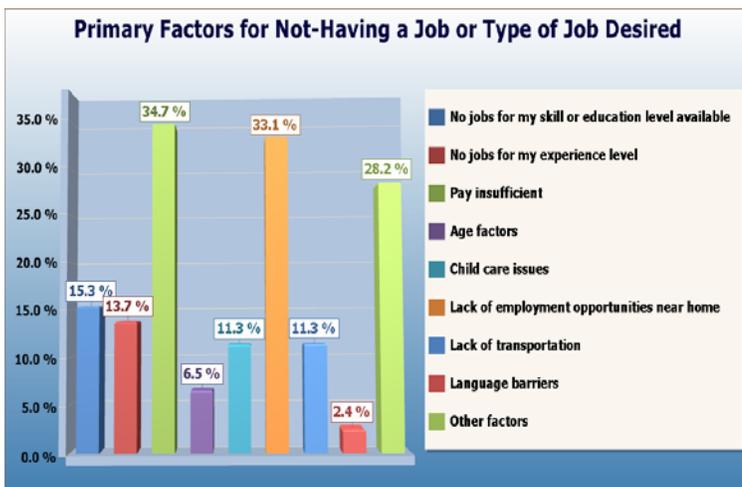


Table 6 - Primary Factors for Not Having a Job or Type of Job Desired*

Factors	Percent
No jobs for my skill or education level available	15.3%
No jobs for my experience level	13.7%
Pay insufficient	34.7%
Age factors	6.5%
Child care issues	11.3%
Lack of employment opportunities near home	33.1%
Lack of transportation	11.3%
Language barriers	2.4%
Other factors	28.2%

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

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Over 44% of the households have annual total household incomes under \$30,000. More than one-half of these have incomes below \$15,000.

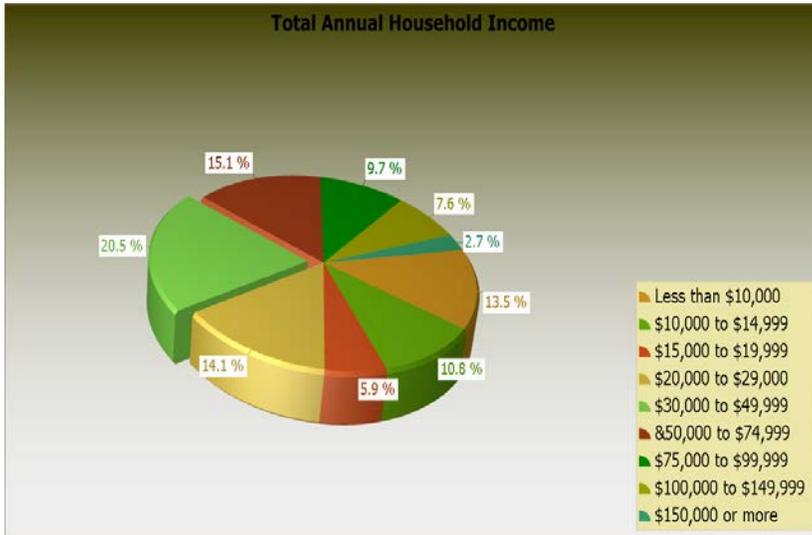


Table 7 - Total Annual Household Income*

Income Category	Percent
Less than \$10,000	13.5%
\$10,000 to \$14,999	10.8%
\$15,000 to \$19,999	5.9%
\$20,000 to \$29,999	14.1%
\$30,000 to \$49,999	20.5%
\$50,000 to \$74,999	15.1%
\$75,000 to \$99,999	9.7%
\$100,000 to \$149,999	7.6%
\$150,000 or more	2.7%

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

The mean total annual household income of the respondents is roughly \$45,000 which is believed to be above the average in the Midtown area and is skewed by a small proportion (about 10%) with incomes above \$100,000.

Spending on Major Commodities

Households most often spend the majority of their income on three basic commodities. Irrespective of income levels, these are housing, food and transportation.

Housing - The proportion of residents responding to the survey paying rents well above affordability levels is substantial. The survey indicates the following.

- ✓ Two-thirds of those with incomes less than \$10,000 spend more than \$600 or at least \$7,200 on rent or mortgage payments.
- ✓ 43% of those with incomes between \$10,000 and \$15,000 spend at least \$7,200 on rent or mortgage payments.
- ✓ 62% of those with incomes between \$15,000 and \$20,000 spend at least \$7,200 on rent or mortgage payments.
- ✓ 91% of those with incomes between \$20,000 to \$30,000 spend at least \$7,200 on rent or mortgage payments.
- ✓ 93% of those between \$30,000 and \$50,000 spend at least \$7,200 on rent or mortgage payments.

The average monthly rent or mortgage payment is \$795, including those with no monthly payment; while the average excluding those with no monthly payment is \$971. Assuming the mean average household income is roughly \$45,000, the average household in the area spends about 26% of their income for housing.

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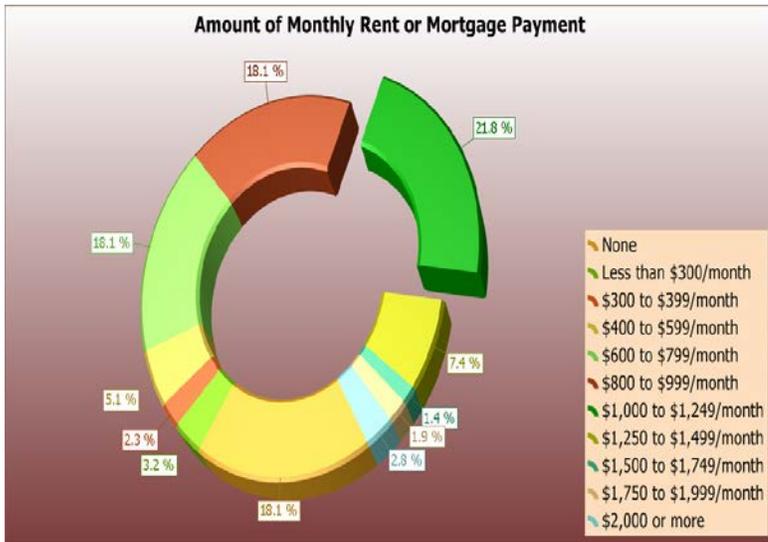


Table 8 - Monthly Rent or Mortgage Payment*

Rent or Monthly Mortgage Payments	Percent
None	18.1%
Less than \$300/month	3.2%
\$300 to \$399/month	2.3%
\$400 to \$599/month	5.1%
\$600 to \$799/month	18.1%
\$800 to \$999/month	18.1%
\$1,000 to \$1,249/month	21.8%
\$1,250 to \$1,499/month	7.4%
\$1,500 to \$1,749/month	1.4%
\$1,750 to \$1,999/month	1.9%
\$2,000 or more/month	2.8%

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

About 40% of the residents interviewed believe they will move in the next five years.

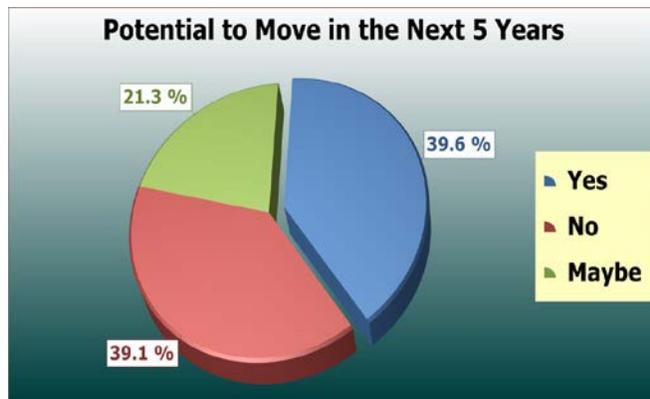


Table 9 - Potential to Move in the Next Five Years*

Likelihood of Moving	Percent
Yes	39.6%
No	39.1%
Maybe	21.3%

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

More than one-half of the respondents feel they can make a difference in the community through their own conduct, activities in which they are involved and by getting involved if they are not now involved.

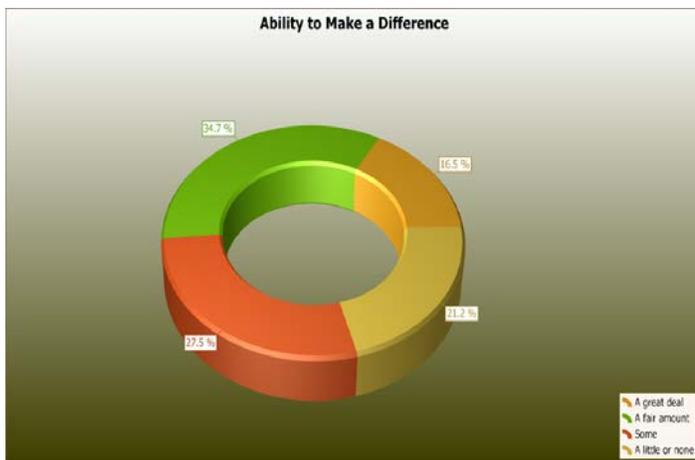


Table 10 - Ability to Make a Difference*

Answer	Percent
A great deal	16.5%
A fair amount	34.7%
Some	27.5%
A little or none	21.2%

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

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Food - Most grocery shopping today is made at supermarkets or “box” operations. Neither of these types of establishments is found in the Midtown area at this time.

The average household in the Midtown survey spends about \$95 weekly on groceries and related products at any and all locations.

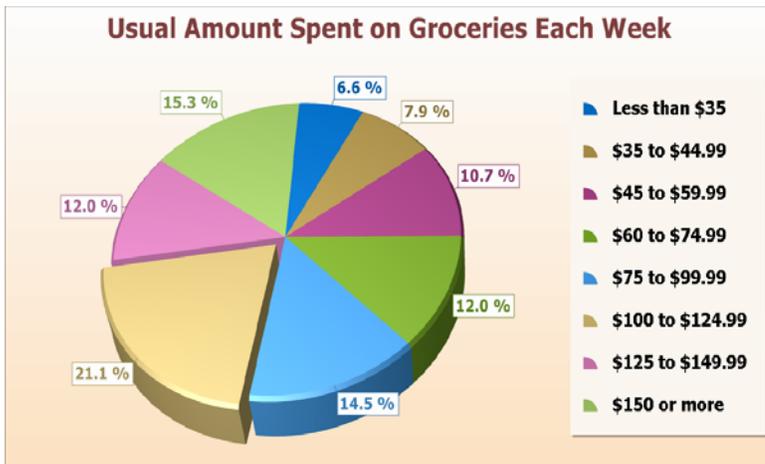


Table 11 - Weekly Grocery Spending*

Amount Spent	Percent
Less than \$35	6.6%
\$35 to \$44.99	7.9%
\$45 to \$59.99	10.7%
\$60 to \$74.99	12.0%
\$75 to \$99.99	14.5%
\$100 to \$124.99	21.1%
\$125 to \$149.99	12.0%
\$150 or more	15.3%

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

For health and other reasons, fresh products and locally grown products are playing an increasing role in changing lifestyles in this country. Non-supermarket and non-box operations purchases have increased dramatically over the last few years as the proportion of other operations and farmers markets accepting electronic transactions, such as WIC, has increased.

Many of the residents do purchase fresh products at non-supermarkets and box stores either at “farmers’ markets,” independent operations, and other related businesses. Four in ten make such purchases “in season” on a weekly basis when the opportunity presents itself.

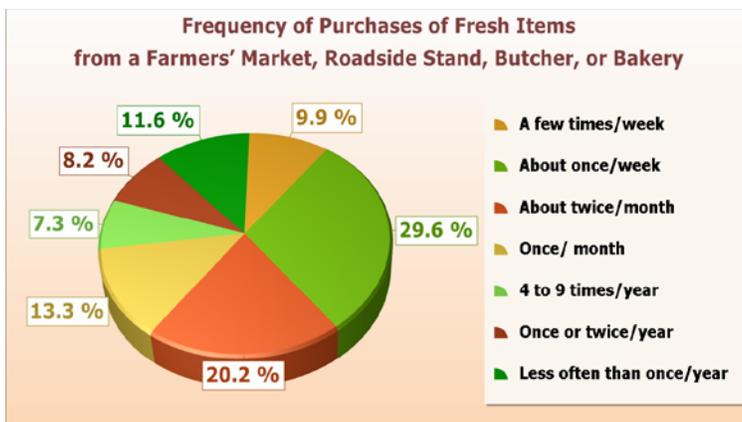


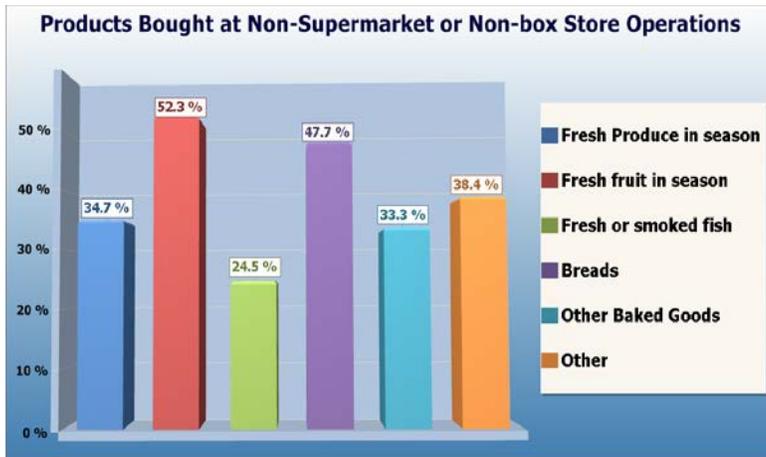
Table 12 - Frequency of Purchases of Fresh Items from a Farmers' Market, Roadside Stand, Butcher, or Bakery*

Frequency	Percent
A few times/week	9.9%
About once/week	29.6%
About twice/month	20.2%
Once/ month	13.3%
4 to 9 times/year	7.3%
Once or twice/year	8.2%
Less often than once/year	11.6%

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

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The types of products purchased are found in the table and graphic that follows.



*Table 13 - Products Bought at Non-supermarket or Non-box Store Operations**

Options	Percent
Fresh produce in season	47.7%
Fresh fruit in season	52.3%
Fresh or smoked fish	24.5%
Breads	47.7%
Other baked goods	33.3%
Meats	38.4%
Other	34.7%

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

In addition to food purchased from grocery operations generally for home consumptions, people eat outside the home frequently at a variety of food service establishments. Spending on food purchased at food service establishments is a factor of both the frequency and the type of establishment frequented.

The proportion of residents most often eating at a food service establishment at least once per week for both lunch and dinner is between 35% and 40%.

*Table 14 – Frequency Household residents Eat Outside the Home at Food Service Establishments**

Frequency	Lunch %	Dinner %
A few times/week	21.5%	16.0%
About once/week	17.4%	21.5%
About twice/month	19.4%	22.4%
Once/ month	13.2%	18.6%
4 to 9 times/year	10.3%	7.6%
Once or twice/year	5.8%	3.4%
Less often than once/year	12.4%	10.5%

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

In general, full service establishments are frequented most often for dinner; while the largest proportion of residents frequent fast food operations for lunch.

*Table 15 – Type of Establishment Frequented**

Type of Establishment	Lunch %	Dinner %
Full-service restaurant	30.6%	52.1%
Fast food operation	35.3%	19.5%
All you can eat buffet	9.8%	16.5%
Sub shop	10.2%	2.5%
Other	14.0%	9.3%

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

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Transportation - The type of transportation varies within the area based on access. About two in every ten households interviewed do not have a personal vehicle available for use, being primarily dependent upon foot, carpooling and public transportation and to a lesser extent bicycles. Furthermore, almost four in ten other households have one vehicle available.

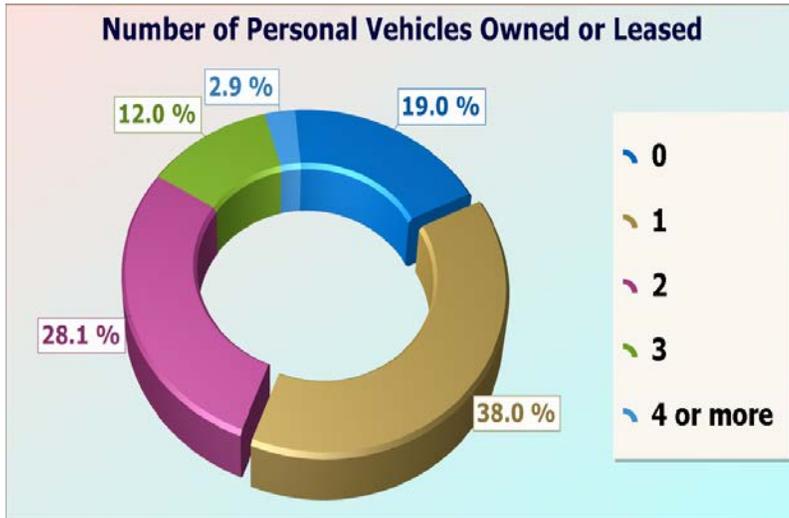


Table 16 - Number of Personal Vehicles Owned or Leased*

Number	Percent
0	19.0%
1	38.0%
2	28.1%
3	12.0%
4 or more	2.9%

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

Generally, vehicles that are less than five years old have higher lease or loan payments, but lower maintenance costs than those five years of age or more.

Table 17 - Number Five Years or Older*

Number of Vehicles	Percent
0	32.7%
1	35.9%
2	22.0%
3	5.4%
4 or more	4.0%

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

Other Spending and Factors

Additional information on spending and perceptions of the community were obtained through the survey. Salient information follows.

- ✓ Increasingly, retail and other goods purchases are made “online.” Primary competition often comes not from within the community or areas that surround the community but from outside of a region. Compared to many communities today, those residing in the Midtown area shop online with a lesser frequency than is often found.

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*Table 18 - Frequency of Online Purchases**

Frequency of Online Purchases	Percent
A few times/week	4.8%
About once/week	8.3%
About twice/month	11.3%
Once/ month	12.2%
4 to 9 times/year	16.5%
Once or twice/year	11.7%
Less often than once/year	35.2%

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

- ✓ Trips to movies often involve food purchases during, before, or after the viewing. Trips to movie theaters are also a surrogate for other entertainment spending. Only a small proportion of residents see movies twelve or more times in a year.

*Table 19 - Frequency of Trips to Movie Theaters**

Frequency of Trips to Movie Theaters	Percent
A few times/week	0.4%
About once/week	2.5%
About twice/month	8.1%
Once/ month	14.4%
4 to 9 times/year	18.6%
Once or twice/year	22.5%
Less often than once/year	33.5%

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

As noted, perceptions and opinion information on the community were also obtained.

- ✓ Most residents live in the community for multiple reasons, with the largest proportions stating the proximity to friends and family.

*Table 20 - Reasons for Living in Kingston**

Reasons for Living in Kingston	Percent
What I can afford.	15.5%
Close to family and friends	40.9%
Have always lived in this area of New York	32.3%
Was from this area originally	22.0%
Close to water	6.5%
Close to work	20.7%
Close to services	13.4%
Other reasons	23.3%

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

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About six in ten households are either very or somewhat satisfied with living in the community at the present time. More than a third of the respondents or at least somewhat dissatisfied. Safety is one of the significant concerns.

Table 21 - Satisfaction with Living in the Community

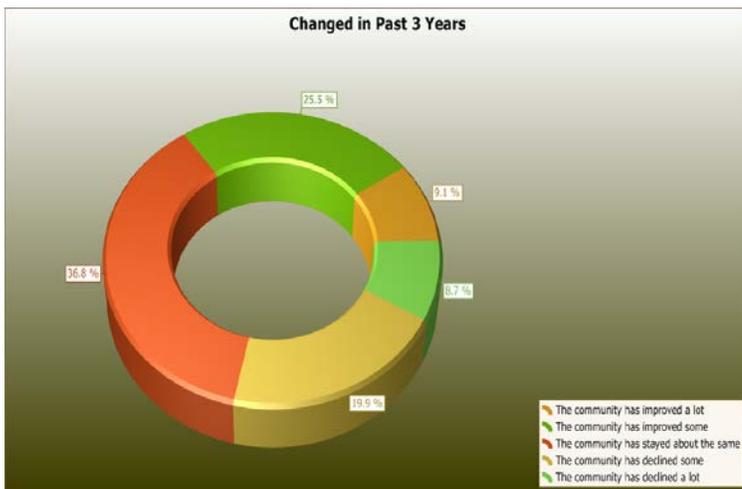
Level of Satisfaction	Percent
Very satisfied	14.8%
Somewhat satisfied	48.1%
Somewhat dissatisfied	27.6%
Very dissatisfied	9.5%

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

- ✓ Majority of the residents ranked:
 1. Police response as being “very good” or “good.”
 2. Fire department response as being “very good” or “good.”
 3. Ambulance response as being “very good” or “good.”
 4. Trash collection as being “very good” or “good.”
 5. Other public services, such as snow removal and street conditions as being “good” or “fair.”

- ✓ Majority of the residents also feel “safe” in their homes or walking in the neighborhood during the daylight hours. However, the parks and recreational areas are deemed as being “safe,” “somewhat safe” and “somewhat unsafe.”

- ✓ Many residents feel that the community has either remained the same or declined in the past three years. About one-third of the residents believe that the community has improved.



*Table 22 - Community Changed in Past 3 Years**

Answer	%
The Community has improved a lot	9.1
The Community has improved some	25.5
The Community has stayed about the same	36.8
The Community has decline some	19.9
The Community has decline a lot	8.7

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

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In addition to the survey of residents and in an effort to determine conditions within the community that impact the residents at present and in the future, a windshield survey was conducted in Midtown. In total, 299 structures and their respective lots were examined. These include single-family, multi-family, commercial, industrial, institutional and mixed with residential and mixed without residential uses.

*Table 23 - Structures Reviewed through Windshield Survey**

Single-family	Multi-Family	Commercial	Industrial	Institutional	Mixed Use no residential	Mixed Use with residential
118 (38%)	68 (22%)	80 (26%)	4 (1%)	1 (0.3%)	2 (0.6%)	26 (12%)

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

The structures and property were evaluated by both condition and attractiveness. The conditions range from good, to needing minor repair only, to requiring at least one major repair, to requiring comprehensive renovation, and to dilapidation. It is noted that only one-third were identified as being in good condition. More than one-fourth (28%) needed at least one major repair, with about 11% of these requiring comprehensive renovation or being dilapidated.

*Table 24 - Condition of Buildings and Surroundings**

	Overall Exterior Condition	Condition of features around bldg
Good Condition	93 (33%)	103 (39%)
Needs minor repair only	110 (39%)	113 (42%)
Requires at least 1 major repair	69 (25%)	46 (17%)
Requires comprehensive renovation	7 (2%)	4 (2%)
Dilapidated	2 (1%)	-

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

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About one-third of the structures and properties were evaluated as being somewhat to very unattractive.

*Table 25 - Attractiveness of Structures & Properties**

Level of Attractiveness	Number & %
Very Attractive	56 (20%)
Somewhat Attractive	131 (48%)
Somewhat Unattractive	51 (19%)
Very Unattractive	34 (13%)

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

Block conditions were also assessed. Consideration was given to street surfaces, sidewalks, curbs, street lighting, trash and debris, graffiti and illegal dumping. The following is noted.

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- ✓ 8% of the street surfaces, 12% of the curbs and sidewalks, and 9% of the street lights were designed as being poorly maintained. 68% had some to much trash and debris, 59% some to much graffiti and 11% had illegal dumping.

*Table 26 - Conditions of Streets, Curbs, Sidewalks and Street Lighting**

	Street Surfaces	Sidewalks & Curbs	Street Lighting
Well Maintained	41 (39%)	27 (28%)	28 (29%)
Adequately Maintained	56 (53%)	52 (54%)	55 (58%)
Poorly Maintained	9 (8%)	12 (12%)	9 (9%)
NA		6 (6%)	3 (3%)

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

*Table 27 - Existence of Trash and Debris, Graffiti and Illegal Dumping**

	Trash, Debris	Graffiti	Illegal Dumping
None	41 (32%)	43 (42%)	92 (89%)
Some	72 (57%)	48 (47%)	11 (11%)
A Lot	14 (11%)	12 (12%)	-

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

Analyses

Multiple analyses, including cluster analyses, demand forecasting and a research opportunities assessments were performed in an effort to define future opportunities within the context of the current conditions, the previously defined trends in the country, surrounding activity and the ability to draw patronage from Kingston and Ulster County. To determine additional potential uses without bias, the Midtown area and properties 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, etc., or could potentially be successful in the near future in Kingston.

Comparative Assessment/Cluster Analysis

A cluster analysis using comparative assessment processes 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. These are by county, zip code, and Metropolitan Statistical Areas. This analysis includes assessments of local business patterns at both the zip code and larger county level. The identified business gaps defined in this process may or may not be appropriate for Midtown 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 Bureau data. 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 (two digit NAICS) 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.

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- ✓ 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.

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- ✓ 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) 12401, encompassing Kingston, 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 size had to be similar to those associated with Kingston, since demand for many goods and services are ultimately dependent largely upon the size of the market served.
- ✓ The household numbers had to be similar to those associated with Kingston, since 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 Kingston reported incomes.
- ✓ The selected communities are all located inland.
- ✓ Transportation and interstate highway access had to be similar.

Consideration was also given to climate.

Based on the criteria, seven communities defined by ZCTA were identified for which the comparison in economic structures was made. These nine communities follow.

15317 Canonsburg, PA
37076 Hermitage, TN
46368 Portage, IN
48035 Clinton Township, MI
49684 Traverse, MI
53186 Waukesha, WI
80537 Loveland, CO

Under-represented “industries” were then defined as those where ZCTA 12401 had a lesser number of businesses than at least five of the other seven communities. Thus, the number of businesses in zip code 12401 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 12401. Once again, under-representation does not mean that the identified categories of businesses are desirable for Midtown.

The following are the “industries” or businesses identified as being under-represented in ZCTA 12401.

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Table 28 - Under-represented Businesses in Zip Code 12401*

Industry Code	Industry Code Description
236117	New housing operative builders
236220	Commercial and institutional building construction
237110	Water and sewer line and related structures construction
237130	Power and communication line and related structures construction
238110	Poured concrete foundation and structure contractors
238130	Framing contractors
238150	Glass and glazing contractors
238170	Siding contractors
238310	Drywall and insulation contractors
238320	Painting and wall covering contractors
238330	Flooring contractors
323114	Quick printing
423420	Office equipment merchant wholesalers
423430	Computer and software merchant wholesalers
423810	Construction equipment merchant wholesalers
423840	Industrial supplies merchant wholesalers
425120	Wholesale trade agents and brokers
442210	Floor covering stores
444130	Hardware stores
453920	Art dealers
484110	General freight trucking, local
484121	General freight trucking, long-distance, truckload
522292	Real estate credit
541611	Administrative management consulting services
541612	Human resources consulting services
561720	Janitorial services
611620	Sports and recreation instruction
623110	Nursing care facilities
623311	Continuing care retirement communities
811310	Commercial machinery repair and maintenance

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

One area of activity or cluster is clearly identified. This is related to construction and related contractors. Also of note are: (1) art dealers; (2) sports and recreation instruction; and (3) senior related care and services.

As previously defined, a second set of comparisons was also made. The business structure of Ulster County was compared to the structures of businesses 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 had to be similar to those associated with Ulster County, since demand for most goods and services are ultimately dependent largely upon the size of the market served.

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- ✓ The household numbers had to be similar to those associated with Ulster 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 Ulster County reported incomes.
- ✓ Transportation and interstate highway access had to be similar.

Consideration was also given to climate.

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

Benton Co WA	McLean Co IL
Butler Co PA	Minnehaha Co SD
Cabarrus Co NC	Peoria Co IL
Clermont Co OH	Racine Co WI
Kent Co RI	

Under-represented “industries” were then defined as those where Ulster County had a lesser number of businesses than at least seven of the other nine counties. Thus, the number of businesses in Ulster 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-served categories were identified in Ulster County. Once again, under-representation does not mean that the identified categories of businesses are desirable for Midtown.

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

*Table 29 - Under-represented Businesses in Ulster County**

NAICS	Industry Code Description
221122	Electric power distribution
236117	New housing operative builders
236220	Commercial and institutional building construction
237130	Power and communication line and related structures construction
237210	Land subdivision
238160	Roofing contractors
238320	Painting and wall covering contractors
238330	Flooring contractors
311611	Animal (except poultry) slaughtering
321920	Wood container and pallet manufacturing
323114	Quick printing
323115	Digital printing
327320	Ready-mix concrete manufacturing
327991	Cut stone and stone product manufacturing
332212	Hand and edge tool manufacturing
332710	Machine shops
332721	Precision turned product manufacturing
333514	Special die and tool, die set, jig, and fixture manufacturing

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Table 29 - Under-represented Businesses in Ulster County (Continued)*

NAICS	Industry Code Description
334418	Printed circuit assembly (electronic assembly) manufacturing
339113	Surgical appliance and supplies manufacturing
339950	Sign manufacturing
423110	Automobile and other motor vehicle merchant wholesalers
423120	Motor vehicle supplies and new parts merchant wholesalers
423140	Motor vehicle parts (used) merchant wholesalers
423210	Furniture merchant wholesalers
423320	Brick, stone, and related construction material merchant wholesalers
423330	Roofing, siding, and insulation material merchant wholesalers
423420	Office equipment merchant wholesalers
423430	Computer and computer peripheral equipment and software merchant wholesalers
423450	Medical, dental, and hospital equipment and supplies merchant wholesalers
423510	Metal service centers and other metal merchant wholesalers
423610	Electrical apparatus and equipment, wiring supplies, and related equipment merchant wholesalers
423720	Plumbing and heating equipment and supplies (hydronics) merchant wholesalers
423730	Warm air heating and air-conditioning equipment and supplies merchant wholesalers
423740	Refrigeration equipment and supplies 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
424130	Industrial and personal service paper merchant wholesalers
424510	Grain and field bean merchant wholesalers
424610	Plastics materials and basic forms and shapes merchant wholesalers
424810	Beer and ale merchant wholesalers
424910	Farm supplies merchant wholesalers
424950	Paint, varnish, and supplies merchant wholesalers
425120	Wholesale trade agents and brokers
441310	Automotive parts and accessories stores
442110	Furniture stores
442291	Window treatment stores
443111	Household appliance stores
443112	Radio, television, and other electronics stores
443120	Computer and software stores
444120	Paint and wallpaper stores
446130	Optical goods stores
448110	Men's clothing stores
448130	Children's and infants' clothing stores
448150	Clothing accessories stores
448210	Shoe stores
451120	Hobby, toy, and game stores
452112	Discount department stores

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Table 29 - Under-represented Businesses in Ulster County (Continued)*

NAICS	Industry Code Description
452910	Warehouse clubs and supercenters
453991	Tobacco stores
484121	General freight trucking, long-distance, truckload
484122	General freight trucking, long-distance, less than truckload
484230	Specialized freight (except used goods) trucking, long-distance
488210	Support activities for rail transportation
488510	Freight transportation arrangement
488991	Packing and crating
493110	General warehousing and storage
511130	Book publishers
511210	Software publishers
517110	Wired telecommunications carriers
517911	Telecommunications resellers
518210	Data processing, hosting, and related services
522110	Commercial banking
522220	Sales financing
522291	Consumer lending
522292	Real estate credit
522310	Mortgage and nonmortgage loan brokers
523120	Securities brokerage
523920	Portfolio management
524113	Direct life insurance carriers
524126	Direct property and casualty insurance carriers
524210	Insurance agencies and brokerages
532111	Passenger car rental
532210	Consumer electronics and appliances rental
541214	Payroll services
541330	Engineering services
541380	Testing laboratories
541612	Human resources consulting services
541614	Process, physical distribution, and logistics consulting services
541921	Photography studios, portrait
551114	Corporate, subsidiary, and regional managing offices
561210	Facilities support services
561311	Employment placement agencies
561312	Executive search services
561320	Temporary help services
561330	Professional employer organizations
561440	Collection agencies
561611	Investigation services
561612	Security guards and patrol services
561720	Janitorial services

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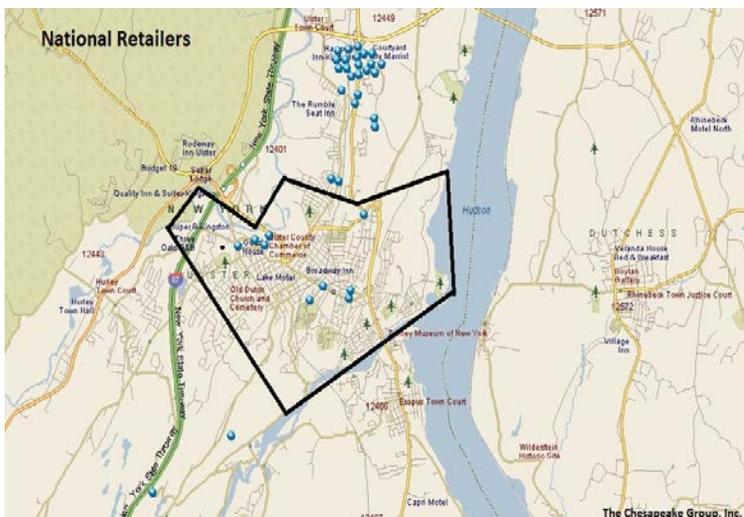
Table 29 - Under-represented Businesses in Ulster County (Continued)*

NAICS	Industry Code Description
561740	Carpet and upholstery cleaning services
562211	Hazardous waste treatment and disposal
621112	Offices of physicians, mental health specialists
621310	Offices of chiropractors
621320	Offices of optometrists
621492	Kidney dialysis centers
621991	Blood and organ banks
623110	Nursing care facilities
623311	Continuing care retirement communities
624120	Services for the elderly and persons with disabilities
722212	Cafeterias, grill buffets, and buffets
722410	Drinking places (alcoholic beverages)
811113	Automotive transmission repair
811191	Automotive oil change and lubrication shops
811192	Car washes
811310	Commercial machinery repair and maintenance
811412	Appliance repair and maintenance
812320	Drycleaning and laundry services (except coin-operated)
813211	Grantmaking foundations
813910	Business associations

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

Clusters identified as under-represented at the county level include: (1) a range of manufacturing; (2) a range of retail activity, including food services; (3) senior care activity; and (4) vehicle and other maintenance and repair activity.

Estimates of Demand for Goods & Services



There is a sense in the community that they are underserved from a retail perspective, particularly given their available transportation options. In fact, the majority of national and regional operations found in the greater Kingston area are not found in Midtown. Nor are most found within the Kingston City limits at the present time.

There are two general markets for commercial activity in the Midtown area as well as a tertiary market that includes others residing in Ulster County and employees of the Midtown area. The primary market is composed of the roughly 2,300 households residing in Midtown North and South. The secondary market is composed of residents in an area outside of Midtown but within Kingston.

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It is noted that employees of an area generally are associated with or residents of one of the three markets. In some cases and because of their employment in the area, there is a higher probability (Penetration level) if attracting them to operations near their employment.

No matter the success of any region, jurisdiction, commercial center, or any other facility where consumers spend dollars; none will be able to capture all the dollars of market-area residents. As examples, people employed elsewhere 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" activity.

It is also noted that:

- ✓ 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, 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 and building materials, including traditional hardware stores and garden and 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 hundreds of dollars for others. Supportable space is derived by dividing the amount of sales by the appropriate productivity level.

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Retail goods and related services sales generated by the residents of the Midtown area are estimated at \$41.8 million in 2013. These sales are sufficient to support more than 117,000 square feet of space at any and all locations.

The largest category of sales is associated with food purchased generally for home consumption. The largest category in terms of supportable space is associated with the miscellaneous category, generally associated with smaller establishments.

More than 28,500 square feet of supportable space is associated with the combination of food purchased for home consumption and prepared foods. Clearly, demand exceeds current supply of such activity in the Midtown area.

*Table 30 - Estimates of Retail Goods and Services Demand for 2013 for Midtown Kingston**

Category	2013 Sales	2013 Square Feet of Supportable Space
Food	\$9,293,000	17,356
Eat/Drink	4,529,000	11,323
General Merchandise	4,550,000	14,842
Furniture	1,147,000	3,534
Transportation	6,275,000	18,260
Drugstore	2,248,000	4,496
Apparel	1,586,000	4,935
Hardware	3,236,000	13,756
Vehicle Service	3,864,000	9,407
Miscellaneous	5,132,000	19,823
TOTAL	\$41,860,000	117,732

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

The category space is a compilation of sub-categories or types of operations. The table that follows on the next page contains the breakdown of the retail goods and related services sales and supportable space by type of operation generated by the primary market or Midtown residents for 2013.

As noted, there is a secondary market as well as tertiary markets that include residents of Ulster County living outside of Kingston and employees of the Midtown area. The secondary market, which is larger in terms of population and households and has a higher median income, is composed of residents of the remainder of the City of Kingston.

The secondary market generates sales and supportable space of \$182 million and 511,000 square feet of space, irrespective of the location at which the sales are spent and the space located. It is noted that the center of retail at the City's edge contains major box operations and other stores that in order to survive serve both the primary and secondary market as well as others well beyond the two markets.

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Table 31 - Estimates of Retail Goods and Services Demand for 2013 for Midtown Kingston by Category & Sub-category or Type of Operation*

Sub-category	2013 Sales	2013 Square Feet of Supportable Space
Food	\$9,293,000	17,356
Supermarkets	7,759,655	13,152
Independents	743,440	1,859
Bakeries	204,446	681
Dairies	120,809	336
Others	464,650	1,328
Eat/Drink	4,529,000	11,323
General Merchandise	4,550,000	14,842
Dept. Stores	1,610,700	5,369
Variety Stores	327,600	1,260
Jewelry	313,950	442
Sporting Goods/Toys	495,950	1,653
Discount Dept.	1,706,250	5,688
Antiques, etc.	22,750	99
Others	72,800	331
Furniture	1,147,000	3,534
Furniture	173,197	559
Home Furnishings	238,576	682
Store/Office Equip.	181,226	604
Music Instr./Suppl.	49,321	247
Radios,TV, etc.	504,680	1,442
Transportation	6,275,000	18,260
New/Used Vehicles	2,196,250	5,491
Tires, Batt., Prts.	2,767,275	9,224
Marine Sales/Rentals	332,575	899
Auto/Truck Rentals	978,900	2,646
Drugstore	2,248,000	4,496
Apparel	1,586,000	4,935
Men's and Boy's	207,766	519
Women's and Girl's	526,552	1,423
Infants	33,306	111
Family	440,908	1,470
Shoes	331,474	1,205
Jeans/Leather	6,344	21
Tailors/Uniforms	28,548	143
Others	11,102	43
Hardware	3,236,000	13,756
Hardware	1,566,224	6,265
Lawn/Seed/Fertil.	61,484	181
Others	1,608,292	7,310
Vehicle Service	3,864,000	9,407
Gasoline	1,313,760	906
Garage, Repairs	2,550,240	8,501
Miscellaneous	5,132,000	19,823
Advert. Signs, etc.	82,112	299
Barber/Beauty shop	313,052	1,565
Book Stores	236,072	638
Bowling	118,036	1,180
Cig./Tobacco Dealer	35,924	72
Dent./Physician Lab	205,280	632
Florist/Nurseries	384,900	906
Laundry, Dry Clean	174,488	582
Optical Goods/Opt.	123,168	352
Photo Sup./Photog.	354,108	1,012
Printing	415,692	1,512
Paper/Paper Prod.	220,676	1,103
Gifts/Cards/Novel.	733,876	2,446
Newsstands	41,056	82
Video Rent/Sales	667,160	3,336
Others	1,026,400	4,106
TOTAL	\$41,860,000	117,732

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

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*Table 32 - Estimates of Retail Goods and Services Demand for 2013
for the Remainder of Kingston**

Category	2013 Sales	2013 Square Feet of Supportable Space
Food	\$40,412,000	75,471
Eat/Drink	19,696,000	49,240
General Merchandise	19,787,000	64,543
Furniture	4,988,000	15,364
Transportation	27,287,000	79,402
Drugstore	9,775,000	19,550
Apparel	6,899,000	21,467
Hardware	14,071,000	59,815
Vehicle Service	16,802,000	40,904
Miscellaneous	22,318,000	86,198
TOTAL	\$182,035,000	511,954

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

The primary and secondary market data indicates that: (1) Midtown dollars are exported to other areas of Kingston, Ulster County, and others at the present time; and (2) particular opportunities exist in both the food and food services areas.

Manufacturing Opportunities Analysis

Manufacturing is going through a rebirth in the United States. For many years, much of that produced for our market was “outsourced” or supplied by others that had significantly lower labor costs than found in here in this country. However and as previously noted, the emergence of new technology is causing a shift resulting from the diminished share labor costs play in the production of the overwhelming number of products.

The deployment of the technology is growing at exponential rates. The result is that transportation costs are an increasing share of the product cost, favoring production of many products close to large markets. This represents a significant opportunity for Kingston because of its affordable land, rail and road network connections to some of the largest major metropolitan population centers in the country, affordable housing stock, quality of life, and a workforce which can be enhanced.

A full range of manufacturing related opportunities were reviewed. The following are those deemed most appropriate for Kingston and its Midtown area.

Athletic & Sporting Goods Manufacturing - Companies involved in the industry purchase raw materials and rework them into sporting and athletic goods. Products such as apparel and footwear are excluded. Industry products include balls used for sports, such as baseball and basketball; and outdoor equipment, such as hunting and camping equipment. These products are then sold to wholesalers and retailers.

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Participation in the corresponding sport activities affects the industry due to the specialized nature of these products. The athletic and sporting goods manufacturing industry declined in the five years to 2013 due to falling demand. A rise in imports of sporting goods into the United States and the "Great Recession" diminished consumer demand for industry products. Industry revenue is estimated at \$8.9 billion in 2013. A reversal has begun as revenue increased by 0.3% from 2012 to 2013.

Retail and wholesale revenue will see a return as economic recovery builds. Moreover, with an increasing trend towards health consciousness, consumers will be more likely to purchase industry products. Demand for the athletic and sports equipment is therefore predicted to increase and revenue is projected to reach \$9.3 billion by 2018. This includes a 2.2% increase in 2014.

Medical Instrument & Supply Manufacturing - Companies in the medical instrument and supply manufacturing industry mainly research, develop, and produce medical, surgical, ophthalmic and veterinary instruments and apparatus. Products include anesthesia apparatus, syringes, surgical clamps, blood transfusion equipment, catheters, and medical thermometers. Industry products do not include electro-medical and electrotherapeutic apparatus, non-medical thermometers, laboratory instruments, X-ray apparatus, or ophthalmic goods.

This \$91.7-billion industry remained resilient during the Great Recession, with a positive forecast to continue growing in the five years to 2018. Increased public and private health spending, continued innovations and new product introductions have caused demand for medical instruments and supplies to rise. The industry has also been helped by favorable demographic trends.

Larger companies are expected to increase product innovation going forward. This can be attributed to industry operators obtaining substantial research and development budgets. Despite revenue growth, the number of industry operators has declined to 15,508 firms in the five years to 2013. Through consolidation efforts, industry participants were able to sustain operating profit margins of 10.7%.

Revenue is projected to grow to a total of \$110.9 billion by 2018. Demand for industry products will be bolstered by healthcare reform, increasing the number of physician visits which will require more medical equipment.

Drone Development - One of the most significant growth industries in the country that would fit with Adams County's location would be drone manufacturing. While most people think of drones as unmanned aircraft utilized by the military for surveillance or attack purposes; they are being utilized and deployed by both the public and private sector in many ways. Furthermore, the size of the drones varies significantly as do the materials utilized.

In fact:

1. Local government police forces are utilizing drones now throughout many communities around the country.
2. Mapping companies are utilizing them for high resolution photography purposes.
3. They are being used in the Florida Keys to track areas of mosquito larvae concentration.
4. They are being employed to gain knowledge of wildfire movements.
5. The agriculture industry is increasing utilizing the drones to follow potential migrations of pests and disease.

6. This year they were employed to assist with defining the strength, wind speeds, paths and other factors associated with tropical storms.
7. They are being used to locate distressed or lost hikers in mountain and forest areas.
8. They are being employed to track reforest generation success.
9. They are being used to track wildlife.

The amount of production and other related activity associated with this emerging "vehicle" can be argued to grow exponentially in the foreseeable future.

Additive Manufacturing or 3D Printing and Applications - Many business professionals use the terms "additive manufacturing" and "3D printing" interchangeably. Additive manufacturing is receiving unprecedented attention from the mainstream media, investment community, and national governments around the world. This attention reached a pinnacle when 3D printing was mentioned by President Obama in his February 2013 State of the Union address.

Additive manufacturing is a breakthrough production technology that enables functional end-products or product features to be grown from materials such as conductive inks and metal powders in a layer-wise manner. The approach is inherently more efficient and flexible than subtractive manufacturing methods; and the benefits are compelling in terms of reduced manufacturing and material costs, reduced process time, reduced environmental impact and improved product performance.

Replacing 20th century manufacturing tool and die methodologies, researchers are developing a high-volume process for manufacturing superhydrophobic (SHP) nanostructured surfaces to enhance water repellency, boiling heat transfer and condensation heat transfer. The image transfer can be achieved via plastic injection molding, stamping, forging, and dye casting and pressing. Hydrophobic or water repelling surfaces are increasingly important in applications to reduce corrosion, drag, biofouling and other undesirable effects of water exposure.

Additive manufacturing technologies encompass laser melting, and injection molding technologies. Laser melting process is an emerging manufacturing technology with a presence in the medical (orthopedics) industry as well as the aerospace and high technology engineering and electronics sectors. Laser melting is a digitally driven additive manufacturing process using focused laser energy to fuse metallic powders into 3D objects. Injection molding machines are suited to either short series production using resin tooling, or volume production of small shot components less than 12 grams depending on the model chosen.

Development of complex and high-value metal parts made by additive manufacturing is also evolving. Corporate owner GE has announced its intention to produce fuel injector assemblies for its next-generation LEAP jet engine by additive manufacturing. The company's aviation division also plans to use 3D printing to produce the titanium leading edges for the LEAP engine's fan blades.

European companies are leading the way in manufacturing of metal powder bed fusion systems used dental copings. A coping is the metal structure for dental crowns and bridges. Acetabular (hip) cups have been manufactured using electron beam melting powder bed fusion systems. These are standard, off-the-shelf products that come in a range of sizes. More than 30,000 of these parts have been implanted into patients.

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Other companies are focused on the accessibility and rapid adoption of desktop 3D printers. There are now significant collections of downloadable digital designs for making physical objects. The app numbers are expected to grow exponentially.

Products and apps are increasingly used by professionals, including engineers, designers, architects; manufacturers; entrepreneurs; and individuals for business and personal applications. Opportunities exist for both production of the equipment, development of software as well as any products in the medical, arts and other areas that can be produced.

Research & Development Opportunities

The following section was researched using internet resources. It details the City of Kingston and Ulster County's existing natural resources, including both cultivated and indigenous. The potentials include, but are not limited to: research and development for either identified needs within an industry, or further exploration on an established path. There are also potential new business concepts or expansions for City of Kingston and surrounding areas currently operating agricultural and manufacturing businesses or start-up, new businesses.

Existing natural resources contributing to the business potential include, but are not limited to: Catskill Watershed's significant water bodies and their indigenous species; Ulster County's migrating and native birds; the critically important bee community; Catskills native trees; and cultivated fruit and vegetable crops. Each description is supported at the back of this document with a complete reference chart including the bibliographical resources contributing to the data cited.

The Catskill Watershed's habitat includes vast wetlands and deep-water habitats. The harmful effects of toxicants: pharmaceuticals and personal care products (PCPs), organic wastewater compounds, antimicrobials, antibiotics, animal and human hormones, endocrine disrupting compounds, as well as a variety of domestic and industrial detergents endanger the delicate ecological balance. The size of the Hudson River Estuary Program area includes the waters of the Hudson from the mouth of the Rondout River in Kingston, to light no. 72 off the south end of Houghtaling Island.

Within these fragile water ecosystems are several dangerous threats including, but not limited to: un-metabolized pharmaceuticals, anti-bacterial resistant organisms developing, quaternary ammonium compounds, QACs, and non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen, diclofenac, naproxen, and acetylsalicylic acid; Ethinyl estradiol (EE2), the main active ingredient of contraceptive pills.

According to a recently published research paper, fish exposed to human drugs eat zooplanktons, which in turn eat algae. If the feeding rate of zooplankton increases because the fish become more efficient in feeding, the result is an increased amount of algae. This may lead to oxygen depletion of the aquatic system and a higher risk of algal blooms.

The un-metabolized pharmaceuticals are often the most non-biodegradable substances in the environment. Another specific effect of ibuprofen is growth inhibition of certain gram-positive bacteria when exposed to low concentrations of the drug in the environment. Fish are becoming fearless, gluttonous and asocial due to pharmaceutical waste, according to a new study linking these behavioral changes to something as seemingly harmless as a person flushing a toilet.

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Baylor University's environmental science department with long experience studying pharmaceuticals in the environment, is proposing a new testing standard for drug toxicity. If groups like the US Environmental Protection Agency draft regulations to improve the drug release control into the environment, it will need that intensive, repetitive testing data to determine which drugs need the most attention and how to get rid of them.

The California three-step operation is one of the most sophisticated cleansing systems. While incoming water contains minuscule levels of prescription drugs, tests for any traces of a half-dozen pharmaceuticals, conducted as the treated water leaves the plant, detect nothing. Wastewater strained and disinfected at an adjacent sewage treatment plant is first filtered through tiny straws. In a process called reverse osmosis, the water is forced across a spiraled sheet of plastic with holes so small that little else can slip through. In the final phase, the water is zapped with ultraviolet light.

Striped bass, American shad, and sturgeon spend much of their adult lives in the ocean, returning to the Hudson River to lay their eggs (spawn). Migratory fish require different environments for the main phases of their life cycle and these fish populations are highly dependent upon the characteristics of the aquatic habitat which supports all their biological functions. The species has to move from one environment to another in order to survive. Water-chemistry changes can also be significant. These migratory, diadromous species requiring pure, well-oxygenated cold water and one of the first species to suffer when water quality is degraded. Many stocks are seriously threatened by what are called the "four H's": Habitat destruction, Hydroelectric dams on migratory rivers, over-Harvest of rare stocks, and competition with Hatchery fish. Some stocks are so severely reduced that they have been listed as endangered or threatened species under the Endangered Species Act.

Water quality is critical to the survival of both adult and juvenile fish. Excessive amounts of nutrients in waterways can create sudden blooms of phytoplankton. After the phytoplankton die, decomposition uses up large amounts of oxygen. This can lead to dangerously low dissolved oxygen levels along the bottom where eggs and larvae grow and sturgeon feed. Sturgeons have proven to be among the more sensitive of fishes to industrial, polychlorinated biphenyls PCBs chemical toxicities.

The Hudson River Atlantic tomcod population has developed dramatic resistance to PCBs induced early life stage toxicities. It is likely that this rapid evolutionary change is due to intense natural selection for the resistant phenotype. The Atlantic tomcod's PCB resistance can be studied, to provide genetic information for cross-breeding with the sturgeon species.

Since 2007, an invasive algae species, *Didymium*, has been persistent in the Esopus and Rondout Creeks in NY State's Region 3. Rapid progress in genomics and molecular genetics in selected model diatoms, together with the novel resources derived from modern oceanography and materials science, are providing new opportunities to understand diatom biology and ecology, and to exploit them for biofuels and nanotechnology.

Diatoms are one of the most successful photosynthetic organisms and given the important role their shells (frustules) play in light trapping, researchers explored their use in multilayered materials for application as photo, electrical current transmitting, anodes in dye sensitized solar cells (DSSCs). They found a substantial improvement in energy conversion efficiency of 30%, increasing with diatom incorporation. An anode is an electrode through which electric current flows into a polarized electrical device. They found a substantial improvement in energy conversion efficiency of 30%.

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Diatoms are critical in the ecological food chain of streams, lakes and oceans. It's thought diatoms could help slow Earth's current warming trend. Scientists have suggested seeding the ocean with iron to stimulate diatom reproduction could help remove carbon dioxide from circulation. Together with aquatic invertebrates or "bugs" and fish, diatoms are an indispensable component of Federal and State monitoring and assessment programs.

A University of Oxford researcher team found a cost-effective way of growing diatoms with silica shell frustules, in controlled lab conditions, laying the groundwork for industrial-scale production. Adopting this technology would eschew what has typically been a high impact, resource intensive process to build artificial reflectors. Growing diatoms only requires standard conditions, including normal room temperature and pressure, and, under the right circumstances, has the advantage of being extremely speedy. They envision frustules being incorporated into everything from paints and clothing to credit card holograms and other polymers.

University of Leicester, U.K., researchers used a unique 12,000 year long record from microscopic marine algae fossils to trace glacial ice entering the ocean along the western Antarctic Peninsula. This research is the highest resolution application in coastal Antarctic marine sediments to measure the oxygen isotope ratios of microscopic marine algae fossils (diatom silica). When a large amount of glacial ice is discharged into the coastal ocean, it alters the oxygen isotope ratio of the sea water the marine algae are living in. This creates a clear imprint in the fossils revealing the environmental conditions of the time. Researchers used the oxygen isotope ratio of the fossils to reconstruct the amount of glacial ice entering the coastal ocean in the past 12,000 years, to determine whether the variations in the amount of ice being discharged were the result of changes in the ocean or atmospheric environment. This same paleolimnology can be studied and applied to the Hudson River's environmental conditions.

Biologists have learned more about the mechanism of bio-silica shells formation, which have unique porous architectures with good mechanical strength. Physicists have revealed their optical and microfluidic properties, and chemists have identified ways to modify them into various materials while maintaining their hierarchical structures. Research has provided more opportunities to use bio-silica structures in microsystems and other commercial products, especially in the development of micro-devices. Using existing methods of extracting bio-silica from diatomite and diatoms, new methods of separating bio-silica structures by shape and sizes, has facilitated recent studies on diatom-based devices used for bio-sensing, drug delivery, and energy applications. The research has concluded new findings on the elastic, deformable characteristics of bio-silica structures offering perspectives on planting diatom bio-silica in microsystems.

Engineers at Oregon State University, have developed a photosynthetic, bio-refinery concept, combining sand, fertilizer, a little sun and saltwater, that might someday power the world's automobiles and provide materials for electronics. This production is possible with the help of diatoms. Diatoms have already been used to produce semiconductor materials, chitin fibers for biomedical applications, or the lipids needed to make biofuels. The prediction is all of these products can be produced in one facility and move easily from one product to the other. Scientists have shown biofuels can be made from algae, but those fuels are a comparatively low-value product and existing technologies have so far been held back by cost. If the photosynthetic bio-refinery concept can help produce products with much higher value at the same time, like glucosamine, a food product commonly sold as a health food supplement, the entire process could make economic sense. As part of the work at OSU, researchers plan to develop mathematical models so various options can be tested.

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New York's Ulster County bird species include, but are not limited to: Bald Eagle, Common Loon, Eastern Bluebird, Great Blue Heron, Great Horned Owl, Osprey, Peregrine Falcon, and Wild Turkey. Migratory birds such as ducks, geese, and songbird often stop in Ulster County's freshwater wetlands on their route to and from breeding grounds to feed on insects, seeds, water plants, and fish. Migrant birds may also find protection from strong winds and the elements, in the trees, dense reeds and grasses in those wetlands. In October, migrating birds make their way south, down the Hudson River flyway. There are also many other hawks, eagles, and falcons plus flocks of marsh ducks, (dabblers), such as mallards, teals and wood ducks.

These bird species are dependent upon the friendly environment of wetlands, occupying 3,780 acres, or 1% of the land area, in the Catskill Watershed. Forested wetlands are most abundant, comprising 34% of the inland marsh, bog, swamp and tundra, palustrine wetlands, but emergent wetlands, ponds and scrub shrub are also common.

Birds, plumage colorations are enhanced by pigment-rich berries from abundant shrubs turn orioles red, cardinals redder. This relationship holds up from species to species, as the birds eat native foods.

Ohio State University researchers recently confirmed this by comparing Northern Cardinals in rural and urban settings. With the carotenoid-rich berries of an abundant introduced shrub, the Amur honeysuckle, even the urban cardinals whose body condition was poor looked bright. Canadian investigators reported the berries of Tatarian honeysuckle, another widely propagated exotic bush, have a similar effect.

At the McGill Bird Observatory in Montreal, they captured 15 Baltimore Orioles that were unusually red where the birds normally are yellow to olive. Edmonton's Royal Alberta Museum's curator of ornithology, and colleagues collected feathers from the red orioles, extracted the carotenoids, and compared them with the berries. Rhodoxanthin, a pigment of deep red hue only rarely encountered in birds and normally absent in oriole feathers, was present in both.

Duke University Neurobiologists have discovered roughly 80 genes that turn on and off in similar ways in the brains of humans and songbirds. This gene activity, which occurs in human brain regions involved with the ability to imitate sounds, to speak and sing, is not present in birds that can't learn songs or mimic sounds. Songbirds are good models for language because the birds are born not knowing the songs they will sing as adults.

Like human infants learning a specific language, the birds have to observe and imitate others to pick up the tunes. Vocal-learning birds and humans share a distinct pattern of activity in roughly 40 genes in similar brain regions, involved with imitation.

A University of Chicago's team has shown how the brain is organized to govern skilled performance, which may lead to new ways of understanding human speech production. This may shed light on speech problems such as stuttering or stroke induced aphasia. It also offers a window into how the brain and body carry out other kinds of complex movement, from throwing a ball to doing a backflip. The research has extended to the larger question involving muscle control, and how the motor system organizes the dynamics of movement.

Great horned owls are fierce predators with an appetite for skunks, hawks, waterfowl, and mouse to rabbit size mammals. They are permanent residents year-round in the U.S. and do not migrate like many other bird species. They use their sharp eyesight, acute hearing, and specially edged feathers for nearly silent flight to hunt and capture prey stealthily at night.

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The U.S. Intelligence Advanced Research Projects Agency is seeking to develop silent drones inspired by owls. One problem in unmanned aerial vehicle is the sound created making effective surveillance difficult. The agency's program was created to reduce the ability of the target "to counter surveillance" by creating more efficient, quiet power sources and propulsion techniques to engineer the next generation unmanned aerial vehicles, UAVs. The anticipated innovation phase-one of the new UAV program is a propulsion system that will quietly generate electrical power from liquid hydrocarbon gasoline or diesel fuel enable purely electrically driven quiet flight. Instead of using battery-powered drones, while quiet, have little in terms of endurance or payload hauling capability, the project is focusing on "hybrid turbine-electric propulsion systems." These systems run on everyday fuel, but instead of a simple combustion motor, as noisy as the rest, they are attempting to turn the fuel into electricity and then turn that electricity into thrust for the vehicle.

While studying the owls' vascular network, scientists have noted a large blood reservoir at the base of the head. A Johns Hopkins University team looked closer to discover how they spin their heads around without damaging blood vessels or cutting off blood to the brain. They found under the creature's impressive feathers interesting features in the bone structure and vascular network that facilitated the remarkable rubbernecking. These included a seeming ability to pool reservoirs of blood during rotation and large holes in the vertebrae, which could provide air pockets to protect the artery passing through. In humans, the vertebral artery hugs the hollow cavities in the neck, but this is not the case in the owls, whose structures are specially adapted to allow for greater arterial flexibility and movement. This reservoir allows the animal to store a blood supply for their brain and eyes while they rotate their head by as much as 270 degrees in either direction. Even if this twisting movement blocks the blood supply along one route, the owls' interconnected vascular network helps provide uninterrupted blood flow to the brain. The researchers surmise these expandable blood reservoirs enable the owls to pool their blood, allowing them to make radical gyrations of the head, without cutting off their energy supply. Therefore, the supporting complex vascular network minimizes interruption in blood flow. Johns Hopkins researchers compare, humans lack these adaptations, which helps explain why people are more vulnerable to neck injuries. This physiological ability can be studied to benefit human neck and spinal injuries

Perpetual research increasing our understanding of the animal kingdom leads ornithologists to study all bird species. Examples listed below, are a small sample of the types of ornithology research currently in progress, can serve as potential, new research in both City of Kingston and Ulster County.

It's well known Belted Kingfishers are champion diggers, famous for sending plumes of soil flying into the air as they excavate their nest burrows. Less well known is how the kingfishers get their burrows started. Published reports suggest the birds typically stab at the soil with their bill while they hover near a potential site or cling to a perch beneath it. Montana Natural Heritage Program zoologists watched a pair of Belted Kingfishers take turns hovering and then rushing toward the bank of Rattlesnake Creek in Missoula County, MT. The birds repeatedly hit the bank bill-first, either directly or at an upward angle, then returned to a perch near the stream. The researchers recorded, sometimes a kingfisher struck with such force that it struggled to remain airborne after impact as it bounced backwards and fluttered down to a creek-side perch. They witnessed debris fall down the face of the bank after several of these collisions. This so-called aerial ramming into banks or trees has been reported in 13 other species of kingfishers, including two kookaburras, and birds have suffered broken bills and even died in the collisions.

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Studying the various native bird species for their conservation - Ferruginous Hawks experience vulnerable reproduction. Researchers found 100 occupied territories during a two-year study, 80 of them contained an active nest, most of which were successful in producing at least one hatchling, and 67% of nests with hatchlings produced at least one fledgling. Researchers followed the fate of 202 hatchlings, 58% survived to fledging. They radio-tagged 46 of which 72% survived the fledgling period and dispersed from their natal territories. Most juveniles that died were killed during the late nestling (58%) and fledgling (24%) periods. Mortality was lowest early in the nestling period (18%). Across all years, 42% of hatchlings did not survive long enough to disperse from their natal territory.

Peregrine and saker falcon's unique morphological, physiological and behavioral adaptations make them successful hunters. The peregrine, renowned as the world's fastest animal, in recent decades, both peregrine and saker falcons have been listed as endangered due to rapid population declines caused by a range of factors including environmental change, overharvesting for falconry, habitat loss and bioaccumulation of pesticides (e.g. DDT, PCBs). Researchers focused on the evolutionary basis of predatory adaptations underlying peregrine and saker. Conducting whole genome sequencing and assembling high quality reference genomes for each. Their study reported the two falcon genomes are the first predatory bird genome published. This data will advance the understanding of the adaptive evolution of raptors as well as aid the conservation of endangered falcon species.

Bees are "keystone organisms" in most terrestrial ecosystems and are essential for the sustainability of many types of ecosystems: the forest understory, pastures, fields, meadows, roadsides, many agricultural crops, fruit orchards, and backyard vegetable and flower gardens. Without bees, many flowering plants would eventually become extinct. Without the work of bees, many fruit- and seed-eating birds and some mammals, including people, would have a less varied and less healthy diet.

University of Maine's insect ecology department is conducting a four-state, 5-year research project, 2009-2014, as wild honey bee populations have all but disappeared and commercial honey bee populations are shrinking. They will create a detailed assessment of the native bees' role in the pollination of low-bush blueberries in Maine, cranberries in Massachusetts, squash in Connecticut and apples in New York. Ecological factors that enhance bee conservation will be another focus of the research. A consequence is that fruit and berry growers face increasing costs to rent beehives for crop pollination, when more native, wild bees could be relied upon. Hive rental is one of the biggest and increasing costs for fruit growers. The New England project will determine ways to reduce dependence on commercial bees by relying more on native bees, which are a largely untapped resource, and to create environments favorable to bees. Native bees are more productive pollinators than imported honeybees. Existing field research has shown a single native bumblebee is 2.3 times more efficient as a pollinator than a single imported honeybee. Native bumblebees will "work" in cold and wet weather that honeybees won't. Having evolved over hundreds of thousands of years, the natives have perfected in-flight and harvesting techniques for quickly and thoroughly extracting pollen. Many crops depend exclusively on the honeybee for their pollination, and others obtain up to 30% increased yields by using bees.

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Croatian researchers are training bees to find unexploded mines. It has been scientifically proven that there are never zero mines on a de-mined field, which is where bees would be most beneficial. They have a perfect sense of smell that can quickly detect the scent of the explosives. It is not a problem for a bee to learn the smell of an explosive, which it can then search. Training one bee is relatively easy, but training their colony of thousands becomes a problem. American researchers have in the past experimented with mine-searching bees, but TNT, the most common explosive used in the Balkan wars, wasn't part of their experiment because its smell evaporates quickly, and only small traces remain after time. Rats and dogs are also used to detect explosives worldwide, but unlike bees, they could set off blasts on the minefields because of their weight. Once the experiment with bees proves scientifically reliable, the intent is to use them in the areas that have already been de-mined, where their movement would be followed with heat-seeking cameras.

Bee venom contains melittin, a potent toxin that can poke holes in the protective envelope that surrounds HIV, and other viruses. Large amounts of free melittin can cause damage. In addition to anti-viral therapy, it has been shown melittin-loaded nanoparticles are effective in killing tumor cells. The new study shows melittin loaded onto nanoparticles does not harm normal cells. Researchers added protective bumpers to the nanoparticle surface protecting the normal cells. When the nanoparticles come into contact with larger normal cells, the particles simply bounce off. HIV, on the other hand, is even smaller than the nanoparticle, so HIV fits between the bumpers and makes contact with the surface of the nanoparticle, where the bee toxin awaits.

On average, beekeepers are losing 30 percent of their colonies every growing season. Rather than relying on pesticides and antibiotics to control Varroa mites and related diseases, a method that has become part of the problem, University of Minnesota entomologists are advancing effective strategies to help bees help themselves. Their work focuses on showing beekeepers how to identify and breed for hygienic bees, bees that are adept at spotting infected immature bees (larvae and pupae) and quickly removing them from the nest before a disease or pest can get out of control in a colony. The studies have demonstrated colonies bred for hygienic behavior have good resistance to chalkbrood and American foulbrood diseases, and partial resistance to *V. destructor*. The establishment of disease-resistant bees has the potential to save commercial-scale beekeepers thousands of dollars each year in treatment costs while reducing the environmental impact of pesticide use. After helping three Minnesota commercial-scale beekeepers establish hygienic disease resistance in their colonies, the team is now working with some of the country's largest bee breeders to adopt the sustainable pest-management strategies including breeding and sampling strategies. Many of the breeders sell queen bees throughout the country, providing the opportunity to have widespread impact. While much of the research focuses on the European-imported Honey bee, the primary victim of colony collapse disorder, the researchers expanded to a wider range of native bee species.

A similar Purdue University breeding project has bee scientists producing genetically selected bees that can smell the mites inside the brood cells and kill the offspring to keep the mite population from exploding inside the colony. While breeding for Varroa Sensitive Hygiene VSH, bee specialists have been selecting bees for increased grooming behavior. They've identified increased grooming behavior by monitoring the proportion of chewed mites falling from bees. Another project is working to map gene regions in Honey bee DNA for VSH. The team's expertise is looking for the markers in bees, a process previously took four to six months of field testing has been reduced to hours in terms of identifying the most desirable VSH queens.

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Some of the State of Israel's applied research projects aim to help the cross-pollination of various fruits such as apples and pears. The work requires a thorough understanding of bee learning theory. Within days of being placed in an orchard, scout bees discover attractive alternative blooms, after which they recruit other bees through their dances. Individual foragers learn to save work by "robbing" nectar from flowers in the orchard without pollinating them. By sequentially introducing naïve colonies throughout the blooming period, Hebrew University HU, scientists have increased effective bee pollination and yields by 50-100%.

HU scientists are also finding suitable pollen-supplementary feeds that can keep honey bee colonies healthy during dearth periods, or prepare them to pollinate in greenhouses. They have developed a nutritionally-balanced pollen-free artificial bee diet which has become a norm.

A multidisciplinary research approach is enabling HU scientists to analyze honey bee behavioral choices. Forager bees visiting flowers face many alternatives, requiring multiple decisions. Consequently, HU's Triwaks Bee Research Center uses the honey bee as a model system for studying basic questions involving perception and decision making. Bees show some similar fallacies of rationality in multi-attribute choice behavior and in making choices under uncertainty as do humans. Scientists are using these discoveries about bees' decision-making processes to enhance their effectiveness in pollinating crops. These new theories about honey bees are shared with psychologists and economists who analyze human decision making. A central question being asked about both animal and human decision-making is how choices are made under conditions of uncertainty.

The USDA's National Academy of Sciences has identified habitat loss as one of the major contributing factors to the decline in native pollinators and honey bees. The goal of habitat management is to enhance pollination and pest control in adjacent crop fields. Several studies examining floral resource strips look promising, and the next step is to fully evaluate the costs and benefits for growers of implementing this technology. Swedish Lunds Universitet biology department conducted similar studies determining: the bumble bee colony requires a continuous supply of forage resources for the successful establishment, growth and finally production of reproducing individuals (males and queens). A lack of forage resources may limit the survival of the bees, prompting the university's project studying the utilization of annual flower strips in agricultural landscapes by bumble bees and other wild bees. These patches had annual plants sown in strips, an insectary plant, and a clover which both attract honeybees and as well as a common vetch, beneficial insect plant.

The 30,100-acre Sundown Wild Forest in the Sullivan County Town of Neversink and the Ulster County Towns of Denning, Rochester, Wawarsing and Olive, covers a large swath of the southeast Catskills. The Catskill Mountains has many native trees species, including, but not limited to: American Beech, Balsam Fir, Basswood, Birch, Black Cherry, Eastern Hemlock, Eastern Red Cedar, Maple, Paper Birch, Red Oak, Spruce White Pine and Willow and Yellow Birch.

Live willow is used in bioengineering because it is a pioneering plant which thrives in freshly disturbed riparian environments. It acts as a nursery plant providing food and shelter for many animals and plants. Bioengineering involves using living plant material to build structures that reduce, prevent or repair erosion. A bioengineering structure, a "living wattle fence", helps prevent soil from washing away. As the vegetation grows, the plant roots further stabilize the soil. This creates in-channel stability, traps sediment, and the seeds of longer lived riparian trees. It also jumpstarts the natural process of successional development and puts the disturbed area on a new ecological trajectory towards recovery. The flexible stems of willow also work to slow velocities around structures, prevent scour, prevent out flanking, create roughness, and increase complexity.

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The discovery of the invasive emerald ash borer in the Catskill Forest Preserve may have serious impacts on North American ash tree species, which comprise nearly 7% of all trees in New York State. The state expanded its quarantine for Emerald Ash Borer in 2010.

Biological control is a long-term management strategy accepted throughout the world for the sustained control of invasive insects. This approach is used for non-native species that 1) have been established for more than 5 years, 2) cannot be eradicated and 3) cause significant ecological or economic damage. Biological control involves research in the insect's country of origin to find, isolate, and identify its natural enemies, ranging from parasites to predators to pathogens. The use of biological and microbial control agents in North America is expected to suppress EAB densities below a tolerance threshold for native ash trees. If successful, native ash species will continue to help sustain healthy forests, woodlots, and riparian areas.

In 2003 and 2004, researchers studied natural enemies attacking EAB in southeastern Michigan. The most conspicuous natural enemies of immature EAB were the downy, *Picoides pubescens*, hairy, *P. villosus*, and red-bellied, woodpeckers. Based on analyses of infested ash trees felled during the study, it was estimated woodpeckers consumed an average of 16% of EAB larvae and pupae at the field sites from 2002-2004. Other predators included the larvae and adults of three beetle species that live under tree bark and feed on EAB in infested ash trees. Six in-host, killer hymenopterans have been reared and confirmed as ectoparasitoids of immature EAB. Since completion of this early work on EAB natural enemies, MSU collaborators have found high levels of in-host, killer parasitism by an incidental larval ectoparasitoid of EAB, in a heavily-infested state park north of the Detroit area. USDA's Northern Research Station is collaborating with MSU and U.S. Forest Service, to develop a rearing method for this parasitic wasp. Other scientists in the U.S. and Canada are beginning to study EAB natural enemies, finding *P. sulcata* and *B. indica* also reach high levels in some sites. High prevalence of these parasitoids, however, tends to occur in stands where the majority of the ash trees have already died.

From the first discovery of the hemlock woolly adelgid in the Hudson Valley in the 1980's, the insect has spread north and west to the Catskills, and even the Finger Lakes and other parts of western New York. Currently (2012) 25 New York counties are infested with the hemlock woolly adelgid. Despite aggressive efforts to control infestations, large numbers of hemlock trees in the Southern Appalachian region are dead or in poor health. Hemlock mortality is adding large quantities of litter to the forest floor and streams, even more will be added as standing dead trees continue to decompose. Hemlock death is also changing basic ecological processes such as the cycling of carbon, nutrients and water. Some studies predict as much as 30 percent increase in stream-flow during the winter months in areas where hemlocks dominate.

Controlling the spread and impacts of hemlock woolly adelgid involves the integrated use of multiple approaches including chemical control, biological control, cultural treatments, host resistance, and host gene conservation. Chemical control has been extremely effective at small scales, but biological control is currently the only viable option for controlling hemlock woolly adelgid across the landscape, though research continues on other possibilities.

North Georgia State College and University has become a leading institution in research to produce a predator beetle that could eradicate the HWA. The predator beetle program is yielding very good results with certain species of the beetles actually reproducing in the wild, and seemingly doing very well in Georgia's topography. Young Harris College and Clemson University also have predator beetle labs in a bid to produce enough of the beetles to combat the aphid.

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USDA's Agricultural Research Service ARS, geneticists and horticulturists teamed up with Forest Service's entomologists to breed and select these tolerant hybrid trees. ARS geneticists began a breeding program in the 1990s to develop hemlock hybrids tolerant to HWA. The scientists crossed hemlock species native to the U.S. with germplasm-collected in Asia-of hemlocks that have shown tolerance to the insect. Ten years later, 140 hemlock hybrids have been developed, 108 of which are suitable for testing. The hybrids are appealing not only due to their tolerance, but because they have good vigor and shape. Researchers still have several years of testing to complete before they are able to release these hybrids.

Pine trees are one of the biggest contributors to air pollution. They emit gases that react with airborne chemicals, many produced by human activity, creating tiny, invisible particles that muddy the air. New, Carnegie Mellon University research shows the biogenic particles formed from pine tree emissions are transformed in the atmosphere are not static, but, keep changing and growing. Quite a few previous atmospheric models, had assumed that doesn't happen. What is needed are accurate models, representations of what's really going on in the atmosphere.

The air we breathe is chock-full of aerosol particles, tiny liquid or solid particles coming from hundreds of sources including trees, volcanoes, cars, trucks and wood fires. The small particles influence cloud formation and rainfall, affecting climate and human health. Less well understood is how the size and chemical composition of those particles influences those effects. The atmosphere is a highly oxidizing, highly reactive place, which means aerosols are transformed very rapidly into particles that can have completely different chemical compositions. Carnegie Mellon's team, together with European colleagues, are testing a hypothesis using fake atmospheres called smog chambers, into which they feed alpha-pinene, an aerosol released by pine trees, and ozone into the smog chambers and adding hydroxyl (OH) radicals, which are naturally occurring, highly reactive molecules that drive reactions with other chemicals present in the air. The data gathered from four different smog chambers was fed it into a computer model to discover OH ages the particles, altering their properties and concentrations and producing three times more particulate matter than what was originally released into the atmosphere. There is significant evidence that, even when organic gases come from natural sources, the aerosol levels emitted are controlled by human activity. Their work shows one of the ways this can happen.

Ulster County's local fruit crops, include, but are not limited to: apples, apricots, sweet cherries, tart cherries, grapes, nectarines, peaches, pears, plums/prunes, chestnuts, blackberries, dewberries, blueberries, currants, raspberries, strawberries, maple syrup. Apples are New York's largest fruit crop, and production in the State ranked second in the nation. The longer growing season in the Hudson Valley allows orchardists to grow long-season apple varieties that do not mature elsewhere in the state.

The Agriculture Department opened Okanagan's application for regulatory approval of the genetically modified apple trees. Okanagan expects U.S. approval for Arctic apples in early 2014. The company's non-browning apples could improve industry sales. Its rationale explains a whole apple is too big a commitment. If there is a bowl of apples at a meeting, people wouldn't take an apple out of the bowl. However, if there's a plate of apple slices, people will take a slice. Slices are becoming more popular as a healthful snack, sold in bags in supermarkets and included in McDonald's Happy Meals for children. The slices are often coated with vitamin C and calcium to prevent browning and preserve crispness, but can also affect the taste.

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Another benefit is growers would have fewer apples rejected by supermarkets because of the minor bruising, common from handling of the fruit. Arctic Apples™, which would first be available in the Golden Delicious and Granny Smith varieties, contain a synthetic gene that sharply reduces production of polyphenol oxidase, an enzyme responsible for browning. The gene does not come from another species, but rather contains DNA sequences from four of the apple's own genes governing polyphenol oxidase production. Putting an extra copy of a gene into a plant can activate a self-defense mechanism known as RNA interference that shuts down both the extra copy and the endogenous gene. The potential for similar, longer-shelf-life, alternative uses exists for other, new fruit varieties.

Modern strawberry varieties are highly dependent on soil dis-infestation to maximize yields, making it difficult to find non-fumigant alternatives to methyl bromide. In-kind non chemical alternatives to MB, include, but are not limited to: Solarization, Steaming, crop rotation, Integrated Pest Management IPM, biofumigation, biological Control, and electromagnetic radiation. Solarization is up to 80% cheaper to apply than MB, and provided it is used with suitable crop rotations, can produce acceptable yields. At present steaming is difficult for strawberries as cost, time requirements and access to power, fuel and water prevents open field use on a large scale. Recent advances in mobile steam machines may improve the adoption of this technique.

The Spotted Wing Drosophila SWD, a small vinegar fly with the potential to damage many fruit crops, was first detected in New York 2011. It is a pest of most berry crops, cherries, grapes and other tree fruits, with a preference for softer-fleshed fruit. Given the propensity for its spread and potential to infest fruit, it is important to both monitor and manage SWD to minimize the risk of larvae developing in fruit and affecting fruit marketability. Risk of marketing SWD larvae, contaminated fruit is high resulting in rejected shipments and consumer complaints. In areas where SWD has been established longer (e.g. Michigan) some growers have resorted to frequent pesticide applications, thereby increasing economic and environmental costs as well as potentially disrupting established IPM programs.

Michigan's fall red raspberry growers questioned early mowing of canes in an attempt to reduce the overwintering SWD population, thus reducing pest numbers for the next season. The berries have traditionally been mowed in February or early March. All perennial plants, including fall red raspberries, go through a long "hardening" physiological change process as they prepare for winter. The plants' vigor and perhaps yields may be reduced the next year as a result. Early mowing may also reduce the winter hardiness of the plants crowns.

The North American strawberry has a huge wealth of wild germplasm and traits. Currently there is work, transferring wild strawberry genes to domesticated berries. Researchers have identified the source of genes for high cyaniding, the gene connected with red coloring. Using this content from a strawberry growing wild on the coast of Oregon, breeders can integrate desired wild traits into cultivated strawberry species. When breeding for processing markets, growers going in the fields trying to identify berries with great color that still taste good after freezing or thawing, and have a certain level of pH and Brix. That's a difficult prediction when selecting on a hot day in the middle of summer. 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.

The contribution of fruit and vegetables to foodborne diseases has increased since the end of the eighties, stressing the need to control biological hazards in processed products. Heat resistance of hepatitis A virus in fruits products is presented and compared to the stability of fruit enzymes such as fresh-quality PME. In the case of high hydrostatic pressure, the efficacy to kill E. coli and Salmonella in fruit and vegetables juices is strongly affected by the juice matrix. Challenge tests showed that botulinum toxin production is possible during refrigerated storage of heat processed vegetables, but the risk it would occur in real conditions remains unknown.

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According to the most recent, 2007 U.S. Ag Census, Ulster County's vegetable crops include: asparagus, snap beans, beets, broccoli, brussels sprouts, Chinese cabbage, head cabbage, mustard cabbage, carrots, collards, cucumbers, eggplant, garlic, escarole, fresh herbs, kale, head lettuce, leaf lettuce, romaine lettuce, mustard greens, onions, Chinese snow peas, peas, bell peppers, other peppers, potatoes, pumpkins, radishes, spinach, summer/ winter squash, sweet corn, sweet potatoes, tomatoes, turnips, other vegetables.

The commercial vegetable potential for Kingston and Ulster County includes, but is not limited to: propagation techniques; pests; environmental impacts.

Grafting of vegetable seedlings in North America is just getting a foothold, mainly for greenhouse production. This propagation method takes a plant variety with desirable above-ground horticultural characteristics (like fruit size, flavor, etc.) and connects it to the roots of a variety with desirable under-ground characteristics (like resistance to soil-borne diseases and vigorous root growth). The use of grafting technology to produce disease resistant vegetable seedlings can overcome disease pressure on limited arable land. Interest is increasing in the U.S. due to the rising cost of soil fumigation and mounting disease spread from certain soil-borne pathogens such as bacterial wilt, fusarium wilt, and verticillium wilt and soil-borne pests such as nematodes.

The Colorado potato beetle is one of the most destructive insect pests of potatoes, and can also be a pest of eggplants and tomatoes. Methods of control include the use of microbial insecticides, physical methods such as propane flaming and ditches to collect dispersing adults, and cultural methods such as crop rotation and straw mulch. Many beetle populations have become resistant to some widely used insecticides.

A Cornell University project's goal was to investigate whether beneficial predatory insects could be attracted to vegetable plants so the pest could be controlled. Buckwheat flowers are fragrant and researchers found several predator insects were attracted and ate the newly hatched young of the Colorado potato beetle. Enough control was observed to state that buckwheat does indeed attract a sufficient number of predatory insects to reduce the negative effects of the potato pest.

USDA scientists are using "DNA barcodes" to monitor insects that damage crops as diverse as wheat, barley and potatoes, and to make pest management decisions. Agricultural Research Service (ARS) entomologists are using the DNA barcodes to identify insect predators best equipped to control the Colorado potato beetle, which is the single most damaging insect pest of potatoes in the Eastern U.S. Numerous studies have analyzed the gut contents of predatory insects to evaluate their ability to control pests in a field. But predators digest prey at different rates, so simple gut analysis is insufficient for accurately comparing the effectiveness of different predators. The research team collected four potato beetle predators, fed them lab-raised potato beetles and determined how long the pest's barcoded DNA could be detected in the predators' guts. The results show the importance of taking digestive rates into account when evaluating insect predators as bio-control agents. They also may provide guidance to growers on the most effective control strategies for combating a voracious pest.

Another Cornell study aimed to find if cover crops could additionally help suppress the Colorado potato beetle larvae (CPBL) on potato plants. There were significant differences between control and treatment plots, with plots where buckwheat strips were grown showing a more than 95% reduction of CPBL on the potatoes compared to those not grown beside buckwheat strips.

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In a similar study, University of Maryland Researchers investigated the impact of inter-planting eggplant with crimson clover to establish what effect this has on Colorado potato beetle numbers and the populations of insect predators. It was observed significantly fewer Colorado Potato Beetles, adults, larvae and eggs, were found on eggplants cropped with crimson clover than in plots with no crimson clover. There was also no apparent impact of insecticide treatment on Colorado potato beetle numbers on eggplant inter-planted with crimson clover in comparison to plots without clover, suggesting a winter cover crop of clover can be used to manage Colorado potato beetle without the use of insecticide sprays. The findings suggest it may be more cost effective, practical and ecologically sustainable to use crimson clover as a management technique to control Colorado Potato Beetles on eggplant than repeated insecticide applications.

The expanding urban population, as well as potential political developments and climate changes' progression, will likely further reduce the fresh water supply for agriculture in ensuing decades. One solution lies in the desalination of brackish water and high-level water reclamation. 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.

California's Red Rock Ranch's vision of big farming, minimizing chemical application and reducing tillage, may point a way toward a future in which big-time farming can become more sustainable. The owner has already instituted a system of mining, and even selling, minerals he extracts, via a series of tiles under his farmland, after irrigation. This keeps local businesses from having to purchase minerals mined in more destructive ways. The ranch owner's goal is to farm with passive energy: solar, wind, and concentrating solar and to avoid buying energy from the grid.

With rising fuel prices and efforts to more efficiently utilize water for crop production, University of Nebraska, Lincoln, UNL Extension, is working to help producers more effectively and efficiently use water resources while maintaining high crop yields. New information on innovative irrigation management practices include the Improving the Precision of Irrigation project POI, the use of partial root-zone drying and regulated deficit irrigation practices have been assessed in crops from pears to cotton. Continuing research will determine The Software for Best Use of Water on Farm project SBUFF, using a two-step process consistent with the delivery of the milestones which are: (a) technical report on existing tools for water management at farm level and (b) quantification of benefits and identification of opportunities for further investment.

The University of Missouri tested a tile drainage system that controls the flow of water during the course of a season. 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, however, took four times the volume of water. 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. System managers can let water drain in the spring to dry out the soil for planting, then close a gate in the discharge pipe in the summer to back water up to the root zone of thirsty corn or soybeans. The gates can be opened again in the fall for harvest, and closed again in the winter to limit leaching and to conserve fertilizer. This and other research show up to a 75% reduction in the nitrate load in drain water. With the tile drainage system, there are fewer moving parts than pivot irrigation, and the water requires pressurization to get it on fields, another cost savings. For the claypan soil, researchers needed lateral lines on about 20-foot centers to sub-irrigate, while in a drainage-only system, they could usually get by with fewer laterals spaced farther apart. The yield payoff for managed drainage combined with sub-irrigation is going to depend on the weather. In a wet year, drainage alone will give a big bang. In a dry year, the payoff will come from sub-irrigation.

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Cornell's 2012 research showed Cucumber Mosaic Virus CMV, was spreading to snap beans from alfalfa and soybean fields. There are no pesticides that can stop viruses, so the problem required a Cornell team to determine the best solution would depend on breeding new snap beans with resistance to the virus. Selection depended on using pure and appropriate strains of CMV and closely related viruses. Researchers selected strong resistance and combined it with the major traits of fresh green beans. Further study is pursuing a parallel path with transgenic CMV-resistance genes developed that has been available in summer squash for over a decade.

In a further development, 10/1/10–12/13/13, USDA/ARS research project, involves the genetic engineering of floral bulb crops for virus and nematode resistance. The project will utilize genetic engineering to improve resistance of bulb crops to fungal diseases and plant parasitic nematodes. (a) Develop transformation technology for Easter lily; (b) test candidate genes to confer resistance to Fusarium in Gladiolus; and (c) determine whether dsRNA expressed in plants can target RNAi to control plant parasitic nematodes.

Its goals are to:

- Transform a commercially important Gladiolus cultivar, Easter lilies, and Ornithogalum with genes for resistance to either CMV or ornithogalum mosaic virus. Determine if the genetically engineered plants are resistant to these viruses.
- Complete experiments involving CMV resistance in transgenic Gladiolus plants that contain either the CMV coat protein subgroup 1 or subgroup 2, CMV replicase, or single chain antibodies to the CMV coat protein.
- Optimize the transformation system for Easter lilies and Ornithogalum using either the gene gun or Agrobacterium.
- Develop a transformation system for roots of Easter lilies using Agrobacterium rhizogenes. Transgenic Gladiolus plants with D4E1 and cpo have been developed using the gene gun and are being grown for challenging with Fusarium in the greenhouse. Genes involved in nematode development will be isolated and tested for their ability to kill Pratylenchus penetrans for affect its reproduction using RNAi.

This same CMV resistant genetic engineering can be applied to vegetable crops.

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. Less than one-half of nitrogen fertilizer applied to fields globally is used by plants, and much of the remainder enters water systems or converts into nitrous oxide, a greenhouse gas nearly 300 times more potent than carbon dioxide. Research and Development has produced Nitrogen Use Efficient, NUE technology creating new vegetable seeds that use less nitrogen fertilizer.

Arcadia Bioscience's NUE technology™, anticipated 2016, has demonstrated its effectiveness, achieving high crop yields while significantly reducing the needs for nitrogen fertilizer applications. The company has licensed its NUE technology to seed companies worldwide for use in all major agricultural crops. Green technology research is maturing rapidly, and as it couples with technology innovators and investors, companies are emerging that have the ability to change our lives for the better, bringing huge returns to their founders and funders. Arcadia® has partnered with Bioceres®, a South American soybean company, to form an agricultural technology joint venture called Verdeca®. The companies will develop and deregulate 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.

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New York's Cornell University's program, CornellBEST promotes and supports entrepreneurship through technology transfer. The university's program established and spearheaded by the Cornell Center for Technology Enterprise & Commercialization (CCTEC) reaches out to all relevant partnering units at Cornell and entities in the regional communities. It features resources, services, and training provided by CCTEC and its allies to help Cornell researchers form new businesses based on licensed Cornell technologies. CCTEC supports each stage of a new business's development life cycle.

The Cornell, NY State Agricultural Experiment Station Hudson Valley Laboratory (HVL) can stimulate similar entrepreneurial activity for Kingston and Ulster County.

Training Needs

Whether seizing opportunities that exist as defined in the cluster analysis, expansion of manufacturing, retail or research and development; there is a skill gap between the what is need at present and the in the future and the existing skills. Training is essential to raise the human capital level of the area's residents. The following are some of the areas of current and future employment training necessary to allo for economic inclusion as well as creating a substantial boost to Kingston's economy. Most involve a range of opportunities from those that are degree-based to those do not involve degrees but simply acquisition of the skill, certification or a combination of one or the other with apprenticeships.

- ✓ CAD for additive manufacturing/3D printing
- ✓ Robotics
- ✓ Trades
- ✓ Medicine
- ✓ Research and development as it relates to industrial expansion
- ✓ Software testing
- ✓ Software optimization
- ✓ IT training
- ✓ Entrepreneurship
- ✓ Business Management and recording keeping for medical group management
- ✓ Resin and nano particle handling and manufacturing
- ✓ Manufacturing of composites and polymers

Midtown Plan Components

According to the 2010 census, the population of Kingston consists of the following races.

- ✓ 14.6% African American/Black.
- ✓ 1.8% Asian.
- ✓ 0.5% American Indian and Alaskan Native.
- ✓ 9.9% some other or two or more races.

13.4% of the population identifies as Hispanic or Latino. The Latino population in Kingston has increased by 5% since the 2000 census.

Significant concentrations of the Hispanic or Latino populations and the African-American populations in Kingston are found in the Midtown area.

About 53% of the overall Kingston population are renters. In Midtown Census Tract 9520, 61.9% rent; and in tract 9521, 65% are renter. This high concentration of renters in the Midtown area leads to neighborhood instability because an investment in the residential housing stock is dependent on landlords, many of whom live out of area, who have not invested in upgrades.

19.6% of Kingston residents have incomes below the poverty level (compared to 14% in New York State). 7.4% of city residents struggle with incomes below 50% of the poverty level (higher than the state percentage of 6.3%); and 26.5% of children in Kingston are living below the poverty level. According to HUD, poverty rates in two of the Midtown census tracts on either side of the Midtown Broadway Corridor are 20.7%, with 47% living below income limit in tract 9521 and 24.8% with 51% living below income limit in tract 9520.

The American Community Survey 5 year study portrays significant economic instability for the residents of Midtown, particularly for women and children.

In tract 9520, 5.9% of residents received SSI support, 7.2% received cash public assistance, and 9.2% received food stamps/SNAP. The percent of persons and families whose income fell below poverty for families was 7.4%. However, for female headed families with no husband and children under 18 in the home, it was 24%; and with children under 5 years of age, it was 16.2%. All individuals experienced a poverty rate of 11.5%; and for children under 18 the poverty rate was 10.5%.

In tract 9521, 10.7% of residents received SSI support; 1.1% received cash public assistance; and 24.3% received food stamps/SNAP. The percent of persons and families whose income fell below poverty for families was 21.3%. However, for female headed families with no husband and children under 18 in the home, it was 50.9%; and with children under 5 years of age was 78.4%. All individuals experienced a poverty rate of 28.1%; and for children under 18, the poverty rate was 45.3%.

The Kingston Consolidated School District reported eligibility for free or reduced lunch in 2010 at 31%, up from 27% in 1998.

Graduation rates identified in the Kingston School District Report Card 2009-2010 suggest inequities as well. The District experienced an overall 73% graduation rate. However, for African American/Black students, it was 46%; for Hispanic/Latino 62%, for students identified as disabled 39%, and 60% for economically challenged students.

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The crime rate in Kingston is considerably higher than the national average across all communities in America from the largest to the smallest. However, at 32 crimes per one thousand residents, it is not among the communities with the very highest crime rates. The chance of becoming a victim of either violent or property crime in Kingston is 1 in 31. Relative to New York, Kingston has a crime rate that is higher than 89% of the state's cities and towns of all sizes. The crime rate is near the average for all other communities when controlled for population size and compared to places that are similar in size.

Criminal activity is clustered in Midtown. According to the officer responsible for reporting and analyzing crime statistics for the city, more than 50% of all criminal activity occurs in the Broadway Corridor of Midtown.

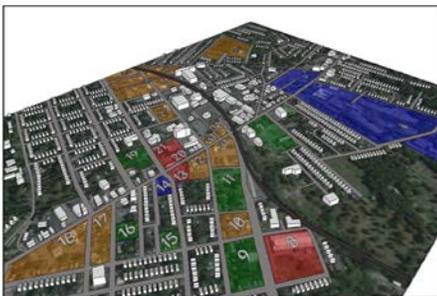
The educational attainment of the population aged 25 years or older in the area is distributed as follows.

- ✓ 14.2% had not earned a high school diploma (14.8% in the U.S).
- ✓ 33.2% were high school graduates only (29.6% in the U.S.).
- ✓ 9.0% had completed an Associate degree (7.7% in the U.S.).
- ✓ 15.0% had a Bachelor's degree (17.7% in the U.S.).
- ✓ 10.8% had earned a Master's/Professional/Doctorate Degree (10.4% in the U.S.).

Based on the above statistics, the noted trends and factors, needs of the area residents, information generated through the various analyses, and opportunities that have been defined; the plan for the Midtown area was developed.

Its focus is upon four areas. These area: (1) creating **BUSINESS** expansion opportunities and activity in the area; (2) providing **EDUCATION** and training for economic inclusion of residents; (3) furthering the fledgling **ART** cluster in Midtown and expanding it and its linkages with other areas of Kingston; and (4) growing and utilizing **TECHNOLOGY** that will be critical to success at present and in the future. The goals for the plan follow.

The Midtown BEAT Plan (Alternate Views)



- ✓ Enhance the level of services
- ✓ Increase resident safety
- ✓ Enhance the quality of life of residents
- ✓ Enhance the existing housing stock
- ✓ Expand the opportunities for affordable workforce oriented housing
- ✓ Expand local employment and economic opportunities
- ✓ Invest in the area's human capital

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Some of these goals and related programs are associated with a continuation of activity initiated under the previous community oriented development plans for the original census tract target area. However, greater emphasis is placed on enhancing human capital to the benefit of Midtown, Kingston and Ulster County residents. The following are the significant components of the revitalization plan for the Midtown area.

Services

As in the previous plan, Kingston will continue to take corrective action with respect to the identified areas of public and private infrastructure in Midtown. This could include expansion of facilities or services for after and before school at risk youth, expansion of the range or opportunities for recreation and other positive activity for the Midtown population in general as well as seniors and youth in particular.

Midtown revitalization through KLDC/ Community Development/Office of Economic Development Strategic Partnership will include, to the extent resources are available, improvements to or for the following in 2014 and future years.

- ✓ Inclusion of the Latino/Hispanic population through the development of appropriate literature, notices and other materials in Spanish as well as English.
- ✓ Infrastructure, including but no limited to sidewalks and streetscape
- ✓ Beautification
- ✓ Hodge Center/Boys and Girls Club
- ✓ Kingston Library
- ✓ Farmers' Market
- ✓ Recreation Expansion

Proposed Catskill Mountain Rail Trail



— Trail

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Safety

An ideal community means that everyone is safe. We must reconnect all of our neighborhoods into one great neighborhood, achieving one great community.

The Kingston Police Department, under the direction of Chief Tinti, has reallocated the personnel, equipment and technological resources for:

- ✓ Foot patrols
- ✓ Youth Bureau
- ✓ Special assignments
- ✓ Special Investigations Unit
- ✓ Community policing
- ✓ Operation Clean-Sweep and Operation Dust-Pan

All of these efforts will continue and will be assessed for effectiveness in the Midtown area. Community policing makes Kingston and Midtown a better place to be, live, work, and play. Kingston will continue to review departmental operational and procedures, keep current with technology and social media, and partner with Ulster County Sheriff, New York State Police and departments in surrounding towns in Ulster.

In addition to the above, Police Bike Patrols will resume in Midtown area.

While all of the above are essential and necessary, further police presence is critical. Kingston believes that police operations in a physical form can be anchor for the revitalization activity as it has done elsewhere. In 2013, the Kingston Loan Development Corporation took title of the Bank of America on Broadway and parcel for a proposed Midtown police station.

The perception by the general public is that Midtown is dangerous and this has huge implications for economic development as evidenced by empty storefronts and disinvestment. Moving the headquarters of the police station from its current location in the Rondout District into the vacant Bank of America Building on Broadway has been identified as an essential first step to the revitalization of Midtown for the following reasons:

- Response times to all areas of the city will be optimized
- Operations will be more efficient and cost effective
- Community Policing Initiatives will be greatly enhanced
- Police presence in Midtown will have the effect of making people feel safer and lead to a reduction in criminal activity in areas that chronically have suffered
- Economic Development will be greatly enhanced at the City's Core
- Quality of Life for the City's residents will be significantly improved

The KLDC and Office of Community Development shall arrange for funding this project. The City's Office of Economic Development and Strategic Partnership shall seek any available state, federal and foundation funds for the conversion of the building and site into a police station.

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Housing

Housing/building conditions in Midtown have been previously reported. It is also important to note that Kingston, inclusive of Midtown generally has higher rents for equivalent units than those found elsewhere in Ulster County. The only except are the largest or three bedroom units.

Table 33 - Non-Subsidized Apartments - 2010 Average and Median Rent by Unit Size

	# Units	Studios		1 BR		2 BR		3 BR	
		Avg.	Median	Avg.	Median	Avg.	Median	Avg.	Median
Kingston	661	\$653	\$650	\$842	\$875	\$1,031	\$1,050	\$1,175	\$1,175
Ulster County	2,412	\$603	\$625	\$821	\$850	\$944	\$1,000	\$1,165	\$1,175

In June of 2009, the Planning Departments of Ulster, Orange and Dutchess Counties published the Three – County Housing Needs Assessment 2006-2020 which included a “gap” analysis on a regional, county, and municipal level. Housing supply (inventory) was compared to demand by income and tenure status (owner and renter) which revealed if demand exceeds supply, and if so, at what extent for by household income level. Gaps are an indication that the number of units available, at an affordable price, are not sufficient and households will likely pay more than the 30% threshold of household income toward housing costs.

The City of Kingston has and is projected to continue to have the most pronounced affordability gaps, for both owners and renters, of the twenty-one municipalities in the county.

*Table 34 - Forecast of Owner Affordability Gap and Total Demand**

	Unit Affordability Gap			Total Unit Demand		
	2010	2015	2020	2010	2015	2020
City of Kingston	1,368	1,610	1,950	4,886	5,164	5,426
Ulster County	11,319	12,576	13,986	49,824	51,982	53,928

*Source: Three-County Housing Needs Assessment 2006-2020

As seen in the table that follows, the rental gap is expected to grow significantly in Kingston.

*Table 35 - Forecast of Renter Affordability Gap and Total Demand**

	Unit Affordability Gap			Total Unit Demand		
	2010	2015	2020	2010	2015	2020
City of Kingston	1,843	2,071	2,328	6,085	6,508	6,931
Ulster County	6,541	7,252	8,046	25,793	26,947	28,082

Source: Three-County Housing Needs Assessment 2006-2020

Housing activity initiated under the previous plan, which includes but is not necessarily limited to rehabilitation, demolition, acquisition, conversions, block-by-block code enforcement and new development, will continue in this plan. The focus will be on enhancing quality of life through enhanced housing. Focus will include new work force housing for those employed but that are increasingly shut out of the market by the defined growing housing affordability gap. Studio units will be created for artists, entrepreneurs for the new economic activity, seniors and other small households without children

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Activities will also be geared toward first-time homebuyers both now residing in Midtown and those from other areas that would foster revitalization of Midtown.

Activities will be expanded to include defining the feasibility of attracting outside investment dollars and strengthening the opportunities for arts, technology and expanded business activity in the area to create greater opportunities to having employment within walking distance. Should it be feasible to attract outside investment dollars, Kingston will identify methods for attracting the resources and securing the resources.

In addition, Kingston will seek opportunities for expansion of the full range of senior living in Midtown, from independent living through the various levels of assisted and nursing care.

Kingston will also examine the potential for program development to expand opportunities for seniors to remain in their homes while maintaining the housing stock. This could include a range of options not limited to the creation of a training program in the trades that would assist low and moderate income seniors in housing maintenance tasks, increasing interest on reverse mortgages for the purpose of housing reinvestment and other opportunities.

Facilitating current residents to remain in their existing units will be beneficial to the City of Kingston and Midtown area. Some long-time current residents no longer have mortgage payments. Money not spent on mortgages increases the potential for spending on other commodities including local goods and services. Therefore, Kingston's ability to keep residents in their homes for as long as possible in Midtown likely yields returns greater than their costs.

One of the primary problems with staying in existing units for seniors is the ability, often physical, to maintain their units as they have in the past. Many did basic housekeeping and property maintenance themselves. This, along with income and non-ownership of units, is an issue creating current housing conditions.

There are several actions that can be taken that can help to mitigate the burden. One option would be to identify qualified, quality "handymen" entities that would agree to provide services to local residents at a reduced or fixed cost basis. Such entities could be identified by current residents that have had continual positive relationships with an entity. This could be coupled with internet-based lists, the Better Business Bureau, Craig's List and other organizations that rate entities or have extensive reviews. (It is noted that utility companies often have maintenance contracts on significant appliances as well.) The entities involved would benefit through increased promotion at no cost to them and potentially stable and consistent business.

A second option would be to establish a small local company to furnish services on a fixed price or a variety of services for one monthly price. This would operate much like a condominium association and some homeowners associations around the country; but could cover not just exterior but interior minor maintenance elements as well.

The two options could be considered progressive steps, depending upon initial successes.

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Rehabilitation of the Lace Curtain Factory/RUPCO is an early implementation identified option. The project calls for the creation of 55 apartments and work spaces for artists in the former United States Lace Curtain Mill, constructed circa 1903, at the corner of Cornell Street and South Manor Avenue in Midtown Kingston. The total gross floor area, counting all floors except the basement level, is roughly 56,470. RUPCO plans to buy the building, which currently serves as a storage facility. The agency, a provider of affordable housing, plans to use federal, state and historic preservation tax credits to help fund the project, which is estimated to cost \$15 million. The property is adjacent to the intersection of the CSX Corp. rail line and Foxhall Avenue. The rear of the lot abuts a property owned by the Ulster County. The building, which has a brick façade, comprises two main wings with a main entrance, stair tower, elevator shaft and heat-generating plant located between the two larger wings.

The current mix of the 55 units, which is still evolving as the design is being refined, includes 6 studio's, 31 one bedroom and 18 two bedroom lofts.

Many of the lofts will be multi-level units with mezzanines and high ceiling or double height spaces taking advantage of the existing buildings character. Ceiling heights throughout the building range for 9 to 12 feet on the upper stories to a captivating 22 feet on the lower level of the east wing where the existing windows are 14 feet high x 8 feet high. In addition to the residential space the plan includes several gallery spaces as well as spaces for shared and private work spaces outside of the residential spaces.

The project is being design with the perspective that the building will become a center of cultural activity and open to the public in addition to providing housing for the burgeoning arts community in the Kingston area. Other amenities will include a common artist utility room on every level, outdoor sculpture areas designated for public art, and walkable community amenities such as bike racks and connections to the existing city sidewalk system. It is anticipated that the building will be designated as an individually significant historic structure and that it will be listed on both the State and National Register of Historic Places. Offices from the State Office of Parks, Recreation and Historic Preservation have visited the site and indicated that the building is eligible for listing and are currently reviewing a full application for register status.

The project will employ a variety of sustainable approaches and Green Building techniques including but not limited to geothermal heating and cooling, Photovoltaic (solar) panels on the roof, indoor air quality measures, low flow fixtures, energy efficient lighting and durable and sustainable material sourcing. By adaptively re-using and repurposing the building, the ultimate goals of sustainability are achieved by eliminating the demolition of the building and creating debris that is added to the waste stream, or disturbing previously undisturbed property for the creation of new construction to create the same number of housing opportunities.

Human Capital Investment

According to specific 2013 U.S. Department of Labor reports, Ulster County's average weekly wage was 68% of the State average. The Ulster County average weekly wage is generally lower than the surrounding region. The weekly wage of \$749 was lower than the average for the mid-Hudson Valley Region (composed of Dutchess, Orange, Sullivan, and Ulster Counties) and well below the average within the lower Hudson Valley Region (composed of Putnam, Rockland, and Westchester Counties).

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

Ultimately, successful revitalization of Midtown will result from investment in human capital, providing economic opportunity to the current and future residents of the area. While the establishment of a stronger police presence, improved work force housing opportunities and enhanced services help to mitigate negative conditions, increasing the environment through expanded education, training, economic, and employment opportunities within Midtown is essential.

Kingston believes that the branding of the heart of the Midtown area and the entire city – the Broadway Corridor – coupled with the pursuit of that activity plays an essential role. Broadway needs to become a destination for employment, a full-range of economic activity and gathering place. Kingston needs to brand Broadway as a destination.

As stated, Broadway is the heart of the Midtown community. A heart must have a strong and consistent BEAT to function and to assure the proper and successful function of the larger organism, human or community. It is the intent to make Broadway once again a fully functioning heart or the “BEAT” corridor, with BEAT being synonymous with **Business, Educational, Arts & Technology**.

There are many facets to this program. Proposed efforts associated with the concept follow. Achieving a significant number will have a significant impact on enhancing human capital in Midtown, through expanded education opportunities, increased arts and cultural development, addressing state of the art technology, application of technology, job training, entrepreneurship, as well as physical conditions in Midtown.

The plan will be phased based on funding, opportunity and time required to implement. Current economic initiatives include those that follow.

- ✓ A partnership with Bard College focusing on cultural tourism to provide curator for Artist Society Kingston biennial sculpture exhibit, assist with a feasibility study of establishing an Art Museum or Cultural Center and provide a representative for Kingston Arts Advisory Board.

Related to the above, an Arts Museum on west side of Broadway would complement the four major current arts vendors on the east side of Broadway.

- ✓ Partnership with Bard College for educational initiatives in art, math, science and engineering.
- ✓ The County of Ulster and SUNY Ulster have retained a consultant to provide a feasibility study for the relocation of Ulster County Community College satellite campus from the Business Resource Center (BRC) located on One Development Court in Kingston to Sophie Finn Elementary School.

The proposed scope of work includes rehabilitation and alterations, and a building entry addition to Sophie Finn Elementary School to accommodate SUNY Ulster Business Resource Center (BRC). Per semester, the BRC provides credited collegiate courses to nearly 600 in-county and out of county residents, and non-credited courses to another 1000+ students. Additionally, the BRC is the home of the certified SUNY Ulster Police Basic Training Program which provides full-time pre-employment police basic training to students in preparation to appointment in law enforcement.

Minor reorganization of existing space is being proposed to address program needs, improve efficiency of current spaces, and improve overall aesthetics to create a collegiate environment. The alterations will correct noted code, life safety and ADA deficiencies as required, and replace outdated building systems with modern energy-efficient systems and equipment.

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

Site improvements are being considered to accommodate current and projected student enrollment, staff and faculty. A proposed new main building entrance and parking area at the second story will accommodate 115 student parking spaces and provide a clear sense of arrival. A generous, welcoming entry lobby will telegraph student and faculty activity upon entry. In total, the site has the capacity to accommodate nearly 170 parking spaces, 55 of which will be located at the existing parking area on the lower level for faculty and staff. Police Academy Cadets could utilize the Kingston High School lower lot adjacent to the tennis courts, on the south side of Sophie Finn. The Kingston High School lower parking level on the north side of the building could be utilized for additional spill over parking. The proposed design schemes take advantage of the abundant naturally day-lit spaces and the overall open feel of the existing building. The new main entrance at the second floor brings visitors and students to the heart of the building upon arrival. The new entry lobby is situated between the two existing building wings with views looking out to the Catskills and south over the town of Kingston.

As stated, the SUNY Ulster Business Resource Center currently resides in an Ulster County owned building on One Development Court in Kingston. The one story office facility houses both Ulster County offices such as, County Office of Employment and Training, County Child Support Enforcement and Social Services. SUNY Ulster's BRC, the Small Business Development Center (SBDC) and several community programs run under the BRC. The BRC occupies nearly 20,000 space of floor space. Spaces consist of classrooms ranging from approximately 600 square feet to 950 square feet, offices of 140 to 200 square feet, a Continuing Education and Registrar Suite, and a Reception/Lobby space.

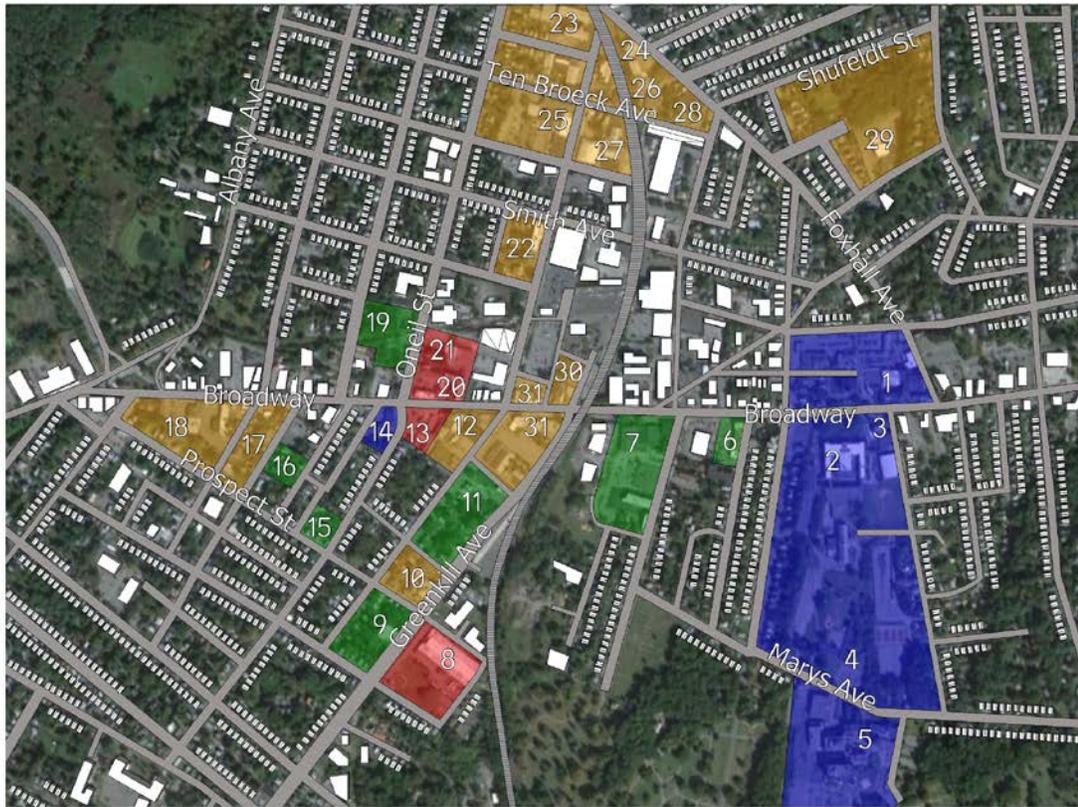
Additional activity incorporated into this plan the following pieces as well as many others:

- ✓ Kingston High School to undergo renovations, KHS to have Academy Curriculum for 9th graders.
- ✓ Ulster BOCES would put courses for technology, manufacturing and health programs in the Carnegie Library Building.
- ✓ Current HealthAlliance at Broadway Campus has potential to become a Medical College of the Arts, Engineering and Technology campus through SUNY Bard, or an Assisted Living Facility.
- ✓ Creating an ethnic village themed commercial area within Midtown, building on existing activity.
- ✓ Graduate student housing and studio/work areas.

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

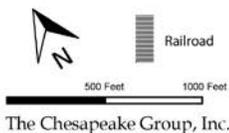
Potential program components for BEAT by their respective function follow.

The Midtown BEAT Plan



Location Key

- 1) Kingston Hospital (Proposed site of Medical College of Arts & Engineering Digital Technology and Senior Assisted Living)
- 2) Kingston High School
- 3) Carnegie Library/BOCES
- 4) Sophie Finn/SUNY UCCC
- 5) Benedictine Hospital
- 6) Midtown Center
- 7) YMCA
- 8) Metropolitan Life
- 9) Boys and Girls Club
- 10) Black Creek Mercantile
- 11) Pajama Factory
- 12) UPAC
- 13) Kings Inn/Farmers Market
- 14) Bank of America/Police Station
- 15) TransArt
- 16) Van Buren Park
- 17) Hodge Center
- 18) 721 Media/SUNY UCCC
- 19) Rail Trail
- 20) Catskill Woodworking
- 21) Boices
- 22) Shirt Factory
- 23) Lace Curtain Factory
- 24) Cornell Street Studio
- 25) Monster Studios
- 26) R&F Encaustics
- 27) Colorpage
- 28) Bailey Pottery
- 29) Meagher School
- 30) Center for Creative Education
- 31) Proposed Creative Learning Centers



- | | |
|--|--|
| ■ Government, Hospital, Education Facilities | ■ Community, Arts, Education Facilities |
| ■ Commercial Businesses | ■ Combination of Business, Education, Arts, & Technology |

The Chesapeake Group, Inc.

BUSINESS COMPONENT OF BUSINESS, EDUCATION, ART, TECHNOLOGY (BEAT)

1. KLDC Loans, matching funds grants for exterior façade of commercial properties.
2. Utilize Bard interns/SUNY at New Paltz for pop-up art at vacant storefronts and provide inventory of artist/live-work space.
3. King's Inn site becomes a farmers' market: Proposed Tent food/beverage to connect with farmers' market.
4. UPAC assisting with funding for air conditioning and other improvements to facilitate year-round venue.
5. King's Inn—Environmental study complete (Phase 1) for preparation of site for mixed use; interim use for UPAC parking and community events.
6. Address and assist all businesses in Broadway corridor for quality of life issues, public safety so as to establish a draw for investment.
7. Create an ethnic commercial village focused on one or multi-ethnicities led by food service activity and related establishments.

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

EDUCATION COMPONENT OF BUSINESS, EDUCATION, ART, TECHNOLOGY (BEAT)

1. Education/medical technology/engineering proposed for Kingston Hospital Campus.
2. Partnership with medical college affiliates and SUNY Ulster, Kingston School District, BOCES and Bard College.
3. Senior Assisted Living facilities at Kingston Hospital Campus.
4. Kingston High School proposed renovation of \$120 million.
5. Carnegie Center—BOCES, SUNY Ulster, Creative Center for Education.
6. Early college at SUNY Ulster/BOCES/Kingston High School.
7. Refurbished Sophie Finn School for nursing college, credit courses, etc.
8. Offer developers, SUNY at UCCC, BOCES, Kingston High School Bard intern opportunities.
9. Mentoring program at Hodge Center for Student Success Center, AT & T grant program with Family of Woodstock.
10. SUNY New Paltz, 721 SUNY Ulster Graphic Arts/Communication Program.
11. Propose Creative Learning Center for Mid-town to facilitate Cultural Literacy, Arts and Digital Technology certificates for youth/adults.
12. Boys and Girls Club improvements
13. Hodge Center enhancement
14. Kingston Library
15. Technical and skill training elevation brought to Broadway Midtown.
16. Entrepreneurship program feasibility and initiation

ART COMPONENT OF BUSINESS, EDUCATION, ART, TECHNOLOGY (BEAT)

1. Art District at Tenbrouck Avenue and Cornell Street with and through the existing operations including R & F Paints, Monster Studios, Color Page, Bailey Pottery, and Cornell Street Studios.
2. Facilitate SUNY at Ulster and Bard, Kingston School District, SUNY New Paltz internships/mentoring.
3. RUPCO Project— renovation of Lace Curtain Factory for artist living-studio space.
4. West Side of Broadway—(UPAC side): Black Creek Art Studio, Bard Feasibility Study for Art/Cultural Museum, UPAC Center to promote arts and necessary funding to improve UPAC for year-round productions (which require new ac/heating system).
5. Facilitate assistance with development of TRANSART Black Cultural Center on Henry Street.
6. Artist live/work space along Broadway.
7. UPAC

TECHNOLOGY COMPONENT OF BUSINESS, EDUCATION, ART, TECHNOLOGY (BEAT)

1. Digital Technology at 721 Media Center utilizing Evolving Media and Dragon Search to foster a partnership with small boutique developers.
2. 721 Multi-Digital Center to assist multi-media professionals; film producer proposes animated film partnership center and other multi-media providers with UCCC—graphic art program.
3. Develop the Broadway corridor to facilitate manufacturing opportunities for 3D printers and other entrepreneur efforts for locations and partnerships with digital technology.

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

Funding & Additional Tools

Finally, a plan is not a document. It is an evolutionary program that is to be developed and modified with continued input and opportunities. Implementation will require significant partnerships between the private and public sector and leveraging of limited fiscal and resources.

Implementation of the plan will require fiscal resources well beyond the capacity of the City of Kingston. It will require grant funds from appropriate sources at the State and Federal levels of government as well as potentially Ulster County. In addition to resources that have been in the past employed in the targeted census tracts and will be employed in the Midtown area in the future, including but not limited to HUD Community Development Block Grant Program funds and Section 108 funds, Kingston must continue to have success with other government sources.

One example is the successful application of grant funds from the state of \$1.5M from NYSERDA, \$500,000 from OPRHP Heritage Area, \$200,000 OPRHP Recreational Trail Program funds, and just under \$75,000 from Department of State (DOS). For Midtown, the NYSERDA grant will be employed to transform the Broadway Corridor.

A second successful effort is associated with the Transportation Enhancement Program (TEP) funds. Kingston received a \$2 million federal TEP funds grant to transform Broadway and connect the City to the Hudson waterfront.

With outside funding of about \$4.3 million for the Kingston Connectivity Project/Kingston Greenline available over the next two to three years; "shovels" are expected in the "ground" late in 2014 or early 2015, with work completed in 2016.

There are substantial private sector resources that can be tapped for grant funds and technology capital requirements. Research indicates that those that follow provide a range of opportunities and funding level options for Kingston's Midtown's BEAT plan implementation.

IBM Corporation
Irving Rothlein Foundation
The Klock Kingston Foundation
BBL Construction Services, LLC
Central Hudson Gas & Electric Corp.
Louis Greenspan Charitable Trust
M&T Charitable Trust
The Newcombe Foundation
The Dyson Foundation
Ulster Savings Bank
Roy M. & Frances K. Anderson Fund, Inc.
KeyBank Foundation
Rondout Savings Bank

Golden Family Foundation
Cerner Corporation
Price Chopper's Golub Foundation
Rhinebeck Bank
Jacob & Sophie Rice Family Foundation, Inc.
Altman Foundation
Bristol-Myers Squibb Foundation, Inc.
Community Foundations of the Hudson Valley
Charles and Mildred Schnurmacher Foundation, Inc.
Rose & Kiernan Charitable Foundation
The Swyer Foundation
Alcoa Foundation

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

Peter Bogdanovich

Paul Kreppel

Gerald Celente

Anne Sweeney

Joe Ausanio/Paul Runge Estates

Mike Ferraro Estate

Aéropostale

AMETEK Foundation, Inc.

ArtPlace America

Bank of America

Bloomberg Philanthropies

Citizens Bank

Ceres Technologies

DICK'S Sporting Goods

First Niagara Bank

Hudson Valley Federal Credit Union

Bloomington's and the Macy's Foundation

People's United Bank

The People's United Community Foundation

Danversbank Charitable Foundation Inc.

Regeneron Pharmaceuticals, Inc.

Rhinebeck Bank

TD Bank

TD Charitable Foundation

Wells Fargo Bank

Ford Motor Company

Ford Foundation

Local Initiative Support Corporation

Zumtobel Lighting Inc.

ENTREPRENEURSHIP - Entrepreneurship has always been and continues to be a mainstay in raising economic levels of residents in all sectors of economy. Entrepreneurs are primarily derived from two sources. These are existing residents of the area and those that come to visit and make the community the home for their venture. Creating new ownership for existing and new businesses and franchises through entrepreneurship is both an adjunct and an alternative to recruiting new activity. Two options are indicated.

- ✓ **A Local Entrepreneurship Program** - An entrepreneurship program with a possible apprenticeship component serves several purposes for increasing business opportunities. It can be effectuated through community colleges; other regional area universities; local, regional and national chapters of AARP; accountants and financial advisors in the area; and technical-oriented higher education or training schools. Relationships with such institutions could be established on a one-to-one basis or collectively through one catalytic institution. It is possible for current owners of operations could also identify current employees with potential.

Through the organizations or institutions, "students" or participants can be identified with potential entrepreneurship profiles and interests. A "training" process could be developed that would include:

- Certain business curricula courses.
- An internship with introduction and at least part-time work while attending the program.
- An apprenticeship of 1 to 3 years working and learning in the businesses if dealing with existing operations.
- Purchase, with previous ownership staying on in some capacity for 1 to 3 years, where applicable and possible.
- For existing operations, current owners involvement with financing, fully or partially.
- Creating new businesses at the culmination.

Business scholarships to attend business management courses, acquire specific industry skills, or acquire entrepreneurship skills could be arranged through cooperative partnerships. These partners could sponsor student apprenticeships, assist with financial planning, assist with housing, sharing of needed equipment through incubator activity (if appropriate), and procure resources for the purchase and financing of businesses if dealing with existing operations and change of ownership or for start-ups. Business scholarships would be provided to those who make a commitment to establish a new entity or purchase an existing entity and remain for a minimum number of years (such as 5 years).

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

Financing for existing operations may be through current owners “taking paper” as well as other consortium sources to be noted.

- ✓ **A Privately Run Incubator.** A second way of spurring entrepreneurship is through a privately run incubator or now frequently called coworker space. The incubator would create an environment with amenities typical of larger businesses with the fiscal capacity to provide a range of resources. Artist activity is one area where such could be pursued for multiple locations in Midtown. Such an incubator would likely or could include that which follows.

- Affordable space
- Smaller spaces than typical
- Access to experienced entrepreneurial support services
- Shared conference room or equipment
- Technology room including 3D printing capacity

TRAINING - As defined in the analysis, manufacturing of a range of products based genetic materials used in medicine, to newly developed composite materials used in industries and to consumer products are in transition. In general, the transition is technology driven and will generate lesser employment than previous forms of manufacturing. The type of jobs created will be based on operation and maintenance of the technology. Whether additive manufacturing or 3D printing, CAD based activity is essential for product design and production now and will be increasingly important in the future as will multiple robotics. Successful appropriate training that will benefit residents both in the short and long-term for which there is and will be employment opportunities involve or should focus on those that follow as previously presented. Most involve a range of opportunities from those that are degree-based to those do not involve degrees but simply acquisition of the skill, certification or a combination of one or the other with apprenticeships.

- ✓ Research and development as it relates to industrial expansion
- ✓ Software testing
- ✓ Software optimization
- ✓ IT training
- ✓ Business Management and recording keeping for medical group management
- ✓ Resin and nano particle handling and manufacturing
- ✓ Manufacturing of composites and polymers
- ✓ CAD for additive manufacturing/3D printing
- ✓ Robotics
- ✓ Tradesman

R & D RECRUITMENT - Creating the atmosphere for R & D and industrial growth is important. The activity will help to generate a sustainable employment base as well as related economic activity and a market that can assist with increasing resident skills and holding and attracting a younger resident population.

There are a few possible methods for pursuing research and development. The first method is to directly recruit individual companies through a coordinated, continual process much like the business/tenant recruitment process. The second method is to form a partnership or consortium. The second is the preferred cost effective method for Wixom.

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

Fundamental to R & D recruitment activity would be the establishment of a “blue ribbon” committee, composed of national or international business interests in the area; New York’s economic development entity and select services; the area’s community college; utility companies; Ulster County; and other interests involved with related or other areas of research at the present time. The area’s community college, other education institution interests, or the City of Kingston could coordinate the activities.

This methodology and partnership is suggested for the following reasons.

- ✓ It can help to form and solidify a partnership between the Federal and State levels of government, with greater contact than now occurs and expanded relationships.
- ✓ It may help to expand local higher education and training opportunities which may help to retain and potentially increase the proportion of residents seeking higher education within the community.
- ✓ It potentially brings in larger interests and dollars.
- ✓ It has staying power. (Often research, if and when it turns into product “development,” takes fifteen or more years.)
- ✓ It is likely to yield high levels of employment for highly skilled individuals in the future, increasing the potential to expand a “permanent younger resident” base and utilize the skills of an educated work force that exists in the area or nearby.
- ✓ The approach has proven to be successful elsewhere.

Centreville, Mich. —

Trine University representatives will speak about their proposed partnership with St. Joseph County at 7 p.m. Thursday at the St. Joseph County Intermediate School District on Shimmel Road.

Community members may attend, along with the target audience of business leaders. It will mark the fourth time Trine leaders have visited St. Joseph County in recent weeks to promote a financial partnership. Trine is a private university in Angola, Ind. Thursday’s discussion is expected to explore the benefits to St. Joseph County economically and to local manufacturers and businesses.

The following actions should be taken.

- ✓ Form the consortium and decide upon roles.
- ✓ Identify entities, including national and international universities and corporations that can play a critical role and should be sought. Included in this process would be research to identify the appropriate parties, and discussions with existing business operators to identify potential partners of which they are aware or with which they do business.
- ✓ Develop specifics of a marketing plan.
- ✓ Prepare marketing materials.
- ✓ Develop an “Ambassadors club.”
- ✓ Solicit entities.
- ✓ Follow-up solicitation with direct contact.

The committee might also be involved with the following.

- ✓ License high-potential technologies.
- ✓ Form companies around technologies.
- ✓ Build management teams with executives that possess requisite experience.
- ✓ Assist with market acceleration using specialized tools, people, and infrastructure.

THE REVITALIZATION PLAN FOR KINGSTON'S MIDTOWN AREA

DIRECTED "CROWDFUNDING" - "Crowdfunding" was recently given tentative approval by the Security and Exchange Commission and opens the door for an incentive for entrepreneurship, potential R & D and industrial recruitment in Kingston. The new rules allow investors (in this case Kingston and surrounding area residents, property owners and businesses and other interests) to invest in companies using a "crowdfunding" exchange if they will locate in Midtown. Assuming space in Midtown is available for non-retail activity; small and promising companies (including but not limited to the arts) could be enticed to come to Midtown by providing capital for growth. Not only is capital generated; but expansion costs are lowered from savings associated with decreased need to hire investment bankers and accountants. Working with and through an existing "funding platform," including Kickstarter, Selfstarter, Micro-Ventures, Indiegogo, and Fundable; Kingston could promote the availability of capital generated by local residents and businesses to grow new and fresh ideas and entrepreneurial entities. This would provide a competitive advantage for Midtown.

"Crowdfunding" comes prior to approaching venture capital funders. There are more than 800 online platforms. Many now focus on specific industries. There are two approaches to crowdfunding. One is product production oriented; while the other is simply investor oriented. Campaigns that provide backers with equity in the business instead of products have less short-term delivery pressures. Equity crowdfunding is really simply an extension of raising investment dollars from relatives, friends and other individuals frequently used to launch new businesses.

The concept should be reviewed and explored by Kingston and contact made with a variety of existing platform entities.