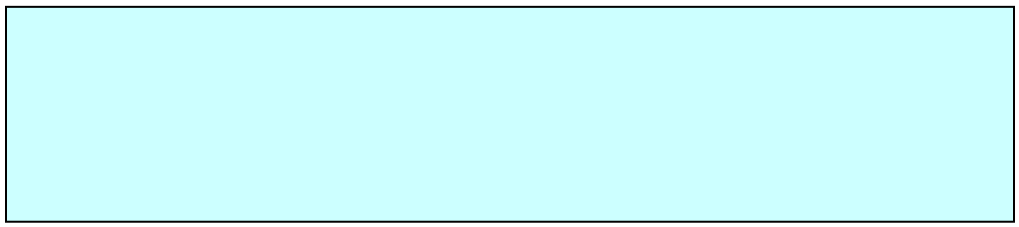
Effects of Alternative Development Scenarios in the Capital District

A discussion document prepared for the Capital District Transportation Committee's Quality Region Taskforce Working Group A



September 1, 2005

Introduction

The future is already here; its just not evenly distributed.
- William Gibson

Scenario planning is intended to prod people to think more broadly and view events with a new perspective.
- Joel Garreau

The Capital District is a region at a critical crossroads. With the specter of increased development pressure, the region is being challenged to assess its ability to accommodate growth in a sustainable manner. The Capital District Transportation Committee (CDTC), as part of the "New Visions" plan update, has been examining the regional transportation/land use issues and policies that directly affect this sustainability. This report is part of that effort. Its primary purpose is to explore the population and land use patterns and implications of four different future development scenarios in the region.

The first development scenario is based on the Capital District Regional Planning Commission's (CDRPC) 2040 regional population projections by Transportation Analysis Zone (TAZ). This scenario is considered the baseline scenario, as it is what the CDRPC staff considers to be the most realistic scenario based on historic population and development trends and existing policies. This scenario will be called "Development Scenario 1 – Status Quo Trend."

The second scenario uses the same regional growth rates as projected by CDRPC under Scenario 1, however the rates are applied to each TAZ in proportion to their existing population, which has the effect of constraining the spread of growth in outlying areas and increasing growth in the existing urbanized areas. This scenario is called "Development Scenario 2 – Concentrated Growth."

The third scenario will explore the regional growth patterns that could result if the region grew at the same rate of growth as projected for the United Stated as a whole from 2000 to 2040. This scenario will distribute the growth within each county based on the proportional share of growth each county is projected to receive under CDRPC's baseline projections. The spatial distribution will also be constrained by density caps and environmental limitations. The general effect of this scenario is an extensive spread of growth into currently undeveloped areas and minimal growth in older urban areas. This scenario will be called " Development Scenario 3 – Trend Hyper-Growth."

The fourth and final scenario, similar to Scenario 3, will explore the regional growth patterns that could result if the region grew at the same rate of growth as projected for the United Stated as a whole from 2000 to 2040. However, instead of distributing the growth within each county proportionate to CDRPC's baseline projections, the growth in each TAZ would be scaled in proportion to the overall regional rates of projected growth. The distribution of growth would be constrained by environmental factors; however there

would be no density caps. The general effect of this scenario is a large amount of the regional growth would be concentrated, at higher densities, in the already developed and the newly developed areas within the region. This scenario will be called “Development Scenario 4 – Concentrated Hyper-Growth.”

In addition, there are a number of trends taking shape in the U.S., which may be considered potential harbingers of future conditions that will affect land use patterns. These trends may already be taking place in some parts of the country and may eventually see more widespread manifestation in the Capital District. There are also several global trends that have the potential to greatly shape land use patterns in the future. These trends will be discussed following the discussion of the alternative scenarios

Capital District Population Projections & Trends

“Development Scenario 1 – Status Quo Trend”

In May of 2004, CDRPC completed revising its population and household projections for each of the Region's municipalities in ten-year increments to the year 2040. The Population Projection Model implemented involved two distinct stages: a quantitative first stage using a log-linear regression projection model on historic Census data and U.S. Census Bureau estimates, and a qualitative second stage using non-quantitative judgments of the likelihood and extent of future population change within particular jurisdictions.

The Log-Linear model - so-called because of its straight-line form when plotted on graph paper that has a logarithmic scale for X-axis measurements - uses historic population to forecast or project future population based on a logarithmic curve, which is the best general model for natural populations.

Log-Linear models when used for forecasts will project the historic rate of change of the actual data into the future at a steadily declining rate (i.e., historic growth or decline will continue, but at a lesser rate). Log-linear models are an excellent basis for population forecasts because they project average historic rates of change into the future in a manner consistent with the average changes in natural populations. While short-term population data will often exhibit some variety of a saw-tooth pattern when charted, long-term population data usually follow a log-linear trend.

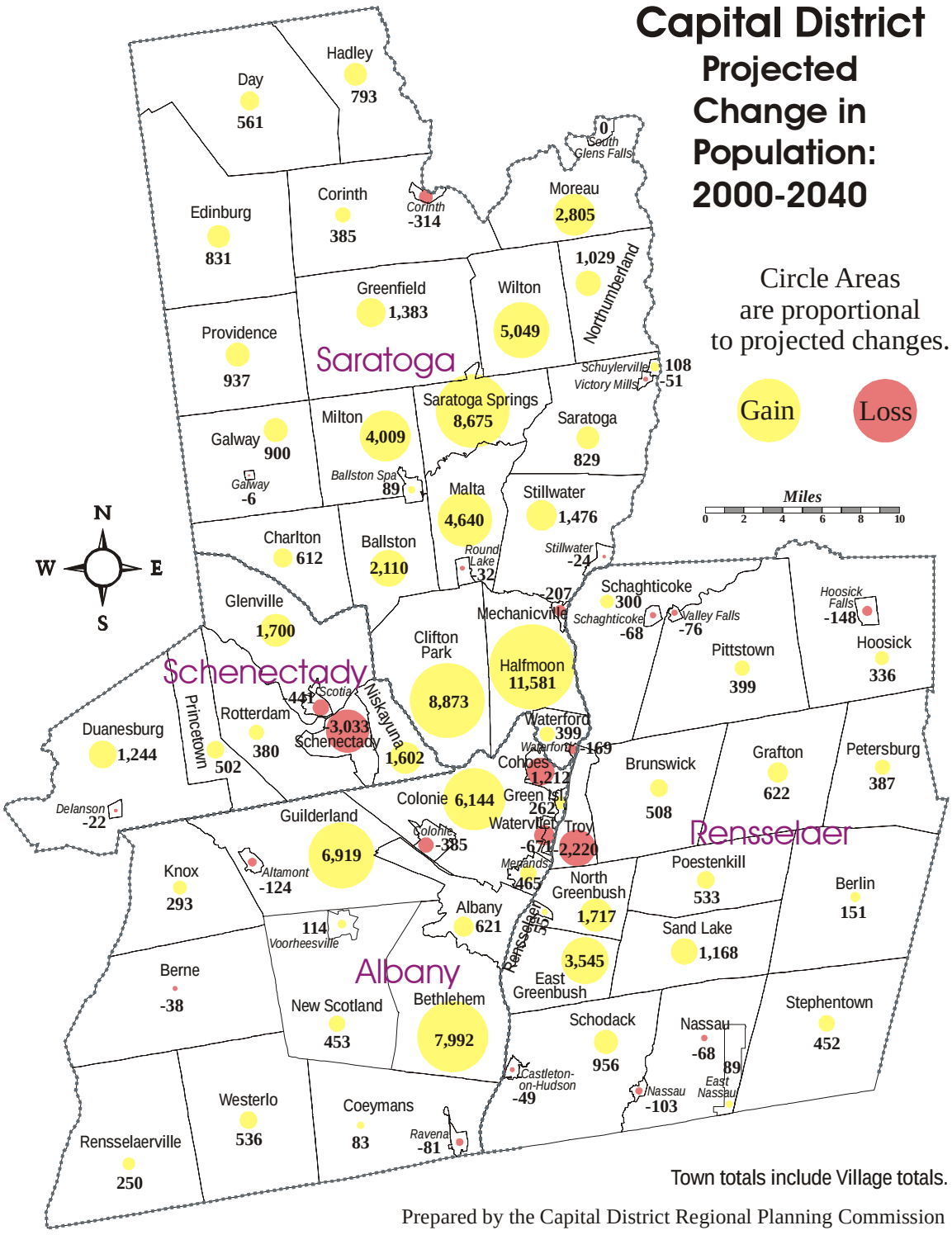
Historic data by minor civil division (MCD) for the Region were fitted to individual log-linear models, and the results proportionally reduced or increased to force the sum of a county's MCDs to equal the county total.

The projections derived from the Log-Linear Model provided a basis from which to further analyze the forces that affect population change in each minor civil division. There are many historic trends other than simple population which may give an indication of the direction and extent of future population change, including, but not limited to, average persons per household, persons in group quarters, building permit issuances, new home and apartment unit construction, immigration and emigration patterns, journey-to-work data, and labor force data. In addition, there may be new development opportunities or constraints for particular jurisdictions embodied in zoning and subdivision regulations, environmental regulations, economic development programs, and capital budgets for transportation facilities and water and sewer service extensions, to name a few. This information was taken into account in consultation with county and municipal planners and the projections derived from the Log-Linear Model were adjusted accordingly.

CDRPC projects a net gain of 90,538 persons and 59,898 households by 2040. The map, “Projected Change in Population: 2000-2040,” shows this projected net population growth by minor civil division. This would bring the total population of the region by 2040 to 884,831 persons and the total households to 378,153.

CDRPC then developed a set of population projections for the Region's 925 Traffic Analysis Zones. The initial TAZ projections were based on a distribution of projected MCD populations to Traffic Analysis Zones based on 1990 and 2000 historic distributions of TAZ populations within each municipality.

Modifications were made to individual TAZ’s based on the best available TAZ data, including, historic and existing growth pressure, environmental constraints, available land, available or likely available public infrastructure, existing zoning, existing planning policies, average persons per household and persons in group quarters.


Capital District
Projected Change in Population: 2000-2040
Circle Areas are proportional to projected changes.
Gain
Loss
Miles
0 2 4 6 8 10
N
W
E
S
Hadley 793
Day 561
Edinburg 831
Corinth 385
Corinth -314
South Glens Falls 0
Moreau 2,805
Northumberland 1,029
Greenfield 1,383
Wilton 5,049
Providence 937
Saratoga
Schuylerville 108
Victory Mills -51
Saratoga Springs 8,675
Saratoga 829
Galway 900
Galway -6
Milton 4,009
Ballston Spa 89
Malta 4,640
Stillwater 1,476
Stillwater -24
Charlton 612
Ballston 2,110
Round Lake -32
Glenville 1,700
Schenectady
Clifton Park 8,873
Mechanicville 207
Halfmoon 11,581
Schaghticoke 300
Schaghticoke -68
Valley Falls -76
Hoosick Falls -148
Pittstown 399
Hoosick 336
Scotia -441
Niskayuna 1,602
Rotterdam 380
Schenectady -3,033
Princetown 502
Duanesburg 1,244
Waterford 399
Waterford -169
Cohoes -1,212
Brunswick 508
Grafton 622
Petersburg 387
Delanson -22
Colonie 6,144
Green Isl. 262
Watervliet -671
Troy -2,220
Rensselaer
Guilderland 6,919
Colonie -385
Menands 465
Knox 293
Altamont -124
Poestenkill 533
Berlin 151
North Greenbush 1,717
Albany 621
Rensselaer 375
114
Voorheesville
Sand Lake 1,168
Albany
3,545
East Greenbush
Berne -38
New Scotland 453
Bethlehem 7,992
Schodack 956
Nassau -68
89
East Nassau
Stephentown 452
Castleton-on-Hudson -49
Nassau -103
Westerlo 536
Coeymans 83
Ravena -81
Rensselaerville 250
Town totals include Village totals.
Prepared by the Capital District Regional Planning Commission

Spatial Distribution of Status Quo Trend

The resulting TAZ projections are shown on the "Development Scenario 1 – Status Quo Trend" map. This "dot density" map shows the distribution of the new population growth projected from 2000 to 2040 by TAZ (90,538 persons). One dot on the map equals 50 new persons. Areas without dots are either projected not to grow, or could be projected to loose population.

The "Development Scenario 1 – Status Quo Trend" map, along with the "Projected Change in Population: 2000-2040," represents the most likely future population growth scenario of those considered in this report. It is what is projected to occur based on historical trends and future expectations including development policies presently in place.

The most salient characteristics of the distribution of growth projected in the Status Quo Trend are:

- Of a total projected population growth of 90,538 persons, 65% will be located in Saratoga County (58,850); 24% in Albany County (21,729); 9% in Rensselaer County (8,148); and 2% in Schenectady County (1,810);

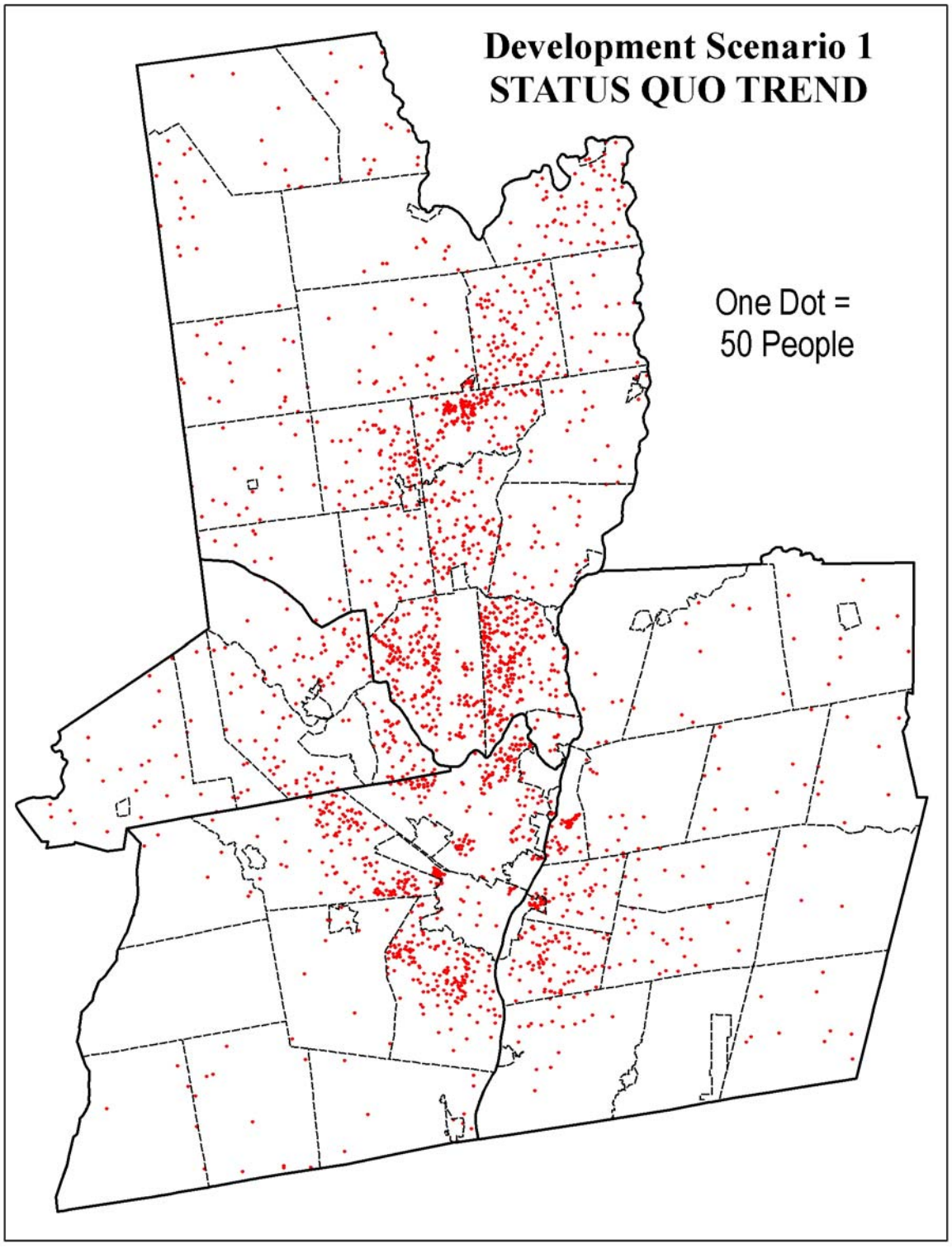
- New development in Albany County will be primarily focused in Bethlehem, Guilderland and Colonie;

- New development in Rensselaer County will be primarily focused in East and North Greenbush, with some spread into Sand Lake;

- Schenectady County will grow the least of the four counties, with moderate growth in Niskayuna, Glenville, Princetown, Duanesburg and the western part of Rotterdam.

- The eastern, older parts of Rotterdam adjacent to the City of Schenectady show a loss of population;

- Saratoga County will experience the most growth of the four counties, with particularly large amounts of growth in Halfmoon, Clifton Park, Malta, Milton, Wilton, and the city of Saratoga Springs. The towns of Ballston, Stillwater and Moreau will experience comparatively moderate growth, though high by historic regional standards;


Development Scenario 1
STATUS QUO TREND
One Dot =
50 People

- The cities of Schenectady, Troy, Mechanicville, Cohoes, and Watervliet will continue to lose population, while the cities of Albany and Rensselaer will see little new population growth;

- The top ten municipalities in terms of net projected increase in population from 2000 to 2040 are: Halfmoon (11,581), Clifton Park (8,873), Saratoga Springs (8,675), Bethlehem (7,992), Guilderland (6,919), Colonie (6,144), Wilton (5,049), Malta (4,640), Milton (4,009), and East Greenbush (3,545). (Note: The net projected increase in the towns does not include any villages that may be located within the town).

Land Consumption
The average suburban residential development density in the Capital District in 2000 was approximately two persons per acre. This is derived by taking the urbanized area of the region (according to the U.S. census definition) and removing the high-density city and village areas, and then calculating the persons per acre of the remaining urbanized area.

According to CDRPC's population projections, 90 percent of the projected population growth (81,097 persons) will take place in the suburban and rural areas of the region. If we assume that future suburban development will take place at an average density of 2 persons per acre, then approximately ***40,549 acres*** *of land would be* ***developed*** *under the status quo trend.*

The distribution of new persons is based on historic population and land development trends. In order to better understand the issues associated with the status quo trend, in addition to potential issues associated with the other scenarios to be explored, it will be necessary to summarize the region's historic development trends, and the resulting conditions and issues currently facing the region.

Historic Perspective on Status Quo Trend

Regional Population Growth

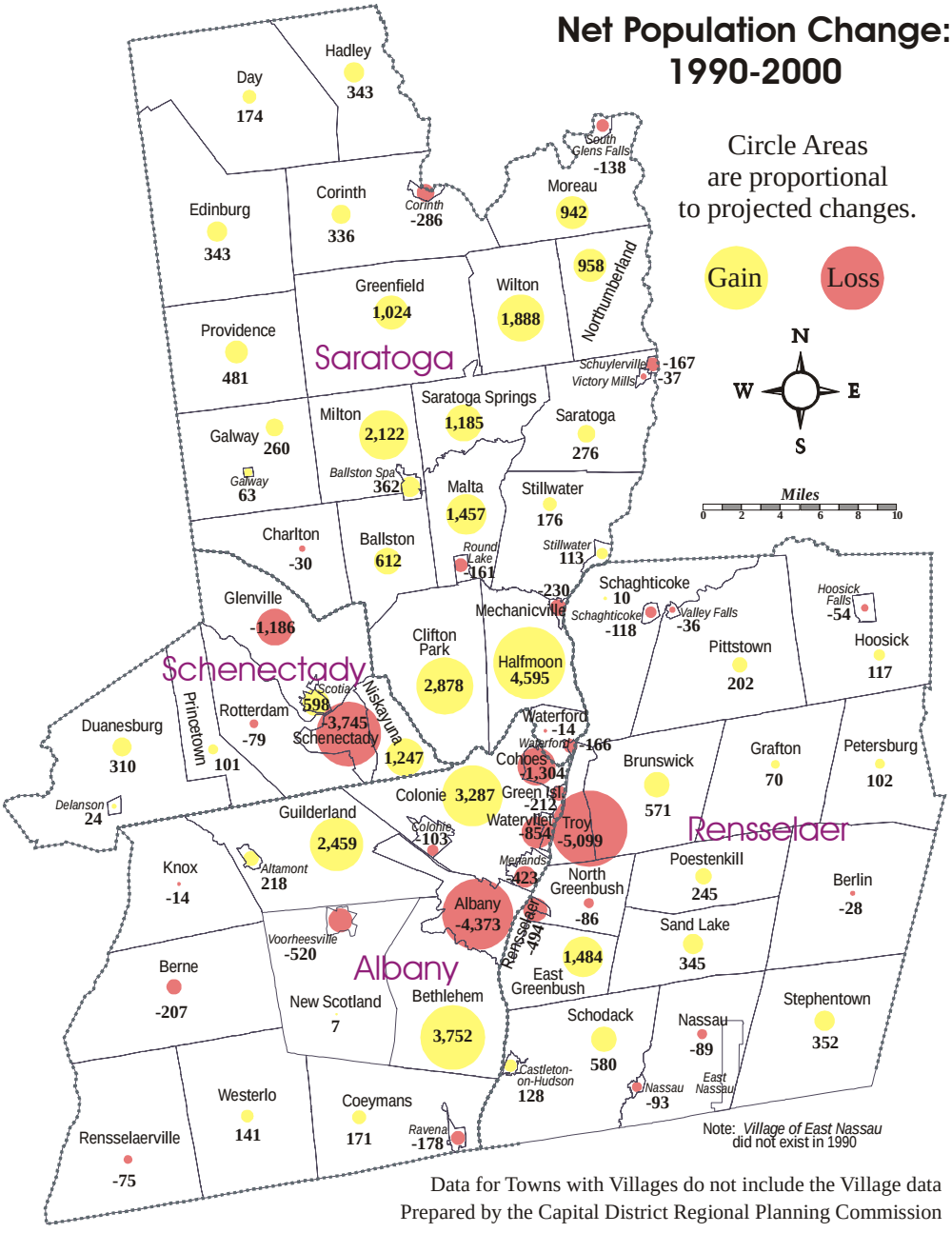
From 1950 to 2000, Capital District population grew from 589,359 persons to 794,293 persons, a net increase of 204,934 persons or 35%.

During this same period, the fastest growing county of the region's four counties was Saratoga, which grew from 74,869 persons in 1950 to 200,635 persons in 2000, a net increase of 125,766 persons or 168 %. Since 1950, Saratoga County has accounted for 61 percent of the region's population growth. During this period, Albany County's population increased by 23% (55,179 persons); Rensselaer County's population increased by 15% (19,931 persons); and Schenectady County's population increased by 3% (4,058 persons).

Between 1980 to 2000, Saratoga County's population increased by 31% (46,876 persons); Albany County's population increased by 3% (8,656 new persons); Rensselaer County's population increased by .4% (572 new persons); and Schenectady County's population *decreased* by 2.3% (3,391 loss).

During the last census period – 1990 to 2000 – the Capital District population grew by 16,500 persons, or 2.1%. The U.S. population increased by 13% during this same period. The map "Net Population Change: 1990-2000" shows the distribution of growth by MCD during this period.

Capital District Municipalities

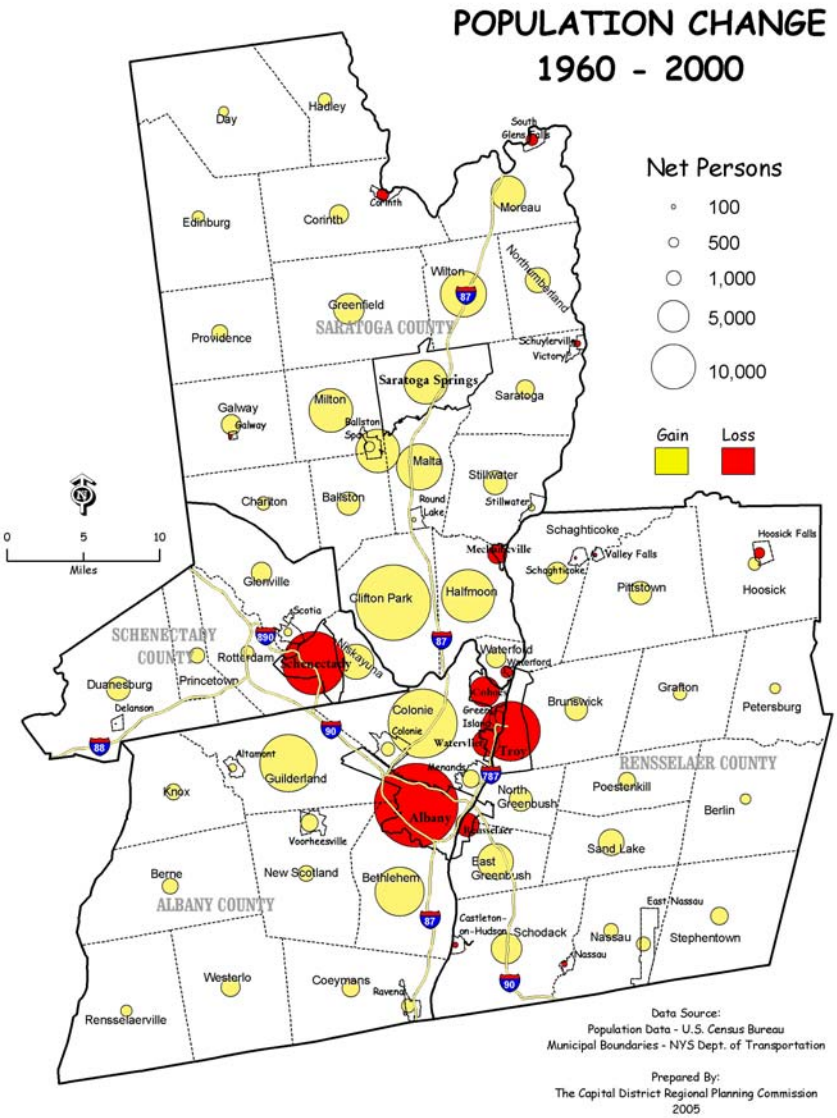


Data for Towns with Villages do not include the Village data
Prepared by the Capital District Regional Planning Commission

Urban Decline

One of the most significant features of the past half-century is the decline in population of the region's cities. From 1950 to 2000, the city of Albany declined 29% from 134,995 persons to 95,658. The city of Schenectady declined by 33%, from 91,785 persons to 61,821. The city of Troy declined by 32%, from 72,311 to 49,170. The cities of Cohoes, Watervliet, Mechanicville and Rensselaer have lost 30% of their combined population since 1950. The only city to experience population gain in the region was Saratoga Springs, which grew by 69% since 1950, from 15,473 persons to 26,186.

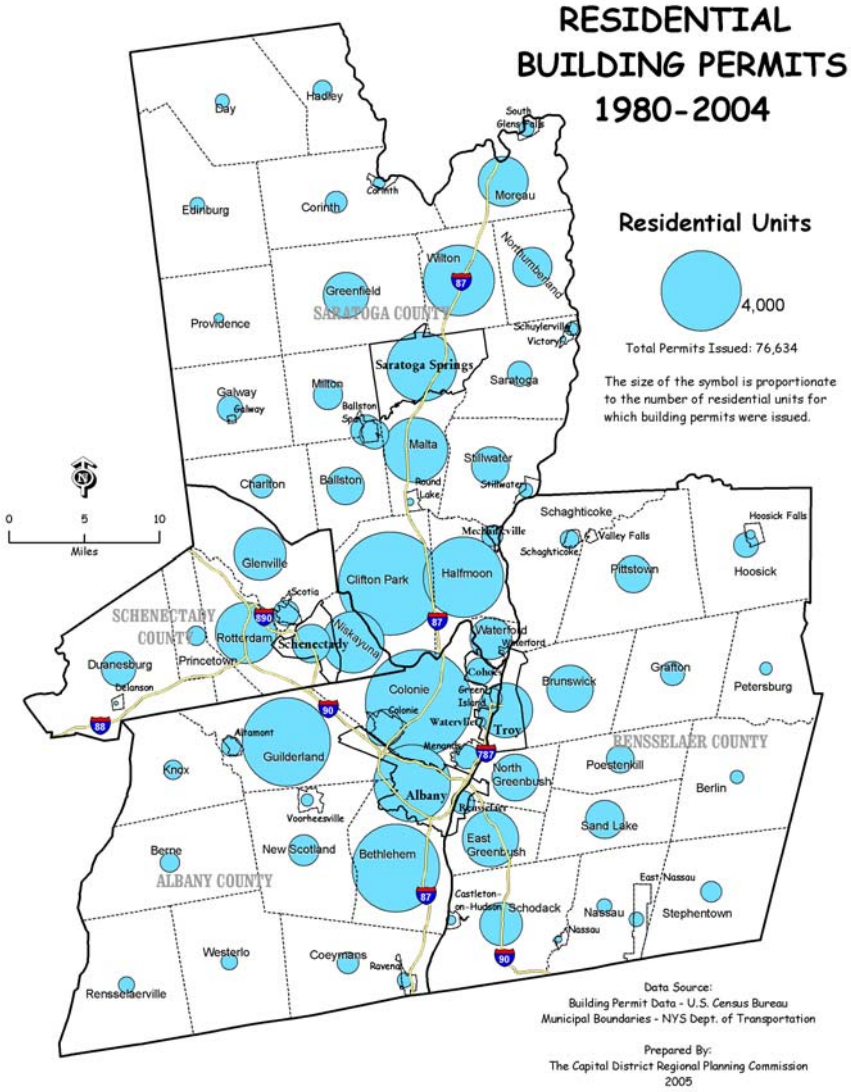
The following map shows the net regional population growth from 1960 to 2000.

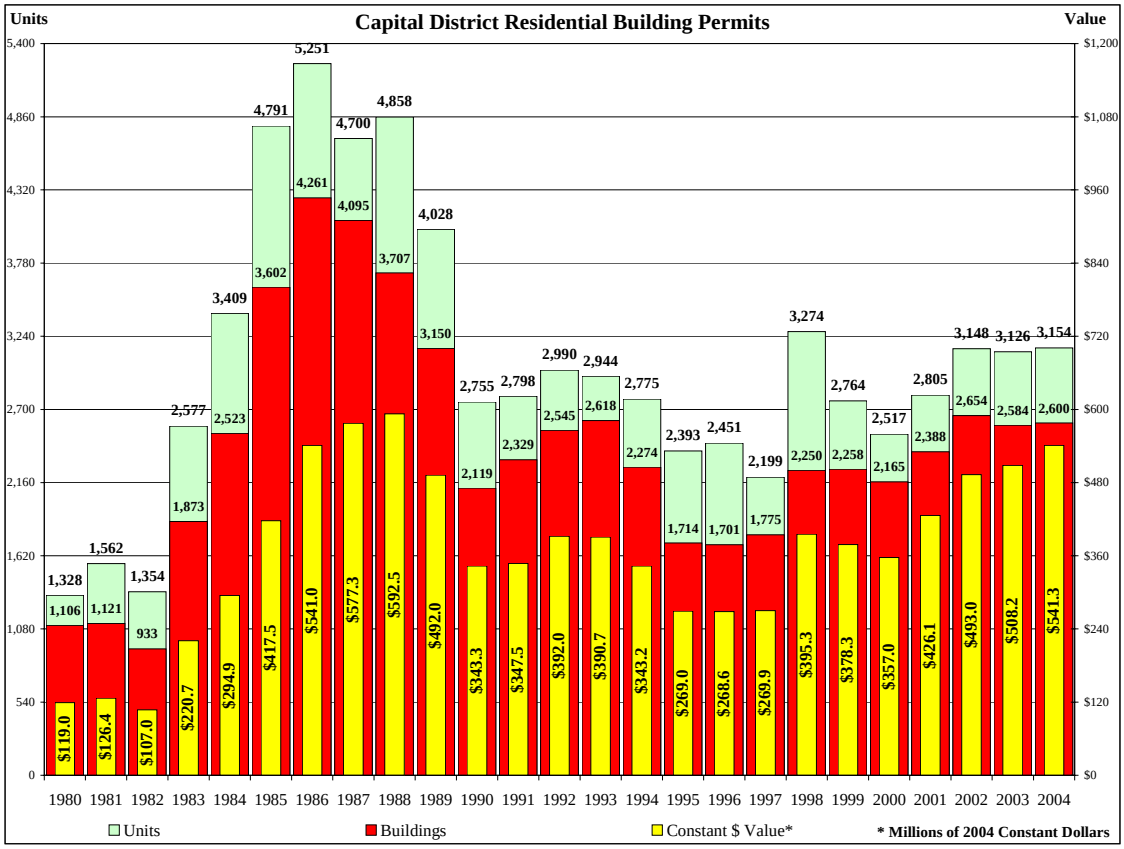


Suburban and Rural Growth

In 1950, 71 percent of the region's residents lived in cities or villages. By the year 2000, that proportion had dropped to 42 percent.

Historic building permit activity further underscores this trend. Since 1980, 81 percent of the region's residential building permits (per unit) were issued outside of the cities and villages. The map "Residential Building Permits: 1980-2004" shows the regional pattern and relative quantity of building permits by municipality. Overall, the market for new housing in the Region, as evidenced by residential building permit issuances, has been strong and stable over the last few years, and has shown significant increases in constant dollar value.





Within the Capital District, suburban and rural land is being developed at a faster rate than overall population increases. A study of land development undertaken by CDRPC in 1999, which analyzed satellite imagery from 1986 and 1997, indicated that during this period approximately 15,000 acres of land were developed on previously undeveloped land - a 15.8 percent increase in land consumption. There was approximately a 3.4 percent increase in population during the same period (~26,210 persons), which means that the region developed land at 4.65 times the rate of population growth during this period. As a result, the ratio of population per developed acre was 1.75 persons per acre of new development. A map of this growth, called "Capital District Suburban Growth 1986-1997" can be viewed at http://cdrpc.org/GrowthPatterns.html.

This trend has also been documented for upstate New York as a whole. A Brookings Institute study titled "Sprawl Without Growth: The Upstate Paradox"[1] analyzed the growth and development trends and population in Upstate New York and found that:

[1] Sprawl Without Growth: The Upstate Paradox, by Rolf Pendall, Brookings Institute Center on Urban and Metropolitan Policy, October 2003.

- *Despite slow population growth, 425,000 acres of Upstate New York were urbanized between 1982 and 1997, resulting in urban sprawl in the form of declining density.* The total amount of urbanized land in Upstate grew by 30 percent between 1982 and 1997, while its population grew by only 2.6 percent, reducing the density of the built environment by 21 percent.
- *Compared with other Upstate regions, Western New York sprawled less between 1982 and 1997, and Central New York sprawled more.* All Upstate regions have falling population density, but Western New York's density dropped only 16 percent between 1982 and 1997. Meanwhile, Central New York—which includes Syracuse, Utica/Rome, and surrounding counties—urbanized over 100,000 acres even though it lost 6,500 residents, resulting in a 32 percent decline in its density.
- *People, jobs, and businesses are leaving cities and villages and moving to towns.* Upstate cities lost over 40,000 households in the 1990s alone, while unincorporated town areas gained over 160,000 households. Businesses have also disappeared from cities while growing in towns.
- *Sprawl hits Upstate cities hard.* City tax bases fell in the 1990s, vacant housing increased, and home ownership slipped. Towns remained comparatively prosperous.

The report states that continued decentralization of people and jobs away from Upstate New York's cities and villages is undermining the economic health and quality of life of the region. The authors argue that State and local leaders need to understand that these trends are not inevitable. Explicit state reforms in fiscal policy, annexation laws, and planning can go a long way toward fostering a better future for Upstate New York.

The Patterns of Suburban Growth

The dominant pattern of suburban growth in the Capital District over the last half-century, much like the rest of the U.S., has overwhelmingly exhibited the following characteristics:

- *Isolated/Unconnected* – Most new suburban residential growth has been built as isolated single-family housing subdivisions dispersed throughout the urban fringe, in many cases at a considerable distance from existing developed areas and employment centers. The dominant street patterns of the new residential developments are curvilinear rather than gridded, and they do not usually connect to adjacent developments (if there are any); rather, they more often connect directly to collector roads or highways. This is often the case even when one subdivision is adjacent to another and/or when a retail store is adjacent to a residential development. It is more common to see specific provisions made to *prohibit* interconnections using dead-ends (cul-de-sacs), berms, tree buffers, and fences.

- *Segregated by Use* – Following the prevailing "modern" zoning implemented by many communities over the last half-century, which largely outlawed mixed-land uses, developments are rigidly segregated by use: single-family housing subdivisions are separated from apartments, which are separated from shopping areas, which are separated from offices and employment centers.

- *Land Intensive* – As noted by the Brookings Institute and the CDRPC studies previously cited, land development has been greatly outpacing population growth throughout upstate New York. And the developments themselves, housing, retail, manufacturing and warehousing in particular, take up much more land in both buildings and parking, than their traditional urban predecessors.

- *Auto-dependant* – Developments that are spread out, isolated by design, segregated by use, and land intensive result in auto-dependency: owning and driving a car for almost all trips becomes imperative.

Sprawl development patterns in the U.S. have come under criticism because this pattern of development is more costly to serve with infrastructure than traditional urbanism; is unnecessarily wasteful of land; despoils environmental resources, is socially alienating (separation by class and often race), and is inefficient for mass-transit service. Metropolitan regions that have experienced large amounts of sprawl development have suffered from traffic gridlock, air pollution, water quality degradation, urban fiscal distress, and concentrated poverty, and therefore, a decline in regional quality of life.

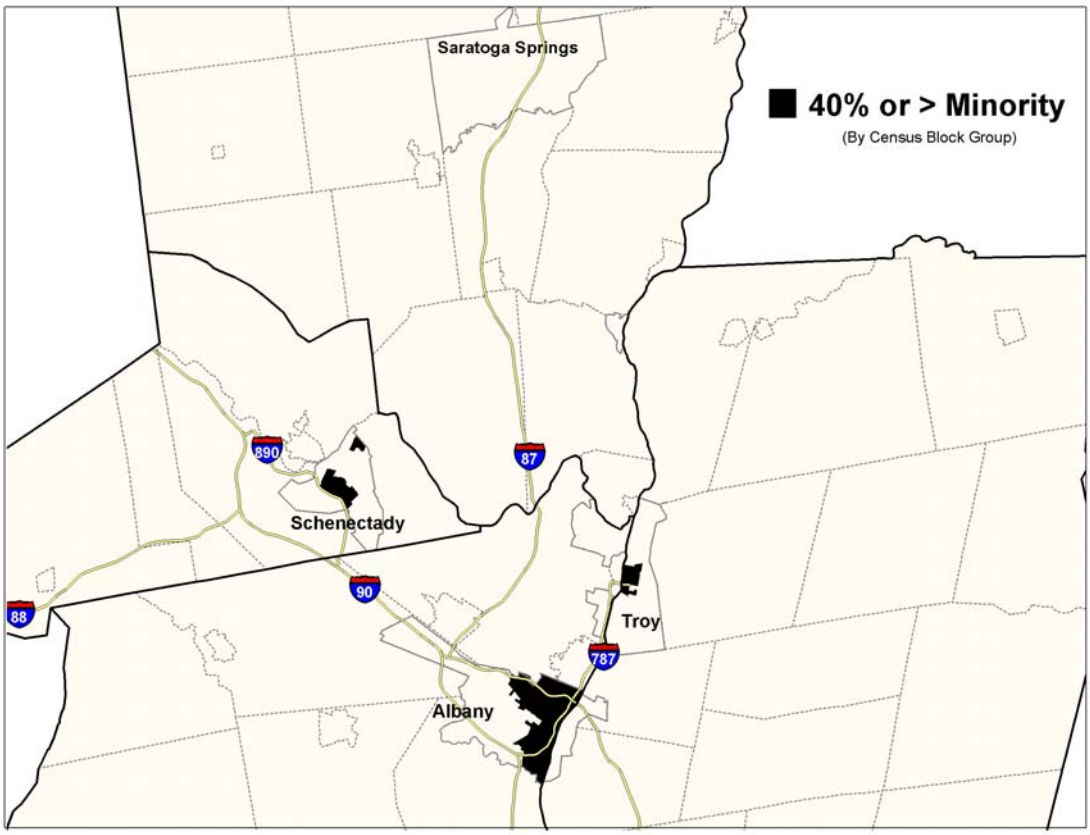
Demographic Patterns

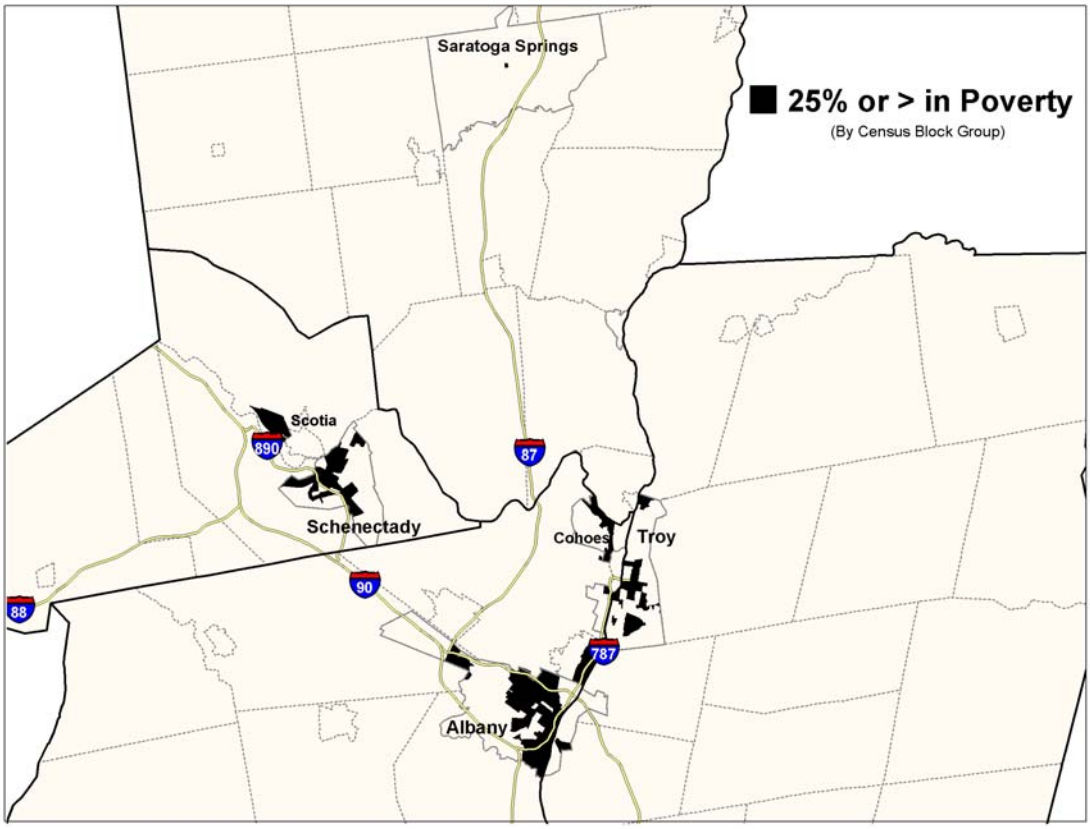
The half-century urban exodus of a large portion of the region's middle and upper income residents has resulted in a regional pattern of distinct racial and income segregation. The region's minority population, particularly blacks and Hispanics, are highly concentrated within the region's central cities. The percent minority population within the region is12.4%, however within the cities of Albany, Schenectady and Troy combined the minority population is 31%. While the central cities of Albany, Schenectady and Troy contain only 26% of the Capital District's overall population, these three cities contain 64.4% of the region's minority population. 79.4% of the region's black population resided in these three central cities, with 52% in the city of Albany.

The concentration of black and Hispanic residents in the region's cities is increasing at a higher rate than the overall regional increase in minority residents. And the exodus of whites from the central cities is increasing faster than the overall population decline. From 1990 to 2000, the city of Albany's overall population dropped by 4,373 persons, yet the city lost 16,041 (-22%) white residents during the same period. A total of 35,526 white non-Hispanics (17.5%) left the four central cities from 1990 to 2000, while minority residents these cities increased by 17,129 persons (49%).

Moreover, these same areas of racial segregation closely correspond with the region's highest concentrations of poverty, and with the region's oldest housing, highest concentration of vacant housing, and highest percentage of rental housing. For example, the overall poverty rate of the Capital District is 9%, while the combined poverty rate within the cities of Albany, Schenectady and Troy is 22%. The region's owner occupied housing rate is 64%; within the city of Albany it is 38%, in the city of Schenectady it is

45%, and in Troy it is 40%. See maps below and http://cdrpc.org/GIS/2K-Thematic-Maps.html for more detailed regional thematic maps.





Household Size and Make up

Since 1970 there have been significant changes in household size and composition in the region that has and will continue to impact development patterns and alternative housing types. In 1979, there were 3.04 persons per household in the Capital Region. By the year 2000, the persons per household declined to 2.40. Though following the same trend, the reduction in the number of persons per household in the region has been much more dramatic than experienced at the national and state levels. In New York State, there were 3.01 persons per household in 1970; by the year 2000 there were 2.62. At the national level, in 1970, there were 3.14 persons per household; by the year 2000, the ratio was nearly comparable to the State, at 2.61 persons per household. CDRPC projects that the persons per household in the region will continue to decline during the next 40 years, though at a more modest rate, to 2.25 persons by 2040.

Another critical factor is household composition. In 1970, 78.4% of the households in the Capital Region were considered family households, that is, households that had two or more related persons living in the same housing unit. The remaining 21.6% consisted of non-family households, which include either persons living alone or two or more unrelated persons living in the same housing unit. By the year 2000, only 63.4% of the households in the Capital Region were identified as family households. Disaggregating

the Family Households by Type further reinforces the diversification of the family unit that has occurred during the last thirty years in the region. In 1970, almost one out of every two family households (47.8%) were Married couple with children under 18. By 2000, only one out of every three (33.6%) was a married couple with children. At the same time, the percent of married couples without children increased from 38.5% to 42.5% and the percent of family households composed of a single parent nearly tripled going from 5.4% in 1970 to 14.2% of all family households by 2000. The number of family households in these types of arrangements is further magnified by the fact that during the last 30 years there was an increase in the total number of family households in the region going from 180,600 in 1970 to 201,800 in 2000.

Economic Changes

Demographic Change and Structural Unemployment

The region's central cities and other older communities were hard hit by demographic and economic shifts accompanying the suburbanization process of the post-World War II period, and the economic recessions of the past two decades. The changing demographic patterns in central cities have resulted in an older, less skilled, and relatively more immobile labor force. Combined with a steadily diminishing supply of well-paying blue-collar jobs, these changes have created serious long-term unemployment problems, especially among minority youth. The cities of Albany, Troy, and Schenectady have all exhibited significantly higher unemployment rates than those of their corresponding counties. The Central City unemployment rates run 2-3% higher than the respective county levels.

Industrial Restructuring

While the economy of the Capital District Region has been and remains reasonably well diversified, certain important industries have continued to decline beyond the last economic downturn and into the present one as part of an overall restructuring of the region's economic base. During the last dozen years, the four-county area lost almost 12,000 manufacturing jobs. The continued loss of manufacturing employment has been concentrated in the County of Schenectady, while increases in private non-manufacturing employment were predominantly found in Albany, Saratoga, and Rensselaer counties. In examining the shifts in manufacturing establishment totals by average numbers of employees per establishment, it is obvious that most losses in employment can be attributed to the contraction of large facilities.

Another aspect of regional economic restructuring can be found in examining pay scales across industries. Though expansions in other sectors such as construction, services, wholesale and retail trade, and finance have usually outweighed the employment losses in the manufacturing sector, the majority of the jobs in these sectors pay significantly less than manufacturing.

Shifting employment from manufacturing industries towards service, retail, and construction sectors, along with associated differences in salary have added a strong causal element for a growing labor force. Disparities among pay scales, coupled with increases in the cost of living (e.g., increasing housing prices, health care costs, etc.) have, in part, fueled a significant increase in labor force participation, especially among women (although many women, by choice, want to be part of the labor force). The region's female labor force expanded at twice the rate of the labor force as a whole between 1990 and 2000.

Technological Change and Manufacturing Obsolescence
Since the economy of the Northeast developed earlier than most other regional economies in the nation, key elements of its physical and economic infrastructure were developed around an industrial, transportation, communications, and energy technology different from that preferred or considered necessary today. In many ways, the old technological base of the Northeast has been deemed unsuitable for the needs of modern business and industry. The result has been a marked shift in industrial location away from the Northeast, with the Capital District Region being no exception

Changes in preference for product types and material resources have also caused a continuing obsolescence of machinery at established plants. Such changes, coupled with prospects of relatively lower wage scales, less stringent regulations, newer infrastructure, and locational incentives in other regions, have provided common opportunities for plant closings and relocations.

In addition, many of the industries, which had historically maintained a strong regional presence due to past locational advantages, have matured and declined because of a deteriorating comparative advantage in production relative to other countries. In a number of cases, market saturation and an ultimate deterioration in demand for certain durable manufactured products have resulted in the decline of those manufacturing sectors. The ripple effects throughout the economy have been amplified by deteriorating backward and forward linkages to what were once considered "core" industries: a negative multiplier effect.

On the upside, a rebirth in manufacturing activity has been taking place with the increasing formation of smaller establishments. Unfortunately, many smaller manufacturers find it more difficult to keep up with research and development costs, technological change, capital investment, and labor training. Moreover, they often fall prey to larger firms in terms of heavy competition or contractual dependency. The relative flexibility and improved organization of smaller establishments cannot outweigh the economies of scale for transportation costs and production when high technology, labor training, and capital cannot be acquired as easily.

Recent Economic Trends
After the 1990-91 recession, the Capital Region economy experienced a recovery in 1992 and 1993 and a strong growth phase in 1994, with all-time high employment and low unemployment. But in 1995, regional employment was down, unemployment up, and the

region entered into a local recession, which persisted through 1996. In 1997, the regional economy entered a modest recovery phase, which strengthened in 1998, and in 1999 the transition was made to a growth phase, which has continued to the present time, with slight interruptions in 2001 (national recession running from March through November) and 2004. In the monthly employment reports over the past few years, the Capital Region has typically had the lowest unemployment rate in New York State, and the highest rate of job growth. The Capital Region has the highest labor force participation rate of any region in New York State.

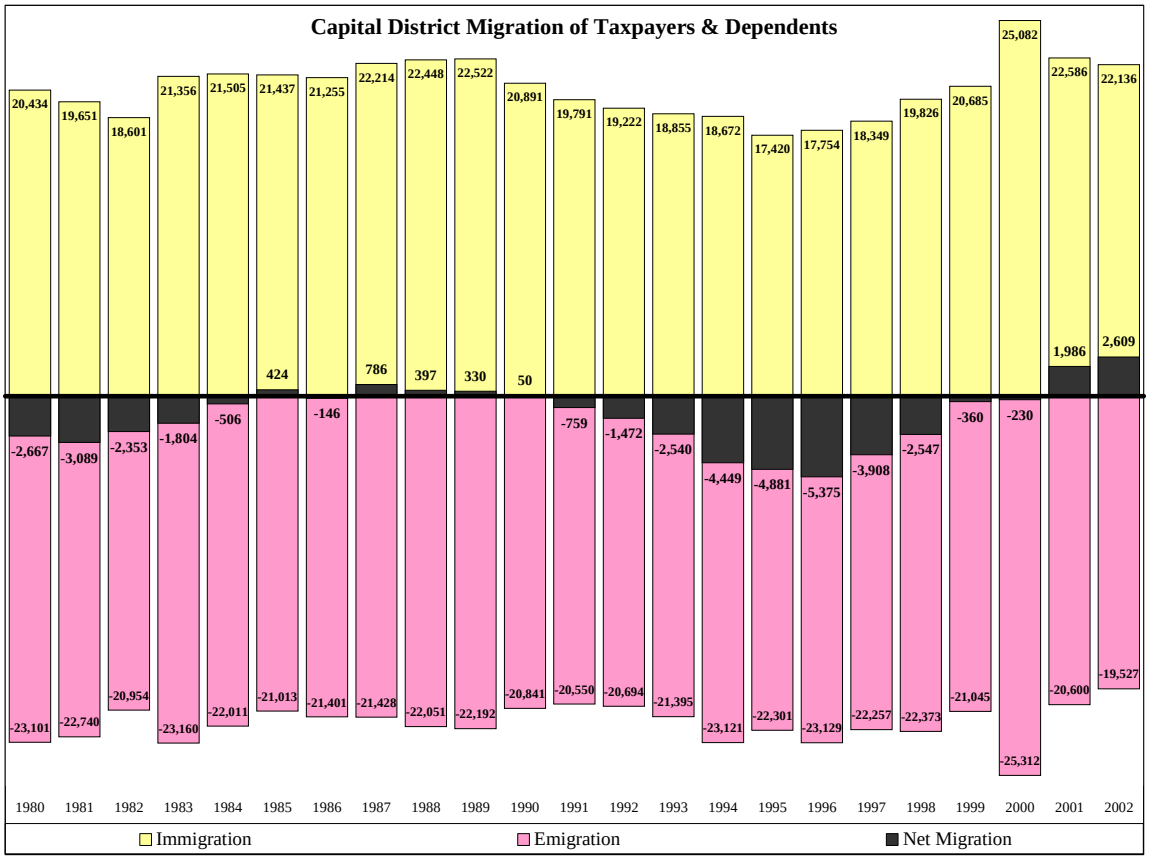
The Capital Region has a highly educated population and workforce, with 86.2% graduating from high school and 29.6% with a Bachelor's degree, second only to the Nassau-Suffolk Region in New York State.

The Capital Region as the seat of State government has by far the largest proportion of government workers in New York State. While on rare occasions this is a disadvantage — in 1995 and 1996 the reduction in the state's workforce was primarily responsible for a local recession — generally the high number and proportion of government workers acts as a very significant stabilizing force for the region's economy. While the Capital District economy will never achieve the highs of, say, a booming Silicon Valley economy, it will also be spared the corresponding lows of periodic bust cycles.

Migration

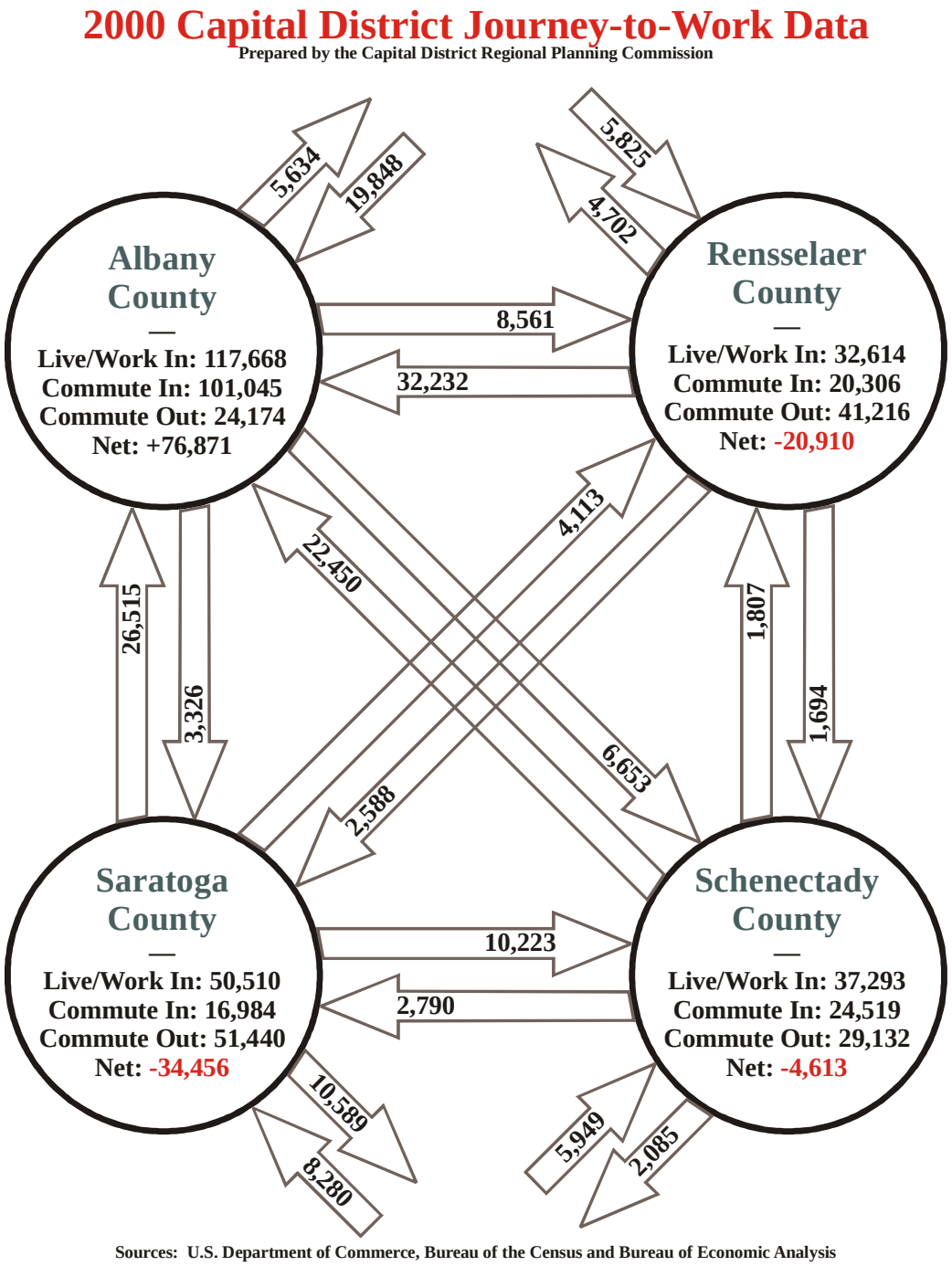
After ten consecutive years of net out-migration of taxpayers and their dependents (based on IRS data), the region has shown significant and increasing net in-migration over the past couple of years. Together with a net natural (births less deaths) increase in population of about 1,700 per year, the region is on track to post a 5.5% total increase in population between 2000 and 2010.

Although the region experienced a significant in-migration of taxpayers and their dependents for 2001 and 2002, the out-migration of aggregate constant-dollar income continued, indicating that, on average, the households moving into the region had smaller incomes than those moving out.



Journey to Work

The following graphic portrays the region's county-to-county commuting patterns.



Albany County continues to be the principal place of work for the region's residents. With only 36.9% of the Region's employed residents, it provides 54.6% of the Region's jobs.

Loss of Farmland

The land-intensive nature of suburban development puts pressure on environmentally sensitive areas, wildlife resources, forest resources, and existing open space. Pressure on farmland along the urban fringe has been particularly great. According the USDA Census of Agriculture, the Capital District has lost 21,357 acres of farmland from 1987 to 2002, which is an 8% loss. Much of this land has been converted to new housing developments, and much of this lost farmland is prime – having the most productive characteristics for farming. However, the land characteristics that make for productive farmland - well drained soils on relatively level terrain – are some of the same characteristics that make this land well suited for development.

Suburban development pressure has served to expedite the demise of struggling farms along the urban fringe since the temptation to sell to a developer is often too great to resist given the financial challenges, in particular to the region's small dairy farms. Suburban development often creates addition financial pressure on already struggling farmers. For example, new development often creates the need for additional municipal services, which in turn causes an increase in the property tax rate. Farmland in areas under development pressure often becomes assessed and taxed based on its development potential rather than its potential for farming. Additional pressure also comes in the way of conflicts between new suburban residents and existing farms. Many suburban residents are unprepared for the smells, sounds and activities that are normal occurrences in rural farming areas, although right-to-farm laws protect these activities. Farmland located within an agricultural district provides farmers with protections and safeguards from these outside intrusions. Landowners may also be eligible for agricultural assessments for farmland (in and outside agricultural districts) that reduces their property tax burden since the value of the land, for tax purposes, is based on its use and not market potential.

Development Scenarios

The following growth scenarios are "what-if" conceptual explorations that will allow Capital District policy makers to consider the regional growth implications of three alternative development scenarios. These are not predictions or recommendations; only what-if scenarios that evaluate the various effects of low, concentrated growth; high, dispersed growth; and high, concentrated growth. The following section will quantify the growth of the different development scenarios.

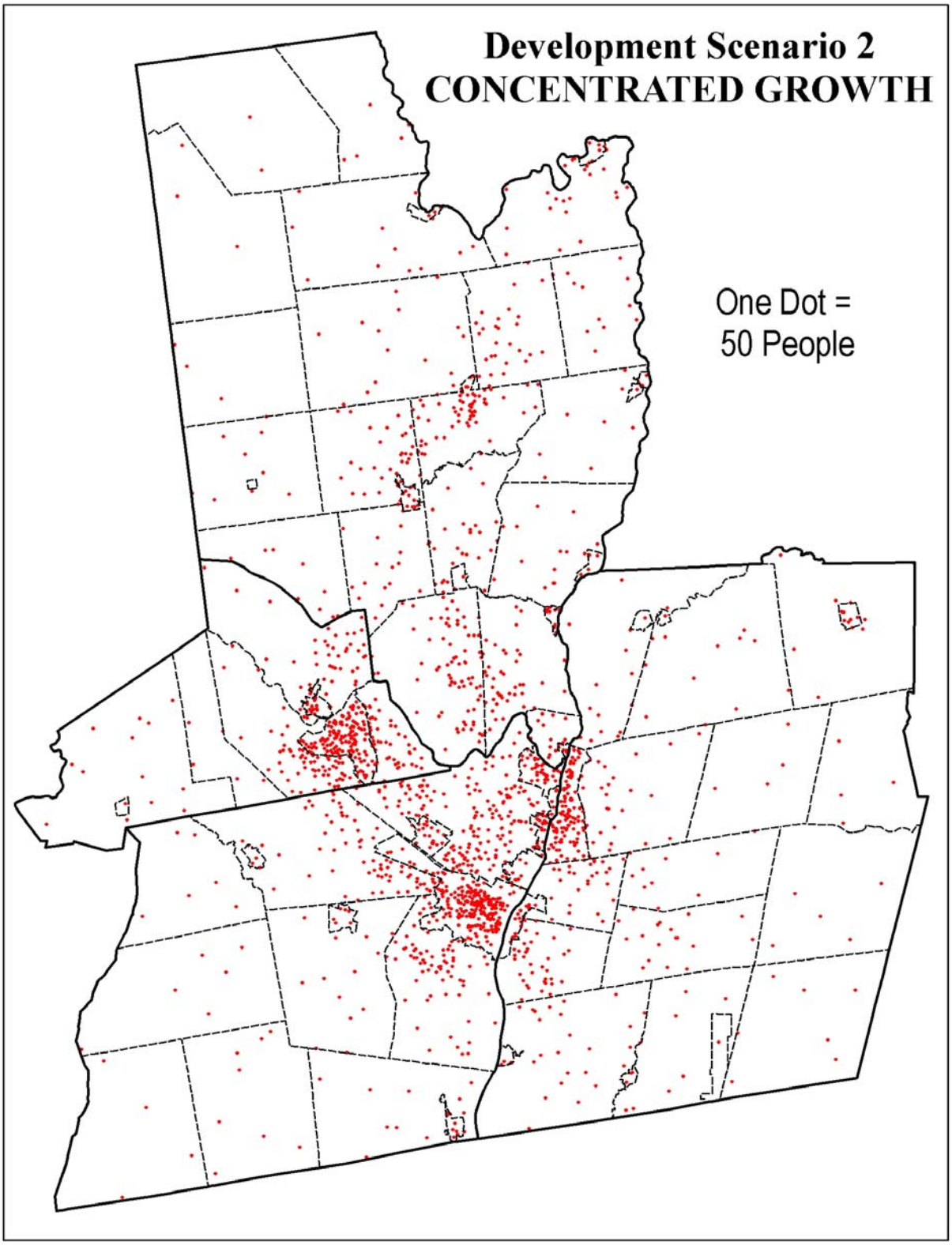
"Development Scenario 2 – Concentrated Growth"

A special set of TAZ projections has been prepared for this scenario, which apply the regional growth rates derived from CDRPC's original MCD Projections for each growth year to the 2000 Census populations of each TAZ. These are the same regional growth rates as projected under Scenario 1, with the same net population gain of 90,538 persons projected by 2040, however the rates are applied to each TAZ in proportion to their existing population. The growth rates applied sequentially were: for 2000-2010, 3.934%; for 2010-2020, 2.6684%; for 2020-2030, 2.2315%; and for 2030-2040, 2.0597%. This projection methodology has the effect of directing most of the growth, at higher densities, to existing urbanized areas.

The resulting distribution is shown on the "Development Scenario 2 – Concentrated Growth" map.

The characteristics of the distribution of growth projected in the Concentrated Growth scenario are as follows (Note: town totals do not include villages):

- 76% of the projected population growth would be concentrated in the region's existing urbanized area;
- 26%of the projected growth would be in Albany, Schenectady, and Troy;
- 41% of the projected growth would be in the region's cities and villages;
- The top ten municipalities in terms of net projected new growth from 2000 to 2040 would be: Albany (10,674); Colonie (7,649); Schenectady (7,002); Troy (5,576); Clifton Park (3,736); Guilderland (3,659); Bethlehem (3,548); Glenville (2,291); Halfmoon (2,093); East Greenbush (1,764);
- Total population by 2040: Albany (104,975); Colonie (75,081); Schenectady (68,823); Troy (54,746).


Development Scenario 2
CONCENTRATED GROWTH
One Dot =
50 People

Land Consumption
If 41% of the regional growth (36,743 persons) were to take place in the region's existing cities and villages at the urban density of 10 persons per acre (which is the current density, for example, of the city of Schenectady), and if we assume that the remaining growth (53,795 persons) would occur at traditional suburban densities of 2 persons per acre, then approximately **26,898 acres** of previously undeveloped land would be **developed** under this scenario versus 40,549 developed acres projected under the status quo trend.

Moreover, if policies were implemented to achieve a modest increase in the development density – to 4 persons per acre – for half of the population growth that would occur outside the existing cities and villages (26,898 people), then an additional 6,724 acres of land could be saved from development, which, overall amounts to 20,375 acres of undeveloped land preserved compared to the status quo trend.

"Development Scenario 3 – Trend Hyper-Growth"

Using population projections for the United States to the year 2040, Capital Region Target Populations were developed for each projection year, which represented the application of the growth rates expected for the U.S. to the Region's 2000 Census population. The growth rates applied sequentially were: for 2000-2010, 9.50%; for 2010-2020, 8.70%; for 2020-2030, 8.27%; and for 2030-2040, 7.80%.

Each TAZ was assigned to a classification from 1 to 4, where 1 represents highly developed urban areas (population density of 3000 persons or greater per sq. mile by census block group); 2 represents TAZ's within the existing census-designated "urbanized area" boundary (except those classified as 1); 3 represents TAZ's outside the urbanized area boundary but adjacent to TAZ's classified 3; and 4 represents the remaining rural areas.

A number of TAZs in the #2 classification were identified which appeared to be fully developed, based on existing land use, and their average density was calculated as the average number of (2000 Census) persons per developable acre (i.e., land area less government-owed land and land undevelopable because of environmental constraints). The resulting average density, 2.84 persons per developable acre, was established as a development constraint for this scenario.

Developable land within each TAZ was calculated based on the existing area of each TAZ minus environmental constraints areas. These constraints were determined by developing a composite map of the following: state regulated wetlands, 100-year flood zones, slopes greater than 15 percent, hydrography (streams, rivers, lakes, ponds, etc.), and public preserves and parks. Once this composite constraints map was created, these areas were removed from each TAZ.

Using CDRPC's county-level population projections, the distribution of county population change as a percent of total Regional population change was derived for each projection year, and those distributions applied to the Regional Target Population changes to produce County target populations for each projection year.
For each projection year, a factor was derived which, when applied equally to CDRPC's County TAZ projections for that projection year, yielded a TAZ sum equal to the County target population for that projection year. For any TAZ in any projection year, if the product of the County factor and CDRPC's projection exceeded the density constraint, the assigned population projection was determined to be the higher of 1) the original CDRPC projection or 2) the population implied by the density constraint (i.e., 2.84 × the TAZs developable area).

There is a total population growth of 309,190 persons and 154,948 households projected under this Growth Scenario 3. This would bring the total population in the region by 2040 to 1,103,483 persons and the total households to 473,203. The resulting distribution is shown on the "Development Scenario 3 – Trend Hyper-Growth" map.

The characteristics of the distribution of growth projected in the Trend Hyper-Growth scenario are as follows:

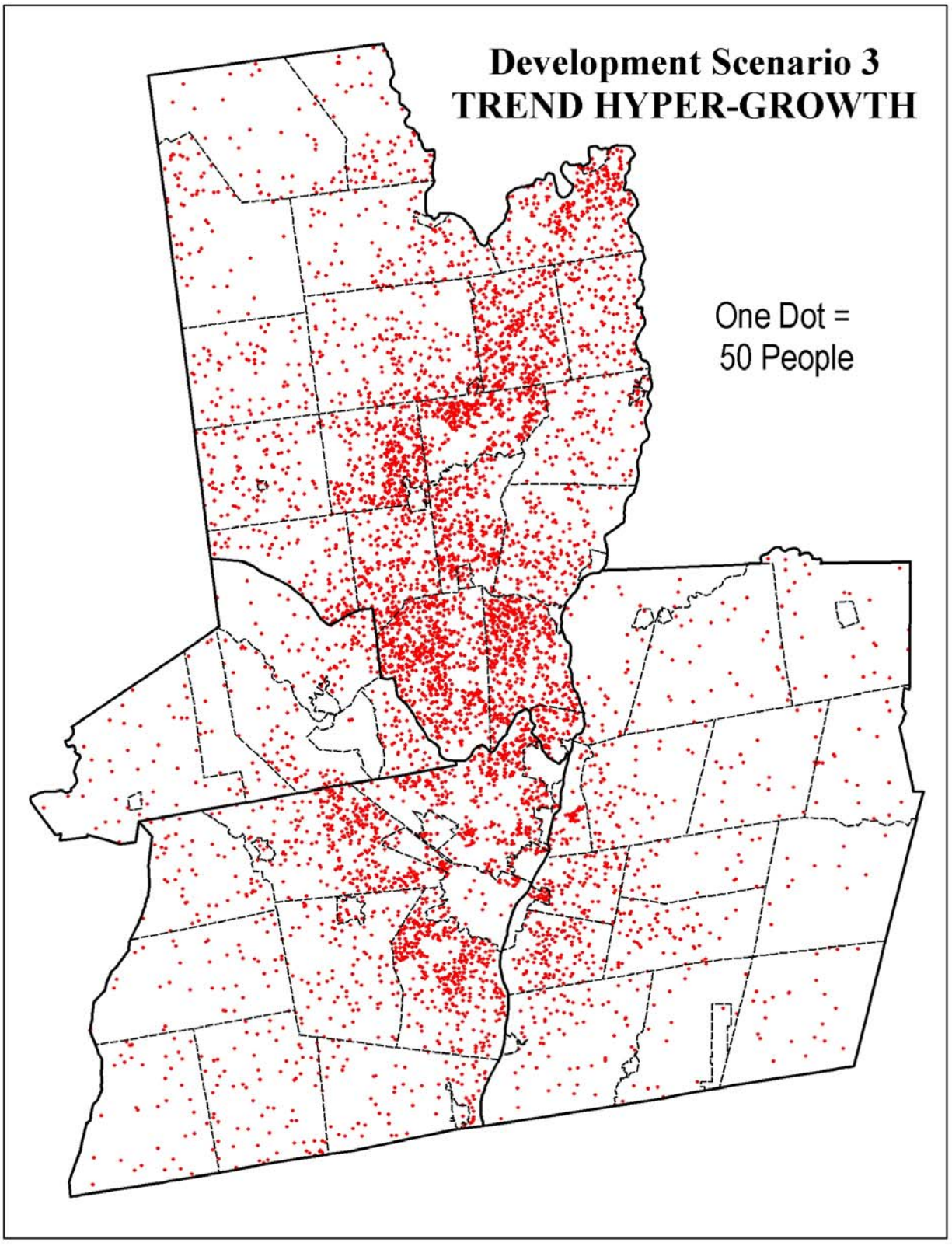
- Out of a total projected population growth of 309,190 persons, 199,540 persons would be located in Saratoga County (65%); 74,109 in Albany County (24%); 28,534 in Rensselaer County (9%); and 7,007 in Schenectady County (2%);

- 95.2% of the future population growth would be located outside the region's existing cities and villages;

- The cities of Albany, Schenectady and Troy would *decline* in population by a combined total of 2,226 persons;

- 33% of the projected growth would occur in the region's existing urbanized area.

- The top ten municipalities in terms of net projected new growth from 2000 to 2040 are: Clifton Park (29,026), Halfmoon (21,497), Bethlehem (19,255), Colonie (16,928), Wilton (16,786), Milton (16,357), Guilderland (16,107), Saratoga Springs (15,889), Malta (14,435), and Moreau (13,489).


Development Scenario 3
TREND HYPER-GROWTH
One Dot =
50 People

Land Consumption
As with the previous scenarios, if 4.8% of the regional growth (14,815 persons) were to take place in the existing urban areas (cities and villages) at the density of 10 persons per acre, and 76,667 persons were to live at suburban densities of 2.84 persons per acre (this number is the total persons in urban level 2 built-out TAZ's that met the density cap discussed above) and 2 persons per acre for the remainder of the suburban and rural TAZ's, then approximately ***146,855 acres*** *of previously undeveloped land would be* ***developed*** *under this scenario*

"Development Scenario 4 – Concentrated Hyper-Growth"

The fourth and final scenario, similar to Scenario 3, is based on Capital Region Target Populations that were developed for each projection year based on the growth rates expected for the U.S. population as whole between 2000 and 2040. However, what is different from Scenario 3 is that instead of distributing the growth within each county proportionate to CDRPC's baseline projections, the growth in each TAZ would be scaled in proportion to the overall regional rates of projected growth.

The distribution of growth would be constrained by environmental factors; however there would be no density caps.

The general effect of this scenario is a large amount of the regional growth would be concentrated, in some instances at higher densities, in the already developed and the newly developed areas within the region.

The resulting distribution is shown on the "Development Scenario 4 – Concentrated Growth Hyper Growth" map.

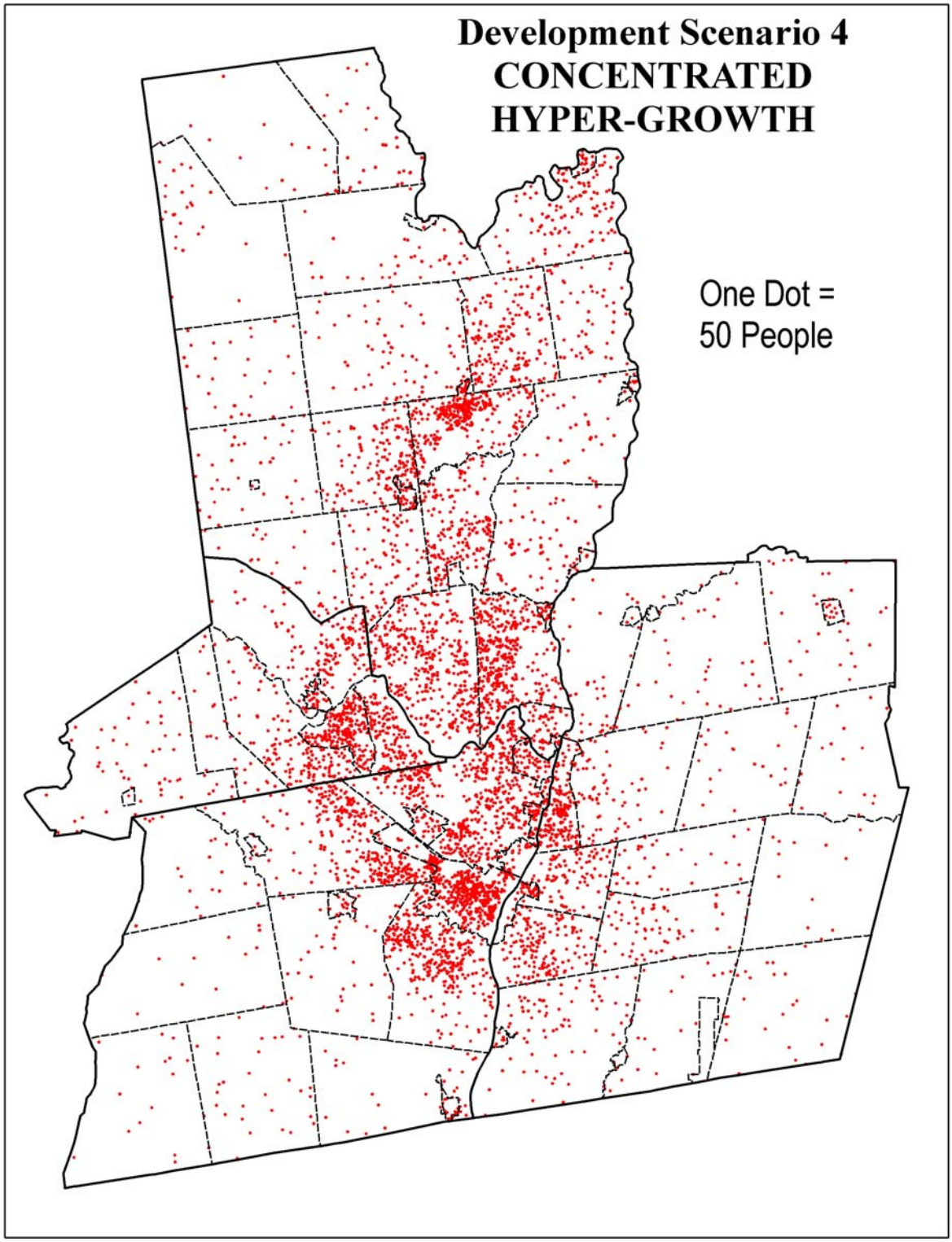
The characteristics of the distribution of growth projected in the Concentrated Hyper-Growth scenario are as follows:

- Out of a total projected population growth of 309,190 persons, 121,506 persons would be located in Saratoga County (39%); 99,766 in Albany County (32%); 48,720 in Rensselaer County (16%); and 39,198 in Schenectady County (13%);

- 64% of the projected population growth would be concentrated in the region's existing urbanized area;

- 15% of the population growth would be located in the cities of Albany, Schenectady and Troy (44,942 persons);

- 26% of the population growth would be located in the region's cities and villages (81,656);



- The top ten municipalities in terms of net projected new growth from 2000 to 2040 are: Colonie (24,226); Albany (24,071); Clifton Park (19,362); Halfmoon (18,865); Bethlehem (17,704); Saratoga Springs (17,2914); Guilderland (16,769); Schenectady (11,488); Wilton (9,394); Troy (9,383).

- Total population by 2040: Albany (118,372); Colonie – w/o villages (91,658); Schenectady (73,309); Troy (58,553).

Land Consumption

Quantifying land consumption under this scenario is problematic because the method used to create this distribution involved scaling up areas where development already exists, without any caps in density, in proportion to U.S. growth rates. One of the results of this method is that in suburban areas where residential growth has already occurred in relatively high quantities, such as Delmar or Latham, densities would increase beyond the "suburban" type densities that currently exist. In addition, growth would be minimal and at very low densities in areas that have so far not experienced much residential growth. The rate of land consumption per person would be much harder to generalize in terms of "existing cities and villages" and "suburban" since the development densities of new development within suburban towns would not be nearly as uniform as it has historically.

Therefore, as a rough guide to land consumption under Scenario 4, the "Urban Level 2" overall density was calculated for 2040. Urban Level 2 includes the TAZ's within the existing census urbanized area boundary, excluding the Level 1 TAZ's (which are the highest density areas in the cities and villages). The 2040 overall population density of the Level 2 TAZ's under this scenario is 2.93 persons per acre. If this figure is used as an approximation of land consumption per person outside the existing cities and villages, and 227,534 persons are projected to live outside these areas in 2040 under this scenario, then approximately ***77,657 acres*** of land will be ***developed*** under Scenario 4, which is 69,518 acres less developed land than what is projected to occur under Scenario 3.

Population Growth and Land Development

	Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**
Population	90,538	90,538	309,190	309,190
Acres of Land Developed	40,549	26,898	146,855	77,657

Interpreting the Development Scenarios

Interpreting the future is inherently an inexact task. Nevertheless, planning is partly about anticipating future outcomes. Therefore, with due caution, we will attempt to identify what these growth scenarios could mean for the future development of the Capital District if they were to occur, and to consider the kinds of policies and conditions that would bring about these outcomes.

Development Scenario 2 – Concentrated Growth

Whereas only 10 percent of regional growth is projected to occur within existing cities and villages under the Status Quo Trend, 41 percent of the region's future growth would be located in the existing cities and villages under Scenario 2. However, while the population of the region's traditional central cities (Albany, Schenectady, and Troy) would see population increases, they would still be well below historic population peeks. The town of Colonie, on the other hand, would see it population increase to an historic high of 75,081 (not including the villages). The town would see some areas redeveloped at slightly higher densities than previously experienced, but most areas within the region's other suburban towns would not see an increase in population density under this scenario.

When we compare the land developed in the Statues Quo Trend (Scenario 1) to the land developed in Scenario 2, the result would be the conservation of approximately 20,375 acres of land that would otherwise be developed under the Status Quo Trend. There would be a number of benefits associated with this scenario. These include: a reduction in the pressure to develop farmland; the preservation of wetlands and wildlife habitats; a reduction in the impact of erosion, sedimentation and stormwater runoff; the preservation of natural and scenic landscapes, and the likely reduction in the overall cost of providing services.

Since the majority of the projected development takes place within the existing urbanized area, and 41 percent of the projected growth occurs in existing cities and villages, very little new public investment to expand infrastructure will be needed. Though investments may be needed to maintain and improve existing infrastructure, the expanded tax base resulting from the new growth would help provide the means for funding these improvements.

Moreover, with the addition of 36,743 people in the region's cities and villages, the issue of vacant and decaying buildings would be greatly ameliorated due to the residential and business improvements and investments made by the new population. There will also be additional opportunities for "brownfield" and "greyfield" redevelopment.

Small business development would be aided by the infusion of new customers and an enhanced urban vibrancy would result from the close proximity of many more people within walking distances of services, employment, and mass transit, thereby helping to improve regional air quality and reduce dependence on fossil fuels.

Major land use policy changes at the local and regional levels would be necessary in order for this scenario to materialize. For example, rural and semi-rural communities on the fringe of the region's urbanized area would have to strictly limit expansion into their communities. Land use tools such as large-lot zoning, farmland preservation zones, open spaces purchases and easements, and transfer of development rights programs would need to be implemented. In addition, in order to maintain their rural character, these outlying communities would have to limit or disallow the creation or extension of municipal services such as public sewer and water systems into their municipalities. In order to achieve the concentrated growth depicted in this scenario, communities would also need to endorse the adoption of growth boundaries. These boundaries would need to be designed at both the local and regional scale so as to concentrate rural growth in villages and hamlets and major regional growth within the already urbanized areas.

Under this scenario, some suburban and rural communities that are presently seeking to grow in population and tax base would not be able to achieve these goals until the existing urbanized areas are more highly developed and until there is high enough regional population growth to create a demand for additional outward expansion. Landowners and developers in outlying areas that are hoping to capitalize on the development of green-field properties would likely see their anticipated profits reduced or eliminated if the demand for green-fields is attenuated.

Development Scenario 3 – Trend Hyper-Growth

Under Growth Scenario 3 – Trend Hyper-Growth, the region would develop in a low-density, centrifugal pattern, similar to the pattern of regional development over the last half-century, however at a much accelerated growth rate. Whereas the regional population is projected by CDRPC to increase by 90,538 persons by 2040 (Scenario 1 – Status Quo Trend), under Scenario 3, the regional population would increase by 309,190 during this same period. This amount of population growth at low-densities could result in nearly 150,000 additional acres of land being developed. This represents an approximate doubling of the overall developed land area of the region, with 65% of this development occurring in Saratoga County, 24% in Albany County, and only 11% of the growth occurring in Schenectady and Rensselaer Counties combined.

In order to realize this large population increase, there would need to be major successes in the various economic development efforts to attract and nurture new employers. For a population increase of 309,190 persons, approximately 160,000 new jobs would have to be created and/or attracted to the region (this figure is based on region's current population to labor force ratio). This amount of new job activity would attract an in

migration of population from other parts of the country, and, depending on U.S. immigration policies, would attract new immigrants from outside the U.S.

The regional development patterns under Scenario 3 would be characterized by growth patterns similar to those that have occurred in the region in recent decades. This includes growth that is in large part low-density (2 persons/acre on average) single-family housing developments in separate, disconnected subdivisions. This separation will be the result of land use policies that continue to prohibit (or don't require) interconnected streets and require buffers between subdivisions. The road patterns will be predominately dendritic, with dead-end cul-de-sac streets discharging at collector roads. Moreover, similar to trends seen in other parts of the country, a portion of the new residential developments will likely be private gated communities governed by "common-interest development" (CID) regulations. The predominance of gates will further add to the isolated character of these areas. The CID fees for private road and amenity maintenance within these developments will be viewed as duplicative of municipal taxes, creating new pressures for succession from the wider municipal community outside the gates.

Because of the isolated, disconnected nature of these residential areas, most of these subdivisions will lack both sidewalks and destinations/services within walking distance. Recreational paths will be created, but they won't serve as viable alternatives for commuting.

The overall pattern of suburban land use will continue to be represented by developments mostly segregated by use, as required by zoning codes. Commercial big-box retail will be located along high-traffic highway corridors. These commercial landscapes will be dominated by signs, parking and buildings made of low-grade materials with short-term life cycles and commercially standardized designs.

Much of the job activity will be located in industrial/office parks scattered throughout the region.

Many senior citizens, who will become an increasingly large percentage of the total population, will likely downsize their single-family suburban homes for segregated senior housing, rather than relocate to the region's cities, which will be viewed as dangerous and crime-ridden.

The overall development pattern described above will require most people to own and use a car to go about their daily business. The spread-out pattern of development will make mass-transit services impractical for much of the population. This auto-dependence will lead to a dysfunctional transportation system, where highway gridlock and extended peak hour(s) daily traffic congestion become the norm. The demand for highway/road building and maintenance will most likely outstrip the public's ability to fund these improvements.

Regional natural resources and working landscapes will be degraded by the nearly 150,000 acres of land consumption. Prime farmland will be lost to subdivisions. There

will be increasing pressure to develop environmentally sensitive lands that may impact water quality and increase downstream flooding due to the additional impervious surfaces.

With the developed land area of the region nearly doubling, the overall character of the region will change dramatically. Many areas that are currently rural will be developed creating the need to invest in new public infrastructure such as sewer, water and roads, and expanding municipal services such as police and fire protection, municipal planning, code enforcement, property assessment, and other services.

Ninety-five percent of the population growth under Scenario 3 will occur outside the region's cities and villages. The cities of Albany, Schenectady and Troy would decline in population by a combined total of 2,226 persons, which would be a continuation of a trend that began in the late 1940's. Although the rate of urban decline will slow significantly compared to the past fifty years, the lack of overall population growth will also mean a general lack of tax resources to maintain city services. Sewer, water and road systems will fall into a state of major disrepair with more frequent breakdowns as maintenance and upgrades are continually deferred due to lack of municipal resources. State and federal subsidies will become more difficult to secure as cities compete for help with expanding suburban areas where most of the new growth is occurring (and where a majority of voters would now reside).

The general abandonment of decaying and/or obsolete structures in cities will continue, and the abandonment of structures in the inner-ring suburbs will become more common place.

Similar to today, but to a higher degree, the cities will continue to be the home of the majority of the region's poorest residents and residents needing social services.

The cities will also continue to be the home for the region's minority residents, particularly blacks and Hispanics, which will make up the majority of theses cities populations. Although this will create opportunities for minority political power within these areas, this situation will most likely exacerbate regional political divisions between these cities and the outlying areas.

Development Scenario 4 – Concentrated Hyper-Growth

Compared to Scenario 3 – Trend Hyper-Growth, where the cities of Albany, Schenectady and Troy would decline in population by a combined total of 2,226 persons, under Scenario 4 – Concentrated Hyper-Growth, these three cities would increase in population by a total of 44,942 persons. And as with the urban concentration in Scenario 2, the population of the cities and villages would see significant population increases, though they would still be below historic population peeks.

What would also be significantly different from the concentrated growth of Scenario 2, is that there would be a much higher concentration of growth under Scenario 4 – Concentrated Hyper-Growth, which would result in much higher population increases to the more-developed suburban towns such as Colonie, Clifton Park, Guilderland, Bethlehem and Halfmoon. For this high growth to occur in these suburban areas, the growth would have to occur at significantly higher densities than have historically transpired.

In order for this high-density growth to occur, the suburban communities that have low density patterns of development would need to revise their land use regulations to accommodate higher density/mixed-use development alternatives. This could include adopting transect zoning, utilizing official maps to layout public right-of-ways, creating town centers, permitting higher concentrations of town houses and apartments, and providing both pedestrian and mass transit amenities.

In addition, similar to Scenario 2, major land use policy changes at the local and regional levels would be necessary in order for this scenario to materialize. For example, rural and semi-rural communities on the fringe of the region's urbanized area would have to strictly limit expansion into their communities. Land use tools such as large-lot zoning, farmland preservation zones, open spaces purchases and easements, and transfer of development rights programs would need to be implemented. In addition, in order to maintain rural character and limit urbanization, many of these outlying communities would have to limit or disallow the creation or extension of municipal services such as public sewer and water systems into their municipalities. In order to achieve the concentrated growth depicted in this scenario, communities would also need to endorse the adoption of growth boundaries. These boundaries would need to be designed at both the local and regional scale so as to concentrate rural growth in villages and hamlets and major regional growth within the already urbanized areas. However, these growth boundaries, if not sufficiently large enough to accommodate the anticipated increase in growth thereby limiting the supply of developable land, will drive up the demand for land in the urbanized area, which will escalate regional land and housing prices.

Similar to Scenario 2, with the infusion of 81,656 people back into the region's cities and villages, the issue of vacant and decaying buildings would be greatly ameliorated and there would be opportunities for "brownfield" and "greyfield" redevelopment. Moreover, the added tax base would provide the revenue necessary to fund maintenance and upgrades to public sewer, water and road systems.

A factor that would differ from Scenario 2 is that because of the much higher population growth under Scenario 4, at much higher densities, growth in the more developed suburban towns would require new public investments in sewer, water and road infrastructure, as well as, the expansion of municipal service delivery capabilities such as police and fire protection, municipal planning, code enforcement, property assessment, and other municipal services.

Compared to the spread of land development under Scenario 3 – Trend Hyper-Growth, where nearly 150,000 acres of land would be developed, Scenario 4 – Concentrated Hyper-Growth, with growth concentrated in already built-up areas, would result in the development of 77,657 acres. And as with the concentration in Scenario 2, this would help minimize the pressure to develop farmland; help preserve wetlands and wildlife habitats; reduce the impact of erosion, sedimentation and stormwater runoff; and help preserve natural and scenic landscapes.

Small business development would be aided by the infusion of new customers and an enhanced urban vibrancy would result from the close proximity of many more people within walking distances of services, employment, and mass transit, thereby helping to improve regional air quality and reduce dependence on fossil fuels.

Even though the majority of the growth in Scenario 4 will be in the existing urbanized area, there will still be a relatively large amount of low-density growth outside the region's existing urban area in municipalities that are largely rural today, which will result in many of the same conditions in these areas describe above for Scenario 3, though of smaller magnitude.

Future Trends and their Potential Affect on Development Patterns

The scenarios described above are partly based on the assumption that many of the same economic, social, and political trends in evidence today will continue, and will condition land use patterns in a similar fashion throughout the next 35 to 40 years. This may or may not be the case. A global war or global economic depression may knock the future course of history off it linearly projected track. In addition, technological inventions may enable paradigm shifts in behavior (and development patterns), as they have in the past, which may be impossible to predict today.

However, there are a number of trends taking shape, which may be considered potential harbingers of future conditions that will affect land use patterns. These trends may already be taking place in some parts of the U.S. and may eventually see more widespread manifestation in the Capital District. There are also several global trends that have the potential to greatly shape land use patterns in the future. Following is a summary of these trends and associated issues.

Demographics

Aging Population

The aging of the population has the potential to alter both the pattern and the politics of land use in the United States. The U.S. population of persons 65 years or older numbered 35.9 million in 2003 (the latest year for which data is available), representing approximately 12% of the U.S. population. The Capital District population of persons 65 or older in 2000 was 110,658 persons, which is 14% of the total population.

By 2030, there will be approximately 71.5 million people 65 and up in the U.S., more than twice their number in 2000. Whereas people 65+ represented approximately 12% of the U.S. population in the year 2000, they are expected to grow to be 20% of the population by 2030. In the Capital District by 2030, there will be approximately 163,464 persons 65+, which will be 19% of the regional population.

The aging of the U.S. population is the result of several related factors. Perhaps one of the greatest achievements of twentieth-century medicine in the U.S. was the raising of life expectancies at birth from 48.3 years for men and 46.3 for women in 1900 to 74.2 for men and 79.9 for women in 2000. And longer life expectancies have been accompanied by declining birth rates in much of the developed world. In the U.S. this decline in fertility rates along with longer life expectancies has shifted the median U.S. age from 19 in 1850 to 34 in the 1990s. It is projected that by 2050, the median U.S. age will be 40 years old.

The “baby boom” generation – the large number of people born in the U.S. from 1946 to 1964 – is also contributing to the growing increase in the elderly population in the US as this group ages. In 2005, baby boomers were between 41 and 59 years old. There are about 76 million boomers in the U.S., representing approximately 29% of the population.

There are several ways in which the aging of the U.S. population may affect regional land use patterns. Traditionally, upon retirement, many seniors have migrated from the Northeast to warmer climates, such as Florida. Many other have become “snowbirds,” living in warmer climate second homes for the winter months. For this second group and for those who live in the region all year long, most will want to continue to live in the same community were they have been living. Many of these seniors will downsize by selling their high maintenance single-family houses and buying into low maintenance (for them) condominiums or senior apartments.

There have been a number of senior housing complexes built in the Capital District in the last twenty years; and there will be many more built in the future to accommodate the growing elderly population. To meet the demand of seniors who wish to continue living in the same community, many of these senior developments have been built in suburban towns. However, many of these developments are isolated from nearby amenities and services, requiring auto or shuttle travel for all trips. These isolated settings tend to reduce the independence of those seniors who could otherwise still walk to services if they were in close proximity.

The question then becomes, are there ways to better integrate senior housing with amenities and services so that complete auto-dependence is avoided? This will be difficult in many suburban settings because of the isolated nature of development patterns. In order to better integrate senior housing, the urbanizing areas will need to become more spatially integrated overall.

A second option will be for seniors to move into older cities where integrated environments already exist. However, the unresolved question at this stage is how most seniors, particularly aging baby boomers, will view cities, even with their many amenities. Will the positive features of cities be great enough for seniors to overcome their other concerns about cities, especially urban crime?

A final observation about an aging population is how seniors will view the political choices related to land use. Will seniors generally support or reject public expenditures for public amenities? And more broadly, will seniors support land use changes that are contrary to the status quo? To the first question, there is some evidence that seniors, many of whom are on fixed incomes, may be adverse to new public expenditures that are viewed as benefits to others but a new tax burden for themselves. As for the support seniors will give to changes in the status quo, such as changes in the way growth is designed and regulated, Professor Francis Fukuyama has suggested that the continuation of a basic paradigm depends not just on the empirical evidence supporting or rejecting it, but also on the physical survival of the people who created that paradigm. As long as the

elderly sit on the top of age-graded hierarchies (such as peer review boards, foundation boards of trusties, planning boards, town boards), the status quo will remain unshakable. According to Fukuyama, "It stands to reason, then, that political, social, and intellectual change will occur much more slowly in societies with substantially longer average live spans."[2]

Immigration and the Latinization of the U.S.

According to the U.S. Immigration and Naturalization Service, the United States admits approximately 900,000 legal immigrants every year. In addition, approximately 5 million illegal aliens currently reside in the United States, with approximately 300,000 entering illegally each year.

The U.S. Census Bureau projects that approximately 46,692,000 new immigrants will be added to the U.S. population by 2050, which is 36% of the total projected population increase.

In the Capital District, the number of foreign-born persons in 2000 that entered the U.S. between 1990 and 2000 was 14,044, which represents 84% of the region's total population growth from 1990 to 2000. Thirty-nine percent of these new residents live in one of the region's four central cities. A map showing the distribution of the region's recent immigrants can be accessed at: http://cdrpc.org/GIS/2K-Theme-foreign%20born90-00-P.jpg.

Hispanics account for almost 50% of legal immigrants in the U.S. and all but a small portion of illegal immigrants. The majority of Hispanic immigrants are from Mexico, comprising approximately two-thirds of the U.S. Hispanic population.

Hispanic (or Latino) is not a racial class; it is an ethnicity. Hispanics can be of any race or mix of races (i.e., Hispanics can be white, black, Asian, Indian, or a combination.) And not all Hispanics are immigrants, because Puerto Ricans are both Hispanics and U.S. citizens. Moreover, Hispanics are not a homogeneous group. While the unifying factor is the Spanish language and Spanish imperial history, there are considerable cultural differences between and within the countries of South America, Central America, Mexico and the Caribbean.

The U.S. Census Bureau estimates that as of 2004 there were approximately 41.3 million Hispanics in the U.S., approximately one of every seven people. According to population projections by the U.S. Census Bureau, the nation's Hispanic population would triple over the next half century. This would mean that nearly 67 million people of Hispanic origin would be added to the nation's population between 2000 and 2050. Their numbers are projected to grow from 35.6 million to 102.6 million, an increase of 188 percent.

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[2] Fukuyama, Francis (2002). *Our Posthuman Future, Consequences of the Biotechnology Revolution:* Picador, p 66.

Their share of the nation's population would nearly double, from 12.6 percent to 24.4 percent. At this point, non-Hispanic whites would represent only *one-half of the total population* by 2050, verses a 69% share in 2000.

The exponential growth of the Hispanic population in the U.S. represents an epochal demographic transformation with extraordinary cultural and political implications, particularly for U.S. cities.

In six of the ten biggest U.S. cities, New York, Los Angeles, Houston, San Diego, Phoenix, and San Antonio respectively (with the exception of Phoenix, all in states with large electoral votes), Hispanics outnumber blacks; and in Los Angeles, Houston and San Antonio, non-Hispanic whites as well. Los Angeles and New York City account for nearly one-third of the total U.S. Spanish-surname population. One of the outcomes of these demographic transformations, which is likely to eventually be repeated elsewhere, is that in 2005, Los Angeles elected its first Hispanic mayor.

In the Capital District there are 19,777 Hispanics (2000 census), which is 2.5% of the total population. Fifty-seven percent of these residents live in one of the region's four central cities. And while this number is small compared to many other U.S. cities, the regional Hispanic population increased by 72% from 1990 to 2000, which is the fasted rate of increase of any racial or ethnic group. Moreover, in 2000 there were 2,982 Hispanics living in the nearby city of Amsterdam, which is 16% of the city's population (City of Amsterdam figures are not included in the Capital District totals, though the commuting time from Amsterdam to Albany (1/2 hour) is less than many municipalities included in the Capital District).

The influx and growth of Hispanics and other immigrants in the U.S. has caused a public backlash where some people have expressed resentment toward immigrants (particularly illegal), believing that they are taking jobs from U.S. citizens, overcrowding public schools and draining public welfare resources that they shouldn't be entitled to. Part of this resentment is related to overcrowded classrooms, failing public schools, and shrinking public resources at a time of growing demand.

However, As long as the disparity of wealth and opportunity exists between the United States and other countries, people will try to find a better life elsewhere, even if it means risking your life to do so. Moreover, the views of opponents to immigration conflict with the goals of many employers who prefer illegal labor because these people will work for low wages, will take undesirable jobs, and are easy to exploit.

Needless to say, the nation built by immigrants may not be a welcoming place for immigrants in the future, regardless of the necessity of their labor. And with climate of job insecurity, threats of foreign terrorists, and escalating taxes, future battles over immigration are likely to continue.

Regardless of future U.S. immigration policies, however, the growth of Hispanic immigrants will continue to increase. According to Mike Davis, "the total fertility rate for

women born in Mexico is more than double that of Anglo women. Even if all immigration were ended tomorrow, the dramatically younger Latino population (median age twenty-six) would continue to increase rapidly at the statistical expense of aging, non-Hispanic whites (median age thirty-eight)." [3] This growth may lead to future social conflicts as a large, increasingly elderly native-born population confronts the claims of an even larger, culturally different and substantially younger immigrant population. And one way of confronting these changes may simply be to leave: as Sociologist Janet Abu-Lughod has noted, the growth of Mexicans in Los Angeles "may be contributing to the further exodus of Anglos and the withdrawal of many of the remaining into defensive gated communities in the outlying suburban and exurban areas." [4]

Uneven Development

One of the more pronounced (and troubling) patterns of land development in the U.S. is the geographic polarization of regional populations by race and income. The term "uneven development" has been used to describe this pattern. This is an important factor to consider when evaluating the likelihood of concentrated or dispersed regional settlement patterns. As indicated in the discussion of regional demographics under the "Historic Perspective on Status Quo Trend" section earlier in this report, the majority of both the Capital District's poorest residents and minority residents are concentrated in the region's cities. They are often one in the same. Conversely, the region's growing suburbs are largely made up of middle and upper income residents, mostly non-Hispanic whites. Regional maps of household income and race display these conditions (see: http://cdrpc.org/GIS/2K-Thematic-Maps.html). And while uneven development has been a long-standing feature of U.S. land development, the simultaneous hyper-spread of regional population growth and urban abandonment over that last half-century has exacerbated these patterns.

In ascertaining the future implications of regional uneven development, it may be instructive to examine the poles of this polarization: urban ghettos at one extreme, and suburban (and exurban), gated developments at the other. As things presently stand, both of these extremes may be poised to greatly expand in the future.

U.S. urban ghettos are the poignant physical manifestation of racial segregation in America.[5] There have been many hard-fought battles in the U.S. against discrimination that ultimately were successful in removing institutionalized racism, however, spatial segregation has stubbornly persisted. And while there have been many social and welfare programs, such as urban renewal, the "war on poverty" and the "great society" initiatives,

[3] Davis, Mike (2000). *Magical Urbanism: Latinos Reinvent the U.S. Big City*: Verso.
[4] Abu-Lughod, Janet L. (1999): *NY, Chicago, Los Angeles, America's Global Cities*: University of Minnesota Press, p 383.
[5] See the books "The New American Ghetto" and "American Ruins," by Camilo Vergara, which show several decades of urban transformation in the inner-city areas of places such as Newark, New York, Chicago, Detroit and Los Angeles.

which have attempted to ameliorate urban poverty, they have had little lasting success, leading to the view by many that urban (mainly minority) poverty is an intractable problem that the government cannot (and to some, should not) solve. In turn, this view has led to the attrition or elimination of most government-sponsored programs to aid urban renewal and abate poverty. The result is a cycle of urban abandonment of U.S. cities, where the physical conditions of many urban schools and neighborhoods, and the fiscal conditions of many city governments, now militate against middle class resettlement and toward further urban exodus.

However, for many of the people that can't find the financial means to escape the city, there is a simmering bitterness and resentment. What this resentment has led to in the past is a burst of pent up anger in the form of urban riots. In many urban areas, tensions and resentments are still simmering just below the surface, which could mean that if the conditions in these areas spread and worsen, there may be more conflicts and uprisings in the future.

Urban crime (or the fear of crime) has been a deterrent to urban revitalization and a force driving the demand for high-security residential living on the urban periphery. Moreover, the 9/11 attacks along with the recent mass-transit bombings in London, have further stigmatized cities as dangerous places. Cities, originally conceived as places of refuge and protection, are now more and more seen as places to seek refuge *from*.

In the meantime, the growth of gated communities in the U.S. has been rapidly increasing. According to author Setha Low, "The number of people estimated to be living in gated communities in the United States increased from four million in 1995, to eight million in 1997 and to sixteen million in 1998."[6] While the Capital District has yet to see the development of gated communities, this form of development is the dominant trend in residential development throughout the growing metropolitan regions of the U.S., so it is reasonable to assume that this region will see the proliferation of gated communities in the near future. What's more, the administrative form of gated communities raises other important issues regarding municipal taxation, secession, and allegiance to place.

Gated communities are administered as privately governed "common interest developments" (CIDs). Common interest developments are legal entities formed by contractual agreements between developers and new homeowners. Author Edward Soja, notes that: "By the 1980s, there were more than 80,000 CIDs [in the U.S.], and today they have probably become the principal form of new home ownership in almost every metropolitan area in the country."[7] According to the "CID Network," a nation-wide association of CID's, as of 2005 there were over 40,000,000 Americans living in CIDs.

Within common interest developments, residents usually own or control common areas and shared amenities while having certain rights and obligations, which are enforced by a private governing body or "community association." These rights and obligations are

[6] Low, S. (2003): *Behind the Gates: Life, Security, and the Persuit of Happiness in Fortress America*: Routledge.
[7] Soja, E. (2000): *Postmetropolis: Critical Studies of Cities and Regions*: Blackwell Publishers.

spelled out in the "Covenants, Contracts and Restrictions agreements (CC&Rs), which every new homeowner must sign as part of the home sale.

The millions of citizens that have joined CIDs have agreed in writing to restrictions such as what colors they can paint their house, what plants they can plant, how long their grass can grow, what size dog they can have, what color blinds and awnings they can hang, what kind of vehicle can be parked in front of their house, how many people can visit their home, and even what age their co-habitants must be. As Setha Low notes, CID legal restrictions "may be far more restrictive than any state statute or local ordinance."

According to Gerald Frug, professor of local government law at Harvard, "The privatization of government in America is the most important thing that's happening, but we're not focused on it. We haven't thought of it as government yet."[8] Authors Blakely and Snyder have written that homeowner associations are a government growth industry growing at a rate of over 10,000 per year. They note: "while at the national and state levels the public is asking for less government, at the local level, people are creating more governance institutions."[9]

Moreover, the growth of small, privately governed taxing jurisdictions has created a new impetus for municipal secession. Homeowners in CID's often resent having to pay both municipal taxes and homeowner association fees. With the latter funding road and common space maintenance within the development, homeowners often feel that they are being taxed twice for services, and that the roads and parks outside their developments are not their concern.

One of the results of these trends is that the "public realm" – public areas and buildings such as streets, schools, libraries, museums, community centers and parks that knit together private property and function as spaces of interaction open to all citizens in a democracy – are slowly attenuating as the notion of a "greater public good" becomes increasingly circumscribed by private interests, which are often motivated by fear and a drive for personal safety. For when the outside world appears unstable and unpredictable, people are more likely to take interest in the immediate needs and personal safety of their families, rather than in the problems and long-term concerns of the wider community and region.

Perhaps this is part of the explanation for the dramatic decline is civic participation documented by Harvard Sociologist Robert Putnam in his groundbreaking book, "Bowling Alone." [10] Putnam has quantified the erosion over the last several decades in America of what he calls "social capital," which is our level of social connectedness and community involvement. He examines trends in U.S. political participation, civic

[8] As quoted in Garreau, J. (1988). *Edge City: Life on the New Frontier*: Doubleday.
[9] Blakely, E, and Snyder, M (1997) *Fortress America: Gated Communities in the United States*: Brookings Institute and Lincoln Land Institute.

[10] Putnam, Robert (2000): *Bowling Alone: The Collapse and Revival of American Community*: Simon & Schuster.

participation, religious participation, connections in the workplace, informal social connections, as well as trends in altruism, volunteering, and philanthropy, and concludes that over the last third of the century there has been a large decline of public involvement in all these areas.

Putnam concludes that there are a number of concurrent factors causing the decline in social capital, including pressures of time and money, especially with two-career families (10% contribution to the decline); suburbanization, commuting and sprawl (another 10%); electronic entertainment, particularly television viewing, which is the single most consistent predictor of civic disengagement, with every hour of TV viewing causing a 10% decline in civic participation (25% total contribution to the decline); and lastly, generational change – the replacement of an engaged civic generation by their less involved children and grandchildren (50% of the total decline).

What the trends in this section indicate overall is the strong social and political pull away from concentrated urban development and toward a further dispersion and balkanization of regional population patterns in the future.

Technology and Urban Form

Predicting the types of future innovations and their social outcomes is fraught with uncertainty. Technological breakthroughs in genetics, robotics, information technology and nanotechnology will likely alter our future world in ways that are usually imagined by writers of science fiction.[11] There are, however, several recent technological trends related specifically to digital technology that are worth considering because they are already beginning to influence the spatial pattern of land development in the U.S.

Historically, technological innovations have been inseparable from the process of urbanization. The industrial revolution in the 19th and 20th centuries proceeded in a dialectical relationship with the process of urbanization characteristic of these same periods. New manufacturing and building processes, for example, both enabled and inspired mass urbanization on an unprecedented scale. Fast transportation; from the railroads in the 19th century to the automobiles of the 20th century, have enabled long-distance traveling and commuting. In addition, the evolution of mass media, particularly television, has played an important role in influencing people's patterns of consumption and shaping feelings and choices on how and where people want to live.

Computers, and digital technology in general, are now central to the present and near-future phase of urbanization, though the influence of this technology on regional

[11] See Garreau, Joel (2005): *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies -- and What It Means to Be Human*: Doubleday, and Fukuyama, Francis (2002). *Our Posthuman Future, Consequences of the Biotechnology Revolution:* Picador, for detailed discussions of these trends and their implications.

settlement patterns is only beginning to be realized. Urbanist Lewis Mumford noted some of the potential influence of recent technologies as long ago as 1960 when he wrote that metropolitan over-congestion, for example, is unnecessary since the change in the mode of human settlement brought about by fast transportation and instantaneous communication means that physical congestion is no longer the sole possible way of bringing a large population into intimate contact and cooperation.[12] This observation has even more practicality now that more and more of the U.S. workforce is shifting toward occupations that manipulate digital data, while at the same time the Internet has enabled instantaneous digital communication, which means that an actual physical office presence for many employees is unnecessary to carry out many workday functions.

While the full potential of "telecommuting" hasn't nearly been realized – according to the 2000 census only 3% of the U.S. workforce telecommutes – the potential for telecommuting to provide a low- to no-cost means of reducing metropolitan traffic congestion offers great promise. In addition, telecommuting may increase productivity. A survey of American Express telecommuters found that they produced 43 percent more business than regular office workers. In addition, telecommuters save companies in real estate costs by reducing the need for office space. For example AT&T telecommuters save the company approximately $25 million per year. And as states and localities are finding it increasingly difficult to maintain and expand highways under the status quo commuter model, people are likely to have little choice but to embrace telecommuting on a much broader basis in the future.

While digital communication allows the "dematerialization" of the workforce, enabling data-manipulators to work wherever they have an Internet hookup, digital communication has also enabled employers a much greater freedom to locate wherever labor and regulatory costs are cheapest (what geographer David Harvey calls a "spatial fix"), which have turned out to be mostly outside the boundaries of the U.S. The effects of this trend can be observed regionally in the many vacant and underutilized industrial sites in cities such as Schenectady, Cohoes, Watervliet, Mechanicville and Amsterdam.

Digital technology has also begun to play an important role in helping urban planners and decision makers envision alterative future growth scenarios. Geographic Information Systems, which allow the integration and analysis of multiple layers of "geo-referenced" data, have come into widespread use. Three-dimensional animation and visualization software, which is currently used for both military training and movie-making, will likely also come into more widespread future use, allowing building proposals to be visualized and modified before they are approved and built. Web-based services will also greatly improve communication between citizens and their local governments.

Finally, and perhaps most importantly, from land use and transportation perspective, the success or failure of technological innovations related to the development and implementation of alternative fuels will greatly influence whether the statues quo of regional land development patterns in the U.S. can continue, or whether a fundamental reorganization of the existing order will ensue.

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[12] Mumford, Lewis (1963): *The Highway and the City*: Harcourt, Brace, and World.

Peak Oil

Of all the future trends discussed in this report, the trend in the price and availability of oil and gas has the potential to have the biggest impact on future land development patterns in the U.S. Each of the trends discussed so far appears to support a further continuation of the spread out, isolated, auto-dependent development patterns that have characterized the last half-century of U.S. land development. This would mean that the general dispersal of growth portrayed by "Growth Scenario 1 – Statues Quo Trend" and the "Growth Scenario 3 – Trend Hyper-Growth" in the first part of this report would likely be closest in portraying the future growth pattern of the region. The magnitude of future growth would drive which one specifically.

If oil and gas remain widely available and relatively inexpensive, this would also support the likelihood of one of these two scenarios. However, if oil becomes scarce, and its price subsequently skyrockets, then we will have no choice but to significantly alter the manner in which we build and travel. Non-motor travel, such as walking and biking, will become more common. We will be need to live close to where we work, while the kind of work we do will likely change dramatically. We will need to assemble our entire built environment much closer together, at higher densities, to try and eliminate long distance travel for everyday tasks. We will also be forced to localize our economy, including producing much of our food from within the local region. Under these conditions, "Growth Scenario 2 – Concentrated Growth" would likely be closest to representing the kind of land development pattern that would result.

The evidence emerging from the world's leading geologists and oil analysts strongly suggests that oil and gas will *not* remain widely available or inexpensive, and that our future building and traveling patterns will need to be fundamentally altered. For example, the world currently consumes approximately 84 million barrels of oil per day, with the U.S. using 21 million gallons alone. Most oil experts believe that oil-producing nations have only 1.5 million gallons per day of currently unused production capacity. Moreover, global demand for oil grows daily, particularly from the industrializing, fast-growing populations of China and India.

The problem with oil is not only one of production capacity, but also one of overall supply. Global discovery of oil sources peaked in the 1960's. The world's leading geologists, are largely in agreement that the world is either at, or quickly approaching "peak oil production," which is the point at which the highest rate of global annual oil production occurs. After this point, global oil production will continually decline, at about 4% per year, because at this point the world will have extracted and used approximately half of the two trillion barrels of oil that experts estimate the world holds. What's more, the half that already been used was the easiest to extract and of the highest quality. The remaining half will be more difficult and costly to remove and refine. Experts estimate that if all the world's remaining oil could be extracted, which is unlikely given the quality and difficulty of extracting what's left, that the world's oil reserves will be completely depleted in the next thirty-seven years (which is near the out-year, 2040, of

this study's growth scenarios). In the meantime, there will likely be wild fluctuations in price and much political and social turmoil as protracted fuel shortages become common.

The available data on global oil use, availability and production points to a future that may be much different from the present. Some people hold out hope for technological salvation – that new energy technologies will emerge that provide an alternative to fossil fuels. However, this outcome is far from guaranteed. Most of the technologies that are being researched, such as hydrogen, ethanol and bio-fuels are proving, so far, to require more energy to produce than they will actually provide in fuel. And even if new replacements to oil can be invented, the transition will likely be rough, and the replacement fuel(s) will most likely fall far short of the price and productivity of fossil fuels, which will mean that even with fossil fuel alternatives, we will still need to alter our present patterns of spread out building and long distance traveling.

(Transportation discussion will be included within each scenario)

Conclusion/ Policy Implications and Choices