



**Market-Based Land Use Control:
An Analysis of the Potential for Transfer of Development Rights Programs in
the Capital Region**



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Executive Summary

Saratoga P.L.A.N., the Mohawk Hudson Land Conservancy, the communities of Bethlehem and Stillwater, and the University at Albany collaborated to develop and produce this report. The study period was from April 2011 to August 2012. The goal of the report is to provide a comprehensive analysis of transfer of development rights programs (TDR) and incentive zoning for transferring development rights (IZ-TDR) and to develop a set of educational products about TDRs and IZ-TDRs. We hope that these deliverables will assist Capital Region communities with optimizing their future development. Optimal land-use practices should (1) limit the negative externalities of development (such as, pollution, loss of ecological services, and fiscal impacts) and (2) promote prosperity, improve public health, and so on, while maximizing the positive spillover benefits from preserving working landscapes, ecosystems, and biodiversity. These outcomes help communities to be more sustainable and improve the quality of life for their residents.

The review of the scientific literature, case studies of successful transfer-of-development-rights programs across the United States, and our analyses of a hypothetical TDR or Incentive Zoning Program (IZ) in two case-study communities all produced similar findings. Collectively they tell an important story that illuminates alternatives to existing traditional zoning, which can potentially help Capital Region cities, villages, and towns achieve interdependent fiscal, land-use, and community-building goals. The results here hold promise for those communities that choose to investigate how a TDR program can support their vision of the future.

Transfer of Development Rights (TDR) in Brief

Transfer of development rights programs allow property owners to buy and sell development rights without actually exchanging any land. The basic TDR concept is to compensate landowners who give up potential development rights in environmentally sensitive areas or preservation districts as designated by communities. The goal is to direct development away from sensitive lands, known as "sending" areas, toward more suitable areas, called "receiving" areas. The forms of compensation may be money from a developer or development credits. (Costello 2006, p. 1)

TDR programs are an incentive-based and market-driven approach to preserving land and steering development away from rural and resource lands to more appropriate areas that have the infrastructure and other attributes to support development. These programs may be voluntary or mandatory. In either case, they are based on free-market principles with prices designed to motivate the participation of landowners and developers. At their best, these approaches provide fair-market-value compensation to landowners in sending areas when the “right to develop” is purchased and transferred to a receiving area as development credits.

It is important to note that the only “right to develop” that is purchased and transferred is the right to subdivide and build new residential units or to construct commercial or industrial facilities, as

determined by the existing zoning regulations. The landowners in a sending area that choose to sell development rights continue to own their property and maintain the right to continue to use the property—to sell, lease, maintain, and improve current structures or to conduct any other permitted activities prior to the implementation of a TDR program. However, in practice many communities also obtain conservation easements (at additional values of a TDR credit or operational cost) that restrict types and bulk of use. In this report, there are three sections: (1) Transfer of Development Rights—A Primer for Communities; (2) Lessons from Successful Programs; and (3) A Hypothetical Example. Within these sections is provided a detailed overview of what TDRs are, how they operate, and what makes them an effective and fair approach to land-use control.

Incentive Zoning (IZ) in Brief

Some communities take advantage of a related preservation tool called Incentive Zoning (IZ). Incentive Zoning can permit many of the same controls and benefits as a TDR program and may be more effective in communities with limited developable land. The key difference between TDRs and IZ is *that the community has not designated specific sending and receiving zones for development rights. Without specified sending and receiving zones, incentive zoning could result in more random development patterns and greater fragmentation of land uses than with TDR programs.*

TDRs and IZ strive to utilize market forces to shape development and allow for additional development with accompanying predetermined community benefits. While TDRs specify the geographical area targeted for increased growth and other areas selected for conservation, it is conceivable that an incentive zoning program would lead to patchwork development that is denser on a parcel-by-parcel basis. *One can conclude from this that TDRs provide a greater opportunity to shape the form of development and increase capacity to protect larger areas by designating them as sending areas.*

The Results of This Study

The findings echo those of many prior studies on the cost of development. More compact development prevents the loss of ecological services, reduces the municipal fiscal impact related to development patterns, and protects community-based cultural, historical, environmental, and other assets. *Our results verify that the more compact development patterns of the TDR and IZ simulations yield the most promising outcomes. The TDR simulation results in development occurring in areas already considered appropriate by the community, with existing or planned infrastructure, and prevents development from encroaching on areas the communities desire to protect.*

The empirical outcomes in both Bethlehem and Stillwater simulations are in accord with the lessons learned from best practices. The results of the simulations in Bethlehem demonstrate that the benefits of the three land-use-control policies increase from existing zoning (EZ) to IZ to TDR. In the case of Stillwater, the results of the simulations of EZ, IZ, and TDR also conform to best-practices lessons. Most notable is that the theoretical models of the TDR program did not adequately address the existing zoning in one receiving area that is currently “very low density.” Thus, one would anticipate that an insufficient increase in density for that receiving area would diminish the benefits of a TDR program.

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It also should be noted that all cost benefits and savings from TDR programs are underestimated due to the 2030 horizon year for the analysis. For example, when considering the value of lost ecological services, the analysis considers them only to 2030; although, for as long as the land remains undeveloped it will continue to provide the services. Also, the cost for operation and maintenance (O & M) of the new infrastructure to support the new development does not take into account the most expensive projects of rehabilitation or replacement since the need should not occur until well after 2030.

In brief, the results provide strong evidence that TDR programs, and to a lesser degree incentive zoning, could help communities with visions and goals similar to those expressed by Bethlehem and Stillwater. Key findings include

1. The simulations of the TDR programs illustrate their potential to achieve land-use goals established by the community stakeholders in the towns' comprehensive plans.
2. Both the TDR and IZ simulations consume less land to accommodate predicted growth, preserving valuable ecological services inherent in the undeveloped parcels.
3. The cost to operate and maintain the public infrastructure that supports the new development is less for the TDR and IZ simulations relative to the existing zoning.
4. There are additional benefits that improve the quality of life generated by a TDR program and, to a lesser degree, the IZ simulations.

Best Practices

The review of the academic literature, coupled with case studies of successful TDR programs, reveal that there is a set of "best practices" that will result in the desired outcome. We recommend that to optimize TDR programs the following set of policy and program characteristics guide the formation and operation.

Best practices include:

- early and meaningful stakeholder participation in the program design and operation;
- community education on the real benefits and potential hurdles;
- use of an independent third party to administer the program;
- creation of clear rules for participation, use of a transparent market-valuation process, and explicit statement of and adherence to a predetermined timeline from application to approval;
- development of TDR sending and receiving areas that work in concert with the community's existing vision and land-use policies;

- insurance that any incentive program advance community goals, meet potential participants' needs, and operate with effective administration and oversight; and
- consideration of project scale (the larger the geographic area for implementation, the better the program outcomes).

Why these attributes are important is discussed in detail in the State of Our Knowledge section of the report, and examples of best practices are provided in the Lessons for Success section.

Benefits of TDRs and Sustainable Land-use Practices

Tension between property rights and land-use policy will always exist. However, the mounting empirical evidence leaves little doubt about the benefits of land-use controls to promote environmental protection, reduce fiscal costs for providing and maintaining a public infrastructure that supports development, and improve the quality of life. It is also increasingly clear that good environmental policy does not mean “no growth” or even loss of economic vitality (Bezdak 1995; Chappel & Hutson 2010, 2011; Hevesi 2005; Meyers 1995). In fact, well-designed environmental policy can increase economic efficiency, catalyze industrial innovation, and promote economic prosperity. When considering sustainable land-use practices, including TDRs, documented benefits include:

- flood prevention;
- improved air and water quality;
- better public health;
- reduced cost of providing and maintaining public infrastructure;
- increased energy efficiency;
- less traffic congestion and commute times;
- preservation of historic, cultural, and environmental assets;
- protection of working landscapes; and
- healthier ecosystem services and biodiversity.

Land-use Controls Catalyze Benefits in Bethlehem and Stillwater

The analyses of the land-use controls (EZ, IZ, TDR) in Bethlehem and Stillwater underscore findings regarding best practices and potential benefits that are evident in the literature on TDRs and in case studies of successful programs. In both communities, the benefits in terms of reduced cost of providing necessary infrastructure for development and the increased value of ecological services accorded with anticipated outcomes. The results also suggest that a well-designed-and-managed TDR program would advance the vision and goals of the communities' respective comprehensive plans, particularly with an initial examination of the environmental conservation objectives and aspiration to retain their communities' character.

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In the case of Bethlehem, the low-density “sprawl” development decreases, relative to existing zoning, for both the IZ and TDR simulations while the benefits increase. Since the theoretical receiving areas roughly approximated the area designated for a mixed-use, more compact form through “village style zoning” articulated in relevant planning documents, one could conclude that a TDR program could promote the community’s vision for future development patterns.

The simulations in Stillwater require a more nuanced analysis. Both the IZ and TDR simulations limit low-density development and increased community benefits relative to existing zoning. The Stillwater results are notable: as the receiving-area design improved outcomes relative to EZ, the data suggest that the incentive zoning simulation would slightly outperform the TDR simulation. At first glance, one might interpret the findings to suggest that TDRs are less effective. However, one must consider that in the process of developing the theoretical sending and receiving areas, some critical elements to ensure optimal performance of a TDR program were missing. The process for designating and designing appropriate overlay zones in the receiving areas requires a detailed examination of underlying zoning as well as the myriad other factors. For this research project, for simplicity reasons (and practical reasons), the receiving area only doubles the density of dwelling units. Thus, the capacity to absorb more growth was restricted in the largest receiving area, which is currently zoned as low density (and larger lot sizes leads to more land consumption and smaller benefits).

The Report

TDRs are symbolic of our national political culture and values. The next section provides the historical context of land-use decision making that has sought to balance the needs of the community with the rights of individual landowners. It is followed by a brief primer on TDRs. The analysis then turns to reviewing the scientific literature to assess which best practices yield success. These results of that analysis are then compared to the findings of the case studies of successful TDR programs. Before providing a hypothetical example, to familiarize readers with the nuts and bolts of TDRs, the analysis briefly examines TDR programs in New York. The report concludes with an analysis of the impacts of hypothetical TDR programs in the Town of Bethlehem and the Town of Stillwater (includes the Village of Stillwater).

The Bigger Picture: Historical and Economic Context for Land Use and Conservation

The American consciousness struggles to balance two competing interests rooted in our core values. The Founding Fathers linked the success of the democratic experiment to the citizens' relationship with the land. Thomas Jefferson's political philosophy, agrarian democracy, was built on the understanding that one's connection to the land was essential to ensure the ethical behavior that was considered essential to democratic governance, which was in sharp contrast to the model embraced by European nations with "urban" centers that was considered causal to many social maladies (Shut-in 2001; de Tocqueville 1838). Many people have used this reasoning to create and defend land use and environmental law, the national parks, and the clean air, clean water, and clean drinking water acts (Bryant 1995). Still, rugged individualism, public awareness about real and perceived property rights, and constitutional restrictions on government power combine to produce strong values regarding the role of government in land-use matters. Many property owners vigorously argue that land-use regulation impinges on their rights.

The concept of sacred landscapes and the role of nature in the American psyche can be traced directly from Thomas Jefferson's theory of agrarian democracy. It then flows through the era of Manifest Destiny, Fredrick Turner's thesis that the frontier was the lifeblood of American democracy in the mid-1800s and the emergence of preservation and conservation movements in the late 19th early 20th centuries led by Theodore Roosevelt, Gifford Pinchot, and John Muir. The late-19th-century environmental movements constitute the core of the environmental movement, which can count among its achievement the creation of the national parks; the clean air, clean water, and clean drinking water acts, the creation of the federal Environmental Protection Agency, as well as similar agencies at the state and local level, spurring brownfield redevelopment programs; and now, in the 21st century, heritage areas (Bullard 1993; Shutkin 2001).

Long before the seminal Supreme Court case of *Euclid v. Ambler* (1926) affirmed that local government's police powers included the regulation of land use through zoning, the tension of this struggle was evident in legal and social institutions. The salience of each side has ebbed and waned through history. The publication of Rachel Carson's seminal work *Silent Spring* invigorated the environmental movement in the United States with a Republican-led effort to pass the clean air and clean water acts and the creation of the federal Environmental Protection Agency, which were signed into law by President Nixon.

By the 1980s the pendulum reversed direction, with a new era of property rights advocacy, rapid urban expansion, and resource extraction. In upstate New York, this has resulted in a paradox of sprawl without growth (Pendall 2003). From 1982 to 1997, urbanized land in upstate New York increased 30%, while the population grew by only 2.6% (Pendall 2003). Over a longer time period, New York State lost nearly 500,000 acres of farmland and more than 1,000,000 acres of rural land to development (Farmland Information 2012). This development trend continues as evidenced by the loss of more than 300 farms in New York in 2011 alone (Anderson 2012).

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The confluence of many factors appears to have reversed the tide again, as policy at the state and federal levels are clearly signaling that more sustainable development is a critical goal. At the state and local level, support for land preservation and smart-growth activity has been overwhelming; more than 70% of local efforts were adopted by voters in 2000, and more than 529 initiatives and referendums passed between 1998 and 2000 (Tregoning et al. 2002). As a topic of daily news discussion, smart-growth strategies appeared in a mere 100 reports in 1996, but by 2001 this number had risen to more than 4,600 annually (Tregoning et al. 2002). Transfer of development rights programs emerged in the 1960s. Presently there are approximately 239 programs in the United States. In New York, the estimated 16 TDR programs are all relatively young (Nelson et al. 2012).

Moreover, federal- and state-level policies are shifting in response to constituent demands. As of 2008, grant reviewers at the federal level for all competitive funding of critical economic development and infrastructure use sustainability criteria as part of the proposal ranking. The process is guided by six livability principles:

1. Provide more transportation choices. Develop safe, reliable and economical transportation choices to decrease household transportation costs; reduce all associated negative externalities.
2. Promote equitable, affordable housing. Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
3. Enhance economic competitiveness. Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services, and other basic needs by workers, as well as expanded business access to markets.
4. Support existing communities. Target federal funding toward existing communities—through such strategies as transit-oriented, mixed-use development and land recycling—to increase community revitalization, improve the efficiency of public-works investments, and safeguard rural landscapes.
5. Coordinate policies and leverage investment. Align federal policies and funding to remove barriers to collaboration; leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
6. Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban and suburban.

Likewise, in New York, the recently passed Smart Growth Public Policy Infrastructure Policy Act (2008), the Cleaner Greener Communities Program (2011), and the sustainable regional development strategy for the Capital Region presented in Success Today Opportunity Tomorrow (2011) all dovetail with federal policy goals. The Capital Region is well positioned to capitalize on this trend. For more than a

decade, stakeholders from diverse communities have been engaged in a regional dialogue that has yielded a vision of a more sustainable future, which is embedded in the following:

- Capital District Transportation Committee's Vision 2020 plan
- the consortium of more than 40 partners (chaired by the Capital District Regional Planning Commission) submission of two Regional Sustainability Planning grants from the Department of Housing and Urban Development and achieving the designation of Preferred Sustainability Status, enhancing competitiveness for federal funding
- the Smart Growth Public Policy Infrastructure Policy Act
- the Cleaner Greener Communities program
- the Climate Smart Pledge
- Success Today Opportunity Tomorrow: Capital District Regional Economic Development Council Strategic Plan.

Externalities of Development

Market efficiency requires a set of particular conditions: for example, buyers and sellers must have perfect information regarding their economic transactions. In theory, this knowledge is embedded in the price of the good or service exchanged. When a cost or a benefit from the production or consumption of a good or service is not included in the price, due to lack of perfect information or other factors, this is called an *externality*. In the case of a negative externality, such as pollution, the cost typically is shifted onto the public at large, while the producer of the pollution experiences private gain. If the cost of a pollutant, for example, a low-fuel-efficiency automobile, were reflected in the price, the price would rise and consumption would decline. In this case, efficient market operation would stimulate the transition to more-fuel-efficient vehicles or alternative-fuel vehicles and/or alter consumer housing preferences with people favoring locations closer to work as well as those having multimodal transportation options. Alternatively, there may be a positive spillover from the production or consumption of an economic good that is not reflected in the price. In this case, the price would be artificially low and supply would decline. Vaccines are a classic example, where the producer can never retrieve the entire cost of research, development, production, and distribution; other firms can simply copy their product. Thus, our government provides protection through the creation and enforcement of patent and copyright laws.

Land use of all kinds produces positive and/or negative externalities. The rationale for land use and environmental laws is that they maximize the creation of positive externalities of development while minimizing the negative ones, creating a more efficient market. Often this is accomplished through zoning, which physically separates incompatible uses of land. For example, zoning means that households in a developed neighborhood do not need to fear a slaughterhouse being built on their block.

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Additional tools, beyond zoning, have been developed as we have learned more about the impact of land use. Transfer of development rights programs are designed to use market forces to direct development to locations that enhance positive externalities, such as pedestrian-friendly, vibrant cores—with water and sewer and link green infrastructure—while protecting desirable assets (thus reducing negative externalities) such as working landscapes, critical environmental services, and ecologically sensitive habitat. The protection of wetlands has tremendous economic, ecological, and health benefits. Everyone benefits from cleaner air and water, reduced risks of flooding, and access to open space. History documents that the spillover benefits also include improved property value in the vicinity of, for example, such a protected open space or vibrant community center.

Demographics, Development, and Decisions

For the past half century, the household-real-estate market has been dominated by the detached single-family home built in what is commonly referred to as the suburbs. This development pattern was influenced by many forces: cheap energy, the real or perceived benefits of the nuclear-family housing unit, government policy that incentivized suburbanization with transportation, other infrastructure and zoning provisions, and a host of other forces. However, the largest type of household in the United States is now a single-occupant household—also the fastest growing segment of the housing market. Most of these households are not looking for three-bedroom, detached single-family houses on 2-acre lots. Meeting the housing demand for this demographic is going to require change.

A large portion of the people looking for this new type of housing are aging boomers who are interested in living in traditional mixed-use communities with existing urban amenities. These amenities include walkable neighborhoods with necessary services and retail, multimodal transportation options, entertainment venues, and other attributes that are included in what is referred to as traditional neighborhood design. TDRs could help communities meet this demand while improving the quality of life for all residents.

Looking Forward

In summary, communities need to take stock of current trends in funding, state and federal policy objectives, the regional vision articulated in recent years, and some sobering facts about sprawl-development patterns. The compounding influence of policy and demography creates an opportunity for local communities to become more economically and environmentally sustainable. Through the use of market forces, TDR and IZ programs can have a significant potential to achieve these twin goals and ease the tension between development and environmental concerns.

This report begins by defining transfer of development rights, comparing it to a similar conservation tool: incentive zoning. Next, we examine the scientific literature and review a number of case studies to identify optimal programs that deliver on the promised benefits. We then apply this knowledge to examine how a hypothetical TDR program may work in two communities in the Capital Region and to discern what potential costs and benefits may accrue from implementing a TDR or an IZ program.

After analyzing the communities' characteristics that have substantial influence on land-use decisions and TDR implementation, three simulations of future land-use development are conducted. These simulations—with analysis that run from 2010 to 2030—have identical assumptions about growth rates, housing-commercial space ratios, differing only in the changes in land-use policy. The three policies simulated are (1) a no-change model that uses current zoning and trends to shape the future location and form of development, (2) a model that assumes that the communities decide to enact an incentive zoning program, and (3) a model based on the adoption of TDR.

The final section considers the costs and benefits of each simulation. The comparison of these outcomes provides a lens into the future regarding the outcomes of various land-use decisions that are made today. We hope that examining the effect of these three different policy models on development patterns will educate all stakeholders in the region in the options they have for shaping the future.

The two communities that collaborated on this project, as well as all of the steering-committee members, funders, and authors want to stress that this is an educational exercise only and should NOT be confused with actual policy or even be supported by the leadership in the case study communities. Ideally, we would not name the communities to prevent misconceptions and to avoid unnecessary concern that this report represents forthcoming action. However, this anonymity is impossible because TDR programs must address unique community characteristics that reveal their identity like a set of fingerprints. Also, readers will trust the information presented only if the report is completely transparent. All involved in this project owe a debt of gratitude to the leadership in the towns of Bethlehem, New York, and Town of Stillwater, New York. We want to reiterate that, while stakeholders in both communities were very generous with their time and candid insights, the analysis is that of the research team alone, and the findings do not necessary reflect any individual perspective and absolutely does not constitute any community policy or official position on TDR.

Transfer of Development Rights—a Primer for Communities

Municipalities have the ability to structure transfer of development rights programs (TDR) as they see fit. There is often room for flexibility in these programs, and there are many different ways to implement a working TDR program. Communities can focus on the particular strengths of and opportunities offered by TDR programs, while keeping in mind their particular weaknesses and threats. Communities may share some components of the program and differ wildly in others. These variations speak to the vast array of options available to different communities.

Measuring which options will work best in a given location is complex, but a thorough understanding of the community (e.g., demographics, existing land-use law, infrastructure location and capacity, propensity for preservation) will guide the creation of a program structured to maximize the potential benefits. Oftentimes the scale of a program will change from place to place to account for differences in the geographical size of communities. Other variations typically include the intended uses of transferred development rights, protections, and the manner of payment and incentives. This primer will detail some of the programs and options available.

Transfer of development rights programs allow property owners to buy and sell development rights without actually exchanging any land. The basic TDR concept is to compensate landowners who give up potential development rights in environmentally sensitive areas or preservation districts as designated by communities. The goal is to direct development away from sensitive lands, known as "sending" areas, toward more suitable areas, called "receiving" areas. The forms of compensation may be money from a developer or development credits from the county. (Costello 2006, p. 1)

Mandatory and Voluntary Programs

One initial decision a community must make is should the TDR program be mandatory or voluntary? A mandatory program would require developers to participate in the TDR program in order to gain permitting for construction. Also, mandatory programs may require that new building be balanced equally with open-land conservation. However, this requirement may limit the land available for development, and requiring builders to participate without having ample land from which to purchase rights could potentially slow development. Also, as the supply of developable land decreases, the cost for that land would increase. Therefore, mandatory programs may drive prices up for development rights, which may in fact be a desirable option for some communities. Mandatory participation may need an above-average rate of development in the Program Area to justify the consequences of implementation. Voluntary participation is the most commonly used option and, generally, offers greater incentives than do mandatory programs. This middle ground reflects the tension between private property rights and public-sector planning to protect the commons. Larger incentives are

necessary to encourage participation in voluntary programs. These can include higher density bounces, provision of infrastructure, and change in use within the receiving area, among other possibilities.

Zoning and TDR

Many communities in the United States have traditional “Euclidian Zoning,” which works well with TDR programs. Performance-based zoning also allows for relatively easy TDR implementation. Generally, no changes are needed to existing zoning when implementing a TDR program. Typically, a TDR program will incorporate the use of overlay zones to define the sending and receiving areas. The overlay zones will also articulate the allowable uses and densities in the receiving area. When determining the location of the sending and receiving areas, communities need to analyze where to focus land development and what assets to preserve, within the context of the existing zoning and other relevant planning documents, such as an adopted comprehensive plan or open-space conservation plan.

Examining the current zoning codes should be done in tandem with laying out the “sending” and “receiving” areas. Sending and receiving areas are usually defined as discrete geographic areas within the municipality. Alternatively, sending and receiving areas can be defined based on their characteristics: for example, a sending area may be based on the quality of its soil for farming, may be defined as a buffers to a stream or lake, or may be linked to some other attribute that the community has identified for protection.

Zoning can greatly affect the implementation of a TDR program, and difficulties can arise when there is no, or limited, flexibility within the existing code. A workable TDR program must coincide with the zoning code to create incentives for increasing density: for example, if the receiving area (area with increased density) already has zoning for dense development and increased density is opposed by the community, the program must acknowledge this reality and work within the existing zoning code to help the community go in its desired direction. In this particular scenario, the location for a receiving area could be moved or the zoning changed to accommodate TDR program implementation.

Expedited Projects

TDR programs are often structured to help streamline projects, which is an incentive for developers. Zoning and building-permitting processes, paperwork, variances, and similar preconstruction costs can delay project approvals and be costly to builders. Therefore, it is common to streamline and expedite permitting or even variances, in some cases. The project can still be reviewed and held to certain preexisting, nonnegotiable requirements but will often be granted approval quicker than nonparticipating projects. Under this expedited process, developers incur fewer costs, and completing projects more quickly allows them to see their return-on-investment sooner. In some cases, variances or zoning changes in the receiving area are allowed, which is another substantial incentive for many projects. Municipalities stipulate the guidelines surrounding the expedited permitting processes and hold the final decision-making power for approval on any project. This detail is important because communities should not fear losing their authority over such processes.

Third-party Assistance

Many programs have an impartial third-party entity on board to assist the municipality and the developer. Successful TDRs typically are operated by an independent third party that is an IRS 501(c)(3) not-for-profit organization with prior experience with land-conservation easement management. These third parties have no “police power” to determine zoning regulation but are strictly the “marketplace” or “holding bank” for transferred development rights and facilitate the transactions between willing buyers and sellers. This third party may be called a “Land Bank” and typically handles the monitoring of lands available for sending rights and maintains a list of interested parties, provides project management services for conservation-easement transactions, and handles other programmatic necessities. In some communities, the third party is an existing land trust, or conservation agency, that takes on these tasks. Allocating these duties to an entity other than the municipality relieves the municipal administration of record keeping and other paperwork, which they may not have the staff resources to handle. There is leeway for both entities to determine how to structure the municipality’s role in the decision-making process. In some cases, a municipality may have more power and authority and will have less in other situations. For the sale and use of development credits, the third party may be the reviewing power for expedited approvals, essentially doing site reviews, passing or denying the permit and variances, and sending projects for final approval to the municipality, provided all expedited permitting conditions are met. This can benefit all parties by relieving municipalities of onerous record keeping, while allowing for a nonpolitical decision-making process. Allowing a third party entity to review and participate in TDR implementation often creates a one-stop shop for getting approvals, completing TDR sales, and other associated tasks, while reducing the burden on a particular municipality, which may have limited resources.

TDR Jurisdiction

The perception is often that TDR is associated with fast-growing communities at the local town or village scale, but in reality, most programs are instituted at the county level and incorporate multiple local jurisdictions. This allows the planning authority to protect land in one municipality and to send the rights to a different municipality. Being able to transfer rights across town and city lines often promotes greater efficiency on a regional scale, with density concentrated in hamlets, villages, and cities and open space protected in rural areas. However, in some states including New York, county-wide programs require some intermunicipal cooperation. “Home rule” gives municipalities the authority to control their own planning and zoning and the ability to control their own destiny and avoid being controlled by a regional authority. Localities are granted this power in the state constitution. As a “home rule state,” New York still benefits from TDR programs, but it is important to note that the process and results will be different from other states, such as Florida, Maryland, and Colorado, which do not have small “home rule” townships. Municipalities in New York State wishing to exchange development rights across their borders may enter into intermunicipal compacts or establish TDR systems at the county or regional level.

Incentive Zoning Overview

Transfers of Development Rights programs, or TDRs, have been shown to have great success in some communities interested in conserving open space, while others have found more-limited success. TDRs are typically found within communities that prioritize open-space protection and encompass large areas for which TDR credits can be traded or sold. Unfortunately, not every community with open-space-preservation goals has large open spaces, and some have other constraints to implementing a TDR program. In place of or in concurrence with a TDR program, many communities can take advantage of a related preservation tool called incentive zoning. Incentive zoning allows for many of the same controls and benefits as a TDR program, while providing new opportunities that may increase participation by including awards for smaller areas.

A strong benefit to an incentive-zoning system is that it can provide desired amenities to a community, paid for by the developer, in exchange for allowing the developer to increase bulk-to-land-area ratios by building taller, building smaller, or building denser. Incentive zoning can also be used to transfer development rights between properties. Similar to a TDR program, incentive zoning may also allow for use changes in a community. A parcel overlain with incentive zoning can allow for greater flexibility and incentives to development than the current underlying zoning will allow. This may include more units, less setback requirements, taller structures, different uses, and so forth. In exchange, the developer provides an “award,” in the form of a separate conserved property, park, trail, building “X” amount of infrastructure or some other benefit to the community, as outlined by planning board, by the community, or in a preexisting arrangement. This study examined the use of incentive zoning as a tool to transfer development rights. *Incentive zoning differs from TDR in that the community has not designated specific sending and receiving zones for development rights, as it has when TDR programs are undertaken. Without specified sending and receiving zones, incentive zoning could result in more random development patterns and greater fragmentation of land uses than with TDR programs.*

Awards can have double incentives for the developer. A property can sell faster if there is a nearby park, public amenity, or conserved area, thus, helping the developer further while still having provided the community with its desired amenity. In essence, communities have control of the overlay-zone rules and gain benefits, while developers receive the benefit of more units per acre for a greater return on their investment and incentives for making the property more desirable for businesses and residents. The developer and community may find greater interest in mutually beneficial awards, participation and better results than requirements with seemingly long-term benefits or benefits only enjoyed by a select few. Incentive zoning reduces volatility in supply-demand as well as price inflation, but often fails to accomplish the long-term goal of open-space and farmland conservation. In particular, IZ programs cannot prevent fragmentation of habitat and can create conflict between existing land use, such as agriculture and new residential development adjacent to working landscapes.

Nationally and statewide, incentive zoning has funded both conventional and unconventional projects. In parts of Seattle, Washington, developers can build taller (providing extra square footage) if they provide a percentage of total square footage to middle-income residents. In the resort town of

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Mammoth Lake in California, developers were allowed to build hotels at double the capacity allowed by current zoning. In exchange, the community required the builders/hotel company to change their design to increase the public good. The redesigned site plan incorporated public plazas, a connector road, and a restaurant and put parking underground. These all cost more upfront but the developer was able to increase the property's returns with greater capacity. More conventionally and locally, in New York City, developers/owners of more than 300 buildings have used an incentive zoning program to add square footage, which has led to the creation and/or expansion of 500 parks. This includes much of the "privately-owned public space" that residents and tourists enjoy, such as open space, playgrounds, and fountains.

Both incentive zoning and TDR endeavor to optimize market forces to shape development and allow for additional development with accompanying predetermined community benefits. However, TDRs specify the geographical areas targeted for increased growth and selected for conservation, based on a number of factors; while incentive zoning overlays do not have targeted sending and receiving areas. In contrast, it is conceivable that an incentive zoning program would lead to patchwork development that is denser on a parcel-by-parcel basis. However, the development parcels might not be connected, but rather isolated, which may result in a fragmented environment and be challenging for the municipality regarding the provision of public infrastructure and services. *One can conclude from this that TDRs provide greater opportunity to shape the form of development and increase capacity to protect larger areas by designating them as sending areas.* Thus, the potential for ecological fragmentation is less of a concern with a TDR program and more of a concern with incentive zoning: for example, in an incentive zoning scenario, it is possible for a patchwork development pattern to emerge in which one parcel is developed to the maximum while the adjacent land remains as open space and the parcel across the street develops based on existing zoning. By designating sending and receiving areas, TDRs are more effective at preserving the character of the community, protecting a working landscape from incompatible adjacent use and maintaining a consistent aggregated aesthetic, because they designate geographic areas or land characteristics for both increased density and conservation.

The State of Knowledge on Transfer of Development Rights

There is a cohesive message that emerges from a review of the academic literature on transfer of development rights (TDRs). While the body of literature is somewhat limited, it suggests that most TDR programs share a predictable set of barriers to implementation and effective operation, while also sharing many clear benefits. From the literature, one can glean a stable set of “best practices” that can help communities overcome common impediments, thereby, enabling them to realize the environmental and economic benefits of implementing a TDR program. Finally, there is some evidence that TDR programs can be categorized into two broadly defined groups: (1) programs for rural communities and (2) programs designed for suburban communities. TDR benefits are optimized only when variances to zoning of the intended receiving and sending areas are strictly enforced.

This section begins with articulating the identified barriers to successful TDR program development and implementation. Incorporated in this section is a discussion of how employing “best practices” can help mitigate potential stumbling blocks. Benefits that can accrue from the implementation of a well-designed and well-managed TDR program are presented in the second section. The final section provides an overview of the two different approaches that rural and suburban communities generally adopt.

Best Practices Assuage Potential Pitfalls to TDR Program Development and Operation

Successful program development and operation is often stymied by inadequate public education and engagement. *TDR success is dependent on ensuring early and meaningful public participation.* This participation should educate the community about the nature and structure of TDRs and provide a forum to hear legitimate concerns from all stakeholders. The impediments to optimal TDR performance are best understood as the other side of the coin of best practices.

Without creating an efficient market for development rights from both supply and demand sides, TDR programs will not be optimally implemented. Barriers to creating such a market can emerge as the result of many factors, including:

- poorly valued pricing of development rights;
- ineffective regulatory design;
- long transaction time (i.e. high transaction costs);
- imperfect information; and
- sending areas with a baseline density that is too high or too low.

Also contributing to poorly functioning TDR programs are political factors, which can impede an efficiently functioning market. The degree of political feasibility can stymie the process before it even begins or can create inordinate transaction times that deter developers and landowners from participation. Similarly, the institutional capacity to develop and manage a TDR program can lead to

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poor design and/or ineffective management. Some research suggests that the absence of state-enabling legislation can be difficult to overcome. However, this is not an issue in the State of New York (see Appendix 3).

All research and case studies suggest that the lack of demand for TDR credits is the primary reason TDR programs underperform. Preventing this outcome requires early and meaningful stakeholder participation in the process of developing a successful TDR program. While public participation and transparency are necessary for success, they are not sufficient conditions. Ultimately, demand is most dependent on prevailing real-estate trends in the community.

Scholars and TDR practitioners agree that each of these potential pitfalls can be surmounted by the implementation of state-of-the-art practices. All researchers agree that there is a strong need to educate all stakeholders about TDR programs. In economic terms, the failure to do so would result in imperfect information and would introduce a perception of high risk and undermine the creation of an efficient market for development credits. Educating key stakeholders and community residents can assuage the political risk that can stymie the creation and the efficient operation of a TDR program. The education of all affected parties is also the foundation for the creation of the vision, goals, and program design details that ultimately determine program efficacy.

Table 1: Barriers to Optimizing Transfer of Development Rights Programs

Potential Barriers	# of Studies
Demand Side	
Persistent problem on demand side of TDR markets (market demand)	6
Inefficient regulatory design (restriction, transaction time, increase in uncertainty)	6
Free density issue on demand side	2
Supply Side	
Imperfect Information	7
Design can limit supply (restriction, transaction time)	3
Sending areas have too high of a baseline density	3
Both	
Political Feasibility	7
Institutional Capacity	4
Underlying Zoning	4
State Enabling Legislation	1

Sources: n=8: Pruetz and Standridge 2009; Walls and McConnell 2007; State of Massachusetts n.d.; Taintor 2001; Koptis et al. 2005; Johnston and Madison 1997; Kaplowitz et al 2007; Hanly-Forde et al. 2011

Most scholars use a market-based reasoning to identify the potential creation of “market inefficiencies” from a supply/demand perspective (see Table 1). The market analysis is an appropriate methodology, as TDR programs are credited with being a market-based solution to inefficient land use. Conducting a market analysis can reveal how the program design, public participation, and the role of public action can coalesce to mitigate potential market failures, such as imperfect information. At their core, TDR best

practices are recommendations for designing a successful “transfer of development rights market” in a community by eliminating factors that manifest as market imperfections (see Table 2).

Table 2: Success Factors for Transfer of Development Rights

Success Factors	# of Studies
Demand for Receiving Area Bonus Development	8
Education of all Stakeholders	7
Market Incentives: Transfer Ratios and Conversion Factors	6
Underlying Land Use Restrictions	6
Receiving Customized for Community Context	5
Ensuring Developers will be Able to Use TDR	5
Strong Support for Environmental Conservation	5
Simplicity	5
A TDR Bank	5
Work in Concert with Other Preservation Tools	5
Strict Sending Area Development Regulation	4
Infrastructure Capacity of Receiving Area	4
TDR Promotion and Facilitation	2
Scale of Sending and Receiving Zones	2
Limited Alternatives to TDR for Achieving Additional Development	1
State Enabling Legislation	1

Sources: n=8: Pruetz and Standridge 2009; Walls and McConnell 2007; State of Massachusetts n.d.; Taintor 2001; Koptis et al. 2005; Johnston and Madison 1997; Kaplowitz et al 2007; Hanly-Forde et al. 2011

A market-based approach effectively incorporates existing and future capital planning of public infrastructure influence on the price of land. By doing so this approach optimizes the return on infrastructure investment and influences the geography of development to set the “market clearing price” of a “development right.” Of course, other factors are important in this calculation as well. These include, but are not limited to the following (Nelson et al. 2012):

- regional real-estate trends;
- factor costs;
- underlying zoning;
- location and rules for development within the sending and receiving zone(s); and
- real-estate trends specific to the affected areas and their local community.

Examples of how successful TDR programs surmounted these challenges are provided in the case study section of the report.

All businesses like to avoid unnecessary risks and costs. The development process has some uncertainties that can only be resolved through the adoption of effective policies that are well specified, that stipulate a clear process with designated timeframes, and that are applied in a uniform manner without “surprises.” Zoning, variances, and environmental regulations were cited repeatedly by

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developers (both in interviews and in case-study research) as the primary regulations that create uncertainty in their business models. To combat this perceived or real problem, many states and communities have deployed a “one-stop-shop” strategy to better communicate the process, timeline, and goals of the policy. This enhanced communication also expedites the process from time-to-file to decision making. This is often achieved by redesigning the “delivery process” so prospective developers can go to one office to meet with one person who is responsible for the project. Here prospective developers will receive information on what regulations apply and who is responsible for enforcement, will be provided with the necessary forms/documents, and will be offered assistance in finding answers to, often, complex questions.

TDRs that conform to best practices accomplish one-stop-shopping through the use of an independent third party to manage transactions in the “development rights market” created by the public process. These TDR banks, as they are often called, are typically not-for-profit, 501(c)(3) organizations that have expertise in conservation easements, the purchase of development rights, and an acute understanding of the host community’s development-approval process. Finally, most successful TDRs have incorporated a specific timeline that accelerates the approval process relative to the community’s existing traditional zoning ordinances.

Benefits From TDR Programs

The literature and case studies document a host of potential benefits that may accrue from a successful TDR program (see Table 3). Many of the benefits are related to market logic and measurable by monetizing the economic value. Other benefits exist outside of a market-based analysis, as they cannot be reduced to a simple “market value” necessary to be understood using economic theory.

Table 3: Benefits of Transfer of Development Rights

Potential Benefit	# of Studies
Preserves land (historic, cultural, natural assets) with little or no cost to government	7
Compensates landowners for value of development rights	7
Accommodates growth in the region/community	4
Social welfare benefits improvements	4
Market drive, thus in theory transactions are rational raising utility and profit	3
Relatively easier to implement than zoning	3
Uses private investment for preservation	2
Reduces uncertainty in land markets	2
Less cost to administer than alternatives	2
Preservation is permanent	1

Sources: n=8: Pruetz and Standridge 2009; Walls and McConnell 2007; State of Massachusetts n.d.; Taintor 2001; Koptis et al. 2005; Johnston and Madison 1997; Kaplowitz et al 2007; Hanly-Forde et al. 2011

These benefits are interrelated. Specifically, if one is achieved, others will result. Using farmland as an example, the benefits might include:

An Analysis of the Potential for Transfer of Development Rights Programs in the Capital Region

1. Generates more tax revenues than the value of municipal services, particularly education, that it requires;
2. Provides market compensation for landowners by paying the landowner for the development rights;
3. Accommodates community development that is cost effective;
4. Enhances the value of adjacent parcels;
5. Preserves working landscapes;
6. Improves water quality and reduces the risk of flooding;
7. Creates or maintains recreational opportunities; and
8. Provides a host of social benefits that are not easily reduced to a monetary value.

The preponderance of evidence documents that wetlands, forested lands, agricultural uses, and other forms of open space use significantly fewer municipal services, relative to other land-use types, for the amount in property taxes that are paid on such lands (Bunnell 1997; Burchell 2002, 2007; Costello 2006; Ladd 1994; Levine 2005; Lewis et al. 2007). This open-space land use also provides essential environmental services with numerous benefits (AFT 2002; Brabec 1994; Bradec & Smith 2002; Camagni & Gibelli 2002; Cieslewicz 2002). Furthermore, fiscal expenses to provide public infrastructure and services for compact mixed-use development patterns are low compared with built environments that stem from traditional Euclidian development patterns of low-density, single-use zoning (Bunnell 1998; Burchell 2003; Burchell et al. 1993; Lewis et al. 2007; Speir & Stephenson 2002). Economic and public fiscal benefits also result from the fact that TDR programs do not diminish the prospects of additional growth in the community and the opportunity to expand revenue and diversify the sources of revenue (Nelson et al. 2012; Pruetz & Stan 2009). In contrast to purchase of development rights or conservation-easement programs, TDRs do not reduce the total available number of development rights. In transferring the potential development to a receiving area while financially compensating the landowners in sending areas, communities can continue to develop (Costello 2006; Nelson et al. 2012). *The most recent research documents that one public dollar invested in open-space preservation, made by the New York State Environmental Protection Fund, returns more than seven dollars in benefits such as air and water purification, flood protection, enhanced biodiversity, improved groundwater-recharge rates, soil stabilization, erosion control, and providing a carbon sink* (TFP 2012).

The benefits of open space include increasing the value of adjacent land, which can bolster the fiscal health of a community. Preserving working landscapes contributes to the economic vitality of the community because they create opportunities to increase the local circulation of consumer dollars, are critical to local food systems that have health benefits, and increase local income-multiplier effects. Finally, the intrinsic value of a working landscape—cherished scenic vista, wildlife habitat, or forgotten footpath through the forest—needs to be considered when making land-use decisions.

The environmental benefits of open space also include improved air and water quality, increased flood protection, a reduced carbon foot print, and reduction in urban heat bubbles (Nelson et al. 2012; TFP

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2012). The spaces are filled with potential for creative recreational uses (a ropes course, outdoor education, rock climbing) as well as more traditional options such as hunting, fishing, cross-country skiing, birding, snowmobiling, and horseback riding. Minimal-investment improvements to create a waterside trail and a picnic area have been shown to improve the quality of life in communities and to enhance property values within the area.

The aggregation of benefits from a cleaner environment, preservation of open spaces and working landscapes, and enhancement of desired attributes of a community's character create positive externalities in the form of spillover social benefits. These benefits are difficult to quantify in monetary terms, but there is solid empirical evidence that shows that higher-pollution loads increase health risks and costs, that built-environment impacts personal activity and pollution loads, and that the aesthetic appeal of places increases their economic value (Cieslewicz 2002; Costello 2006; Lewis et al. 2007; Mitchell et al. 2006; TFP 2012). Estimating the value of these benefits is further complicated by the knowledge that the benefits include a reduction in stress, which in turn has multiple health benefits.

Two Approaches to TDRs

Model TDR ordinances are divided into two primary approaches that are shaped by community characteristics and physical geography, both of which are intertwined with history, culture, economics, and other factors. Communities may decide to stress sending-area preservation by creating disincentives to development in areas valued in their current form by residents, businesses, elected officials, and civic organizations. The alternative approach has been to rely on development bonuses to attract private capital investments. Investors are attracted to new opportunities created by the possibility of increased densities, alternative building forms, and potentially mixed uses that can generate higher returns on investment. These new rules must be clearly defined by the TDR program and, ideally, are attached to an unambiguous timeline for the permitting-and-approval process.

More rural communities tend to prefer the first approach. Often communities that take this approach are less comfortable with an increase in overall development. These places typically are seeking to preserve existing resources while maintaining the community character. They are more likely to have a well-developed town center but will lack centralized water and wastewater systems. In many respects, the Town of Stillwater could be viewed from this perspective, though the pace of change there is accelerating away from this position.

Bethlehem fits better into the second primary approach. This approach is associated more with suburban places that may have multiple cohesive centers but lack a "core." Many of these communities are reacting to decades of restrictions on land development and the resulting depreciation of the environment. They desire to foster growth and density levels that are higher than existing zoning in designated areas. These areas tend to have existing infrastructure capable of absorbing growth, including water and wastewater networks. In areas such as these, many residents link success to curbing existing sprawl-development patterns.

Lessons From Successful Programs

Transfer of Development programs are found across the nation in various settings and operating structures, depending on the host community's characteristics as well as designed intent and goal of the program. In the United States there are approximately 239 TDR programs, though not all programs are actively used, and only a few dozen are considered successful. The review of seven successful TDR programs and the academic literature reach markedly similar conclusions regarding the TDR practices that optimize the desired outcome. The programs are from five different states with wide variation in land-use law and practices: two in Florida; two in Maryland; two in Colorado; and one each from New Jersey and Washington State. Each program has some unique qualities but all are successful for similar reasons. The primary drivers and most-often-noted best practices of successful TDR programs are discussed in more detail below. Table 4 provides an overview of which of the five programs analyzed utilized specific best practices, revealing a clear pattern in the structures and operations of successful TDR programs.

Table 4: Comparison of Successful TDR Programs

Location	Year Started	Amendments	Area of Program (Acres)	Acres Preserved	# of Parcels	Third Party Admin.	Scale
St. Mary's County, Maryland	1990	2002 to include Floor area increases for commercial	Only the RPD (Rural Preservation District) can sell TDRs, but anywhere can use them, including the RPD) 178,000 Acres in RPD, additional 50,000 acres for whole county.	2,846	380	Yes	County
Calvert County, Maryland	1978	Many times, 14 times since 2006	Sending area 111,600 Acres, Receiving Areas 12,100acres	23,000	16,400	Yes	County
Pitkin County, Colorado	1994	2006	County is 622,720 acres, City of Aspen is 2,240. The size of each zone is unclear.	7,250	325	Yes	County
Collier County, Florida	1974	2002	County is 1.3 Million acres, 41,535 acres of sending zone, 21,020	3,612	na	Yes	County
Sarasota County, Florida	1982	1999, 2004	83,500 of Sending zone acres, 36,000 of receiving zone.	na	na	Yes	County

Note: No recent data available is represented as na.

Demand Drives Success

As asserted in the academic research and also revealed in the case studies, creating an efficient TDR market with sufficient demand is the most critical factor for achieving a community's goals. Successful programs are typically found in areas with a strong local housing market and above-average demand for development. Areas with a strong housing market may have a lucrative tourism industry, a growing population, or other drivers influencing developers to build to meet the demand. Many TDR programs tap into this demand, requiring or voluntarily allowing developers to participate and receive incentives. Incentives may include additional square footage, more units, or zoning variances that may otherwise be

limited under the property's zoning requirements. Incentives given to developers for participation in a TDR program can provide additional units, helping developers to maximize potential profits on a property lot if it can bring additional revenue to the developer beyond the cost of participation in the TDR program.

Third-party Alliances

A second important factor found in successful TDR programs is the use of an independent, third-party land bank. This third party can be an existing land-conservation group or an entity created for the distinct purpose of operating the TDR program. Beyond managing the transfer process, third parties also tend to provide myriad TDR-related services. They can provide record keeping of TDR sales, education of community stakeholders, facilitation of sales, lists of interested parties, services for managing transactions, ongoing stewardship of conservation easements, and, in some cases, permitting services for TDR-related projects.

Beyond inventory and facilitation, the third party has an explicit function to be a politically neutral party and to mediate between all stakeholders, including elected officials and permitting authorities, as well as landowners and developers. *An independent neutral third party does not determine who can participate or what the rules are regarding land-use policy.* This minimizes the risk of distorting the valuation of transfer credits by creating transparency of sales, allowable uses of TDR credits, and fair treatment of all parties. Lastly, many third parties should operate as a one-stop shop, or single place for the sale, purchase, and administration of TDR credits, reducing the transaction cost for buyers, sellers, and the municipality. Creating a simple process for interested developers and landowners that is easy to navigate facilitates demand for the purchase and transfer of development rights.

Amenity Funds Creates Demand for TDR Program

King County, WA (the core of the Seattle metropolitan region) adopted a TDR to curb urban sprawl and protect dwindling open space and working landscapes. The county wide program needed to encourage designated communities to accept additional density to absorb the anticipated growth that would protect the most coveted assets as determined by the community. Their solution was to develop a flexible "amenity fund" to help receiving communities to upgrade infrastructure to support the increased density and/or provide additional community amenities such as public art, streetscape improvements, parks, and community facilities, among others (Wall and MacDonald 2007).

N.J. Demonstrates the Value of Independent Third-Party Administration of TDRs

New Jersey is often cited as the first to develop independent third-party administration of a TDR program. The New Jersey TDR- enabling legislation has a provision for the creation of a land bank by the municipality. The efficacy of third party administration has been demonstrated in two important TDR cases: Pinelands, one of the largest preservation programs utilizing TDRs in the country, and Lumberton and Chesterfield townships, very successful TDR programs in small towns.

The Pinelands Commission was created to oversee a spatially-large area of 53 municipalities in 4 counties and has used a TDR program to reach its objectives of preserving land. In 1985, it created a Land Bank primarily to provide administrative services and secondarily to create other supportive programs to match buyers and sellers, educate stakeholders, etc. The Pinelands is one of just several programs in the nation that has used a third party to handle the tracking, selling and servicing of their TDR program, and all are amongst the top in TDR success (JCCPD 2012).

Simplicity and Clarity

Simplicity is a major key to the adoption, use, and success of a TDR or IZ program. The language and process of buying, selling, and use of TDR credits is easily understood in the most successful programs. The developers and landowners appreciate easy-to-understand terms. Clarity and simplicity of the TDR program terms and process go hand-in-hand with the previous success trait, a third-party land bank.

Program Scale and Reach

The geographic extent, or scale, of a TDR or IZ program is an incredibly important trait of successful TDR programs. Nearly all successful TDR programs in the United States have been operating at a scale of a county, or equivalent, level, incorporating more than one municipality. This provides a rich number of properties for TDR credits to be sent from, to a likely larger metropolitan area with an array of neighborhoods in different stages of development. A growing city in a large, rural county is the most typical situation, because there is demand in one area of the county, land for conservation in another area, and the opportunity for alternative areas to develop is limited or non-existent. Smaller-scale entities are less able to support TDR programs because the developers can avoid TDR programs by moving to an adjacent town, undermining potential demand. A limited number of land parcels in the TDR service area also restricts options and reduces the size of the market, creating a downward pressure on demand.

Coordination Between Land-use Plans, TDR, and IZ Programs

Good community master plans, solid zoning ordinances that support the objectives of the master plan, and a well-formulated program that accounts for the vision and underlying zoning are separate traits but are inextricably linked. The zoning ordinance can help define parcel values in the sending and receiving zones of a TDR program and is the set of regulatory measures created under comprehensive direction in the master plan. *Well-designed zoning ordinances that*

Scale Matters

Nearly every successful TDR program operates at the county or larger scale. Kings County, Washington, has preserved the most land and has an area of 2,300 square miles, while Collier County, Florida, has preserved 3,450 acres of its 2,300-square-mile area. Operation of the TDR program seems to favor county-wide programs over home-rule states but does not preclude success at other scales. Chesterfield in the Philadelphia PMSA and Lumberton Township in the Trenton PMSA demonstrate success on a smaller scale when factors like proximity to major metropolitan areas influence housing markets, price, and demand.

Coordinating Zoning with TDR and IZ

Situated just a few miles northwest of Washington DC and dissected by the Capital Beltway, Montgomery County, MD, this rural farmland was ideally situated to absorb DC's accelerating growth. Rapid urban expansion, in part fueled by federal government growth and the relocation of operations to the County, intensified the competition for land, threatening the traditional farming communities, and leading to the loss of prime agricultural lands. By the 1980s it was clear that traditional zoning efforts beginning in 1964 were inadequate for addressing land use conflicts. The loss of two thirds of agricultural lands from 1950 catalyzed the development of a TDR. Since inception of one of the most successful TDR programs, over 49,000 acres (of the remaining 90,000 acres) have been preserved. Observers agree that one of the keys to the success of the Maryland TDR program is the linking of "bold downzoning" to the development of the program (Walls and McConnell 2007). "Bold downzoning" is not politically feasible in many communities.

are fair, comprehensive, and effectively enforced create more-stable land markets. Under these conditions, estimating the potential build-out for any parcel—and thus the value of a development rights—is more predictable and reliable. The reduction of uncertainty increases developers’ and landowners’ confidence, thereby, promoting participation.

TDR programs must operate in concert with the zoning ordinance to create the appropriate sending and receiving areas that maximize the opportunity for TDR credits to provide added value for developers. The sending/receiving overlays must support the incentives for buying TDR credits: for example, if the TDR program employs increased density in the receiving area as the incentive, but increase above existing zoning limits results in only limited positive effects on developers’ profits, developers may avoid what they perceive as higher risk with limited gain. In other words, changes in density and/or use granted in the receiving area (once the transfer of development rights are purchased) must create enough additional profit for developers and minimize uncertainty. The difference needs to exceed the price of the development rights, including the transaction cost and administrative fees and any perceived risk in the process, and provide a relatively high return on investment (Nelson et al. 2012; Pelletier et al. 2010).

Incentives

Additional dwelling units (DU), increases in allowable square footage, or other up-zoning policies can bring developers increased profits, but incentives or bonuses remain key for the success of TDR programs. Landowners in sending areas could receive bonuses to spur participation, but the most typical strategy is providing incentives to developers to compensate them for any real or perceived risk. Most programs with incentives give extra units or square footage, sometimes only for use in specific areas, to spur development: for example, the developer may purchase ten “development credits” for a sending area landowner, which, when transferred to the receiving area, the TDR overlay permits, in addition, a 10% bonus in square footage per unit. In the end, participation gives the developer the current zoning allowance plus his or her TDR credit worth and a bonus.

Another incentive is offering an expedited review process. Permitting and zoning variances take time and cost money for developers. The expedited review process can still include planning-board approvals and some zoning requirements and adhere to the master plan and the community vision. The incentive for the developer is a simpler set of rules and a shorter waiting time to start construction (Nelson et al. 2012; Pruetz et al. 2009a; Wall & McConnell 2007).

Incentivizing Participation at its Best

A great number of TDR programs from across the nation have provided incentives to developers and/or landowners for participation, even when accompanied by certain requirements. Collier County, Florida provided “bonus density” for early participation in its TDR or other environmental protection programs. Demonstrating early success attracts additional demand. Other localities have given lower taxes to landowners who participate (King County, Washington), additional height beyond limits (Issaquah, Washington), or extra square footage (Redmond, Washington) for participating. Each example demonstrates the need to match the selected incentive to target population needs and desire (Nelson et al. 2012; Wall and McConnell 2007; Koptis et al. 2005)

Flexibility and Follow-through

A successful TDR program directs development and protects open land. Eventually the program may reach its goal or the capacity of the area's development/preservation possibilities. Alternatively, programs can fall short of their intended goals. Programmatic flexibility and follow-through from leaders can correct a struggling program or redirect development pressures. Flexibility in a TDR program equates to hearing alternative scenarios that may not have been heard or possible when the program was created. Therefore, a program's decision makers, developers, and landowners need to understand that community conditions can change, requiring the need for flexibility to adapt the TDR program to new stimuli. Follow-through in a TDR program is to monitor the success and usage and make amendments regularly. Some programs complete annual reports and make necessary amendments often; others may wait until a problem or program objective is reached. *The monitoring and goals are different for every community, but flexibility and follow-through are two traits that lead to success and should be sewn into a program as its inception* (Koptis et al. 2007; Nelson et al. 2012).

Other Supportive Policies

There are other policy options that support TDR programs, though there is less evidence of their contribution to success. Incentives may include using short- and long-term capital investment that support increased density in the receiving area and, perhaps, more allowed uses. Providing other amenities in the receiving zone may also attract demand for TDR credits. *TDR programs need to understand that businesses reliant on a working landscape need to be supported.* This begins with the development and location of the sending area or areas. Additional support may be provided through business-assistance programs, marketing support, and right-to-farm legislation, and so on.

Though the literature on TDRs does not emphasize longer-term parameters, the need for benchmarks and reflection should be built into the process. This includes periodic reviews of the benchmarks as well as program operations. It is also necessary to consider how to adjust the price of a TDR to reflect changes in the market. Another long-term consideration is whether the program will "sunset" on a predetermined date or in response to target objectives being achieved?

TDR Programs in New York State

Within New York State, TDR programs have failed to meet expectations, with the exceptions of the New York City (NYC) and, to a lesser degree, Clifton Park. However, both of these programs are atypical. Real-estate markets in New York City are unparalleled, with the combination of intense demand and the desire to protect historic structures and neighborhood characteristics creating a unique opportunity. The Clifton Park case is best characterized as more of a hybrid program that more closely resembles incentive zoning, since the defined sending and receiving areas are coterminous.

In New York State, host communities have similar reasons for developing TDR programs (see Appendix 4 for more details) and are concerned about the impact of uncontrolled development on environmentally

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sensitive areas. Among the most prevalent goals of the TDR programs in New York State are to protect the following:

- productive agricultural farmland;
- environmentally-sensitive wildlife areas;
- wetlands, water-recharge areas, and other water resources;
- lands containing a slope of 15% or greater;
- scenic vistas and viewsheds; and
- rural character and community historical features.

Comparing New York State TDR program characteristics to identified best practices reveals that the suboptimal program outcomes are in part related to their design, though the relatively short program life and, in many communities, the sluggish real-estate markets also impede performance. Perhaps the most problematic issue in the cases reviewed is that the TDR programs were at least partially—in some cases fully—administered by the existing municipal operation. This organizational structure has been documented in the literature and case studies of successful programs to interfere with the efficient operation of TDR markets, with a corresponding reduced market demand. In the case of the Town of Westport, the burden of a special use permit is needed before a developer can receive approval of a project, further increasing the transaction cost of participation.

Another significant issue is the geographic scale. In the more successful TDR programs across the United States, programs are implemented at the county level and incorporate multiple municipalities. However, the strong home-rule nature of New York State land-use decisions is difficult to overcome, most likely restricting the geographic extent of existing programs in New York State to the municipal level.

Recent policy changes discussed above and the recent revision of the New York State TDR guidelines (Coon 2011) signal the State's desire to encourage more-sustainable land practices. The State has concluded that there are three primary benefits from TDRs: (1) they permit the preservation of land without loss of new development in a community and do so “without depriving landowners of a reasonable economic return on their property” (Cuomo & Perales 2011: p. 12).” Perhaps the recent revisions to the New York State TDR program guidelines in 2011 will mitigate some of the real or perceived risks and address stakeholder concerns that may have been deterring participation (Cuomo & Perales 2011).

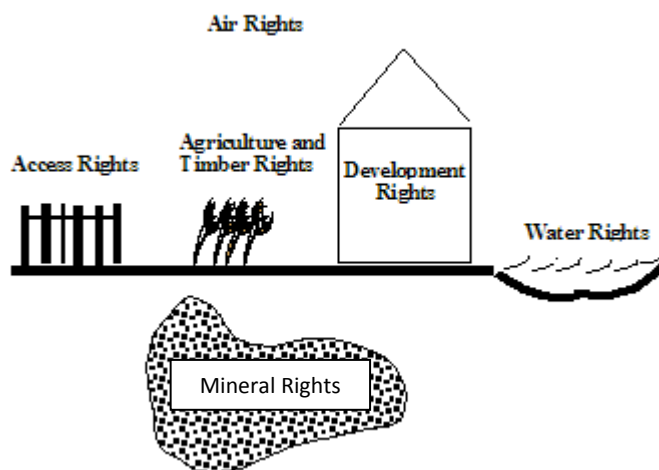
A Hypothetical Example

The analyses of the case studies and literature on TDR programs reveal a strong consensus that TDR programs that accomplish their policy objectives have similar characteristics. This provides us guidance regarding how to develop successful programs. First, the community must determine that there is a consensus among stakeholders to support exploring the potential of TDR programs and educate themselves about TDRs. If the community decides to pursue a TDR program, a transparent participatory process begins with defining the sending and receiving areas. Though the order of each step in the process may vary slightly, the factors that influence success and community concerns have very limited variability. Once sending and receiving areas are determined, communities can establish allowable uses and densities for the receiving area. The critical steps in the development process are (1) articulate the administrative structure of the program, (2) estimate the cost to operate the program, and (3) set the value of a development right (Appendix 5 provides a more detailed road map).

Selecting Sending and Receiving Areas

The community-driven selection process determines the areas that are important to protect from development, commonly referred to as sending areas, as well as the places that are appropriate for additional growth, referred to as receiving areas. Factors to consider in this process are (1) critical ecological habitat and/or areas that provide essential ecological services; (2) the location of infrastructure that supports development (roads, water, and sewer); (3) historical features of the community; (4) current and future land use and zoning; (5) agricultural viability; and (6) environmental constraints on development (e.g., steep slopes, fragile soil types, depth of bedrock, flood plain or wetland conditions). Depending on the designation—sending or receiving—these attributes may be desired or impose impediments to optimal TDR operation. Only through effective enforcement of the target growth areas will maximum benefit be ensured.

Figure 1: Typical Bundle of Property Rights



Source: CCE 2012

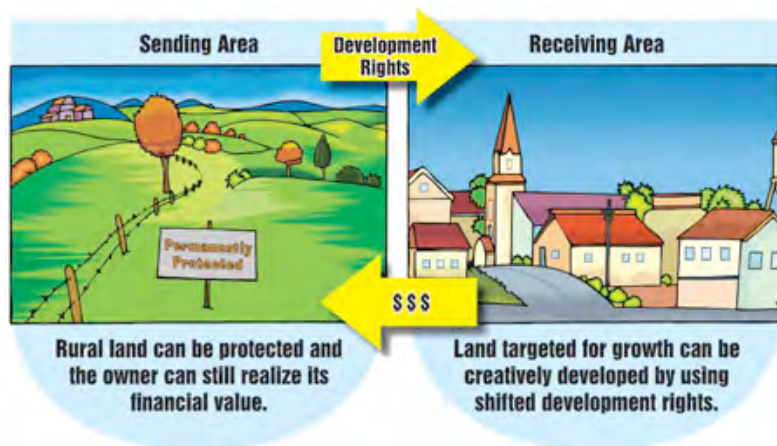
In most cases, a fine-grained analysis is necessary to determine the nature of the relationship. Historical assets may be considered for preservation and influence designation of a sending area, such as working landscapes, or they might serve as the ideal anchor upon which to center development. For example, a town square with historic structures like a library, a place of worship, a historic hotel, an aging theater, or one of many other potential community icons can serve as anchors for a vibrant community core and receiving area. In either case, they can serve to preserve and enhance

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the character of the community while creating broad economic benefits (Costello 2006; TFP 2012).

To illustrate the concept of transferring a development right, let us assume that Anywhere, USA, has reached a community consensus to adopt a TDR program and has designated the sending and receiving areas. Each parcel in both the sending and receiving areas has a bundle of associated rights (see Figure 1). In a TDR program, when a landowner chooses to sell development rights, the right to subdivide and develop (based on existing land use law) is the only property right transferred. The landowner can continue to use the property; sell, lease, or improve current structures; or carry on any other permitted activities. In exchange, the landowner is provided fair market value for these development rights. As with conservation-easement designations, in most cases, the TDR programs will permit new nonresidential and noncommercial development of barns and other outbuildings. TDR programs also need to address how to manage mineral and logging rights, as these are separate from property rights.

Figure 2: Sending and Receiving Areas



Source: JCCPD 2012.

As an example, parcel X, located in the sending area is 100 acres, of which 80 acres are developable, (20 acres are wetlands and other restricted areas). Of the 80 buildable acres, another 10% to 15% percent is needed (an average) for roads and other infrastructure. In this example, 10 acres will be used for infrastructure purposes, leaving 70 acres for residential lots. The zoning on the property permits subdivision for one single-family, detached housing unit per 2 acres. If the property were subdivided for

development, a full build-out would yield 35 housing units. *The difference in the value of the land with development rights and the land without the development rights is the fair market value of the development rights.* The TDR bank purchases the development rights at full or partial fair market value and holds them as development credits available for sale to a developer for use in a receiving area.

Once the TDR bank has purchased development rights, a developer may decide to purchase the development-right credits to enhance the profit opportunities of locating additional development in a town-designated receiving area (see Figure 2). Within the receiving area, existing zoning is still effective unless the developer has purchased development-right credits that trigger eligibility for benefits associated with those rights. These may include increased densities, new allowable uses, increased bulk per parcel, a fast-tracked approval process, or even some form of financial incentive within the receiving area. To make the receiving area more attractive to developers, communities could approve infrastructure upgrades—street improvements, public uses (a library, a post office, a city hall, etc.) to attract people and enhance the commercial prospects—and/or cooperative marketing of the area. When successful, the community can continue to grow, enhance its character through preserving critical

built and natural assets, build a stronger economic environment, and improve the quality of life for its residents.

The land use and bulk regulations are major factors in determining the fair market value of transferred development rights. The underlying zoning in the program areas determines the total available development rights in a community (see the previous example). In a TDR program, these rights can be fixed so that the total quantity of development rights

transferred from a sending area will be exactly equal to the number of increased housing units newly permitted in the receiving area. Alternatively, TDR programs can design the development rules in the receiving area to allow for additional development density and/or coupled new allowable uses (see Figure 3). Because many landowners may not wish to conserve their property, the community might consider designating a sending area with more theoretical development rights than the receiving area will accommodate.

Figure 3: Transferring Development Rights

Before Transfer of Development Rights:



After Transfer of Development Rights:



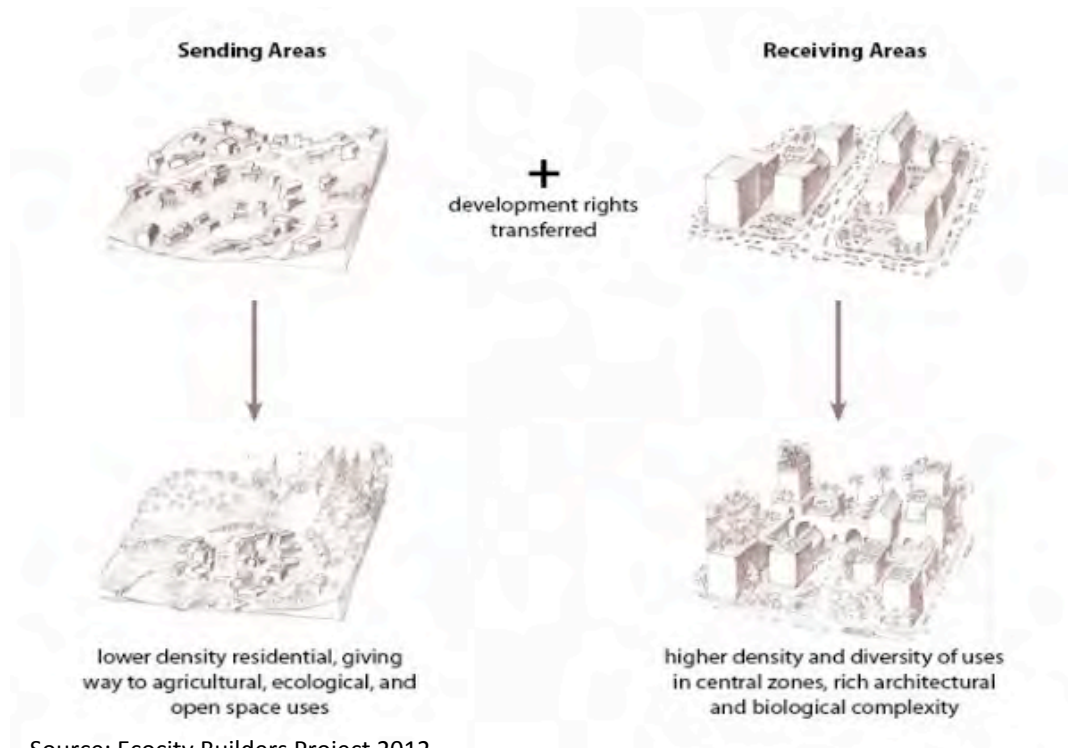
Source: Modified from Spotsyhome 2012

Determining the Allowable Use/Form of a Receiving Area

With TDR programs, the legal authority to create receiving and sending areas and to determine allowable uses and densities in the receiving areas always remains entrusted to the current public entities and local elected officials. In determining receiving-area development characteristics, all stakeholders need to be consulted. All parties involved must be educated in regard to the key factors of success as well as understand the critical community characteristics that will shape the future form and use of a receiving area. Key community characteristics include (1) location and capacity of supporting infrastructure for existing and planned development; (2) community vision; (3) demand for allowable land uses in receiving areas; and (4) existing and forecasted development pressure.

When designing permissible uses and densities in a receiving area, the stakeholders accommodate the transferred development rights in addition to the existing development rights according to the existing zoning statutes (see Figure 4). Beyond this requirement, stakeholders are free to determine uses, design standards, form, and all other land development permitted by law.

Figure 4: Hypothetical Density, Form, and Use Changes



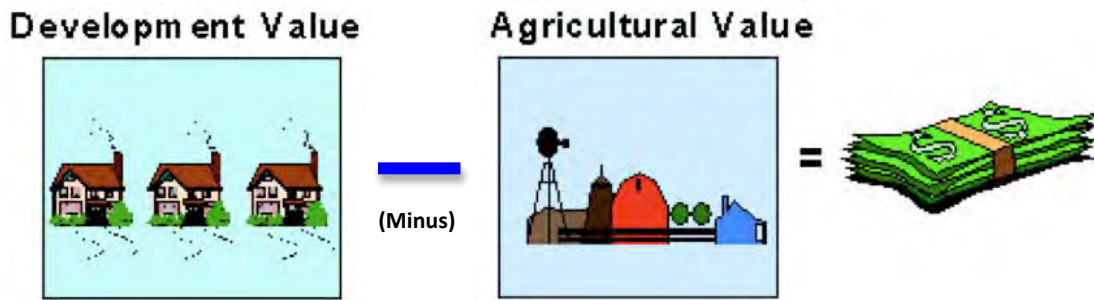
Source: Ecocity Builders Project 2012

What Determines the Value of a Transferred “Development Right”?

Success of a TDR program is predicated on accurately estimating the fair market value of a development right. This process must be transparent and informed by a detailed analysis of local conditions by qualified appraisers. A detailed explanation of this valuation process is beyond the scope of this report. Generally speaking, demand from growth pressure is the primary determinant of the demand for development-rights markets. It is critical to understand that market demand is strongly influenced by the host community’s policy choices coupled with overall trends in real-estate transactions in the community and its region. External forces combine to create a positive economic and political landscape to explore the potential of a TDR program. These forces include volatile energy markets, shifting state and federal rules for development-related competitive grants, employment trends, and changing demographics (from nuclear-family households to single homeowners) in the housing market. In the United States, the fastest growing household type and the largest proportion of all household types is the single-occupant household.

The basic process of establishing fair market value of development rights is akin to valuing conservation easements. It boils down to the difference in the value of land with its existing development potential based on land-use law and the value of the same parcel of land without the capacity to subdivide and develop (see Figure 5).

Figure 5: Setting Fair Market Value of a TDR



Source: HCCC 2012

For illustrative purposes, assume that the development value of the land with its full bundle of rights, including the right to subdivide and complete a full build-out based on existing zoning is \$500,000. If the owner decides to sell the development rights, the agricultural value of the land is \$200,000. Subtracting the agricultural value from the prior value equals the total value of all the development rights on the property (\$300,000). Based on current zoning and other land-use law or physical constraint, a full build-out on the property would yield 10 housing units. One can then determine that the value of one development right is \$30,000, by dividing the total value by the number of permissible units of development.

Of course, with any financial transaction, there are overhead costs to administer the process. In a typical residential-real-estate transaction, there is the selling price plus numerous other fees commonly bundled into closing costs. Essentially, closing costs cover the cost of preparing legal documents, inspections, the survey, staff time, and so forth. Transfer of development rights programs encounter similar types of overhead costs. In addition, there are ongoing perpetual stewardship costs associated with holding, monitoring, and enforcing conservation easements. Thus, TDR programs need to identify a revenue stream to cover the transaction and stewardship costs.

Research on the administrative cost structure is sparse. Based on anecdotal evidence, there are two approaches: one option is acquire state or federal grants; the other option is to build the transaction costs into the TDR sales and purchases. Funding TDR program operation cost through grant funding is possible. However, it is unpredictable and requires additional effort to identify funding sources, prepare proposals, and administer grants. The second option—taking a percentage of each sale—works much like a broker taking a percentage for a real-estate or stock sale. There are a few programs that use this method. A community may choose to develop a TDR program that does not purchase any developments rights (or credits). Instead, the responsible organization only develops a database that matches landowners and interested developers. In either case, once a sale is made the program takes its percentage from the sale price to cover the cost of administration. Regardless of how the transaction fee is determined, it may be charged to the landowner, developer, or both, as decided by community stakeholders.

Regional Context

Understanding some of the history and the current situation of the communities researched in this report provides valuable context. To maximize our understanding of a community we must see it in the context to its region. This section looks briefly at the Town of Bethlehem and the Town of Stillwater to better understand their past, their current demographics and socioeconomic well-being, and the other key characteristics that shape local land-use policies in those places. The Village of Stillwater is analyzed in conjunction with the Town of Stillwater.

Bethlehem has experienced significant growth relative to the Capital Region and its three historic core cities: Albany, Schenectady, and Troy. It has been growing faster relative to the Town and Village of Stillwater. The Town of Stillwater has experienced two growth spikes: one between 1980 and 1990 and the other between 2000 and 2010. The respective growth rates are 14.5% and 10.3% (this was slower than the Town of Bethlehem and Saratoga County as a whole (see Table 5).

Table 5: Actual and Projected Population, 1980-2040

Place	Year							% Change 1980-2010
	1980	1990	2000	2010	2020	2030	2040	
Albany County	285,909	292,793	294,565	304,204	<i>307,201</i>	<i>311,707</i>	<i>316,197</i>	6.4
Town of Bethlehem	24,296	27,552	31,304	33,656	<i>35,730</i>	<i>37,510</i>	<i>39,296</i>	38.5
Saratoga County	153,759	181,276	200,635	219,607	<i>233,633</i>	<i>258,305</i>	<i>258,305</i>	42.8
Town of Stillwater	6,316	7,233	7,522	8,297	<i>8,303</i>	<i>8,661</i>	<i>8,998</i>	31.4
Village of Stillwater	1,572	1,531	1,644	1,638	<i>1,637</i>	<i>1,629</i>	<i>1,620</i>	4.2

Source: U.S. Census Bureau and Capital District Regional Planning Commission

Note: Forecasted numbers are italicized and were recently updated though are not significantly different.

Bethlehem is more affluent than the overall Capital Region and the Town and Village of Stillwater. Though Bethlehem's housing stock is slightly older than the Town of Stillwater's, the owner-occupied median value is significantly higher as is the occupancy rate (see Table 6).

Table 6: Demographic Analysis

Place	Total Population	Educational Attainment > 25			Income			Housing		
		% H.S.	% BA	% Grad/Prof	Per Capita Income	Median HH Income	% in Poverty	Median Yr. Built	Median Value	Vacancy Rate
Nation	281,421,906	40.7	21.8	8.9	21,587	41,994	9.2	1971	119,600	9.0
New York	18,976,457	40.7	22.8	11.8	23,389	43,393	11.5	1954	148,700	8.1
Albany MSA	875,583	40.4	25.7	12.6	22,303	43,250	9.4	1957	107,400	9.3
Albany County	294,565	36.6	27.1	15.8	23,345	42,935	7.2	1956	116,300	7.3
Town of Bethlehem	31,565	22.9	32.6	27.3	31,492	63,169	2.3	1966	143,700	2.8
Saratoga County	200,635	37.7	28.8	14.4	23,945	49,460	17.5	1974	120,400	9.8
Town of Stillwater	7,522	51.3	21.2	6.5	19,291	45,579	5.3	1971	102,500	8.8
Village of Stillwater	1,644	57.6	16.9	3.8	17,221	43,516	7.8	1948	91,900	7.9

Source: U.S. Census Bureau and Capital District Regional Planning Commission

These socio-demographic differences may correspond to differences in community receptiveness to a TDR program between the two communities. In either case, the interviews with stakeholders in Bethlehem and Stillwater suggest the need to further educate all stakeholders about what TDRs are and how they can be effective.

Town of Bethlehem

The Town of Bethlehem is approximately 50 square miles, of which 98.5% is land cover. The hamlets of Delmar, Elsmere, Glenmont, Selkirk, Slingerlands, and South and North Bethlehem are the primary population centers. Incorporated in 1793, Bethlehem was initially settled due to its location on the Normanskill, a creek that flows along the northern border of the town. The most populated hamlets within Bethlehem are Elsmere and Delmar.

Bethlehem is primarily a “bedroom community,” meaning that it is a place where people live, but not where they work. The town is mostly low density, suburban residential development. Another factor that has greatly influenced Bethlehem’s development is that there are three school districts within the town. The placement of these schools has contributed in a large way to the placement of surrounding homes. Residents are inclined to purchase homes located within their desired school district, and the reputations of some districts attract and retain residents.

Development has been concentrated in the north end of town in the Bethlehem School District. The fact that the town is home to portions of three different school districts creates an additional challenge to making land-use decisions as school revenues are very dependent on property taxes (see Figure 6). Within the town, there are many unique neighborhoods and hamlets, for example, North Bethlehem, Slingerlands, Delmar, Elsmere, Normansville, Bethlehem Center, Glenmont Center, Meyer’s Corners,

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Houck's Corners, Jericho, Bell Crossing, South Albany, Becker's Corners, Cedar Hill, Selkirk, and South Bethlehem. Other significant development drivers in the Town of Bethlehem include (1) the physical geography that is a significant constraint of development due to steep slopes, poor soils, wetlands, and flood plains, (2) location of key transportation infrastructure (New York State Thruway, several active rail lines, and several major state roads), and (3) existing sewer and water trunk lines.

Figure 6: Town of Bethlehem Zoning Map

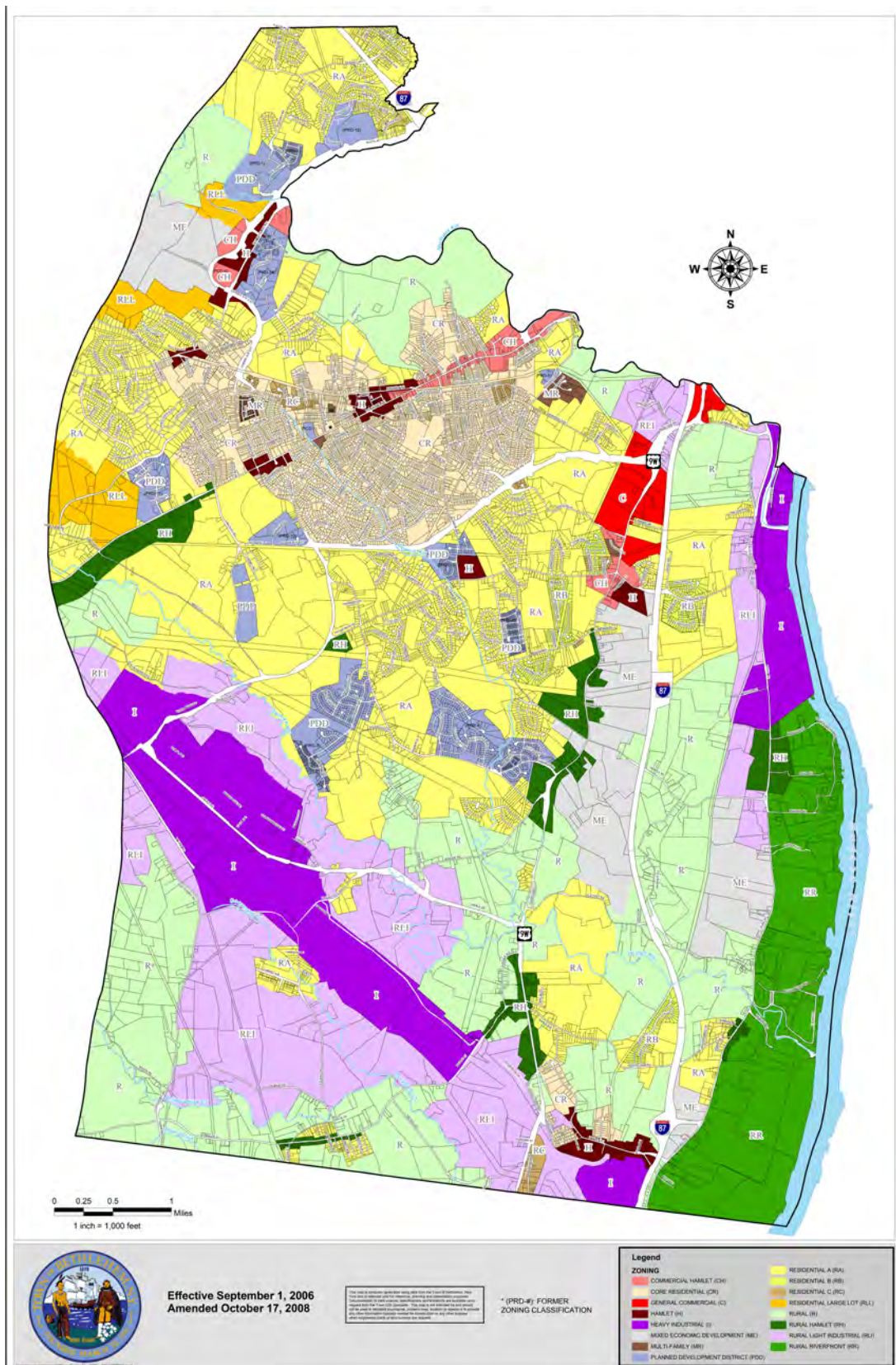


Table 7: Land Use in the Town of Bethlehem

Property Class	Parcels	Acres	Percent
All Residential Totals	10,599	9,995	70.5
1-Family	9,928	4,966	35.0
2-Family	458	197	1.4
3-Family	32	20	0.1
All Other	181	4,811	33.9
All Commercial Totals	519	1,463	10.3
General	305	1,107	7.8
Retail	10	137	1.0
Commercial Services	204	219	1.5
Recreation/Entertainment	26	563	4.0
Recreation/Entertainment	26	563	4.0
Community Services Totals	101	1,236	8.7
Education/Medical/Religious	101	1,236	8.7
Industrial Totals	28	918	6.5
Light Industrial	10	305	2.2
Heavy Industrial	18	613	4.3
TOTALS	11,273	14,175	100.0

Source: Compiled by authors

The current zoning is designed to support residential uses, yet it also seeks to encourage commercial or industrial uses to provide opportunities to residents to conveniently access goods and services and diversify the tax base. Residential use covers 70% of the community and, within the residential-use areas, half the land area is devoted to single-family homes and the other half is for multifamily housing (see Table 7). Commercial uses (10.3%), community uses (8.7%), and industrial uses (6.5%) are well designed and could dovetail well with a TDR program.

Interviews with stakeholders in Bethlehem suggest that there is a noticeable fissure between advocates for open-space protection and land conservation and those with concerns about impacts on taxes and the rights of property owners. Though there is a strong appetite for more-sustainable-land-use practices, many lean toward protecting property rights, as they interpret them based on precedent and cultural values. In the case of Bethlehem, this historic tension regarding land use was (and remains) an important issue that was an integral part of the community discussion as stakeholders began the process of developing its first comprehensive plan, adopted in 2005 (Bethlehem Town Board 2005).

This process created the shared vision for the future that builds from existing community assets and maintains the character as a

***“..community of attractive residential neighborhoods, vibrant hamlets, successful mix-use commercial centers, modern industrial facilities, and productive rural lands ...This exceptional quality of life contributes to the economic growth and prosperity of the town and region, assuring that the community can continue to meet the increasingly diverse needs and expectations of its residents in a fiscally sustainable manner.”
(Bethlehem Town Board 2005)***

The guiding principles associated with this vision, to be considered in all future decision making, include (1) adaptability, (2) diversity, (3) environmental sustainability, (4) fiscal responsibility, (5) intermunicipal cooperation and community partnerships, and (6) respect for private property (Bethlehem Town Board 2005). Recommendations include the maintenance and creation of compact mixed-use development areas and hamlets, while developing zoning to protect “stream corridors, wetlands, steep slopes and flood plains” (Bethlehem Town Board 2005).

The decision to pursue a TDR program remains that of the community, and predicting the outcome is not possible and we will not attempt to do so here. What one can say is that Bethlehem has built a community-based process for deciding its vision of the future that will serve the community well if it decides to investigate the potential of a TDR. In the opinion of the authors, a TDR may help support the vision articulated in the 2005 comprehensive plan. But only the community can decide if this land-use tool is a good fit for its objectives.

Town of Stillwater

The Town of Stillwater is located at the eastern border of Saratoga County. As is common in New York, a township (in this case, of Stillwater) wholly contains the village of the same name (Stillwater). The town covers approximately 43.6 total square miles (41.4 square miles of land; 2.2 square miles of surface water) and is primarily a residential community. There has been limited growth pressure in this area of Saratoga County until the recent development of the Global Foundries' site that straddles the western border of the Town of Stillwater and the eastern edge of Malta. This rustic farming community that surrounds the village, which is adjacent to the City of Mechanicville, a municipality on its southeastern border that endured deindustrialization over the past decades but is now facing unprecedented development pressure. Recent developments designed to catalyze a "tech-boom," which includes the Global Foundries facility, have the potential to stimulate growth that exceeds any current forecasting model. Reflecting on the Austin, Texas, experience, the Stillwater community realizes now that the boom came with costs to the environment and social cohesion and exacerbated urban sprawl, and it could have been prevented through a well-conceived plan that anticipated the hypergrowth and coordinated land use, capital planning, and environmental protection (Clark-Madison 2000; Lewis et al. 2007; Tech Valley Task Force 2009). Magnifying the growth pressure in the Stillwater area is the announcement that two new water mains will crisscross the town and that the Capital District Intermodal and Automotive terminal is being built along Route 67 in the southeastern quadrant of the town (see Figure 7).

Potentially magnifying growth pressure is the planned development of the new water mains. They will transverse Stillwater at its southern border along Route 67 and run right through the heart of the town along Route 76. This is a mixed blessing. The upgrade of municipal water supply along routes 67 and 4 should encourage development where the community has determined it to be appropriate. However, the new main through prime agricultural lands and other environmental assets could promote growth in areas that both Stillwater's comprehensive plan and the Farmland Protection and Green Infrastructure Plan recommended preserving for their existing uses, ecological services, and in some cases cultural and historical assets. At the time of this research it was not clear if this new main would permit lateral line development. Should there be development of laterals to support new construction, the pressure will create a barrier to changing existing development regulations. Still, this may be desired by some, and there are locations along Route 76 that are considered desirable for more development. In particular, the intersection of Route 76 and Route 75 has been highlighted as appropriate for hamlet-style development.

The northeast part of Stillwater is adjacent to Saratoga National Historical Park. All stakeholders we interviewed agreed that the lands adjacent to the park should be preserved as open space. This consensus is also clear in the Stillwater Farmland Protection and Green Infrastructure Plan (2007). These goals and the high-density residential and commercial hubs of the plan also align with the receiving area used in this report's theoretical analysis.

Figure 7: Stillwater Farmland Protection and Green Infrastructure Plan



Source: Agricultural & Green Infrastructure Vision Map from the Town of Stillwater Farmland Protection & Green Infrastructure Plan 2007

Market-Based Land Use Control

Saratoga Lake, in the northwest corner of the Town of Stillwater, has many cherished recreational and scenic assets that are enjoyed year-round by residents of Stillwater and elsewhere. This quadrant of Stillwater has a mix of seasonal and year-round homes and public infrastructure that can absorb additional development.

A comparison of the land-use patterns in the town and in the Village of Stillwater reveals some obvious historical patterns that remain integral to the community character and quality of life. Community services, commercial activity, and public services are clearly more concentrated within the Village of Stillwater. This suggests that the Village has functioned as the central marketplace and point of attachment to the broader region, with access to Hudson River transportation networks and the railroad and motorways (see Table 8). The analysis also indicates that there is considerable opportunity to preserve the rural, agricultural aspects of the community through encouraging new growth toward historic-commercial corridors via a creative repurposing of a significant amount of vacant land.

Table 8: Land Use in the Town and Village of Stillwater

Property Class	Town and Village of Stillwater		Town of Stillwater		Village of Stillwater	
	Acres	Percent	Acres	Percent	Acres	Percent
Agricultural	3,582.5	13.9	3,568	14.2	14.5	1.9
Commercial	436.4	1.7	393.5	1.6	42.9	5.7
Community Services	170.5	0.7	56.7	0.2	113.8	15.2
Industrial	100.8	0.4	95.9	0.4	4.9	0.7
Public Services	486.6	1.9	475.1	1.9	11.5	1.5
Recreational and Entertainment	320.2	1.2	300.9	1.2	19.3	2.6
Residential	7,337.6	28.4	7,101.60	28.3	236.0	31.4
Vacant	7,245.1	28.1	6,967.20	27.8	277.9	37.0
Wild, Forested, Conservation Lands and Public Parks	6,124.1	23.7	6,093.80	24.3	30.3	4.0
TOTALS	25,803.8	100.0	25,052.7	100.0	751.1	100.0

Source: Stillwater Town Board 2006

It is important to note that the number of housing units in the Town of Stillwater is 3,054, which is roughly one quarter of the total number of units located in Bethlehem. The housing stock is newer, overall; the median age of residential units is 35 years. It is interesting to compare the employment rate of the two towns: even with having lower average earnings and a higher instance of residents living below the poverty level, the Town of Stillwater has a lower unemployment rate (1.7%) than the Town of Bethlehem (2.4%). The two communities are located roughly 30 miles (or 45 minutes in driving time) from one another.

Relative to Bethlehem, there is significantly more available land in Stillwater and its zoning is conducive to low-density patterns, resulting in higher infrastructure costs, loss of open space, and more vehicle-miles traveled. When coupled with other known negative externalities, this pattern contributes to poor health in terms of obesity, asthma, and stress (Lewis et al. 2007). Over the past decade, the Town of Stillwater has deliberated over its vision of the future. The community

“aspires to retain and strengthen its rural character, open space resources and agricultural traditions. It seeks to manage growth and change in a manner that protects and enhances the community’s historic and aesthetic attributes, improves community quality of life, stimulates economic activity, and supports social and civic institutions for this and future generations”. (Stillwater Town Board 2006b)

To achieve this vision, the comprehensive plan should result in significant changes in zoning designed to direct development to the Route 67 and Route 4 corridors. The proposed changes could be supported with a transfer of development rights program, though this report is not an endorsement of that strategy unless an appropriate transparent participatory process results in a community consensus endorsing such an action.

Stillwater sits at a crossroads. The community’s recent and ongoing efforts to engage the challenges and opportunities catalyzed by accelerated growth pressure indicate that they understand that decisions regarding land-use and development goals will determine their quality of life in the near term and ensuing decades. The interviews revealed that change has come quickly, and the response has been measured and transparent. The decision-making process that has guided the community well in the recent past will prove to be an asset if the stakeholders want to pursue a TDR to strengthen the consensus vision articulated in the 2006(b) Stillwater Comprehensive Plan. Furthermore, the Stillwater Comprehensive Plan: Inventory and Analysis (2006a) clearly documents the development conditions in Stillwater and is clearly reflected in the Comprehensive Action Plan and Farmland Protection and Green Infrastructure Plan.

Similar to Bethlehem, interviews of Stillwater residents revealed that the stakeholders we spoke with, representing a broad spectrum of society, have limited understanding of what TDRs are and how they operate. Before Stillwater can decide if a TDR is right for the community, a concerted effort to inform residents and other stakeholders on the operation and potential costs and benefits will be necessary.

Village of Stillwater

The Village of Stillwater, located entirely within the town, has a population of 1,644. The Village is a former industrial area that has experienced decline, due to the lost supremacy of the Champlain Canal for commerce, and has endured by becoming a residential community.

It was not until 2007 that the village adopted its first zoning laws. The two primary zoning districts are low-density residential and neighborhood business. There are some allowances for light-industrial uses, and portions of the Town south of Saratoga Lake are zoned Planned Development Districts.

The educational attainment levels for village residents are lower than those of town residents. Also, per capita income is lower in the village than in the Town of Stillwater. These statistics exemplify a common pattern in New York State, wherein a village located within a town has lower income levels and older housing stock. The villages are typically more economically distressed than the corresponding towns.

Market-Based Land Use Control

In the Village of Stillwater, the median age of the housing stock is 64 years (35 years in the town). The median housing value is lower than that of the town, as is the median gross rent paid. Unemployment, however, is lower in the village than in the town.

Current land-use decisions in the Town of Stillwater and the Village of Stillwater will influence the future in the neighboring City of Mechanicville, though that is beyond the scope of this analysis. If the Town of Stillwater is successful in directing development along the historic-commercial corridors and preserving its rural-farming community character, some of traditional, compact neighborhood development investments will spill over into the Village of Stillwater and the City of Mechanicville.

Comparative Build-out Analyses

The analysis commenced by conducting interviews with various stakeholders in Bethlehem and Stillwater, conferring with the steering committee, and conducting a community assessment. Information gathered from these activities was coupled with an analysis of the different types of land-use controls, across a continuum from existing zoning (EZ) using a regulatory approach to the TDR approach, which most analysts agree is a market-based approach to development. Between the two poles is incentive zoning. The data were analyzed on multiple levels including (1) distribution of development, (2) type of land to be consumed, (3) density of development, (4) differences in the value of ecological services, (5) long-term costs to support necessary infrastructure, (6) possibility of other benefits accrued based on development patterns, and (7) the forecasted development pattern's ability to illustrate the vision and goals articulated in the recent planning documents.

While there are notable difference as the result of the scale and design of TDR programs, the results are consistent with our expectations. Mirroring the many prior studies on the cost of development—due to the loss of ecological services, municipal fiscal impacts related to development patterns, and the loss of community-based cultural, historical, environmental, and other assets—our findings confirm that the more-compact development patterns of the TDR and IZ simulations yield the most promising outcomes when compared with development patterns expected with the status quo EZ. The TDR simulations result in development occurring in areas already considered to be appropriate by the community, with existing or planned infrastructure, and prevents development from encroaching into places the communities desire to protect.

It also should be noted that all costs are underestimated by the short timeline. The relatively small forecasted demand also dampens the impact of development. For example, when considering the value of lost ecological services, the analysis only calculates them to 2030, though the ecological services provided continue for as long as the land remains protected. Also, the cost of operation and maintenance of new infrastructure to support the new development does not consider the most expensive projects of rehabilitation or replacement, since the need should not occur until well after 2030.

Land-consumption-characteristics Analyses

The data collected from interviews, the U.S. Census, the Capital District Regional Planning Commission, and the volunteer case-study communities were viewed through the lens of the findings from the best-practices literature and case studies presented above. For both Bethlehem and Stillwater, we conducted three unique potential-land-use outcomes based on three different land-use-control tools.

All three analyses of alternative land-use tools (also considered conservation/preservation policies) begin with the same population forecast (presented in Table 6) and translate existing zoning ordinances into the number of developed housing units and their locations. This is referred to as the existing zoning (EZ) simulation. In the two alternative cases, the authors change the existing zoning constraints to

Market-Based Land Use Control

simulate development patterns and land consumption expected from an incentive zoning approach and a transfer of development rights approach. The final step is to compare the two alternatives (IZ and TDR) to the EZ simulation and, to a lesser degree, to each other.

For instructional reasons, the authors created simplified assumptions to model both the incentive zoning and TDR approaches. To replicate IZ, the minimal lot size was reduced by 50% in all buildable residentially zoned parcels. This effectively changes the total number of dwelling units for full build-out to 6,909 in Bethlehem and 2,467 in Stillwater (see Table 9). Of course, this is roughly about 50% of the total number of dwelling units that would be permitted by just reducing the lot size, which would translate to roughly 15,000 potential new dwelling units in Bethlehem and 5,000 in Stillwater. However, in the IZ program, the assumption is that to “double the density” on any parcel, the developer protects other parcels whose total build-out equals the number of additional units developed at higher density. Thus, approximately half the number of parcels will be developed relative to the EZ analysis.

Still the total estimated need remains unchanged for all build-out forecasts (1,484 dwelling units in Bethlehem; 479 in Stillwater [town, 376; village, 103]). Using a random generator, the software selected the parcels for the necessary development that would meet forecasted demand as a percent of the total buildable number of dwelling units on all developable land (9.84% for Bethlehem and 8.2% for Stillwater, of total potential units).¹ The location and volume of consumed land and ecological resources and potential cost/benefits are then analyzed.

The TDR analysis follows the same pattern. To replicate a theoretical TDR program, with designated sending and receiving areas, the authors calculated the total potential number of dwelling units allowed

Table 9: Total Potential Dwelling Unit Build-Out (in # of dwelling units)

Community	EZ	IZ	TDR	Estimated Demand
Bethlehem				
Total	7,543	6,909	7,418	1,484
Within Sending Area	na	na	125	na
Within Receiving Area	na	na	959	na
Town and Village of Stillwater				
Total Both	2,761	2,647	2,768	479
Within Sending Area	na	na	507	na
Within Receiving Area	na	na	516	na
Total for Town	2,736	2,619	1,720	376
Total for Village	25	28	25	103

Note: Demand is constant derived from total forecasted 2030 population divided by average household size.

Note: For Stillwater, the total for the Town and Village are for parcels outside the sending and receiving areas.

¹ The percentage figure used in the random selection is the total number of needed dwelling units divided by the total potential number of dwelling units that the zoning alternative permits. For example, in Bethlehem, doubling the allowable density on all buildable parcels would permit approximately 15,000 new dwelling units to be built, but demand is only 1,484 units. Thus, in Bethlehem, 9.84% (or 1,484/15,081) is the percent of randomly selected units built and, in Stillwater, 8.2% was used (or 479/6,800).

in both the sending and receiving areas under existing zoning. These figures were then compared to the forecasted demand for the total number of housing units. This analysis generated the potential number of “transferrable development rights” as well as the capacity of the receiving area to absorb the growth by doubling the density. A more detailed discussion of research design and methods is presented below as well as in Appendix 5.

Full Build-out Analysis for Bethlehem

It is important to note that in all of the build-out analyses, the only variable represents the underlying zoning assumptions. Since the forecasts are designed to allow for approximately the same level of development, the total number of potential new dwelling units for all three total build-out scenarios are roughly equal. What does vary is the amount of land consumed and the location of development. The existing zoning would permit 7,543 additional dwelling units in Bethlehem. Assuming these are all built, the development would consume nearly 4,000 acres on 843 parcels (see Table 10). [The full build-out simulation for the incentive zoning would result is 6,909 new dwelling units, about 8.5% less relative to existing zoning. However, land consumption would be reduced by approximately 50%, with 1,811 acres on 422 parcels needed to accommodate the new dwelling units \(see Table 11\).](#)

Table 10: Total Potential Build-Out of Existing Zoning - Bethlehem

Zoning Symbol	Zoning District	School District	Parcel Count	Buildable & Unconstrained Land	Total Potential DU
RA	Residential "A"	Bethlehem & Ravena-Coeyman-Selkirk CSD	505	1,926 +/-	5,779
RB	Residential "B"	Bethlehem & Ravena-Coeyman-Selkirk CSD	6	7.80 +/-	39
RC	Residential "C"	Bethlehem & Ravena-Coeyman-Selkirk CSD	5	3.90 +/-	31
RLL	Residential Large Lot	Bethlehem CSD	14	120 +/-	60
R	Rural	Bethlehem & Ravena-Coeyman-Selkirk CSD	98	1,450 +/-	725
RR	Rural Riverfront	Bethlehem CSD	13	263 +/-	51
MR	Multi-family	Bethlehem CSD	0	Excluded from analysis: no vacant lands	Excluded from analysis: no vacant lands
CR	Core Residential	Bethlehem CSD	202	143 +/-	858
Totals			843	3,913.70	7,543

The results from the full build-out for the TDR simulation are counter-intuitive. In this simulation, all “development rights” are transferred from the sending areas to the receiving areas. In Bethlehem, the simulation also restricted the transfer of developments across school-district boundaries. However, the zoning does not change for any parcel not in a sending or a receiving area. In a full build-out simulation these parcels will be developed too, consuming 2,767 acres (see Table 12). Thus, while the roughly 751 buildable acres in the sending zones will not be developed, all 396 buildable acres in the receiving areas combined with the developable acreage not in a sending or receiving area would permit 7,418 new dwellings on 3,162 acres. This is a 20% reduction in land consumption relative to the EZ.

Market-Based Land Use Control

Since the simulation images reflect the same geography of development in the full build-out, the full build-out analysis images are not presented here. Comparing the spatial distribution of the full build-out of each land-use tool analyzed (EZ, IZ, and TDR) illustrates significant differences in the location of development. The type of land cover that is consumed also varies. It should also be noted that the sending and receiving areas are defined by using a circle buffer from a point (such as an intersection) or a buffer with a specified distance from a line (such as a waterway or road). This approach does affect the analysis and interpretation of the data.

Table 11: Total Potential Incentive Zoning Build-Out - Bethlehem

Zoning Symbol	Zoning District	School District	Parcel Count	Buildable & Unconstrained Land	Total Potential Dwelling Units
RA	Residential "A"	Bethlehem & Ravena-Coeyman-Selkirk CSD	250	828.9	4,963
RB	Residential "B"	Bethlehem & Ravena-Coeyman-Selkirk CSD	3	5.2	53
RC	Residential "C"	Bethlehem & Ravena-Coeyman-Selkirk CSD	4	3.4	35
RLL	Residential Large Lot	Bethlehem CSD	5	64.3	65
R	Rural	Bethlehem & Ravena-Coeyman-Selkirk CSD	46	703	702
RR	Rural Riverfront	Bethlehem CSD	6	117.9	48
CR	Core Residential	Bethlehem CSD	108	87.6	1043
Totals			422	1,810.6	6,909

This process creates sending- and receiving-area boundaries that bisect individual parcels. Thus, some parcels with sufficient developable acres are lost by the reduction in lot size as the boundaries split the parcel in two, part in a sending/receiving area and part from the overlays. In some cases, this prevents the parcel from being selected for development, pushing the development into areas that are not in either a sending or a receiving area. Another factor that limits density in the receiving areas is that parcels with existing structures, regardless of intensity of activity or condition, are not considered in the analysis. Without being able to accurately measure the demand for redeveloping these parcels, the authors excluded them from being considered as developable land and no new dwelling units were placed on these parcels. Since these parcels are clustered in areas that are within receiving areas, this assumption underestimates the actual capacity of receiving areas to absorb new growth and, thus, undervalues the impact of the TDR simulation. In the end, the effects are minor and do not change the overall comparative analysis that reveals a clear pattern of difference in the total consumption and location of the developed parcels in the three simulations.

Table 12: Total Potential Transfer of Development Right Build-Out - Bethlehem

District Code	Zoning District	School District	Parcel Count	Total Acreage	Total Useable Acreage	Total Potential DU
R-1	RA,CR,RLL	Bethlehem CSD	23	100.9	84.0	249
R-2	RA,CR,RLL	Bethlehem CSD	12	204.6	100.1	295
R-3	RA,CR,RLL	Bethlehem CSD	23	147.8	135.4	299
R-4	RA,CR,RLL	Bethlehem & RCS CSD	10	29.2	28.6	83
R-5	R,CR	RCS CSD	8	79.4	47.8	33
Receiving Areas Total			76	561.7	395.9	959
S-1	R,RLL,RA	Bethlehem CSD	11	257.4	95.9	65
S-2	RA,RH	Bethlehem CSD	4	21.2	9.6	36
S-3	RA	Bethlehem CSD	1	6.0	2.9	8
S-4	RR	Bethlehem CSD	4	99.8	73.4	14
S-5	R,RA	RCS CSD	40	800.5	569.2	292
Sending Areas Total			60	1,184.8	751.0	415
Combined Total			136	1,746.6	1,146.9	1,374

2030 Simulation Analysis for Bethlehem

The simulation of three alternative land-use controls reveals significant differences in the spatial distribution and total amount of land consumed for development (see figures 8, 9, and 10). To meet the estimated demand for 1,602 dwelling units by 2030, the EZ scenario would consume approximately 639 acres across 166 parcels with a total of 1,672 acres (see Table 13). However, according to the simulation, an incentive-zoning approach would consume slightly more than half of the land area in the EZ analysis (368.2 acres). The TDR simulation suggests that less the one third of the land area consumed by the EZ analysis may be developed to accommodate approximately the same number of dwelling units (see tables 14 and 15).

Figure 8: Bethlehem Existing Zoning Simulation

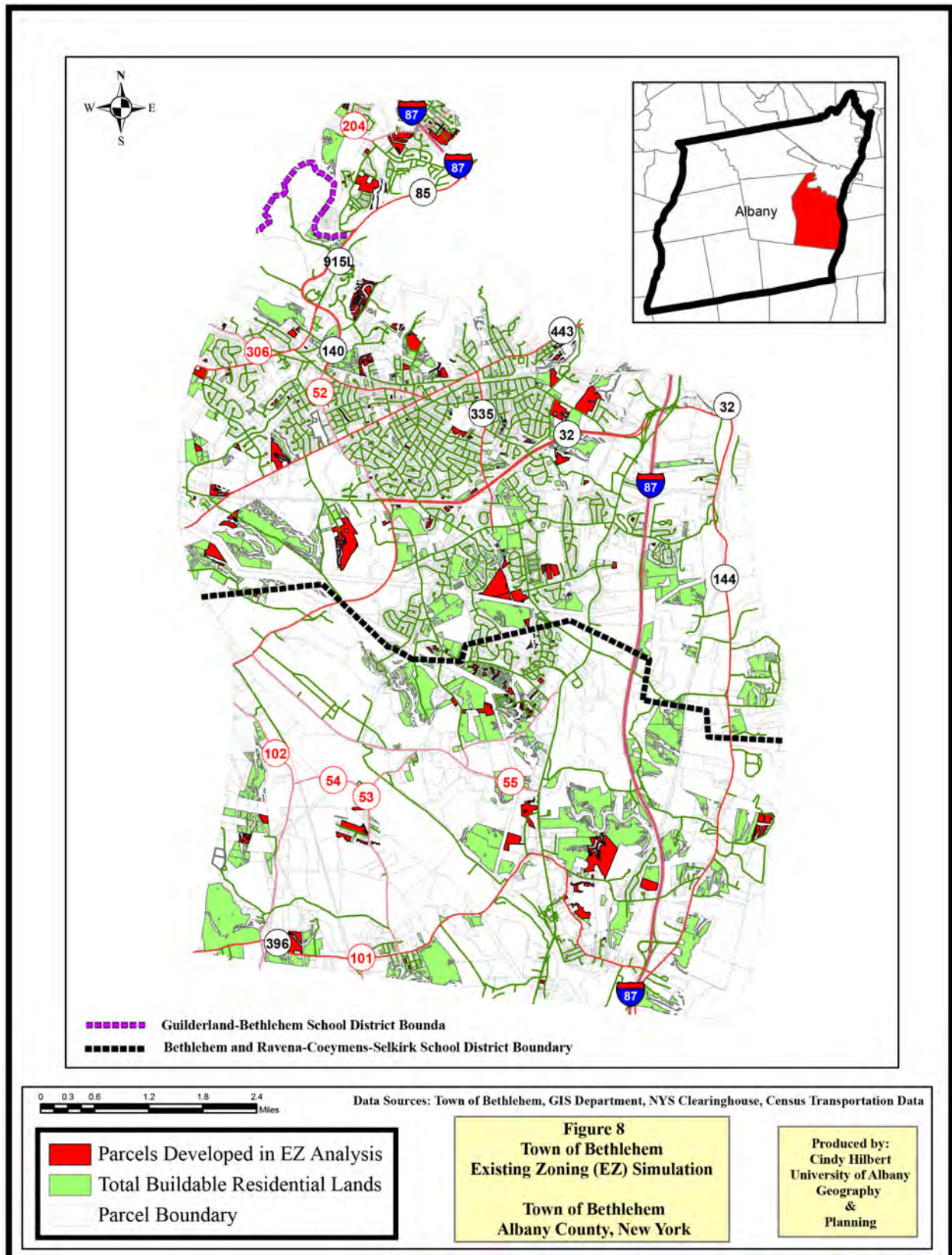


Figure 9: Bethlehem IZ Simulation

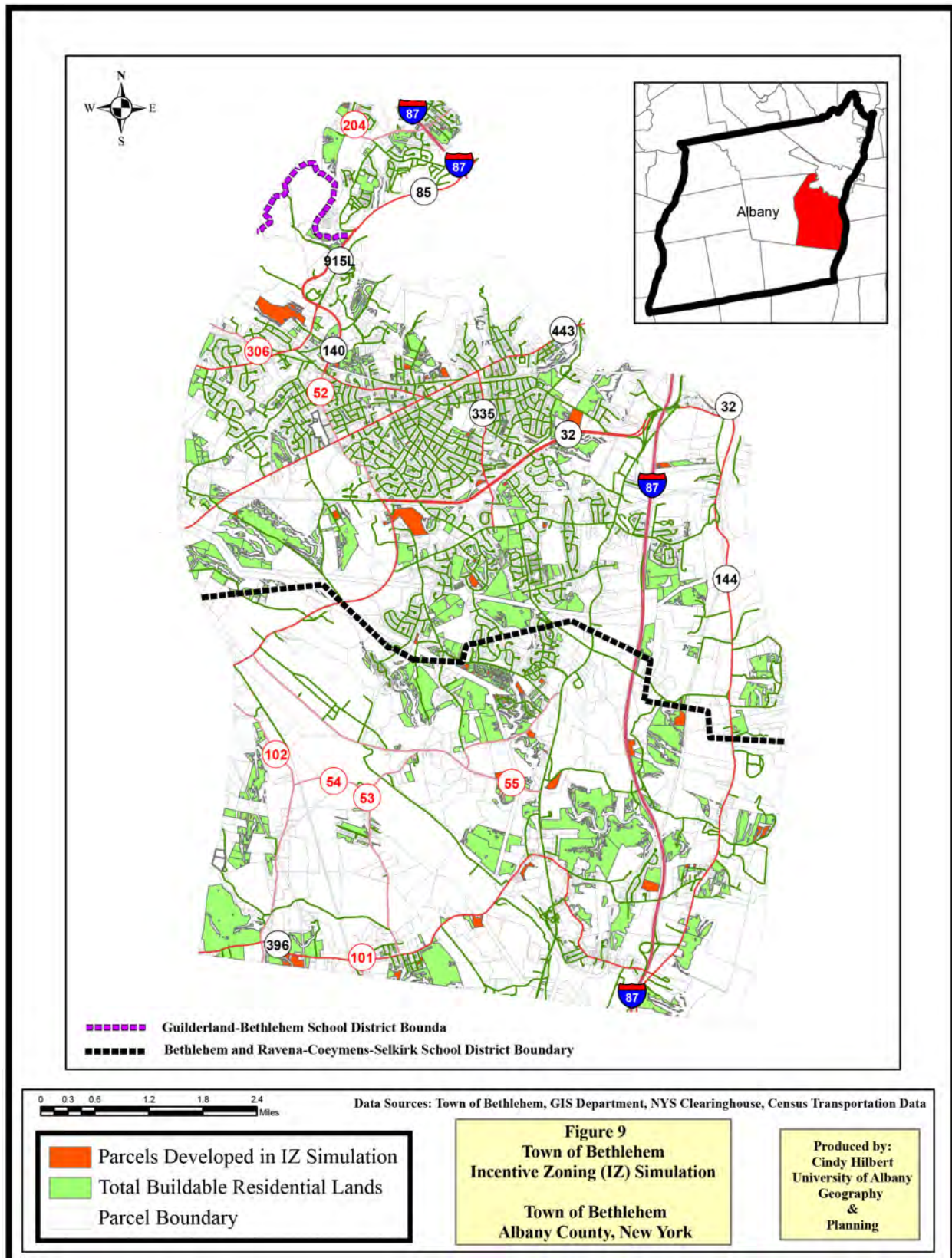
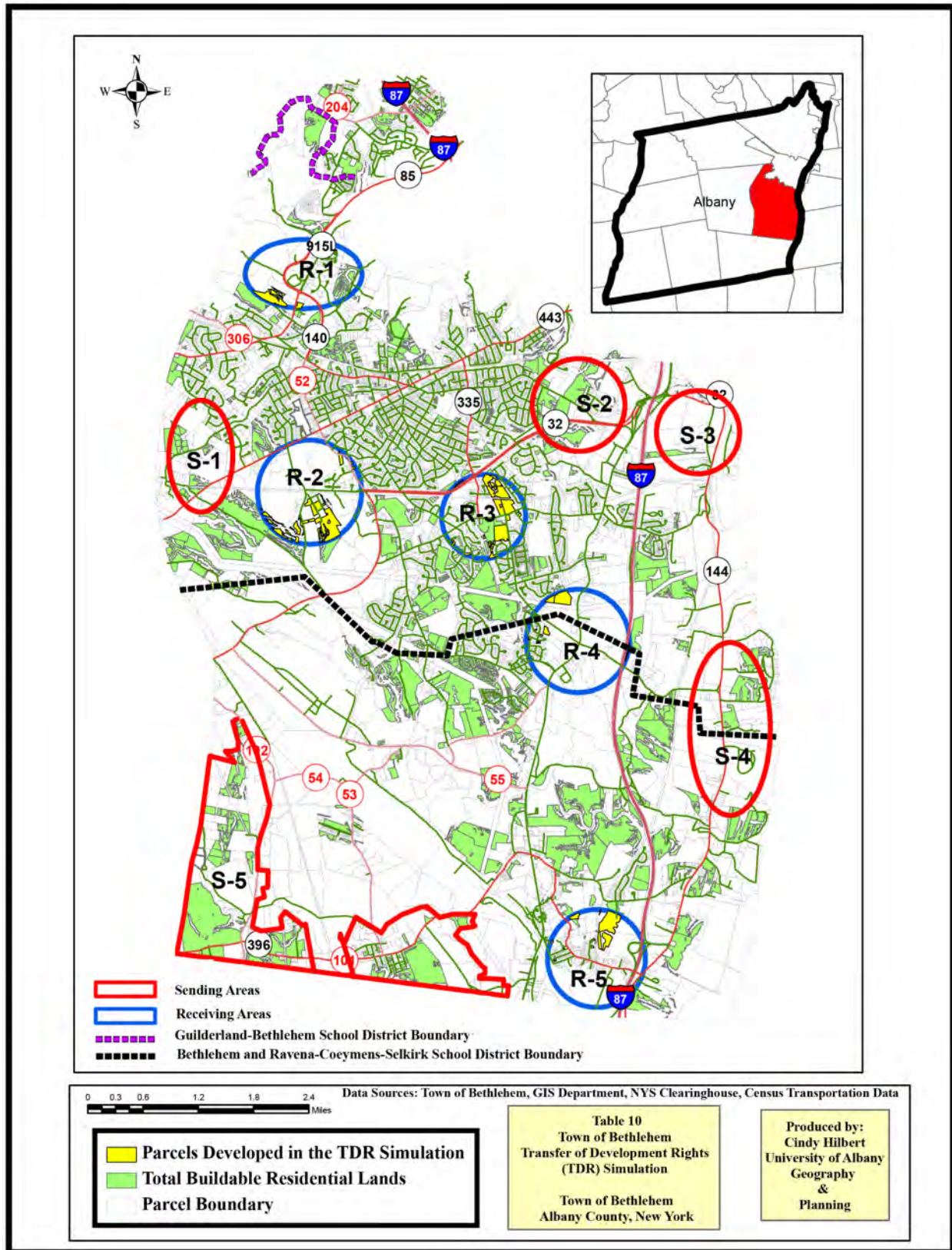


Figure 10: Bethlehem TDR Simulation



An Analysis of the Potential for Transfer of Development Rights Programs in the Capital Region

Table 13: Forecasted Simulation of Existing Zoning - Bethlehem

Zoning District	Total Parcel Count	Total Acreage	Total Acres Consumed	Dwelling Units Build-Out
Residential RA	110	1,160	469	1,273
Residential RB	1	0	0	1
Residential RC	1	1	1	6
Residential R	12	373	120	60
Residential RR	2	31	15	3
Residential RLL	2	21	10	5
Residential CR	38	85	24	143
Totals	166	1,672	639	1,491

Table 14: Forecasted Simulation of Incentive Zoning - Bethlehem

Zoning District	Total Parcel Count	Total Acreage	Forecasted Total Acres Consumed	Forecasted IZ Dwelling Units Build-out
Residential RA	49	331	131	1,078
Residential RB	1	1	0	4
Residential RC	1	0	0	3
Rural R	10	235	78	110
Rural Riverfront RR	1	20	5	4
Residential Large Lot RLL	1	67	52	74
Core Residential CR	20	34	14	226
Totals	83	688	280	1,498

Table 15: Forecasted Simulation of TDR - Bethlehem

District Code	Zoning District	School District	Total Parcel Count	Total Acreage	Total Acres Consumed	Dwelling Units Build-out
R-1	RA,RLL	Bethlehem CSD	3	74	20	58
R-2	RA,CR	Bethlehem CSD	15	382	66	564
R-3	RA,CR	Bethlehem CSD	23	246	63	563
R-4	RA,R	Bethlehem & RCS CSD	9	60	22	186
R-5	R,CR, RR	RCS CSD	9	227	37	98
Receiving Areas Total			59	989	209	1,469
S-1	R,RLL,RA	Bethlehem CSD	11	257	0	0
S-2	RA,RH	Bethlehem CSD	4	21	0	0
S-3	RA	Bethlehem CSD	1	6	0	0
S-4	RR	Bethlehem CSD	4	100	0	0
S-5	R,RA	RCS CSD	40	800	0	0
Sending Areas Total			60	1,185	0	0
Combined Totals			133	2,173	209	1,469

Full Build-out Analysis for Stillwater

The forecasted growth for Stillwater, and thus the demand for additional dwelling units, is considerably more modest than for Bethlehem. The estimated demand for Stillwater is an additional 460 dwelling units by 2030. This difference is reflected in the aggregate impact of development in Stillwater relative to Bethlehem. A comparative analysis of the alternative land-use controls for the full build-out in Stillwater mirrors the outcomes in Bethlehem (see Table 9, above). Considerable variation in the geography of the development and the amount of land consumed is present in the simulations of existing zoning, incentive zoning, and TDR programs (see figures 11, 12, and 13). These results parallel the Bethlehem analysis.

The full build-out for existing zoning allows 2,761 dwelling units to be built on 709 different parcels, totaling 4,976 acres. However, the forecasted demand is for only 460 dwelling units by 2030 (see Table 16). A complete build-out of an incentive-zoning approach would permit 2,647 dwelling units on 322 different parcels, consuming slightly less than half the land (48%, 2,372 acres, see Table 17). The TDR full build-out would consume 6,517 acres on 695 parcels before excluding the sending zone (see Table 18). Once the potential development in the sending area is eliminated, the existing zoning on parcels outside the sending/receiving areas would permit 1,745 dwelling units on 3,932 acres across 333 parcels. Within the receiving areas, an additional 456 dwelling units may be built on 266 separate parcels, consuming 904 acres. Since the TDR receiving cannot absorb all the anticipated demand, the simulation assumes that a maximum of 456 dwelling units will be built in the TDR receiving areas to accommodate the development of roughly 20 more necessary dwelling units outside the receiving area.

In brief, the land consumption for the three different land-use controls vary in terms of geography and the amount of land lost to development for both Bethlehem and Stillwater. In each case, existing zoning would consume more land relative to either incentive zoning or TDR alternatives. A full build-out of EZ would also result in the most fragmented environment. The full build-out of an IZ alternative also results in a more fragmented environment relative to the TDR full build-out in both Bethlehem and Stillwater. This suggests that both an IZ and a TDR approach would result in fiscal, ecological, and quality-of-life benefits relative to existing zoning.

Figure 11: Stillwater Existing Zoning Simulation

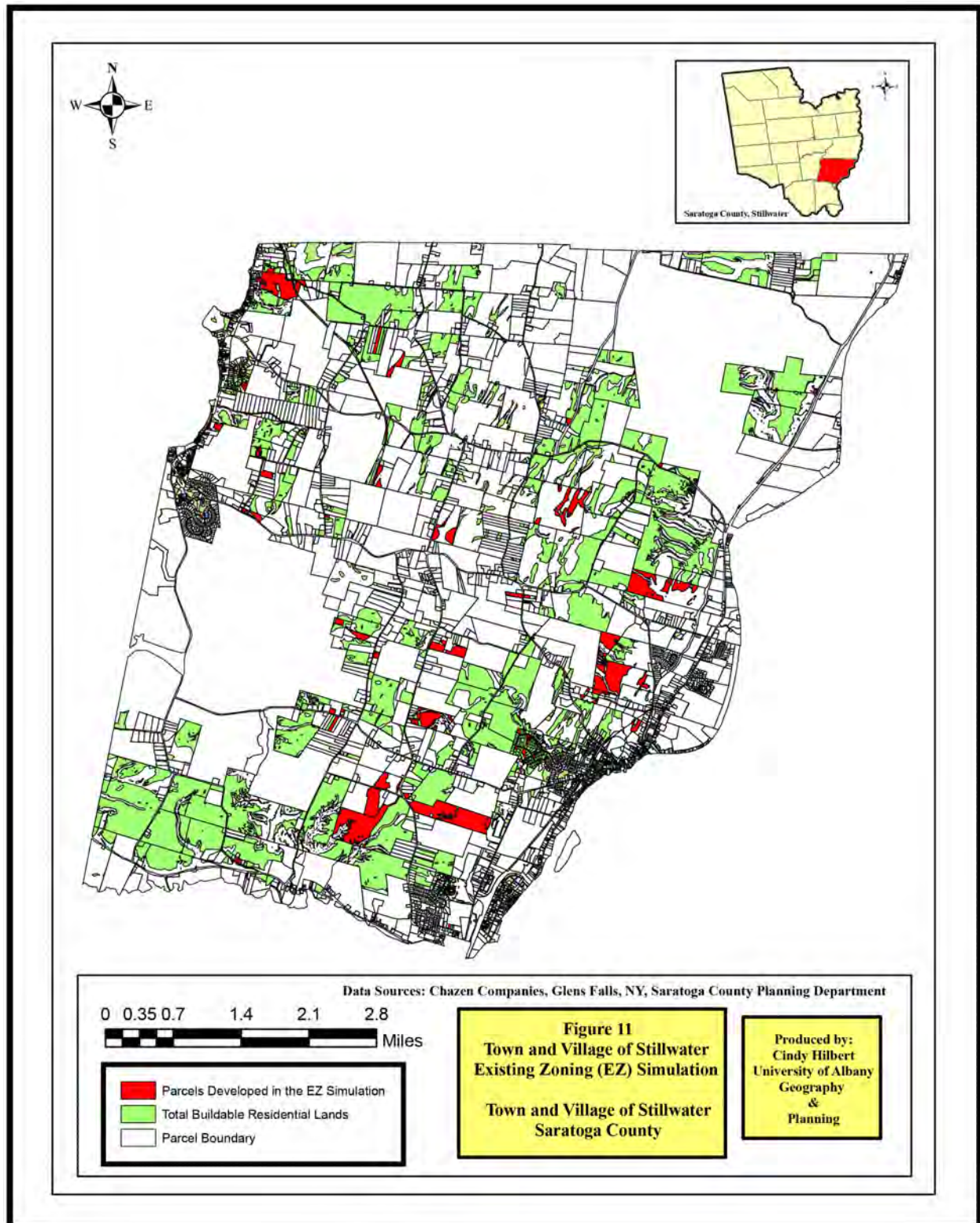


Figure 12: Stillwater IZ Simulation

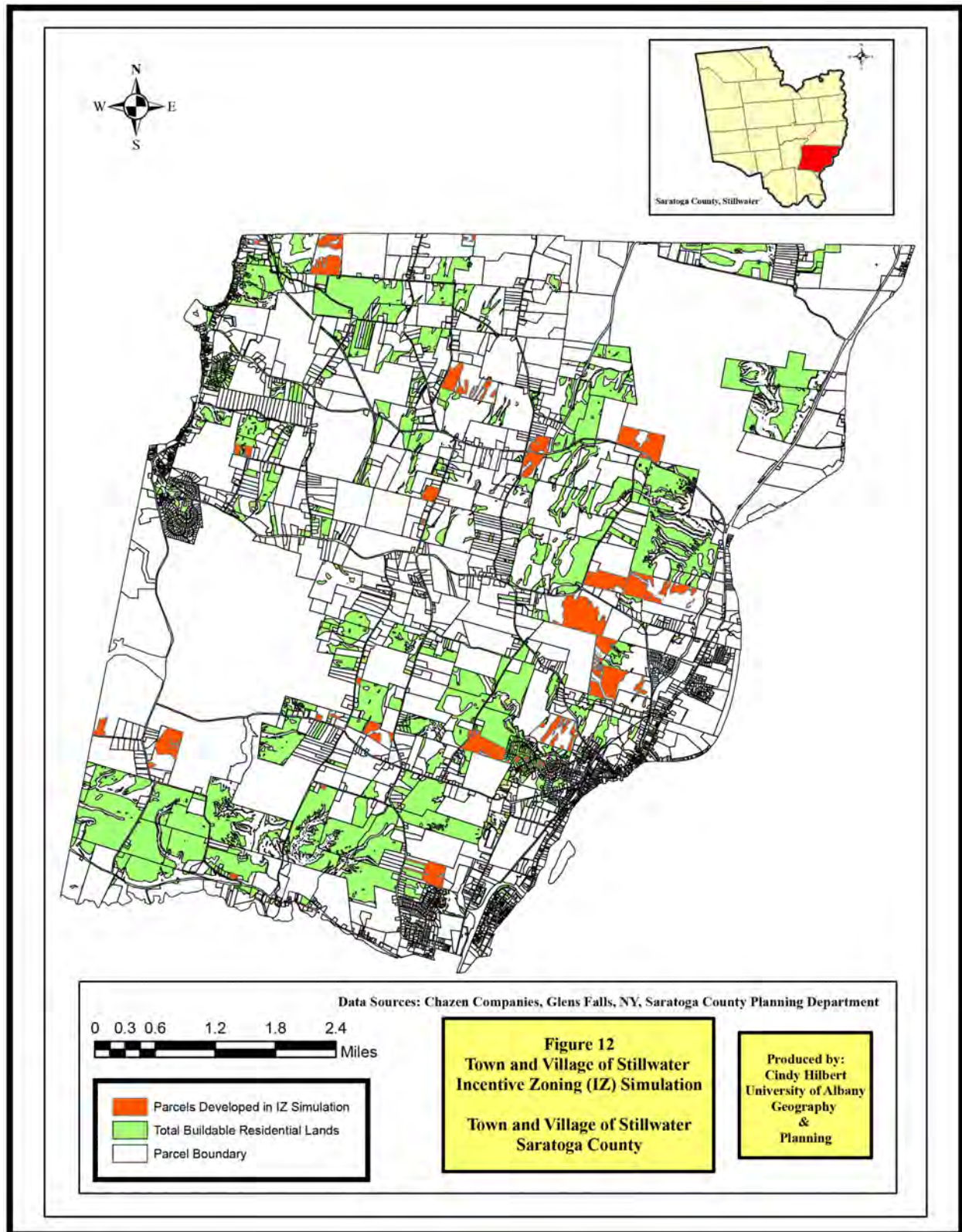


Figure 13: Stillwater TDR Simulation

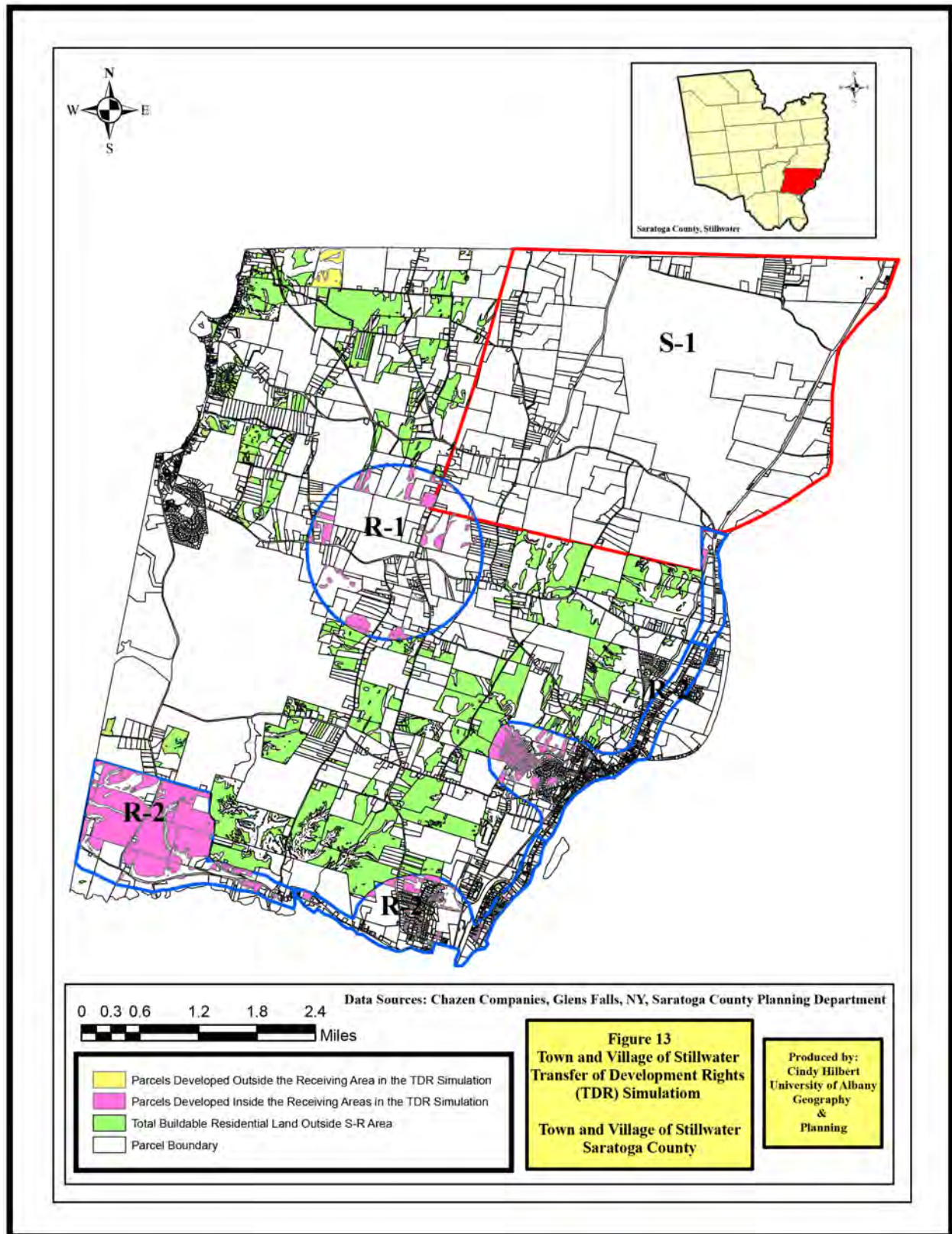


Table 16: Total Potential Build-Out of Existing Zoning - Stillwater

Zoning Symbol	Zoning District	School District	Parcel Count	Buildable & Unconstrained Land	Potential New Dwelling Units
Town of Stillwater					
RR	Rural Residential	Stillwater, Mechanicville, Shenendehowa & Schuylerville	132	2,336.00	1,168
LDR	Low Density Residential	Stillwater, Mechanicville & Schuylerville	385	2,561.00	1,469
	With Public Sewer and Water		122	93.76	81
	Either Public Sewer or Water		107	1,020.49	669
	Neither Public Water or Sewer		156	1,447.64	719
RM	Moderate Density Residential	Stillwater & Mechanicville	64	24.65	80
	With Public Sewer and Water		35	15.63	66
	Either Public Sewer or Water		22	7.75	14
	Neither Public Water or Sewer		7	1.27	0
RRD	Residential Resort	Stillwater	35	13.00	27
PPD	Planned Development District	Stillwater & Mechanicville	69	33.00	137 (Excluded from Analysis)
Village of Stillwater					
R-1	Residential R1 District	Stillwater	17	7.51	16
R-2	Residential R2 District	Stillwater	7	0.92	8
Totals			709	4,976.08	2,768

An Analysis of the Potential for Transfer of Development Rights Programs in the Capital Region

Table 17: Total Potential Incentive Zoning Build-Out - Stillwater

Zoning Symbol	Zoning District	School District	Parcel Count	Buildable & Unconstrained Land	Potential New Dwelling Units
Town of Stillwater					
RR	Rural Residential	Stillwater, Mechanicville, Shenendehowa & Schuylerville	66	531	1056
LDR	Low Density Residential	Stillwater, Mechanicville & Schuylerville	193	711	1454
	With Public Sewer and Water		54	24	61
	Either Public Sewer or Water		54	257	531
	Neither Public Sewer or Water		85	430	862
RM	Moderate Density Residential	Stillwater & Mechanicville	32	41	85
	With Public Sewer and Water		19	38	77
	Either Public Sewer or Water		10	3	8
	Neither Public Sewer or Water		3	0	0
RRD	Residential Resort District	Stillwater	18	12	24
Village of Stillwater					
R-1	Residential R1 District	Stillwater	9	12	21
R-2	Residential R2 District	Stillwater	4	2	7
Totals			322	1309	2647

Table 18: Total Potential TDR Build-Out - Stillwater

District	Zoning District	School District	Parcel Count	Total Acreage	Buildable & Unconstrained Land	Potential New Dwelling Units
R-1	LDR, RR	Stillwater	32	625	127	50
R-2	LDR, RM, RR, R1, R2	Stillwater, Schuylerville, and Shenendehowa	234	2266	777	406
Total Receiving Areas			266	2891	904	456
S-1	LDR, RR	Stillwater & Schuylerville	70	3325	1044	516
Total Sending Area			70	3324	1044	516
Total Outside Send/Receiving Areas			373	3158	3028	1796
Total			709	9373	4976	2768

Calculating the Real Cost of Development

Assessing the costs and benefits of development is a contested “science.” Within this debate, there are a few critical issues to be noted. While reconciling differences in approaches to estimate the accounting cost of some project is relatively simple, the problem becomes infinitely more complex when an analysis of the externalities of development is incorporated. Furthermore, estimating the value of public health improvements, biodiversity, and historic preservation, among other assets, can be difficult to monetize and fraught with challenges. Still, the consensus is that these assets have “economic value.” Other community attributes that are correlated with the spatial distribution of the built environment and healthy ecosystems include social capital, quality of life, social segregation, equality, educational funding and outcomes, and economic multipliers. Though there is a fairly strong consensus in the literature that these community characteristics are relevant, monetizing their value is a contentious issue.

Development also comes with public costs of providing infrastructure, education, and public health and safety, among other municipal, state, and/or federal infrastructure and services that are the foundation for community well-being. Research that estimates the fiscal impacts of land use is very consistent.

Lower density development increases fiscal costs. It is also clear that low-density residential development has the least favorable return in property and school taxes relative to the cost of providing municipal infrastructure and services for this type of development and the occupants. Moreover, the clear conclusion is that more-compact development with mixed uses and multimodal transport options are increasingly desired (Gottlieb 1994; Miller 2007; Nelson 2006; Sexton 2007) and save municipalities money as the development, operation, and maintenance of hard infrastructure is less expensive (Burchell 2002, 2005; DuPage County Planning 1992; Frank 1992; Lewis et al. 2007; Speir & Stephenson 2002). *In the Capital Region, a fiscal-impact analysis of alternative land-use patterns estimated the difference in public cost forecasting the current trend versus a more compact future and indicated a savings of \$1 billion over a 25-year horizon following compact development principles, assuming a 1% annual population growth rate* (Lewis et al. 2007).

The desirability of community assets, such as trails, parks, and other types of open space, is reflected in higher real-estate values in their proximity. In addition, there is a growing acceptance of ways to measure ecological services associated with different land covers, making it possible to calculate the value of these environmental assets (Brabec 1994; Camagni & Gubelli 2002; Cieslewicz 2002; Mitchell et al. 2006; Trust for Public Land 2007, 2012). The development and real estate communities have begun to recognize these assets and are educating their constituents about the benefits (Costello 2006; Miller 2007; Sexton 2007). Also, the development community has been responding to increasing demand for more-compact development that has multimodal transport options and is more sustainable (Filisko 2009). The recent gas-price spikes have revealed this preference in the housing market. As gas prices spiked, suburban housing values fell, demonstrating a higher demand for communities that are less automobile-centric (Kim 2008).

The trend in housing preference toward more-traditional, compact mixed-use communities has been gaining strength since the mid-1990s and is clearly evident in the 2010 census data. The fastest growing and now the largest household type in the United States is the single-occupancy household. This segment

of the housing market is not interested in the three-bedroom house on a 2-acre lot (Nelson 2006). In the Capital Region, for the first time in decades, between 2000 and 2010 the urban cores grew at a faster pace than suburban neighborhoods (U.S. Decennial Population Census 2010), suggesting new development opportunities for the region. Accurately measuring the effect of this trend on housing prices will require more data and time.

Shifting housing preferences, improved understanding of the externalities of development, and the goals of the recent state and federal policies discussed earlier, dovetail neatly, creating unique development opportunities that can attract private investment. *The build-out analyses clearly illustrate the potential of TDRs to center development and create built environments that match the demand profile.*

Our analysis of the potential outcomes of the alternative development patterns shaped by EZ, IZ, and TDR programs endeavors to measure the real costs by incorporating externalities, estimating the fiscal burden on local government to support the development, and examining other impacts that cannot be accurately monetized. This analysis first focuses on Bethlehem, then, on Stillwater, and concludes with a comparison of the forecasted impacts on the two communities.

Forecasted Impacts in Bethlehem

To accommodate the anticipated growth by 2030, the Town of Bethlehem will need to add approximately 1,602 housing units. Where these housing units are built will be shaped by the land-use policies adopted by elected officials. The community will need to weigh various options and determine its vision for the future and which approach to land-use controls will support its vision. Part of the process will involve comparing the spatial and economic outcomes correlated to development patterns. What follows is a simplified example of how to approach this analysis by examining the alternative simulations presented above. Again, we would like to stress that this analysis is for educational purposes only; the funders or authors do not speak for either Bethlehem or Stillwater.

The analysis of ecological services, future municipal costs to maintain new infrastructure, and other benefits clearly documents the potential benefits of a well-designed and operated TDR program. Moreover, the observable differences in the spatial distribution of new residential development based on the land-use control options (EZ, IZ, and TDR) reveal that a TDR program would be more likely to support the community vision articulated in our interviews and in recent planning documents. A TDR program would preserve open space and working landscapes and create recreational opportunities. In addition, the forecasted TDR development would support and strengthen the existing hamlets, while balancing development across the two largest school districts (in terms of area) to ensure some degree of equity.

Ecological Services Analysis—Bethlehem

To translate land consumption into economic terms, the researchers used the same methodology as the Trust for Public Land's research (2012, 2007). The 2012 research estimated the benefits of New York State's investment in its Environmental Protection Fund. This analysis focuses on three broad categories

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of investment: (1) solid waste management; (2) open-space conservation; and (3) recreational assets including parks and historic preservation. *The research documents that the State's investment of roughly \$365 million (constant 2012 dollars) to preserve 144,000 acres between 1998 and 2010 had approximately a seven-to-one return on investment* (this includes forecasted ecological services value to 2020). It should be noted that the total value of \$2.54 billion dollars in ecological services estimated for the study period will only grow as the land continues to provide these services beyond 2020.

The first step in estimating the ecological services provided by different types of land cover is to analyze what type of land is consumed for development in terms of its current use and land cover (see Table 19). A parcel's contribution to environmental services, such as CO₂ sink and water purification, is dependent on the land cover and its size. The value of the contribution to ecological services is in 2012 dollar amounts, and the area of each land type is measured in acres. Thus, multiplying the amount of each land cover to development by the appropriate calculated value yields the economic contribution of the ecological services offered by the land in its existing condition. For the purposes of this analysis, we use an 18-year study period to match the time horizon of the population forecast for 2030.

Comparing the totals for each of the simulations, the total amount of consumed land, the value of the ecological services for the year 2012, and the total value of these services to the horizon year (2030) yields the impact of ecological services. *Compared to the existing zoning simulation, incentive zoning would preserve about \$3.6 million in ecological services between 2012 and 2030 and a TDR could potentially protect \$4.1 million of valuable ecological resources.* Of course, the preserved ecological resources will continue to provide these services beyond 2030, thus, these simulations underestimate the total values.

Table 19: Estimated Value of Lost Ecological Services by Land Use Control Approach - Bethlehem

Land Cover Type	TPL Estimated Annual Value of Eco-Services in 2012 \$s	EZ Simulation			IZ Simulation			TDR Simulation		
		Amount Acreage Consumed	2012's Annual Eco-Services Value (\$)	NPV 2012-30 Eco-Services (\$)	Amount Acreage Consumed	2012's Annual Eco-Services Value (\$)	NPV 2012-30 Eco-Services (\$)	Amount Acreage Consumed	2012's Annual Eco-Services Value (\$)	NPV 2012-30 Eco-Services (\$)
Deciduous Forest	882	19	16758	247239	4	3528	52050	0	0	0
Evergreen Forest	882	0	0	0	0	0	0	0	0	0
Woody Wetland	4120	0	0	0	0	0	0	0	0	0
Mixed Forest	882	313	276066	4072943	107	94374	1392348	83	73206	1080046
Shrub/ Scrub	882	139	122598	1808751	86	75852	1119083	78	68796	1014983
Open Water	220	0	0	0	0	0	0	0	0	0
Pasture/ Hay	22	76	1672	24668	36	792	11685	19	418	6167
Grassland/ Herbaceous Wetland	4	0	0	0	0	0	0	0	0	0
Cultivated Crops	46	92	4232	62437	47	2162	31897	29	1334	19681
Developed Open Space (parks)	317	0	0	0	0	0	0	0	0	0
Emergent Herbaceous Wetland	4120	0	0	0	0	0	0	0	0	0
Developed	0	0	0	0	0	0	0	0	0	0
Barren Land (c.g. rock outcrops)	0	0	0	0	0	0	0	0	0	0
Total		639	\$421,326	\$6,216,039	280	\$176,708	\$2,607,064	209	\$143,754	\$2,120,877

Note: TPL, Trust for Public Lands (2012) page 38 provides the annual value of ecological services for an acre of each land type. All dollars are in constant 2012 dollars.

Public Investment in Development—Bethlehem

When a responsible governmental unit decides to spend publicly generated revenues (taxes, fees, bonds, etc.) to invest in infrastructure (roads, water, sewer, parks, etc.) or provides public services (courts, emergency services, policing, public health, etc.), we typically refer to these expenditures as fiscal costs, or impacts. While technically this is true, they are markedly different from expenditures on things such as electricity, fuel, or copy paper. Daily expenditures for commodities are just that—fiscal cost. There is no expectation that they will have long-term value. However, infrastructure and services expenditures will have lasting impact (decades or more), and for that reason need more scrutiny. For example, the decision to invest in the Erie Canal transformed New York State, as did federal investments in land grant colleges. These public investments have proven their value. Measuring their subliminal benefits of growth in social capital, social transformation, and improved community health and well-being, while desired by most, are difficult to compute as a monetized value. Hence, they are not captured in cost-benefit, fiscal-impact, or economic-growth analyses. A normative analysis of these is discussed in the following section.

The public cost of development—that is the fiscal impact of providing public infrastructure and services—is variable for a host of reasons. Global market forces; regional cost differences; and the price of fuel, war, and other events create challenges that local officials can do little to guard against. However, the structure of our federal system of government devolves considerable power to states and local governments to direct development within their jurisdiction. The research is clear that effective collaboration among different units of government (horizontally and/or vertically) support effective leadership to control fiscal and social impacts through land-use control coupled with other incentives to maximize the public benefits from these investments (Burchell 2005; Frank 1989; Ladd 1994; Levin 2005; Mitchell et al. 2006). *Mutual support between municipalities with a common vision has reduced costs, increased the effectiveness of investments, and improved quality of life* (Bunnell 2003; Fainstein 1996; Mishkovsky et al. 2010).

Our analysis of public expenditures on infrastructure and services coincides with the literature on fiscal impacts, which concludes that the spatial form of a community is more causal in the cost to deliver hard infrastructure (roads, bridges, water, sewer, etc.) relative to the delivery of more mobile services such as education, policing, emergency services, and waste management (Bunnell 1997; Burchell 2002, 2005; Ladd 1989; Levine 2005; Lewis et al. 2007). The primary reason for this finding is that the single largest cost to provide emergency services, policing, education, and other services is labor. In some cases personnel-related expenditures can exceed 80% of annual operating expenditures. Thus, the physical location of a building makes minimal difference to annual or long-term cost. The one area that may be affected is transportation expenditures to bus children, haul waste, or reach a person in need. Even with rising fuel costs, our interviews revealed that the school districts' policies on student transportation and the current built environment prevent any significant savings from increasing densities in the near future. In addition, the interviews also confirmed that recent state aid to local school districts has stripped any excess instruction capacity, increasing class size. While the school districts indicated that their facilities could absorb about 80% of the projected increases, the capacity to deliver curriculum is currently stretched thin.

The historic investments in public infrastructure also help to minimize the cost to provide additional capacity to meet rising demand. As an inner-ring suburb community, Bethlehem has benefited from extensive infrastructure development from Capital Region growth over the past 6 to 7 decades. This, coupled with excess capacity from residential and commercial relocations to areas not served by public water and sewer, suggests that anticipated growth will not require rapid expansion of infrastructure. Furthermore, the development model in the region usually includes the developer absorbing the cost of providing roads, storm water management, water, and sewer within the cost of the housing units; thus, additional fiscal impacts are minimal, except for their long-run operation, maintenance, and replacement.

While the fiscal cost to provide more physical infrastructure is marginal based on this analysis, the operation and maintenance of the new infrastructure will fall on the municipalities. A review of recent engineering documents on the average cost to operate and maintain public infrastructure provides a reasonable estimate from which to calculate the differences based on the different land-use outcomes. Since the study period does not exceed the anticipated life of the new roads, sewers, and so forth, only maintenance costs are considered. Of course, the rehabilitation and/or replacement costs are just beyond the horizon year, and thus, our analysis underestimates the projected long-run cost.

Maintaining New Roads—Bethlehem

Though the cost to rehabilitate a typical two-lane collector road is roughly \$105,000 per lane-mile, the operation and maintenance is considerably less at \$20,000 per lane-mile every 5 years (Olson & Schmidt 2011). To calculate the additional lane-miles necessary to support the new dwelling units, the analysis relies on the reported average land use devoted to roads by the developers we interviewed as roughly 15%. Thus, if a new housing development consumed 100 acres, 15%, or 15 acres, would be devoted to roads. By converting the acreage to square feet and dividing by the width of the road (36 feet), we can calculate the number of lane-miles. *The analysis suggests that the build-out pattern using a TDR policy would save the Town of Bethlehem approximately \$886,462 in 2012 dollars from 2012 to 2030, relative to the simulation of the existing zoning (see Table 20). The IZ simulation would also yield considerable savings in the operation and maintenance of new roads, relative to the existing zoning simulation, costing \$746,942 less over the study period.*

Table 20: O & M Cost for New Road Construction - Bethlehem

Land Use Simulation	New Lane Miles	O&M NPV, 2012-2030
EZ	23.5	\$1,330,998
IZ	10.3	\$584,056
TDR	7.7	\$444,536

Water-related Infrastructure Operations and Maintenance—Bethlehem

The cost of maintaining additional water-related infrastructure (potable water, waste water, and storm water) is a variable based on size of the service area and its topography as well as the type of system

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installed. A more detailed cost analysis should be conducted after an engineering plan to develop the system is completed, which can more accurately predict cost based on the full range of variables. Commonsense tells us that regardless of topography and type of system, the cost to maintain 20 miles of pipe and associated pumps, grinders, collection basins, and so on will exceed the cost of maintaining just 10 miles of the same age and type of infrastructure. If the cost were perfectly scalable, then it would cost 50% less for 10 miles versus 20 miles. This analysis will use the O & M cost analysis of storm water management systems to estimate the cost differential.

The calculation of this cost is straightforward. The U.S. EPA Storm Water Management Center estimates that it costs between \$15,000 and \$20,000 to conduct a needs assessment and roughly \$1,500 to \$2,000 per square mile for maintenance of well-managed systems. The analysis assumes a 5-year cycle to survey and conduct repairs, and we calculate the cost by multiplying the service (land consumed) by the low-end estimate (\$1,500 per square mile) and assume the needs assessment at \$20,000. The cost for the cycles in 2016, 2021, 2026, and 2030 are then converted to constant 2012 dollars (see Table 21).

While the costs are not directly scalable, the analysis suggests that the Town of Bethlehem could save nearly 4% of the O & M cost in the IZ simulation, relative to the EZ, and roughly 5% when the TDR development pattern is compared with the EZ pattern over the study period (2012–2030). As with new roads, this calculation underestimates the long-term cost, as rehabilitation and replacement costs remain beyond the horizon year. This cost pattern would repeat for other linear infrastructures such as water and sewer infrastructure.

Table 21: O & M Cost for New Storm Water Infrastructure - Bethlehem

Land Use Simulation	New Lane Miles	O&M NPV, 2012-2030
EZ	23.5	\$151,756
IZ	10.3	\$98,230
TDR	7.7	\$88,904

Additional Benefits for Bethlehem

Rational land-use policy that incorporates the real cost of development creates economic, fiscal, and health benefits, which are correlated with improved quality of life. Additionally, such policy strengthens a community's capacity to address the myriad interdependent cross-cutting issues driven by the land development process. These types of social benefits result from investment in public goods that underpin development and are essential for a high quality of life.

Public health is correlated with urban form. More-compact, pedestrian friendly, mixed-use environments are conducive to walking and biking, while parks and open spaces encourage other kinds of physical activity. Walking and biking also reduce transportation-related pollution. These factors have a positive effect on public health (Camagni & Gibelli 2002; Frank & Engelke 2001; Mitchell et al. 2006; Smit et al. 2010). In addition, environmental conditions—which are in part determined by land use practices—can create inequities in terms of differential access to public goods, employment, and

necessary household goods and services and proximity to hazardous land uses (Levine 2005; Massey & Denton 1993; Smit et al. 2010). In addition, a more-compact, mixed-use community form promotes food security (Smit et al. 2010).

Reduced fragmentation in the environment increases biodiversity and promotes sustainable ecosystems (Fischer & Lindenmayer 2007; Fahrig 2003; Kruess & Tschardtke 1994). *Conversely, urban sprawl can impair hydrological cycles, reduce aquifer recharge, increase flooding, and decreased quality of surface water* (Hobbs 2003; Krecek et al. 2012).

The simulation analyses highlight the potential of a TDR program to promote the preservation of open space, protect environmental assets, and encourage the development of traditional hamlets. These are all goals expressed in a recent planning document that the Town of Bethlehem adopted and is currently implementing. The spatial analysis of the simulations also supports the assertion that a TDR approach is more aligned with the existing vision articulated in Bethlehem planning documents. The simulations indicate that the town would best situate itself to meet the changing residential real-estate market by taking a TDR approach. The value of the spillover benefits of a TDR approach may not be measurably monetized and calculated in economic terms, but they should not be overlooked in determining a community's land-use control options.

Forecasted Impacts—Stillwater

The Stillwater analysis and its results mirror the Bethlehem case, though there are differences. The most obvious difference between the two cases is of scale. The forecasted demand for housing in Stillwater is roughly one third compared with Bethlehem, though the relative densities create a counter-intuitive result in land consumption. In Stillwater, the existing zoning simulation consumes 618 acres (see Table 22). This is roughly the same as in Bethlehem (639), but only 525 dwelling units would be built in Stillwater compared to the nearly 1,500 in Bethlehem. This finding holds true for the IZ and the TDR simulations (see tables 23 and 24).

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Table 22: Forecasted Simulation of Existing Zoning - Stillwater

Zoning District	Total Parcels Developed	Total Acreage	Total Acreage Consumed	Total DUs Developed
Town				
Residential RR	13	435	226	150
Residential LDR	34	587	388	368
Both S and W	12	9	8	12
Either S or W	11	327	211	223
Neither S or W	11	252	170	133
Residential RM	3	7	0	1
Both S and W	1	0	0	1
Either S or W	1	0	0	0
Neither S or W	1	6	0	0
Rural RRD	3	3	3	5
Village				
Residential R1	3	18	0	0
Residential R2	1	0	0	1
Totals	57	1,050	618	525

Note: The consumed acres are always greater than zero, though rounding results to zero for parcel less than .5 acres.

Table 23: Forecasted Simulation of Incentive Zoning - Stillwater

Zoning District	Total Parcels Consumed	Total Acreage	Total Acreage Consumed	Total DUs Consumed
Town				
Residential RR	10	435.31	200	161
Residential LDR	8	587.42	206	327
Both S and W	2	8.74	2	11
Either S or W	6	326.52	204	198
Residential RM	1	6.72	0	1
Both S and W	1	0.24	0	1
Either S or W	0	0.23	0	0
Neither S or W	0	6.25	0	0
Rural RRD	1	2.85	2	9
Village				
Residential R1	0	17.68	0	0
Residential R2	0	0.08	0	1
Totals	20	1,050	408	499

Note: The consumed acres are always greater than zero, though rounding results in a zero for parcels less than .5 acres.

Table 24: Forecasted Simulation of TDR - Stillwater

District Code	Zoning District	School District	Parcel Count	Total Useable Acreage	Total Consumed Acreage	Total DUs Developed
R-1	LDR, RR	Stillwater	32	127	73	50
R-2	LDR, RM RR, R1, R2	Stillwater, Schuylerville, and Shenendehowa	234	777	484	406
Receiving Areas Total			266	904	557	456
Random Selection Outside Districts	LDR, R1, RM, RR, RRD	Stillwater, Mechanicville, Shenendehowa	1	46	46	23
S-1	LDR, RR	Stillwater & Schuylerville	na	na	na	na
Total			267	950	603	479

The difference in total acres consumed across the three simulations needs greater scrutiny. The patterns are quite different for the EZ and the TDR simulations (see figures 11 and 13), yet the amounts of land consumed in the two scenarios are nearly equal. This outcome is primarily the result of the density assumptions used in the simulations. The hypothetical TDR program only permits doubling the existing residential densities. Increased incentives and changes in permitted uses would have resulted in the Stillwater TDR creating more-compact development, similar to the Bethlehem TDR simulation. This skews the results and should be considered when designing the receiving areas if a community adopts a TDR program. Another factor is that in the random selection process in the simulation of existing zoning, more development is to occur in zones with smaller lot-size requirements. In the TDR simulation, more than 50% of the new dwelling units are developed in low-density residential zoning districts.

Ecological Services Analysis—Stillwater

The Stillwater valuation of ecological services lost to development repeats the same process used for Bethlehem. While significant savings is indicated when the IZ simulation is compared with existing zoning, the TDR simulation produces only moderate savings relative to existing zoning (see Table 25). The TDR simulation is clustered in the areas that illustrate the community vision expressed in the recent Stillwater Comprehensive Plan (2006a, 2006b) and in the Farmland Protection and Green Infrastructure Plan (2007). The density assumptions used in the TDR analysis also results in infill development along routes 67 and 4. Still, the development is relatively low density, mostly in the southwest section of the town, resulting in 603 acres of consumed land in the TDR simulation. This is only slightly less than indicated in the EZ simulation, and thus, the savings represented by the TDR approach is relatively small. Also much of the difference is related to the type of land lost to development. In particular, the quarry in the southwest of town is categorized as barren land, providing no ecological services.

Table 25: Estimated Value of Ecological Services by Land Use Control Approach - Stillwater

Land Cover Type	TPL Estimated Annual Value of Eco-Services in 2012 \$s	EZ Simulation			IZ Simulation			TDR Simulation		
		Amount Acreage Consumed	2012's Annual Eco-Services Value (\$)	NPV 2012-30 Eco-Services (\$)	Amount Acreage Consumed	2012's Annual Eco-Services Value (\$)	NPV 2012-30 Eco-Services (\$)	Amount Acreage Consumed	2012's Annual Eco-Services Value (\$)	NPV 2012-30 Eco-Services (\$)
Deciduous Forest	882	80	70860	1045432	37	32387	477823	84	74458	1098524
Evergreen Forest	882	0	0	0	0	0	0	0	0	0
Woody Wetland	4120	0	0	0	0	0	0	0	0	0
Mixed Forest	882	297	261636	3860057	75	66573	982191	302	265923	3923298
Shrub/ Scrub	882	117	103564	1527939	88	77369	1141465	96	85095	1255456
Open Water	220	0	0	0	0	0	0	0	0	0
Pasture/ Hay	22	93	2039	30088	196	4308	63565	66	1459	21529
Grassland/ Herbaceous Wetland	4	0	0	0	0	0	0	0	0	0
Cultivated Crops	46	31	1421	20971	12	563	8307	24	1110	16369
Developed Open Space (parks)	317	0	0	0	0	0	0	0	0	0
Emergent Herbaceous Wetland	4120	0	0	0	0	0	0	0	0	0
Developed	0	0	0	0	0	0	0	0	0	0
Barren Land (e.g. rock outcrops)	0	0	0	0	0	0	0	30	0	0
Total		618	\$439,522	\$6,484,488	408	\$181,201	\$2,673,351	603	\$428,046	\$6,315,176

Note: TPL Trust for Public Lands (2012) page 38 provides the annual value of ecological services for an acre of each land type. All dollars are in constant 2012 dollars.

Public Investment in Development—Stillwater

The analysis of additional public cost to operate and maintain public infrastructure after construction follows the same methodology described above for Bethlehem. And the results for Stillwater were similar to the results for Bethlehem regarding the ecological services analysis. The O & M analysis of new roads and water-related infrastructure (potable water, waste water, and storm water) reveal the same results as decades of fiscal-impact analyses, which conclude that the low-density, sprawled development patterns result in higher costs (see tables 26 and 27). Again, it bears mentioning, that the density assumptions for the TDR simulation in Stillwater result in more land being consumed than for the IZ simulation. This reflects a less-than-optimal design of the receiving areas, which could be resolved by deploying best practices in the TDR development process. To maximize the benefits of a TDR program, the density within the receiving area in the southwest would need to be more than double the existing zoning.

Table 26: O & M Cost For New Road Construction - Stillwater

Land Use Simulation	New Lane Miles	O & M NPV 2012-2030
EZ	22.7	\$1,287,257
IZ	15.0	\$849,839
TDR	16.3	\$921,076

The relatively low density of the forecasted development in Stillwater dampens the savings for storm water infrastructure and management. However, if population growth accelerates (as some believe will happen) then the cost differences will be magnified. Furthermore, the rehabilitation and replacement cost will also heighten the cost differences just beyond the horizon year of this analysis.

Table 27: O & M Cost for New Storm Water Infrastructure - Stillwater

Land Use Simulation	Service Area Square Miles	O & M NPV 2012-2030
EZ	23.5	\$431,338
IZ	10.3	\$303,536
TDR	7.7	\$324,350

Still More Benefits in Stillwater

As in Bethlehem, the benefits of the more-compact development indicated in the IZ and TDR simulations would also produce spillover benefits regarding public health and protection of working landscapes and would encourage development in the areas designated for development in the recent comprehensive plan. Though more land is consumed in the TDR simulation compared with the IZ simulation, in the TDR simulation development is not fragmented, which means it provides stronger support for protecting farmland, open space, and historic assets, and community character. Furthermore, the TDR simulation clusters development into areas where infrastructure is planned or currently exists. A TDR development pattern clearly provides the most support for the community vision of the Town of Stillwater.

Summary of the Simulation Analyses

The analyses of the land-use controls (EZ, IZ, TDR) in Bethlehem and Stillwater underscore the findings regarding best practices and potential benefits evident in the literature on TDRs and the case studies of successful programs. In both communities, the benefits in terms of reduced cost to provide necessary infrastructure for development and increased value of ecological services accorded with anticipated outcomes. The results also suggest that a well-designed and managed TDR program would advance the vision and goals of their respective comprehensive plans, particularly when examining the environmental-conservation objectives and aspirations to retain their communities' character.

In the case of Bethlehem, the low-density "sprawl" development decreases relative to existing zoning in both the IZ and TDR simulations while the benefits increased. Since the theoretical receiving areas roughly approximated the area designated for a more mixed-use, compact form through "village style zoning" articulated in relevant planning documents, one could conclude that a TDR program could promote the community's vision for future development patterns.

The simulations in Stillwater require a more nuanced analysis. Both the IZ and TDR simulations indicate limit low density development and increased community benefits, relative to existing zoning. The Stillwater results are notable as the receiving area design improved outcomes relative to EZ, the data suggest that the incentive zoning simulation slightly outperformed the TDR simulation. At first glance, one might interpret this finding to suggest that TDRs as less effective. However, one must consider that the process of developing the theoretical sending and receiving areas did not incorporate some critical elements to ensure optimal performance of a TDR program. The process for designating and designing appropriate overlay zones in the receiving areas warrants a detailed examination of underlying zoning as well as numerous other factors. For this research project, for simplicity reasons (and practical reasons), the receiving area only doubles the density of dwelling units. Thus, the capacity to absorb more growth was restricted in the largest receiving area, which is currently zoned as low density. Thus larger lot-sizes lead to more land consumption and smaller benefits.

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Appendix 1: Glossary

Term	Definition
501(3)(c) Non-Profit Organization	An IRS approved "501(c)(3)" nonprofit organization is a tax-exempt, charitable organization. "Charitable" is broadly defined as being established for purposes that are religious, educational, charitable, scientific, literary, testing for public safety, fostering of national or international amateur sports, or prevention of cruelty to animals and children.
Accounting Cost	In economics, accounting costs are the payments (expenses) that are part of the profit and loss statements. They do not include externalities or opportunity cost.
Bold-downsizing	When density or intensity of land use is being lowered, there is a decrease in the number of housing units that can be built or how intensely non-residential land can be used, is referred to as downzoning. Bold downzoning, are bold do to the political challenges present in any downzoning are multiplied by proposing downzoning that significantly reduces permissible uses, the intensity of the use, and reduction in the number of residential units that can be developed.
Conservation Easement	A voluntary, legally binding agreement (between a land owner and the entity that purchases the conservation easement) that limits or prevents certain uses and developments from taking place on a piece of property now and in the future, to protect the property's ecological or open-space values.
Ecological Services (environmental services)	Any positive benefit that wildlife or ecosystems provides to people. The benefits can be direct or indirect – small or large. The terms ecological services and environmental services are often used interchangeably.
Euclidean Zoning	The most common and traditional approach to zoning, Euclidian zoning regulates development through land use classifications and dimensional standards by allowing for a single use in a designated zone, though not all zones are limited to a single land use activity. Typical land use classifications include single-family residential, multi-family residential, commercial, institutional, industrial, and recreational. Each land use must comply with dimensional standards that regulate height, bulk, and area of structures; taking the form of setbacks, side yards, height limits, minimum lot sizes and lot coverage limits. Originally named after the town of Euclid, Ohio where a landowner's legal challenge to the city's zoning code was ultimately rule against by the U.S. Supreme Court (1926).
Externalities	This economic term refers to the "price/value" of some outcome of production or consumption that is not included in the price of the economic good. The value can be positive or negative. For example, the cost of pollution is not reflected in the price of gasoline's production and consumption. This is a negative externality. Markets would be more efficient if this negative cost was incorporated into the price. The positive value of ecosystem services are also rarely incorporated into the price of land, or their loss as a result of development.
Factor Cost	An economic term for the cost of production inputs, land, labor, capital equipment, buildings, etc.
Form-Based Zoning	Zoning ordinance that places emphasis on regulating the form and scale of buildings relative to their use. Placement along and within public spaces, such as sidewalks, street trees, and street furniture, are also prioritized relative to use. Some of the urban planning goals of form-based codes including curbing urban sprawl.

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Term	Definition
Incentive Zoning	Zoning ordinance that offers a reward, usually in the form of increased density, to a developer who does something extra that is in the community's interest, such as preserving open space, or promotes a public goal, such as affordable housing.
Market Clearing Price	Also known as equilibrium price, the price point where the supply and demand curve intersect, signifying that the total supply of the good equals exactly its total demand. Based on economic theory that assumes the market operates efficiently.
Opportunity Cost	Opportunity cost result from the notion of scarcity in economics. The price of the good or service forgone when a different good or service is purchased is call the opportunity cost in economics. For example, if one buys a hamburger and forgoes seeing a movie, the price of the movie is the opportunity cost.
Program Area	Defined geographic specific location(s) stipulated in the local ordinance that are the target area of any zoning classification. In the case of TDR, these are the sending and receive areas.
Real Cost	Economists define real cost as the accounting cost plus the opportunity cost and the value of the externalities.
Receiving Area	Parcel of land which development rights are transferred to. Typically, these parcels are in urban areas where the existing services and infrastructure can accommodate additional growth. Landowners may place development rights onto a receiving site by transferring them from a qualifying parcel they own, by purchasing the development rights from a sending site landowner with certified TDRs, or by purchasing them from a TDR Bank. With transferred development rights, a landowner may develop the receiving site at a higher density than is otherwise allowed by the base zoning or specify new allowable uses previously restricted by the existing zoning.
Sending Area	Parcel of land which development rights will be transferred from. After transferring the development rights, future development in the sending area is limited according to the terms of the conservation easement agreed upon at the time of the transfer. Codes should specific eligibility criteria for sending sites, but generally sending sites are rural parcels providing productive agricultural or forestry values, critical wildlife habitat or other public benefits such as open space, regional trail connectors.
TDR Bank	If someone purchases development rights from a sending site but doesn't use them right away on a receiving site, the person is said to be "banking" the development rights. The sending site property owner might also bank development rights by separating the rights from the parcel and placing a conservation easement on the land. The property owner would then have a certificate for the number of development rights allowed that could be sold or used on a receiving site. Under some circumstances, TDR banks may also purchase development rights and transfer them in into the TDR Bank and then sell them at a later time to owners of qualified receiving sites.
Third Party	"A generic legal term for any individual who does not have a direct connection with a legal transaction but who might be affected by it." (http://legal-dictionary.thefreedictionary.com/Third+Party) OR "a person who is not a party to a contract or a transaction, but has an involvement." (also legal-dictionary.thefreedictionary.com and Copyright © 1981-2005 by Gerald N. Hill and Kathleen T. Hill. All Right reserved.)
Transfer of Development Right Program	A program that allows landowners to separate development rights (building, structure) from a particular piece of land. TDR programs have two objectives: to offer communities a means to preserve open space, agriculture, historic buildings, or housing; and to provide a more equitable and politically palatable way to compensate landowners who lose the right to develop their property. Development rights purchasers are usually other landowners who want to increase the density of their developments. Local governments may also buy development rights in order to control price, design details or restrict growth. [Source: Jason Hanly-Forde, George Homsy, Katherine Lieberknecht & Remington Stone, Transfer of Development Rights Programs Using the Market for Compensation and Preservation: http://government.cce.cornell.edu/doc/html/Transfer%20of%20Development%20Rights%20Programs.htm#Definition]

Sources: King County, WA at <http://www.kingcounty.gov/environment/stewardship/sustainable-building/transfer-development-rights/definitions.aspx#Sending%20Site>. Accessed 2.23.12; Zoning Matters at <http://zoningmatters.org/facts/trends>. accessed on 2.23.12; Nature.org . accessed on 2.13.12; Authors.

Appendix 2: Interview Protocol for Municipal Officers

1. How long have you worked for the municipality and what are your job responsibilities?
2. Have you ever heard of a Transfer of Development (TDR) project?
 - a. Do you understand the process to implement a TDR project?
3. What do you think are reasons to implement a TDR program within the Town?
4. Do you think that there will be support from the Town Board to enact this type of land management/conservation development program?
5. Do you think that this type of tool would be useful for the Town to consider implementing?
6. What other tools in the planning process could be used in conjunction with a TDR project?
7. Who do you envision as the implementing party for a TDR project within the Town?
 - a. Would the Planning Department oversee the process?
 - b. Would the Town Supervisor and Town Board oversee the process?
 - c. Would it be a joint effort between different parties?
8. As part of the Planning Department, how do you see this type of project being implemented if supported by the Town Board?
 - a. Should the Town adopt an amendment to the Town Code allowing this type of project?
9. What type of information would the Planning Department be able to provide to help implement this process?
 - a. If the Town Board approves the usage of a TDR project, do you feel that this could be implemented into the current planning process?
 - b. If not, what changes need to be addressed?
10. Do you feel that you would have the majority of the support of the Planning Board to enact this project?
 - a. If not, what conditions do you see encumbering this project?
11. Are there any areas in the Town, which you feel need to be excluded from the potential development of sending and receiving areas?

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- a. What physical characteristics do these areas possess which cause you to want to eliminate them from the analysis area?
 - b. Are these areas either historically or environmentally sensitive areas?
12. How do you feel that a TDR program be enacted within the Town?
- a. Should the Town create an overlay district to dictate where the sending/receiving areas are located?
 - b. Should the Town amend the zoning/Town Code to include a separate section outlining the criteria of the program?
13. Is there any additional information that you feel would be beneficial to our analysis or is there anything that you can think that that might be useful to our project?

Thank you for taking the time to help us conduct our interview and if we have any further questions may we contact you again?

Appendix 3: Comparison of TDR Programs in New York

Question	Town of Clifton Park	Town of Westport	Town of Glenville ¹	Town of Lysander	Town of Warwick
Does a TDR Project currently exist?	Yes, but not in a specific section of the code. Procedures outlined in sections §208-16, §208-17, and §208-43.10 - §208.41-19	Yes, designated under §32.120 of the Town Code	No, but proposed to be Article XXII of section §270.161 - §270.175 of the Town Code	No, but Town in the process of revising draft ordinance	Yes, and identified under section §164-47.4 of the Town Code
Is the program voluntary?	Yes	Yes	Proposed to be voluntary	Proposed to be either voluntary or mandatory depending on the site location	Yes
When was the project implemented and by what organization?	T/O Clifton Park initiated the program. It is referenced in the Town Code, the Open Space Plan, the Comprehensive Plan, and the W. Clifton Park GEIS.	T/O Westport initiated the program	Draft ordinance was compiled but never passed in June 2008	Under current review and regulation review by the state	T/O Warwick Comprehensive Plan in August 1999; and the 2002 Village Comprehensive Plan
Why was a TDR Program implemented?	To help protect the rural character, the natural and scenic qualities of open space and the agricultural heritage while providing for well-planned new development that complements the traditional settlement patterns. Also to help protect the health, safety and economic base as well as the quality of life.	To encourage flexibility in the layout of design of subdivision projects within the Town as well as preserve important farmland, forest land, sensitive natural areas, groundwater quality, and rural community character.	Project not implemented. Town originally received a grant from agency to investigate possibility of TDR program, and was partially supported by former Town Board but now new TB does not support project. ²	Town determined that the impact from residential development in the Cold Spring Peninsula would negatively impact local farming, open space, local infrastructure, community facilities, and the safe and effective flow of traffic in the AR-40 zone.	Protect rural character and natural beauty; smart growth principals; preserving farmland and open space; encourage growth around the villages and hamlets where infrastructure already exists; CEAS; and historical features
What is the authority which enables this legislation?	§ 261-a of the NY's Town Law and § 261-b.	§261-a of the NY's Town Law	§261-a of the NY's Town Law and §284 of the NY's Town Law for Intermunicipal Agreements	§261-a of the NY's Town Law	§261-a and §261-b of the NY's Town Law and §7-701 and § 7-703 of the NY's Village Law; also §284 of the NY's Town Law and § 7-741 of the NY's Village Law

¹ Information regarding the Town of Glenville TDR was gathered from the Draft 2008 Ordinance and from an interview with town personnel.

² The proposed purpose of implementing the Glenville TDR program was to protect important farmland, sensitive natural areas, scenic viewsheds and public wellheads and recharge areas. These correspond with the 2008 Glenville Open Space Plan, which was adopted.

An Analysis of the Potential for Transfer of Development Rights Programs in the Capital Region

Interview Question	Town of Clifton Park	Town of Westport	Town of Glenville ³	Town of Lysander	Town of Warwick
Is there current Town legislation or ordinances which support TDR Programs?	TDR programs are supported in the Town code under sections § 208-16, §208-17, and §208.43.10 – W. Clifton Park GEIS and the Open Space Plan.	Yes, it is referenced under §32.120 of the Town Code	A draft ordinance was created by Town and planning consultant but never adopted; Article XXII; Proposed to be §270-161 – 270.175	Program would be proposed to be an amendment to the Town Land Use Plan	§164-47.4 of Warwick Town Code
Is there an inter-municipal Agreement(s) in place?	No, sending and receiving areas are wholly contained within the municipal boundaries, no IMA needed.	No, both sending and receiving areas are wholly contained within the municipal boundaries, no IMA needed.	IMA was proposed for Town of Glenville and village of Scotia	None proposed for the Town and no Village involved	Agreement between the Town and Village of Warwick. Expires 10/20/2013. Five year term covered under §119-n of the General Municipal Law; and §284 of Town Law and §7-741 of Village Law
Who oversees the review of these projects?	Town Planning Department, the Open Space Coordinator, and the Town Board	Town Planning Department and reports to the Town Board who has overall approval. Density transfer requires a Special Use Permit	Town Planner proposed to be administrator of project	Town Planning Board oversee the calculation for the developable lots and the TDR project	Town/Village Planning Board and Town/Village Boards work jointly together
Is the TDR Program currently used?	Yes, there have been several TDR programs administered. Each project is treated differently since each project has different circumstances	Yes, have implemented 1 to 2 projects. Building development rights were reserved, but have not yet transferred to developer	Not currently used	Not currently used	No current projects before the Town of Village
Who administers the TDR instruments?	The Town Planning Department, the Open Space Coordinator, and the Town Board	Town Planning Department and final approval by Town Board. Special Use Permit must be signed off by owner or their representative for both the sending and receiving areas	Town Planner along with the Town Board	Town Supervisor and TB are responsible for program and overseeing the creation of the TDR Development Rights Bank	Town has Development Rights Bank "TDR Bank" which oversees the retained and sold interests
How are monies from transfers appropriated?	Open Space Fund	Not mentioned within code but town staff mentioned that TDRs are banked and the Town will oversee the Bank. Program is not currently active.	TDR Bank or Open Space Preservation Fund creation	Allows for the creation of a TDR Bank which is authorized under the TDR enabling legislation	Town and Village created "Warwick Incentive Trust Agency" which oversees monies
Are overlay districts used in the development of transfer zones?	Yes, sending areas are denoted on the Town Zoning Map.	No, not specifically mentioned in the proposed code	Sending areas are identified as "TDR-S" and receiving	Yes, sending and receiving areas are denoted as "overlay"	Village uses a "floating" zoning district aka an "Annexation District"

³ Information regarding the Town of Glenville TDR was gathered from the Draft 2008 Ordinance and from an interview with town personnel.

Interview Question	Town of Clifton Park	Town of Westport	areas are "TDR-R"	districts	Town of Warwick
Is incentive zoning used in the TDR process?	Yes, referenced in the Open Space Plan and Article VB of §208.43.10 of the Town Code as the Open Space Incentive Zoning	Yes, referred to as density transfer	Not specifically noted	Not specifically noted	Not specifically noted
Where are the sending areas?	The sending area is located within the West Clifton Park Zoning District	The sending area can only be in the same zone as the receiving area	Proposed to be in the NW part of Town; two smaller areas in south-central part of Town, and small area in NE part of Town	Proposed to be an overlay district and incorporated into the local zoning law. Must be within the AR-40 Zoning District	Town has sending areas depicted by an Agricultural Protection Overlay District
Where are the receiving areas?	The receiving areas are within the CR, HR, and the HM zoning districts ⁵	The receiving areas can only be in the same zone as the sending area	Located in the Town Center Plan and the Freemans Bridge Road Plan which are zoned CB/GB, and MU, and a former brownfield area ⁶	Not specifically stated in draft proposal. Must be within the AR-40 Zoning District and be contiguous to water/sewer, road infrastructure, and must lack environmental sensitivity	Receiving areas are within the SL, SM and LB zoning districts ⁷
Are there any filing of conservation easement or TDR instruments?	TDR paperwork must be filed with the Planning Board prior to filing for the final approved site plan. Open Space, Environmental, Agricultural and Historic Resource Conservation Easements can be used. Easements are granted to T/O Clifton Park, a qualified not-for profit land conservation organization, or a land trust. Deed restriction or permanent conservation easements are placed on parcel. All dedicated open space must be in perpetuity	A perpetual conservation easement restricting development on the sending parcel must be granted to the Town Board or a qualified not-for-profit conservation organization. Appropriate paperwork must be filed with the County Clerk's Office	Landowner may request a TDR Certificate from the Town, certified by the Town planner. New deed conveying the TDR needs to be recorded in the County Clerk's office and the NYS DEC. Conservation easements are used to sever development rights from the parcels	TDR paperwork will be filed with the municipal Town Clerk, no mention of filing with state agencies or the County Clerk's Office	TDR paperwork must be filed for the sending and receiving parcels with the municipal assessor as well County Clerk's Office
Are development rights in "perpetuity" or are "term" TDRs allowed	Town Code mentioned both perpetuity and term programs. Perpetuity CE uses is only for agricultural, forestry, active/passive recreation, watershed protection, wildlife habitat protections.	Perpetuity only, does not address term TDRs	Assumes perpetuity, no mention of term TDRs	Proposed perpetuity plan	Perpetuity only, does not address term TDRs

⁴ Information regarding the Town of Glenville TDR was gathered from the Draft 2008 Ordinance and from an interview with town personnel.

⁵ CR represents the Conservation Residential District; HR represents the Hamlet Residential District; and HM represents the Hamlet Mixed-Use District.

⁶ CB/GB represents the Community Business and General Business Zoning Districts respectively. MU Development represents the Mixed-Use District.

⁷ SL represents the Suburban Residential Low-Density Zoning District; SM represents the Suburban Residential Medium Density Zoning District; and BL represents the Local Hamlet Business Zoning District.

Generally speaking, all of the above Municipalities have shown a concern for uncontrolled residential growth in their communities within areas which they consider to be environmentally sensitive. These areas contain elements which the communities have identified as a priority to manage. The following is a list including, but not limited to, many of the critical criteria which these communities have identified as important environmental determinants:

- Productive agricultural farmland
- Environmentally sensitive wildlife areas
- Wetland and water recharge areas
- Lands containing slope with elevations exceeding 15% or greater
- Scenic vistas and viewsheds
- Rural character and community historical features
- Protect water resources

Town of Glenville TDR Project

In an interview with Glenville town employees, they stated that the Town had received grant money to hire a planning consultant to research and create a draft TDR ordinance in 2008. The draft ordinance was supported by a split vote by the Town Board at that time. When a new Town Board came in for the 2008 term, the majority was not supportive of the TDR proposition, but had yet to be adopted. The Town Board was supportive of the Open Space Plan, which is used as a supplement to the TDR Ordinance, and was adopted in May 2008. This Plan addresses many of the same issues as the proposed TDR Ordinance, and specifically mentions the prospect of purchase of development rights, and transfer of development rights (Section V1, Open Space Preservation Options, Preservation Options, Purchase and Transfer of Development Rights, page 41). Town staff felt that perhaps with a change in the Town Board members, the TDR Ordinance may become a viable document and, with some minor “tweaking,” can be revisited and adopted into the Town Code. Currently, the Town has received between four and five land donations from property owners, with three of these being quite sizeable. One of these parcels, a 48 acre piece, has been approved to be developed for a passive park plan which includes a non-motorized trail around the large pond encompassed within the lot and a public parking area with significant signage.

Glenville’s Open Space Plan highlights several goals and objectives:

- Preserve and enhance the natural and cultural features of the community that form these unique qualities.
- Promote a land use development pattern that is consistent with the carrying capacity of natural resources and the ability to provide services

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- Ensure the quality of the Town of Glenville's water resources
- Protect and promote agricultural and forestry operations
- Preserve the rural character of western Glenville, which is a portion of Town generally defined as the area west of Sacandaga Road and north of the Mohawk River
- Retain forested areas, fields, stream corridors, wetlands and other open spaces in the eastern portion of Glenville, to the maximum extent practical, so as to establish and preserve buffers between developed areas.
- Provide increased protection for environmentally sensitive areas such as wetlands, flood plains, steep slopes, wildlife habitat areas, unique geological formations, etc.
- Preserve the character of historical sites and structures throughout the Town
- Protect, expand, and/or create active and passive recreational facilities and opportunities
- Identify and protect scenic views as seen from roadsides, parks, preserves, and other areas frequented by the public
- Preserve and enhance key entryways or gateways to Glenville

The Town of Glenville uses several different preservation options which mimic TDR strategies:

- Land Conservation Zoning
- Overlay Districts
- Bonus/Incentive Zoning
- Floating Zones
- Conservation Subdivision Design
- Deed Restrictions
- Land Set-Aside
- Conservation easements as a tax benefit option

Town of Lysander TDR Review

An interview with their planning consultant revealed that the Draft Feasibility Study for a Proposed Transfer of Development Rights Program in the AR-40 Zoning District, which was initially completed in January 2006, is currently under review and the regulatory components have been amended and adopted. The Town is currently discussing the language for the conservation easements, defining the

sending areas and is currently being reviewed at the state level. This step needs to be completed before any monies from New York State Agriculture and Markets to help fund the project.

A review of the draft TDR proposal highlights several important legal issues surrounding the TDR program in New York State. First of all, it states that TDR programs have survived many legal challenges from several different angles. It also mentions that there is substantial case history supporting the use of TDR programs to protect valuable community natural assets. It also states that not only the U.S. Supreme Court and numerous other State Supreme Courts, including New York, have determined that the transfer of development rights is a legal method of protecting important environmental, agricultural, and historical areas.

The Draft Plan addresses the issue of transferring development rights to areas outside the zoning district, or even outside the community. The plan states that it would not be economically feasible to transfer residential development rights to a predominately commercial area or between different school districts because of the tax parity, or that it may be difficult to transfer development rights between different municipalities because of potentially different property values. If the TDR program was set up within one zoning district, with similar land value schedules, there would be little or no economic impact from the proposal. Some of the major considerations to be looked at are:

- The values of development rights vary between parcels;
- Development rights may vary on different areas of a single parcel due to location, road frontage, wetlands, views, slope, aspect, drainage, and proximity to infrastructure;
- Land areas adjacent to sending areas are highly likely to increase in value upon the purchase of a conservation easement;
- Overall development rights to buyer will likely increase as land in the receiving area gets developed; and
- The overall value of the land in the AR-40 District will increase as the number of protected acres increase.

The Town and Village of Warwick TDR Review

The Town and Village of Warwick has endured much development pressure over the past thirty years. In interviews with town officials, they identified the need to maintain the rural character of their community and preserving open space and farmland as their driving forces to create their TDR agreement between the Town and Village of Warwick. Although that had been a great push to generate this document, there has been no TDR activity to date. The inter-municipal agreement between the Town and Village runs in five year terms, and the current agreement expires on October 20, 2013, at which time both municipal governments can decide whether or not to continue their arrangement.

Town of Westport TDR Program

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The Town does currently have a TRD Program in place. Currently, the Town has one or two programs which were administered. The development rights for both of the projects have been reserved and taken from the land, but have not currently transferred to a developer. The Planning Board oversees the projects, but as of today, no TDR Bank has been established and the Town is currently in the process of setting up the regulations governing this process. The Town also has several large farms which had recently had their development rights sold off and have been encumbered by a conservation easement.

Town of Clifton Park

The Town currently has a TDR Program in effect. It is referenced in section §208-16, §208-17, §208.43 and Article VB in the Town Code. The Town has worked on several projects, mainly overseen by the Planning department, the Open Space Coordinator, and finally the Town board. Each project is handled independently, because each project has its own set of unique characteristics. The Town has different density requirements for each of the allowable zoning districts (3) and in lieu of development, a cash buy-out may be an option. The code also specifically states what the allowable densities are, and what the offsets are for the amenities.

Appendix 4: Most Relevant New York State Laws Regarding Intermunicipal Agreements, Comprehensive Planning, and Land-use Regulations

New York State Town Law: § 284. Intermunicipal Cooperation in Comprehensive Planning and Land-use Regulation

Summary

This law gives authority to towns, cities or villages in New York State to enter into agreements with one another, in order to better confront the issues of comprehensive planning and land use regulation. Under the law, towns, cities, and villages are able to work with one another or for one another, in carrying out the ministerial functions related to land use regulation and comprehensive planning.

Law

§ 284. Intermunicipal cooperation in comprehensive planning and land use regulation.

1. Legislative intent. This section is intended to illustrate the statutory authority that any municipal corporation has under article five-G of the general municipal law and place within land use law express statutory authority for cities, towns and villages to enter into agreements to undertake comprehensive planning and land use regulation with each other or one for the other, and to provide that any city, town or village may contract with a county to carry out all or a portion of the ministerial functions related to the land use of such city, town or village as may be agreed upon. By the enactment of this section the legislature seeks to promote intergovernmental cooperation that could result in increased coordination and effectiveness of comprehensive planning and land use regulation, more efficient use of infrastructure and municipal revenues, as well as the enhanced protection of community resources, especially where such resources span municipal boundaries.
2. Authorization and effects.
 - (a) In addition to any other general or special powers vested in a town to prepare a comprehensive plan and enact and administer land use regulations, by local law or ordinance, rule or regulation, each town is hereby authorized to enter into, amend, cancel and terminate agreements with any other municipality or municipalities to undertake all or a portion of such powers, functions and duties.
 - (b) Any one or more municipalities located in a county which has established a county planning board, commission or other agency, hereinafter referred to as a county planning agency, are

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hereby authorized to enter into, amend, cancel and terminate agreements with such county in order to authorize the county planning agency to perform and carry out certain ministerial functions on behalf of such municipality or municipalities related to land use planning and zoning. Such functions may include, but are not limited to, acting in an advisory capacity, assisting in the preparation of comprehensive plans and land use regulations to be adopted and enforced by such municipality or municipalities and participating in the formation and functions of individual or joint administrative boards and bodies formed by one or more municipalities.

- (c) Such agreements shall apply only to the performance or exercise of any function or power which each of the municipal corporations has the authority by any general or special law to prescribe, perform, or exercise separately.

3. Definitions. As used herein:

- (a) "Municipality", means a city, town or village.
- (b) "Community resource", means a specific public facility, infrastructure system, or geographic area of special economic development, environmental, scenic, cultural, historic, recreational, parkland, open space, natural resource, or other unique significance, located wholly or partially within the boundaries of one or more given municipalities.
- (c) "Intermunicipal overlay district", means a special land use district which encompasses all or a portion of one or more municipalities for the purpose of protecting, enhancing or developing one or more community resources as provided herein.

4. Intermunicipal agreements. In addition to any other powers granted to municipalities to contract with each other to undertake joint, cooperative agreements any municipality may:

- (a) Create a consolidated planning board, which may replace individual planning boards, if any, which consolidated planning board shall have the powers and duties as shall be determined by such agreement;
- (b) Create a consolidated zoning board of appeals, which may replace individual zoning boards of appeals, if any, which consolidated zoning board of appeals shall have the powers and duties as shall be determined by such agreement;
- (c) Create a comprehensive plan and/or land use regulations which may be adopted independently by each participating municipality;
- (d) Provide for a land use administration and enforcement program which may replace individual land use administration and enforcement programs, if any, the terms and conditions of which shall be set forth in such agreement; and
- (e) Create an intermunicipal overlay district for the purpose of protecting, enhancing or developing community resources that encompass two or more municipalities.

5. Special considerations.
 - (a) Making joint agreements. Any agreement made pursuant to the provisions of this section may contain provisions as the parties deem to be appropriate, and including provisions relative to the items designated in paragraphs a through m inclusive as set forth in subdivision two of section one hundred nineteen-o of the general municipal law.
 - (b) Establishing the duration of agreement. Any agreement developed pursuant to the provisions of this section may contain procedures for periodic review of the terms and conditions, including those relating to the duration, extension or termination of the agreement.
 - (c) Amending local laws or ordinances. Local laws or ordinances shall be amended, as appropriate, to reflect the provisions contained in intermunicipal agreements established pursuant to the provisions of this section.
6. Appeal of action by aggrieved party or parties. Any officer, department, board or bureau of any municipality with the approval of the legislative body, or any person or persons jointly or severally aggrieved by any act or decision of a planning board, zoning board of appeals or agency created pursuant to the provisions of this section may bring a proceeding by article seventy-eight of the civil practice law and rules in a court of record on the ground that such decision is illegal, in whole or in part. Such proceeding must be commenced within thirty days after the filing of the decision in the office of the town clerk. Commencement of the proceeding shall stay proceedings upon the decision from which the appeal is taken. All issues in any proceeding under this section shall have a preference over all other civil actions and proceedings.
7. Any agreements made between two or more municipalities pursuant to article five-G of the general municipal law or any other law which provides for the undertaking of any land use regulation or activity on a joint, cooperative or contract basis, if valid when so made, shall not be invalidated by the provisions of this section.
8. The provisions of this section shall be in addition to existing authority and shall not be deemed or construed as a limitation, diminution or derogation of any statutory authority authorizing municipal cooperation.

N.Y. TOWN. LAW § 261-b: NY Code - Section 261-B: Incentive zoning; definitions, purpose, conditions, procedures (Towns IZ Authorization)

1. Definitions. As used in this section:
 - (a) "Incentives or bonuses" shall mean adjustments to the permissible population density, area, height, open space, use, or other provisions of a zoning ordinance or local law for a specific purpose authorized by the town board.
 - (b) "Community benefits or amenities" shall mean open space, housing for persons of low or moderate income, parks, elder care, day care or other specific physical, social or cultural

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amenities, or cash in lieu thereof, of benefit to the residents of the community authorized by the town board.

- (c) "Incentive zoning" shall mean the system by which specific incentives or bonuses are granted, pursuant to this section, on condition that specific physical, social, or cultural benefits or amenities would inure to the community.
- 2. Authority and purposes. In addition to existing powers and authorities to regulate by planning or zoning, including authorization to provide for the granting of incentives, or bonuses pursuant to other enabling law, a town board is hereby empowered, as part of a zoning ordinance or local law adopted pursuant to this article, or by local law or ordinance adopted pursuant to other enabling law, to provide for a system of zoning incentives, or bonuses, as the town board deems necessary and appropriate consistent with the purposes and conditions set forth in this section. The purpose of the system of incentive, or bonus, zoning shall be to advance the town's specific physical, cultural and social policies in accordance with the town's comprehensive plan and in coordination with other community planning mechanisms or land use techniques. The system of zoning incentives or bonuses shall be in accordance with a comprehensive plan within the meaning of section two hundred sixty-three of this article.
 - 3. Implementation. A system of zoning incentives or bonuses may be provided subject to the conditions hereinafter set forth.
 - (a) The town board shall provide for the system of zoning incentives or bonuses pursuant to this section as part of the zoning ordinance or local law. In providing for such system the board shall follow the procedure for adopting and amending its zoning ordinance or local law, including all provisions for notice and public hearing applicable for changes or amendments to a zoning ordinance or local law.
 - (b) Each zoning district in which incentives or bonuses may be awarded under this section shall be designated in the town zoning ordinance or local law and shall be incorporated in any map adopted in connection with such zoning ordinance or local law or amendment thereto.
 - (c) Each zoning district in which incentives or bonuses may be authorized shall have been found by the town board, after evaluating the effects of any potential incentives that are possible by virtue of the provision of community amenities, to contain adequate resources, environmental quality and public facilities, including adequate transportation, water supply, waste disposal and fire protection. Further, the town board shall, in designating such districts, determine that there will be no significant environmentally damaging consequences and that such incentives or bonuses are compatible with the development otherwise permitted.
 - (d) A generic environmental impact statement pursuant to the provisions of 6 NYCRR 617.15 shall be prepared by the town board for any zoning district in which the granting of incentives or bonuses have a significant effect on the environment before any such district is designated, and such statement shall be supplemented from time to time by the town board if there are

material changes in circumstances that may result in significant adverse impacts. Any zoning ordinance or local law enacted pursuant to this section shall provide that any applicant for incentives or bonuses shall pay a proportionate share of the cost of preparing such environmental impact statement, and that such charge shall be added to any site-specific charge made pursuant to the provisions of section 8-0109 of the environmental conservation law.

- (e) The town board shall set forth the procedure by which incentives may be provided to specific lands. Such procedure shall describe:
 - (i) The incentives, or bonuses, which may be granted by the town to the applicant;
 - (ii) The community benefits or amenities which may be accepted from the applicant by the town;
 - (iii) Criteria for approval, including methods required for determining the adequacy of community amenities to be accepted from the applicant in exchange for the particular bonus or incentive to be granted to the applicant by the town;
 - (iv) The procedure for obtaining bonuses, including applications and the review process, and the imposition of terms and conditions attached to any approval; and
 - (v) Provision for a public hearing, if such public hearing is required as part of a zoning ordinance or local law adopted pursuant to this section and give public notice thereof by the publication in the official newspaper of such hearing at least five days prior to the date thereof.
- (f) All other requirements of article eight of the environmental conservation law shall be complied with by project sponsors for actions in areas for which a generic environmental impact statement has been prepared including preparation of an environmental assessment form and a supplemental environmental impact statement, if necessary.
- (g) Prior to the adoption or amendment of the zoning ordinance or local law pursuant to this section to establish a system of zoning incentives or bonuses the town board shall evaluate the impact of the provision of such system of zoning incentives or bonuses upon the potential development of affordable housing gained by the provision of any such incentive or bonus afforded to an applicant or lost in the provision by an applicant of any community amenity to the town. Further, the town board shall determine that there is approximate equivalence between potential affordable housing lost or gained or that the town has or will take reasonable action to compensate for any negative impact upon the availability or potential development of affordable housing caused by the provisions of this section.
- (h) If the town board determines that a suitable community benefit or amenity is not immediately feasible, or otherwise not practical, the board may require, in lieu thereof, a payment to the town of a sum to be determined by the board. If cash is accepted in lieu of other community benefit or amenity, provision shall be made for such sum to be deposited in a trust fund to be

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used by the town board exclusively for specific community benefits authorized by the town board.

4. Invalidations. Nothing in this section shall be construed to invalidate any provision for incentives or bonuses heretofore adopted by any town board.

N.Y. VILLAGE. LAW § 7-703: NY Code - Section 7-703: Incentive zoning; definitions, purpose, conditions, procedures (Village IZ authorization)

1. Definitions. As used in this section:
 - a. "Incentives or bonuses" shall mean adjustments to the permissible population density, area, height, open space, use, or other provisions of a zoning local law for a specific purpose authorized by the village board of trustees.
 - b. "Community benefits or amenities" shall mean open space, housing for persons of low or moderate income, parks, elder care, day care or other specific physical, social or cultural amenities, or cash in lieu thereof, of benefit to the residents of the community authorized by the village board of trustees.
 - c. "Incentive zoning" shall mean the system by which specific incentives or bonuses are granted to applicants pursuant to this section on condition that specific physical, social, or cultural benefits or amenities would inure to the community.
2. Authority and purposes. In addition to existing powers and authorities to regulate by planning or zoning, including authorization to provide for the granting of incentives, or bonuses pursuant to other enabling law, a village board of trustees is hereby empowered, as part of a zoning local law adopted pursuant to this article, to provide for a system of zoning incentives, or bonuses, as the village board of trustees deems necessary and appropriate consistent with the purposes and conditions set forth in this section. The purpose of the system of incentive, or bonus, zoning shall be to advance the village's specific physical, cultural and social policies in accordance with the village's comprehensive plan and in coordination with other community planning mechanisms or land use techniques. The system of zoning incentives or bonuses shall be in accordance with a comprehensive plan within the meaning of section 7-704 of this article.
3. Implementation. A system of zoning incentives or bonuses may be provided subject to the conditions hereinafter set forth.
 - a. The village board of trustees shall provide for the system of zoning incentives or bonuses pursuant to this section as part of the zoning local law. In providing for such system the board shall follow the procedure for adopting and amending its zoning local law, including all provisions for notice and public hearing applicable for changes or amendments to a zoning local law.

- b. Each zoning district in which incentives or bonuses may be awarded under this section shall be designated in the village zoning local law and shall be incorporated in any map adopted in connection with such zoning local law or amendment thereto.
- c. Each zoning district in which incentives or bonuses may be authorized shall have been found by the village board of trustees, after evaluating the effects of any potential incentives which are possible by virtue of the provision of community amenities, to contain adequate resources, environmental quality and public facilities, including adequate transportation, water supply, waste disposal and fire protection. Further, the village board of trustees shall, in designating such districts, determine that there will be no significant environmentally damaging consequences and that such incentives or bonuses are compatible with the development otherwise permitted.
- d. A generic environmental impact statement pursuant to the provisions of 6 NYCRR 617.15 shall be prepared by the village board of trustees for any zoning district in which the granting of incentives or bonuses may have significant effect on the environment before any such district is designated, and such statement shall be supplemented from time to time by the village board of trustees if there are material changes in circumstances that may result in significant adverse impacts. Any zoning local law enacted pursuant to this section shall provide that any applicant for incentives or bonuses shall pay a proportionate share of the cost of preparing such environmental impact statement, and that such charge shall be added to any site-specific charge made pursuant to the provisions of section 8-0109 of the environmental conservation law.
- e. The village board of trustees shall set forth the procedure by which incentives may be provided to specific lands. Such procedure shall describe:
 - (1) The incentives, or bonuses, which may be granted by the village to the applicant;
 - (2) The community benefits or amenities which may be accepted from the applicant by the village;
 - (3) Criteria for approval, including methods required for determining the adequacy of community amenities to be accepted from the applicant in exchange for the particular bonus or incentive to be granted to the applicant by the village;
 - (4) The procedure for obtaining bonuses, including applications and the review process, and the imposition of terms and conditions attached to any approval; and
 - (5) Provision for a public hearing, if such public hearing is required as part of a zoning ordinance or local law adopted pursuant to this section and give public notice thereof by the publication in the official newspaper of such hearing at least five days prior to the date thereof.
- f. All other requirements of article eight of the environmental conservation law shall be complied with by project sponsors for actions in areas for which a generic environmental impact

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statement has been prepared including preparation of an environmental assessment form and a supplemental environmental impact statement, if necessary.

- g. Prior to the adoption or amendment of the zoning local law pursuant to this section to establish a system of zoning incentives or bonuses the village board shall evaluate the impact of the provision of such system of zoning incentives or bonuses upon the potential development of affordable housing gained by the provision of any such incentive or bonus afforded to an applicant or lost in the provision by an applicant of any community amenity to the village. Further, the village board of trustees shall determine that there is approximate equivalence between potential affordable housing lost or gained or that the village has or will take reasonable action to compensate for any negative impact upon the availability or potential development of affordable housing caused by the provisions of this section.
 - h. If the village board of trustees determines that a suitable community benefit or amenity is not immediately feasible, or otherwise not practical, the board may require, in lieu thereof, a payment to the village of a sum to be determined by the board. If cash is accepted in lieu of other community benefit or amenity, provisions shall be made for such sum to be deposited in a trust fund to be used by the village board of trustees exclusively for specific community benefits authorized by the village board of trustees.
4. Nothing in this section shall be construed to invalidate any provision for incentives or bonuses heretofore adopted by any village board of trustees.

N.Y. GCT. LAW § 81-d: NY Code - Section 81-D: Incentive zoning; definitions, purposes, conditions, procedures (IZ authorization for cities)

1. Definitions. As used in this section:
 - (a) "Incentives or bonuses" shall mean adjustments to the permissible population density, area, height, open space, use, or other provisions of a zoning ordinance, local law, or regulation for a specific purpose authorized by the legislative body of a city.
 - (b) "Community benefits or amenities" shall mean open space, housing for persons of low or moderate income, parks, elder care, day care, or other specific physical, social, or cultural amenities, or cash in lieu thereof, of benefit to the residents of the community authorized by the legislative body of a city.
 - (c) "Incentive zoning" shall mean the system by which specific incentives or bonuses are granted, pursuant to this section, on condition that specific physical, social, or cultural benefits or amenities would inure to the community.
2. Authority and purposes. In addition to existing powers and authorities to regulate by planning or zoning, including authorization to provide for the granting of incentives, or bonuses pursuant to

other enabling law, a legislative body of a city is hereby empowered, as part of a zoning ordinance, local law or regulation, to provide for a system of zoning incentives, or bonuses, as the legislative body deems necessary and appropriate, consistent with the purposes and conditions set forth in this section. The purpose of the system of incentive or bonus zoning shall be to advance the city's specific physical, cultural and social policies in accordance with the city's comprehensive plan and in coordination with other community planning mechanisms or land use techniques. The system of zoning incentives or bonuses shall be in accordance with a locally-adopted comprehensive plan.

3. Implementation. A system of zoning incentives or bonuses may be provided subject to the conditions hereinafter set forth.
 - (a) The legislative body of a city shall provide for the system of zoning incentives or bonuses pursuant to this section as part of the zoning ordinance, local law, or regulations. In providing for such system, the legislative body shall follow the procedure for adopting and amending its zoning ordinance, local law, or regulations, including all provisions for notice and public hearing applicable for changes or amendments to such ordinances, laws, or regulations.
 - (b) Each zoning district in which incentives or bonuses may be awarded under this section shall be designated in the city zoning ordinance, local law or regulations, or amendment thereto.
 - (c) Each zoning district in which incentives or bonuses may be authorized shall have been found by the legislative body of a city, after evaluating the effects of any potential incentives which are possible by virtue of the provision of community amenities, to contain adequate resources, environmental quality and public facilities, including adequate transportation, water supply, waste disposal and fire protection. Further, the legislative body of a city shall, in designating such districts, determine that there will be no significant environmentally damaging consequences and that such incentives or bonuses are compatible with the development otherwise permitted.
 - (d) A generic environmental impact statement pursuant to the provisions of 6 NYCRR 617.15 shall be prepared by the legislative body of a city for any zoning district in which the granting of incentives or bonuses have a significant effect on the environment before any such district is designated, and such statement shall be supplemented from time to time by the legislative body of a city if there are material changes in circumstances that may result in significant adverse impacts. Any zoning ordinance, local law, or regulation enacted pursuant to this section shall provide that any applicant for incentives or bonuses shall pay a proportionate share of the cost of preparing such environmental impact statement, and that such charge shall be added to any site-specific charge made pursuant to the provisions of section 8-0109 of the environmental conservation law.
 - (e) The legislative body of a city shall set forth the procedure by which incentives may be provided to specific lands. Such procedure shall describe:
 - (i) The incentives, or bonuses, which may be granted by the city to the applicant;

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- (ii) The community benefits or amenities which may be accepted from the applicant by the city;
 - (iii) Criteria for approval, including methods required for determining the adequacy of community amenities to be accepted from the applicant in exchange for the particular bonus or incentive to be granted to the applicant by the city;
 - (iv) The procedure for obtaining bonuses, including applications and the review process, and the imposition of terms and conditions attached to any approval; and
 - (v) Provision for a public hearing, if such public hearing is required as part of a zoning ordinance, local law, or regulation adopted pursuant to this section, and give public notice thereof by the publication in the official newspaper of such hearing at least five days prior to the date thereof.
- (f) All other requirements of article eight of the environmental conservation law shall be complied with by project sponsors for actions in areas for which a generic environmental impact statement has been prepared, including preparation of an environmental assessment form and a supplemental environmental impact statement, if necessary.
- (g) Prior to the adoption or amendment of the zoning ordinance, local law, or regulation, pursuant to this section to establish a system of zoning incentives or bonuses, the legislative body of a city shall evaluate the impact of the provision of such system of zoning incentives or bonuses upon the potential development of affordable housing gained by the provision of any such incentive or bonus afforded to an applicant or lost in the provision by an applicant of any community amenity to the city. Further, the legislative body of a city shall determine that there is approximate equivalence between potential affordable housing lost or gained or that the city has or will take reasonable action to compensate for any negative impact upon the availability or potential development of affordable housing caused by the provisions of this section.
- (h) If the legislative body of a city determines that a suitable community benefit or amenity is not immediately feasible, or otherwise not practical, the legislative body may require, in lieu thereof, a payment to the city of a sum determined by the legislative body. If cash is accepted in lieu of other community benefit or amenity, provision shall be made for such sum to be deposited in a trust fund to be used by the legislative body of the city exclusively for specific community benefits authorized by such legislative body.
4. Invalidations. Nothing in this section shall be construed to invalidate any provision for incentives or bonuses heretofore adopted by any city legislative body.

N.Y. General City Law 20-F - Transfer of development rights; definitions; conditions; procedures § 20-f. Transfer of development rights; definitions; conditions; procedures.

1. As used in this section:
 - a. "Development rights" shall mean the rights permitted to a lot, parcel, or area of land under a zoning ordinance or local law respecting permissible use, area, density, bulk or height of improvements executed thereon. Development rights may be calculated and allocated in accordance with such factors as area, floor area, floor area ratios, density, height limitations, or any other criteria that will effectively quantify a value for the development right in a reasonable and uniform manner that will carry out the objectives of this section.
 - b. "Receiving district" shall mean one or more designated districts or areas of land to which development rights generated from one or more sending districts may be transferred and in which increased development is permitted to occur by reason of such transfer.
 - c. "Sending district" shall mean one or more designated districts or areas of land in which development rights may be designated for use in one or more receiving districts.
 - d. "Transfer of development rights" shall mean the process by which development rights are transferred from one lot, parcel, or area of land in any sending district to another lot, parcel or area of land in one or more receiving districts.
2. In addition to existing powers and authorities to regulate by planning or zoning including authorization to provide for transfer of development rights pursuant to other enabling law, the legislative body of any city is hereby empowered to provide for transfer of development rights subject to the conditions hereinafter set forth and such other conditions as the city legislative body deems necessary and appropriate that are consistent with the purposes of this section, except that in cities of over one million any transfer of development rights shall be provided in the zoning ordinance after adoption by the city planning commission and board of estimate. The purpose of providing for transfer of development rights shall be to protect the natural, scenic or agricultural qualities of open lands, to enhance sites and areas of special character or special historical, cultural, aesthetic or economic interest or value and to enable and encourage flexibility of design and careful management of land in recognition of land as a basic and valuable natural resource. The conditions hereinabove referred to are as follows:
 - a. That transfer of development rights, and the sending and receiving districts, shall be established in accordance with a well-considered plan within the meaning of subdivision twenty-five of section twenty of this article. The sending district from which transfer of development rights may be authorized shall consist of natural, scenic, recreational, agricultural or open land or sites of special historical, cultural, aesthetic or economic values sought to be protected. Every

receiving district, to which transfer of development rights may be authorized, shall have been found by the legislative body of the city, after evaluating the effects of potential increased development which is possible under the transfer of development rights provisions, to contain adequate resources, environmental quality and public facilities including adequate transportation, water supply, waste disposal and fire protection, and that there will be no significant environmentally damaging consequences and such increased development is compatible with the development otherwise permitted by the city and by the federal, state, and county agencies having jurisdiction to approve permissible development within the district. A generic environmental impact statement pursuant to the provisions of article eight of the environmental conservation law shall be prepared by the city for the receiving district before any such district, or any sending district, is designated, and such statement shall be amended from time to time by the city if there are material changes in circumstances. Where a transfer of development rights affects districts in two or more school, special assessment or tax districts, it may not unreasonably transfer the tax burden between the taxpayers of such districts. The receiving and sending districts need not be coterminous with zoning districts.

- b. That sending and receiving districts be designated and mapped with specificity and the procedure for transfer of development rights be specified. Notwithstanding any other provision of law to the contrary, environmental quality review pursuant to article eight of the environmental conservation law for any action in a receiving district that utilizes development rights shall only require information specific to the project and site where the action will occur and shall be limited to review of the environmental impacts of the action, if any, not adequately reviewed in the generic environmental impact statement.
- c. That the burden upon land within a sending district from which development rights have been transferred shall be documented by an instrument duly executed by the grantor in the form of a conservation easement, as defined in title three of article forty-nine of the environmental conservation law, which burden upon such land shall be enforceable by the appropriate city in addition to any other person or entity granted enforcement rights by the terms of the instrument. All provisions of law applicable to such conservation easements pursuant to such title shall apply with respect to conservation easements hereunder, except that the city may adopt standards pertaining to the duration of such easements that are more stringent than such standards promulgated by the department of environmental conservation pursuant to such title. Upon the designation of any sending district, the city shall adopt regulations establishing uniform minimum standards for instruments creating such easements within the district. No such modification or extinguishment of an easement shall diminish or impair development rights within any receiving district. Any development right which has been transferred by a conservation easement shall be evidenced by a certificate of development right which shall be issued by the city to the transferee in a form suitable for recording in the registry of deeds for the county where the receiving district is situated in the manner of other conveyances of interests in land affecting its title.

- d. That within one year after a development right is transferred, the assessed valuation placed on the affected properties for real property tax purposes shall be adjusted to reflect the transfer. A development right which is transferred shall be deemed to be an interest in real property and the rights evidenced thereby shall inure to the benefit of the transferee, and his heirs, successors and assigns.
 - e. That development rights shall be transferred reflecting the normal market in land, including sales between owners of property in sending and receiving districts, a city may establish a development rights bank or such other account in which development rights may be retained and sold in the best interest of the city. Cities shall be authorized to accept for deposit within the bank gifts, donations, bequests or other development rights. All receipts and proceeds from sales of development rights sold by the city shall be deposited in a special municipal account to be applied against expenditures necessitated by the municipal development rights program.
 - f. That prior to designation of sending or receiving districts, the legislative body of the city shall evaluate the impact of transfer of development rights upon the potential development of low or moderate income housing lost in sending districts and gained in receiving districts and shall find either there is approximate equivalence between potential low and moderate housing units lost in the sending district and gained in the receiving districts or that the city has or will take reasonable action to compensate for any negative impact upon the availability or potential development of low or moderate income housing caused by the transfer of development rights.
3. A legislative body of a city modifying its zoning ordinance or enacting a local law pursuant to this section shall follow the procedure for adopting and amending its zoning ordinance or local laws, as the case may be, including all provisions for notice applicable for changes or amendments to a zoning ordinance, local law or regulation.
 4. Nothing in this section shall be construed to invalidate any provision for transfer of development rights heretofore or hereafter adopted by any local legislative body, or, in the case of cities over one million, by the board of estimate.

N.Y. Village. LAW § 7-701 Transfer of development rights; definitions; conditions; procedures.

1. As used in this section:
 - a. "Development rights" shall mean the rights permitted to a lot, parcel, or area of land under a zoning law respecting permissible use, area, density, bulk or height of improvements executed thereon. Development rights may be calculated and allocated in accordance with such factors as area, floor area, floor area ratios, density, height limitations, or any other criteria that will effectively quantify a value for the development right in a reasonable and uniform manner that will carry out the objectives of this section.

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- b. "Receiving district" shall mean one or more designated districts or areas of land to which development rights generated from one or more sending districts may be transferred and in which increased development is permitted to occur by reason of such transfer.
 - c. "Sending district" shall mean one or more designated districts or areas of land in which development rights are designated for use in one or more receiving districts.
 - d. "Transfer of development rights" shall mean the process by which development rights are transferred from one lot, parcel, or area of land in any sending district to another lot, parcel, or area of land in one or more receiving districts.
2. In addition to existing powers and authorities to regulate by planning or zoning, including authorization to provide for transfer of development rights pursuant to other enabling law, a board of trustees is hereby empowered to provide for transfer of development rights subject to the conditions hereinafter set forth and such other conditions as a village board of trustees deems necessary and appropriate that are consistent with the purposes of this section. The purpose of providing for transfer of development rights shall be to protect the natural, scenic or agricultural qualities of open lands, to enhance sites and areas of special character or special historical, cultural, aesthetic or economic interest or value and to enable and encourage flexibility of design and careful management of land in recognition of land as a basic and valuable natural resource. The conditions hereinabove referred to are as follows:
- a. That the transfer of development rights, and the sending and receiving districts, shall be established in accordance with a comprehensive master plan within the meaning of section 7-722 of this article. The sending district from which transfer of development rights may be authorized shall consist of natural, scenic, recreational, agricultural or open land or sites of special historical, cultural, aesthetic or economic values sought to be protected. Every receiving district, to which transfer of development rights may be authorized shall have been found by the board of trustees, after evaluating the effects of potential increased development which is possible under the transfer of development rights provisions to contain adequate resources, environmental quality and public facilities, including adequate transportation, water supply, waste disposal and fire protection, and that there will be no significant environmentally damaging consequences and such increased development is compatible with the development otherwise permitted by the village and by the federal, state, and county agencies having jurisdiction to approve permissible development within the district. A generic environmental impact statement pursuant to the provisions of article eight of the environmental conservation law shall be prepared by the village for the receiving district before any such district, or any sending district, is designated, and such statement shall be amended from time to time by the village, if there are material changes in circumstances. Where a transfer of development rights affects districts in two or more school, special assessment or tax districts, it may not unreasonably transfer the tax burden between the taxpayers of such districts. The receiving and sending districts need not be coterminous with zoning districts.

- b. That sending and receiving districts be designated and mapped with specificity and the procedure for transfer of development rights be specified. Notwithstanding any other provision of law to the contrary, environmental quality review pursuant to article eight of the environmental conservation law for any action in a receiving district that utilizes development rights shall only require information specific to the project and site where the action will occur and shall be limited to review of the environmental impacts of the action, if any, not adequately reviewed in the generic environmental impact statement.
- c. That the burden upon land within a sending district from which development rights have been transferred shall be documented by an instrument duly executed by the grantor in the form of a conservation easement, as defined in title three of article forty-nine of the environmental conservation law, which burden upon such land shall be enforceable by the appropriate village in addition to any other person or entity granted enforcement rights by the terms of the instrument. All provisions of law applicable to such conservation easements pursuant to such title shall apply with respect to conservation easements hereunder, except that the board of trustees may adopt standards pertaining to the duration of such easements that are more stringent than such standards promulgated by the department of environmental conservation pursuant to such title. Upon the designation of any sending district, the board of trustees shall adopt regulations establishing uniform minimum standards for instruments creating such easements within the district. Any development right which has been transferred by conservation easement shall be evidenced by a certificate of development right which shall be issued by the village to the transferee in a form suitable for recording in the registry of deeds for the county where the receiving district is situated in the manner of other conveyances of interests in land affecting its title.
- d. That within one year after a development right is transferred, the assessed valuation placed on the affected properties for real property tax purposes shall be adjusted to reflect the transfer. A development right which is transferred shall be deemed to be an interest in real property and the rights evidenced thereby shall inure to the benefit of the transferee, and his heirs, successors and assigns.
- e. That development rights shall be transferred reflecting the normal market in land, including sales between owners of property in sending and receiving districts, a village may establish a development rights bank or such other account in which development rights may be retained and sold in the best interest of the village. Villages shall be authorized to accept for deposit within the bank gifts, donations, bequests or other development rights. All receipts and proceeds from sales of development rights sold by the village shall be deposited in a special municipal account to be applied against expenditures necessitated by the municipal development rights program.
- f. That prior to designation of sending or receiving districts, the legislative body of the village shall evaluate the impact of transfer of development rights upon the potential development of low or moderate income housing lost in sending districts and gained in receiving districts and shall find

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either there is approximate equivalence between potential low and moderate housing units lost in the sending district and gained in the receiving districts or that the village has or will take reasonable action to compensate for any negative impact upon the availability or potential development of low or moderate income housing caused by the transfer of development rights.

3. The board of trustees adopting or amending procedures for transfer of development rights pursuant to this section shall follow the procedure for adopting and amending a local law including all provisions for notice applicable for changes or amendments to a zoning ordinance or local law.
4. Nothing in this section shall be construed to invalidate any provision for transfer of development rights heretofore or hereafter adopted by any local legislative body.

Appendix 5: Step-by-Step Process

Step 1: Community determines that there is a consensus among stakeholders to support exploring the potential of TDR programs and educate themselves about TDRs.

Step 2: If the community decides to pursue a TDR program, a transparent participatory process begins with defining sending and receiving areas.

Step 3: Once sending and receiving areas are determined, communities establish allowable uses and densities for the receiving area.

Step 4: Articulate the administrative structure of the program.

Step 5: Estimate the cost to operate the program and cost savings to the municipality of concentrated development.

Step 6: Set the value of a development right and the definition of development credit.

Step 7: Establish a development credit “bank” with a third party and define the third party’s roles, responsibilities, and remuneration.

Step 8: Adopt a TDR ordinance.

Step 9: Third party signs up landowners in sending areas interested in selling their development rights; properties are ranked for conservation priority.

Step 10: Developer pays third party bank for development credits in receiving area with planning board approval.

Step 11: Third party purchases development rights from willing landowners of priority property or properties in sending areas, placing a perpetual conservation easement on the property or properties.

OR—

Step 10: Third party purchases development rights from willing landowners of priority property or properties in sending area either (a) using funds from municipality or public or private grants and donations or (b) accepting donation of development rights and banks development credits. A perpetual conservation easement is placed on the property or properties.

Step 11: Developer purchases development credits for use in receiving area, with planning board approval.

Appendix 6: Methodology

The research team developed an extensive methodology to examine the primary question regarding the applicability of transfer of development rights (TDR) for Capital District communities. Although, the University at Albany researchers were not involved in the selection of the two participating communities, the Town of Bethlehem and the Town of Stillwater, they feel that each have merit for providing insights as case-study locations. The funders also assembled an advisory team with diverse backgrounds and expertise and are familiar with the two case-study communities. The committee met periodically over the study period to discuss findings and provide feedback at critical junctures in the process.

The process began with a thorough review of the academic literature that focused on five themes. These included (1) definition of a TDR program; (2) costs and benefits of TDRs; (3) barriers to success of TDRs; (4) best practices; and (5) identification of locations that represent “best practice” communities.

The project then had two parallel tracks of investigation: (1) case studies of best practice communities across the country and (2) identification of NYS TDR programs. These investigations focused on the same key questions to enable the research team to compare the best scientific knowledge in the academic literature to the on-the-ground practices in “best practice communities.”

The information gleaned from the literature review and case studies then informed the survey development and the identification of the key stakeholders to be interviewed. There were five categories of stakeholders (1) elected officials; (2) planning community representatives; (3) environmental organizations; (4) farmers/large land owners; and (5) builders/developers.

The survey questions had some critical overlap, including the request to identify on a map where hypothetical sending and receiving areas might be located, and then a set of questions tailored to the specific type of stakeholders. To improve the surveys, they were reviewed by the steering committee and refined.

Key stakeholders were identified using a Delphi technique. The study team first reviewed the list of elected officials, planning boards and staff, builders’ association members, and so on, and presented a preliminary list to the advisory team whose comments and suggestions were used to refine the list. An attempt was made to balance selection to ensure equal representation from the various stakeholder groups and on the basis of gender. The target number of interviews for each community was 18.

Another key step in the analysis involved a build-out analysis for three scenarios for each town. The build-out analysis was shaped by the methodology used by Chazen Group’s build-out analysis of the Town of Stillwater in 2006 and its associated GIS data layers. To be consistent we applied the same criteria to the Town of Bethlehem, except where otherwise noted. Changes were made only when the necessary data were unavailable (see below).

Appendix 7: GIS Build-out Analysis Methodology

The following were considerations to note regarding the project:

- Properties located in the Commercial Zoning Districts were excluded from the analysis.
- Properties located in the Special Districts (PDD) were excluded from the analysis.
- Properties in the Mixed Use District were excluded, with the exception of properties located in the Rural Riverfront District (RR).
- All Residential Vacant and Agricultural properties located in the Residential Zoning Districts (R, RLL, RA, RB, RC, CR, and MR) were included in the analysis.
- The Residential Vacant property classes utilized were 311, 312, 314, 320, 321, 322, and 323. (Property class definitions provided at the end of the summary).
- The Agricultural Property classes considered were 100, 105, 110, 112, 113, 114, 116, 117, 120, 140, and 170. (Property class definitions provided at the end of the summary).
- No build-out consideration was given to properties where residential structures already exist.

1. Identify environmental constraints limiting potential development. The following list of environmental constraints were excluded from the residential and agricultural vacant lands:

- Slopes greater than 15%
- NYS DEC Wetlands with a 100-foot buffer area
- Federal NWI Wetlands
- 100-year FEMA Floodplain
- NYS Hydrology with a 50-foot buffer area

2. Identify and exclude undevelopable properties from the analysis. Any property identified with the following property classes were excluded from the analysis: Commercial; Recreation; Community Services; Industrial; Public Services; and Wild, Forested and Conservation Lands. (These are identified through the NYS Department of Taxation and Finance.)

3. Identify buildable vs. non-buildable land. Excluding everything already mentioned above, only the remaining parcels were considered in the build-out analysis. Buildable parcels were identified as meeting the current zoning regulations, with sufficient land to build a residential structure, and the unconstrained land is greater than or equal to one half the minimum required lot size. For all parcels, except those with a classification of either Residential Vacant Land or Agriculture, the

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minimum lot size was subtracted from the unconstrained acreage before determining if the area was buildable.

4. Adjustments made for roads and utilities. After determining available buildable lands, reductions for public right-of-ways and utilities need to be applied to the remaining lands.

- If the unconstrained land is greater than 20 acres, then a reduction of 15% is applied to account for roads and utilities
- If the unconstrained land is 5 to 20 acres, then a reduction of 15% is applied to account for roads and utilities
- If the unconstrained land is less than 5 acres, then there is no reduction to the unconstrained land.

5. Parcels with more than one zoning district. Parcels of land that are included in more than one zoning district were examined on an individual parcel-by-parcel basis. Any remaining unconstrained lands, after considering reductions for roads and utilities based upon the above-mentioned formulas in residential zoning districts, were included in the evaluation and added into the potential build-out analysis.