

Municipal Codes for Minimal Development Impacts “Still Kind of a Mystery”

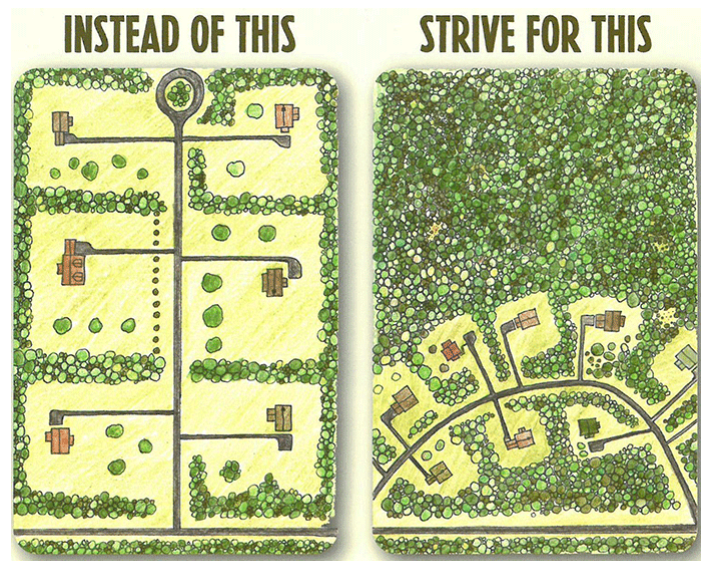
David Morgan and Margherita Pryor

Undeveloped lands are more than open spaces begging for development; they are working landscapes that with proper measures can mitigate human impacts by providing the ecosystem services we depend upon: maintaining water quality, soaking up carbon, preserving a [sense of place](#), and sustaining habitats and communities. Keeping open spaces open, however, is often hampered by conventional building and zoning codes that make it easier to clear new land for development than to reuse, retrofit, or fill in already developed lands. New research in the SNEP region focuses on the disincentives for maintaining open space; SNEP is supporting policy initiatives and stormwater management guidelines that make the case for minimizing our development footprint [while saving millions](#) in costs and maintenance for builders, developers, owners, and municipalities. There are two approaches to shrinking impacts from development: changing how and where we develop. The “how” involves strategies for permitting development with minimal impact, typically through zoning and site design requirements. The “where” can also be addressed by zoning but, in the context of redevelopment, might also involve consideration of infrastructure, building codes, and other regulations.

[Conservation development](#) is the foremost strategy for minimizing new development impacts. Rather than clearing whole sites without regard for the local ecology and the benefits it provides, this strategy first considers how to preserve critical habitat and hydrological elements of the landscape as undeveloped open space. Site context is key; connections between parcels of undeveloped land can be preserved with forethought to maintain habitat connectivity and ecological continuity.

SNEP has funded recent work in [Charlestown, Rhode Island](#), where the municipality is working to create an updated conservation development ordinance. Most towns, if they have moved on from conventional cluster development, are working from a model conservation development ordinance that is now decades old. Charlestown has taken the initiative to write new planning methods into their code. One example under consideration is to limit the footprint of development on 2-acre lots to just 20,000 square feet, providing space for stormwater infiltration, wastewater treatment, wildlife habitat, and much more, without sacrificing density. Those involved with the Charlestown initiative hope that, once completed, the updated ordinance will serve as a new standard for the state.

At the site level, rather than relying only on protected area definitions, Charlestown’s bylaw changes would offer site design guidance that preserves the ecological integrity of the entire lot as best as possible. Forests are recommended for their influence on site hydrology. “Large stormwater treatment systems and flood control basins typically get built where mature forests now stand, which does not seem like a good tradeoff given their ability to absorb and infiltrate runoff,” Lorraine Joubert of University of Rhode Island told SNEP. “One problem is that designers use [runoff calculations](#) originally [intended for farm woodlots](#), which are often grazed and compacted, a far cry from mature forest soils



Courtesy Wildlife Conservation Society, Adirondack Program

Municipal Codes for Minimal Development Impacts “Still Kind of a Mystery”

David Morgan and Margherita Pryor

with highly permeable organic matter. [Research shows](#) this method overestimates runoff from forested areas. The forests we’re choosing to replace may capture and infiltrate much more than you’d expect from current models. Ideally, we can incorporate better estimates in future updates to the Rhode Island Stormwater Rules...Whereas some builders still assume it’s cheaper and easier to clear a whole site for building, the ensuing complications with managing water on site can make things far more costly,” Joubert added. “It’s smarter and cheaper to use forests as qualified pervious areas” that alleviate the need for constructed treatment systems, perhaps entirely.

Developers can benefit financially from better ecological planning, too. Conservation development that is responsive to local ecological conditions provides multiple benefits for municipalities and their residents, developers, and the environment. Multiple studies show that permanently protected open space increases the value of adjacent residential land. This creates a potential win/win situation where conservation subdivisions yield greater profit for developers and greater long-term value for residents. In addition, development costs will often be lower for conservation subdivisions due to the clustering of development and inclusion of low impact development features. On-site savings during design and construction, such as the use of green infrastructure that is less costly and intensive than traditional systems, keeps overhead low. More responsive site design allows a developer to plan around the topography and ecology of the site, resulting in less site preparation, and savings in areas like stormwater system design. The compact design of conservation developments, too, offer savings. Shorter runs are needed for roads and utilities, sparing the developer the cost of unnecessary infrastructure. “If you take a traditional subdivision plan and put it down in an area with varied topography, riparian zones, forests, and so on, you will have far more issues to address,” certified planner and consultant Eric Walberg said in an interview with SNEP staff. “Most of the cost-saving benefits of conservation development come from development scale improvements,” like those named above, “as well as a simplified and faster permitting process when the municipality has conservation subdivision design as the by-right option in their bylaws and ordinances.” With all these benefits, however, it is important to remember that even conservation development in currently open space still generates impacts; roads and utilities are still needed, and new infrastructure can set the precedent and rationale for future development.

Model Bylaws and Design Guidelines

Courtesy of the Southeastern Regional Planning & Economic Development District.

[Winnetuxet Watershed Resilience Portfolio](#)

[Sustainable Neighborhood Road Design Guidebook](#)

[Model Open Space Design / Natural Resource Protection Zoning Toolkit](#)

[Low Impact Development and Subdivision Bylaw Review by Mass Audubon](#)

[Low Impact Development and Resilient Bylaw Reform presentation by Mass Audubon](#)

[Plympton Bylaw Review Tool](#)

[Smart Growth Toolkit - Low Impact Development](#)

[Smart Growth Toolkit - Model Transfer of Development Rights \(TDR\) Bylaw](#)

Municipal Codes for Minimal Development Impacts “Still Kind of a Mystery”

David Morgan and Margherita Pryor

In contrast, developed areas can offer cost-saving approaches that make better ecological sense. One [ongoing SNEP contract](#) aims to provide municipalities with what they need for integrated land use, watershed, and resource management. The project is working to establish a technical foundation for analyzing the hydrologic impacts of existing development, then propose and analyze numerous development approaches and management scenarios to mitigate those and other impacts, like development pressure and climate change. The scenarios will be designed to minimize the cost burden on municipalities that might otherwise be looking at skyrocketing financial demands. Early results suggest that the savings can avoid tens of millions of dollars in future stormwater retrofit costs. SNEP has contracted with other experts at EPA as well as The Nature Conservancy to develop the model and deliver holistic analyses to municipalities around the region, starting in the Wading River sub-watershed in the Taunton region. Like the work in Charlestown, these early examples are meant to serve as a proof of concept for work in other settings. Mark Voorhees of EPA reports that experts from around the region have been empaneled to inform the project’s development, an intentional choice to stay close to the issues at hand for municipalities. “The science is clear; we can demonstrate the impact of impervious cover and other development pressures. What makes this project all the more important is that turning the science into municipal bylaws remains still kind of a mystery for many.”

The economic and social benefits to communities are also clear. Using the existing infrastructure of utilities and building can revive the “downtown” hearts of depressed areas, offer space for new businesses, and spark creative re-use for public amenities and housing.

The important scientific lessons on development impacts are publicized in manuals—helpful to specialists, but less available to the public or policymakers. Such professional manuals have proliferated, covering such best practices as stormwater retrofits, green infrastructure, street design, and much more. Practitioners welcome the new guidance, but there is more to do before these practices are considered the norm. There is even more work to do when it comes to the topics of infill and how to direct pressure away from undeveloped areas. “We’re all ecologists at heart,” said Sara Burns of The Nature Conservancy, one of the partners mentioned above. “Techniques to accomplish that, like transfers of development rights, are things we can understand and implement, but we need the guidance of planners and policy makers in that effort. As far as I know that manual hasn’t been written yet; it’s a great opportunity.”

For more information, please contact us at SECoastalNE@epa.gov