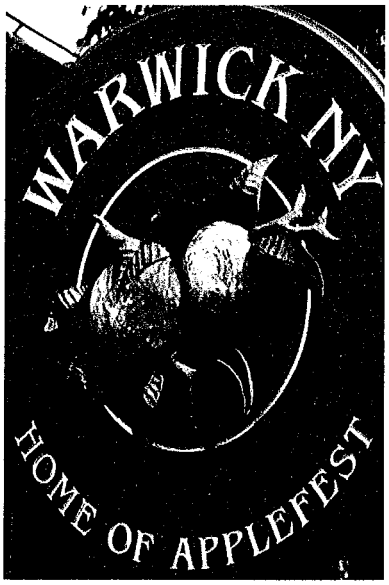

Photo: Dea Ilston-Smith

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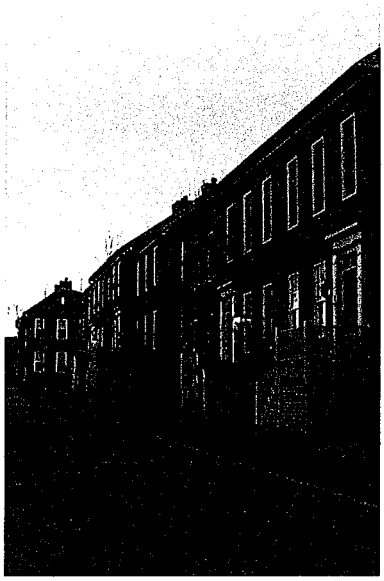

Warwick Grove

Plan UPDATE

Town of Warwick

Warwick Town Board | Warwick, NY

Update Adopted _____ 2016

Acknowledgements

This 2016 Comprehensive Plan Update was prepared by the Town Board of the Town of Warwick. It is based upon the "Sustainable Orange" County planning process that included a review of municipal regulations, policies, and activities in three communities, the City of Newburgh, Village of Warwick, and Town of Warwick. The process assessed the extent to which the Mid-Hudson Regional Sustainability Plan's goals, objectives, and initiatives had been adopted in the three communities.

Warwick's land use controls and policies were compared with strategies compiled for production of the Mid-Hudson Sustainability and Smart Growth Toolkit. The Toolkit, which was published in August of 2015, draws best practices from the Mid-Hudson Regional Sustainability Plan (MHRSP), LEED ND standards, Orange County Design Manual (OCDM) and the NYS Land Use Toolkit (NYLUT). The toolkit was jointly developed by Orange County in partnership with the Regional Plan Association, the City University of New York Institute for Sustainable Cities, the US Green Building Council's Upstate New York Chapter, the Orange County Water Authority, the Town and the Village of Warwick.

Town Board of the Town of Warwick

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Introduction

Warwick's planning legacy spans almost a century, beginning with the Town's original Zoning regulations adopted in the 1920's. The Town has rebounded from economic setbacks, while remaining true to its vision of remaining a primarily residential and agricultural community. Warwick is committed to accommodating new growth with the least impact on the environment, and to preserving the Town's natural beauty and its rural quality of life. The Town is close enough to be within the viewshed of Manhattan's skyscrapers from its mountaintops, yet is a world apart due to its treasured rural characteristics. Warwick enjoys a strategic advantage from both a transportation and an environmental perspective.

Warwick last adopted a Comprehensive Plan in 2008. At that time, the entire Nation experienced the beginning of what has come to be called the Great Recession. Like other Hudson Valley communities, Warwick's pace of residential and commercial development slowed considerably. Since 2008, demographic changes have also led to significant changes in the demands for such development. The baby boomer generation is aging and increasingly seeking retirement in walkable communities while the Millennial generation (currently the largest generation) is seeking housing and jobs in largely urban areas. Then, in 2011, Governor Andrew Cuomo announced the closing of the Mid-Orange Correctional Facility, leading to an almost immediate loss of 400 jobs in the Town.

Other Mid-Hudson counties, like Dutchess, Ulster, Sullivan, Putnam, Columbia, and Green, have all lost population since 2010. Orange County has also experienced some population losses, but this has been offset by population gains in selected communities for a net increase during this time. Warwick has been among those that have lost population, falling from 32,073 in 2010 to an estimated 31,581 in 2014, a 1.5 percent drop. Some of the loss can be attributed to the closing of Mid-Orange but the overall trend nationwide has been for urban areas, like New York City and Albany here in New York, to gain population while suburban and exurban areas, like those found in the Hudson Valley, have experienced losses. Overall trends are towards smaller homes and smaller lots than in the past, with the demand for rental housing in many places exceeding supply.

Other factors have shaped the trends and are expected to do so for years if not decades, as the population ages. Some of these include: a) an oversupply of single-family detached homes; b) housing and neighborhood preferences favoring locations with public transit

options; c) modest redevelopment in formerly distressed urban areas; and d) demand for new nontraditional multifamily housing. Warwick Grove in the Village of Warwick (a portion is in the Town) is a model of the type of development that is more in demand. It is the type of development encouraged in Section 3.3.B(1) of the 2008 Comprehensive Plan.

Warwick's Planning Board has been dealing with an abundance of subdivisions that were approved in the past decade (numbering in the hundreds of units), but applicants have been reluctant to perfect their applications by filing approved subdivision plats. The Planning Board regularly approves extensions to such plans and, where needed, reapproves the plans in accordance with Section 164-73 of the Zoning Law.

Warwick Grove in the Village

Warwick Farmland

Warwick Natural Area
Photo: Appalachian Trail Conservancy

After Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy battered Warwick and many other communities in Southeastern New York in 2011 and 2012, there were new calls for addressing the effects of severe storms, that scientists predict will become more frequent as the climate changes. New York State established the Governor's Office of Storm Recovery, taking advantage of $4.4 billion in federal funds that became available to provide aid to those affected by the storms. The New York State Energy Research and Development Authority (NYSERDA) also initiated the development of regional comprehensive plans throughout New York State, that directly addressed the use of smart growth and sustainability techniques to adapt to and mitigate the effects of a changing climate.

In 2013, the Mid-Hudson Planning Consortium developed the Mid-Hudson Regional Sustainability Plan (MHRSP), which set out a vision for sustainable development that builds on the region's unique social, cultural, and natural history with the goal of promoting economic development, environmental sustainability, and enhancing quality of life for residents. The Plan introduced objectives and initiatives to define a common vision for the region's

sustainable development and identified a series of priority strategies to help achieve the vision.

Orange County Planning Department then applied for and was awarded funding from NYSERDA to develop the Sustainable Orange County planning process that included a review of municipal regulations, policies, and activities in three Orange County communities, the City of Newburgh, Village of Warwick, and Town of Warwick. The process sought to assess the extent to which the Mid-Hudson Regional Sustainability Plan's goals, objectives, and initiatives had been adopted in the three communities. Orange County's regulations and activities were also assessed in the Sustainable Orange County endeavor.

Municipal documents in the three communities were compared with strategies compiled for production of the Mid-Hudson Sustainability and Smart Growth Toolkit. The Toolkit, which was published in August of 2015, draws best practices from the Mid-Hudson Regional Sustainability Plan (MHRSP), LEED ND standards, Orange County Design Manual (OCDM) and the NYS Land Use Toolkit (NYLUT). There are five applicable sections in the MHRSP which include Land Use, Livable Communities and Transportation, Energy, Materials Management, Agriculture and Open Space, and Water, as well as best practices from LEED ND, OCDM, and the NYLUT. The toolkit was funded by NYSERDA and jointly developed by Orange County in partnership with the Regional Plan Association, the City University of New York Institute for Sustainable Cities, the US Green Building Council's Upstate New York Chapter, the Orange County Water Authority, as well as the municipal participants including the Town and Village of Warwick and City of Newburgh.

The Land Use, Livable Communities and Transportation sections focus on strategies that help municipalities strengthen centers supported by transit, creating complete communities, reducing transportation fossil fuel consumption and greenhouse emissions, and improving the resilience of regional infrastructure. The Energy section focuses on becoming less energy intensive, expanding renewable generation, improving the resilience of energy delivery systems, and reducing the energy use of public infrastructure. The Materials Management section places importance on the reduction of solid waste generation, diverting materials from landfills, increasing reuse, recycling, and composting, and reducing transmission and distribution costs. The Agriculture and Open Space section focuses on increasing agriculture and silviculture on the region, improving access to training and technologies, reducing energy use from farm-related activities, and increasing open space and wildlife protection. Finally,

the Water section focuses on increasing water supply by reducing consumption, reducing energy use in water treatment, reducing impervious surface cover, protecting habitat and water quality.

This Comprehensive Plan Update is a direct response to the recommendations developed out of Sustainable Orange County. While Warwick's Comprehensive Plan already addresses many sustainability strategies recommended in the Toolkit, this Update builds upon the previous 2008 Comprehensive Plan by introducing, and adopting as official Town policy, a number of key sustainability best practices in energy efficiency, renewable energy generation, energy distribution, materials management, reducing water consumption, water distribution, wastewater treatment, and accessing sustainable agriculture and silviculture training and technologies.

The Town of Warwick 2008 Comprehensive Plan is hereby updated and revised through the addition of the following new Subchapter 3.10 entitled "Sustainability."

3.10 Sustainability

Community Goals

- Strengthen centers, supported by transit.
- Create a complete community
- Reduce transportation fossil fuel consumption
- Improve regional infrastructure
- Reduce energy dependency & strengthen the economy
- Expand renewable energy generation
- Improve resilience of the energy delivery system
- Reduce the volume of solid waste
- Increase farming and forestry activities & viability
- Advance farming and forestry training
- Increase residents access to local food
- Reduce water consumption
- Protect habitats & water quality

Sustainability has been defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The concept of sustainability has been around for millennia and has touched civilizations throughout the world. The Iroquois Confederacy here in New York State has often been attributed to the following proverb: "In our every deliberation, we must consider the impact of our decisions on the next seven generations."

Society is increasingly recognizing that there may be limits to growth, with current world population increasing at an estimated 200,000 persons per day. When the 20th Century began in 1900, world population was 1.65 billion reaching 6 billion by 2,000. By 2015, population has already grown to 7.4 billion and is projected to reach 9 billion by 2038. The exponential growth worldwide has increased calls for balancing resource use with conservation and alternative practices. This Town of Warwick Comprehensive Plan Update is one attempt to establish local municipal policies and practices that strive to create a more sustainable community. By acknowledging that future generations have a right to meet their needs in similar ways as the present generation, Warwick has taken a big step in becoming a more sustainable community.

Warwick is not alone. In New York State, Gov. Andrew Cuomo recently enacted a mandate that 50 percent of all electricity consumed in New York by 2030 come from renewable energy services and the Governor has also committed to reducing greenhouse gas emissions by 40 percent. Furthermore, 353 U.S. state and local elected officials from nearly every state signed a letter to the President calling for 50 percent clean energy by 2030 and 100 percent clean energy by 2050.

The actions proposed in this 2016 Comprehensive Plan Update were developed out of the Sustainable Orange County project. The project was funded by the New York State Energy

Research and Development Authority (NYSERDA) and involved representatives from the Town of Warwick, Village of Warwick, Orange County Planning Board, the County Executive, County Planning Department, and the Regional Plan Association.

The Sustainable Orange project is described as follows by the Orange County Department of Planning:

> The project involved "researching amendments to municipal plans, policies, and codes administered by Orange County, the City of Newburgh, the Town of Warwick, and the Village of Warwick. This work will then be used to demonstrate best management practices for the full range of local governments (counties, cities, villages. and towns), using the U.S. Green Building Council (USGBC) Neighborhood Development standards, Leadership in Environmental and Energy Design (LEED®) for Neighborhood Development (LEED ND) Floating Zone, the award-winning Orange County Design Guide and other best practice resources from around the region and the nation. Finally, the best practices and lessons learned in this initiative will be disseminated to other local governments in Orange County and in the adjoining Mid-Hudson region through an extensive education and outreach campaign. The work plan includes creating a best-practices resource kit that can be used across the region and state, as well as a robust program of engagement throughout the project. The engagement will include peer expert groups, such as the USGBC and the City University of New York (CUNY), and local stakeholders to encourage adoption of these best-practices at the local level. Detailed revisions to the existing plans, policies, regulations, and administrative procedures and development of training and communication tools will also be part of this project."

In Warwick, this involved an audit of the Town's 2008 Comprehensive Plan, the Town Design Guidelines, the Commercial/Mixed Use Design Standards, the Town Code including Zoning and the Town Zoning Map. The audit involved an assessment of how the Town's regulatory documents and policy practices align with the suggested strategies found in the Mid-Hudson Smart Growth Toolkit. There were five principal topics that addressed the issues of:

1. Land Use, Livable Communities, and Transportation
2. Energy
3. Materials Management

4. Agriculture and Open Space
5. Water

In general, the audit found that:

The greatest areas of emphasis in the Comprehensive Plan align with the sustainability strategies of creating complete communities, protecting agricultural lands, and conserving open space. Several sections of the plan refer to encouraging mixed-use development and creating environments in which people can walk instead of use their cars. The Plan encourages further refining and use of Traditional Neighborhood Design, Cluster Subdivision, and traffic calming for roads. To protect agricultural lands and characteristics of those areas, the Plan calls for a variety of protective measures (continuing to purchase development rights, encourage transfer of density rights, more emphasis on receiving conservation easements), but balanced with providing farmers further opportunity (accessory business options, agri-tourism and agri-tainment), and help with diversifying their agricultural operations. The Plan aims to conserve open space by placing tighter restrictions on cluster subdivision development balanced with providing density bonuses for community benefits.

Zoning amendments were adopted in 2010 that implemented some of the elements of the Plan including promoting agri-tourism, adopting design standards, increasing required percentage of open space for cluster subdivisions, and creating a new district to help address development pressures.

The Comprehensive Plan does not extensively refer to the following sustainable themes/strategies: energy efficiency, renewable energy generation, energy distribution, materials management, reducing water consumption, water distribution, wastewater treatment, and accessing sustainable agriculture and silviculture training and technologies.

This section of the Town Comprehensive Plan will address the gaps that have been identified. The gaps are shown as proposed actions that the Town should consider, based upon best practices recommended in the Mid-Hudson Regional Sustainable Plan, LEED Neighborhood Design (ND) standards, the Orange County Design Manual, and the New York State Land Use Toolkit.

(A) Strengthen Centers, Supported by Transit

1. **Adopt form-based codes.** Warwick adopted hybrid form-based zoning for the Traditional Neighborhood Overlay (TN-O) District in 2002. The TN-O District was designed to be used in conjunction with the Town's transfer of development rights program and the Agricultural Protection Overlay (AP-O) District. Form-based zoning provides a place-based development strategy to guide physical development and redevelopment. It does so by emphasizing physical form rather than separation of uses as a basic organizing principle. With form-based zoning, placing buildings on sites is done systematically and it allows for remodeling sites with traditional community patterns, thereby providing greater certainty and predictability about what can be built or redeveloped as well as where and how. The Town should continue to encourage form-based zoning in the TN-O District and Local Hamlet Business (LB) districts and should consider its use in other appropriate locations where greater density may be suitable and desirable, such as locations that are potentially walkable to the three villages that are also relatively free from development constraints.
2. **Support Transit Oriented Development (TOD).** TOD is a type of development characterized by a relatively dense mix of uses, including residential, within a walkable distance of a transit stop. TOD development can be beneficial to local businesses, improves walkability, and reduces vehicle miles traveled. Warwick currently has public transit services, including New Jersey Transit (with service to New York City), Warwick Transit (with services to Middletown, Monroe, Goshen/Chester, and the villages), and Dial-A-Bus, with stops located in both the Villages and the Town. These services could be expanded and supplemented in the future. To the extent that new development could potentially be served by existing or future public transit, Warwick should consider the use of a TOD Zoning amendment as an overlay district or standalone district, if it were to be located within walkable distance to an existing or future transit stop. Such an amendment could also consider zoning for denser development at designated transit stops.

(B) Create A Complete Community

1. **Build Affordable Housing.** Warwick should continue to encourage the construction of affordable housing units through its Special Use Permit requirements for all new subdivisions of 10 or more lots. Warwick should also consider, in conjunction with its TN-O and TOD recommendations above, the creation of multi-family housing in walkable locations that are appropriate for such uses, where community water and sewer services are existing or proposed, and in conjunction with an overall plan of development.
2. **Build Compact Mixed-use Developments.** Mixed-uses can take a number of forms. Mixed-use means multiple functions occurring within the same building or the same general area. When a variety of different uses are allowed in the same area or in a singular building by zoning, people can live, work, play and shop in one place, which then becomes a destination for people from other neighborhoods. While mixed-use embraces many forms, it is typically characterized by vertical mixed-use buildings, horizontal mixed-use blocks, or mixed-use walkable neighborhoods. The benefits of compact mixed-uses include improved public health, improved mobility and access, equity, and it is a potential driver of economic activity. Both the existing TN-O and possible additional TN-O and TOD districts, are by definition, compact mixed-use development strategies. If additional TN-O and/or TOD districts are proposed in the future, they should be carefully planned and developed so that they fully incorporate compact mixed-uses and other sustainability objectives such as affordable housing, energy conservation and renewable energy use.
3. **Reinforce the Town's Design Guidelines, Design Standards, and Zoning, Where Needed, to Continue to Encourage Internal and External Connectivity Among Sites.** The Town's Design Guidelines, in Chapter 2 Rural Guidelines, encourages residential developments that connect with adjacent neighborhoods for walking, bicycling, and where possible for vehicles (p. 10). The Guidelines also encourage non-residential development to address connectivity between sites. The Zoning has long advocated the use of Marginal Access Roads in Warwick's non-residential Zoning districts and in its Site Plan regulations. When amendments to the Zoning

Law are proposed, Warwick should continue to encourage and where appropriate, require connections between and among adjoining parcels.

4. **Create Connected Street Networks.** Warwick should continue to encourage connected street networks, such as it does in the Community Business District and should amend the Zoning Law to require their consideration where at all possible. The Town should also consider the creation of an Official Map that outlines where connected street networks are most appropriate, given existing and projected development.

(C) Reduce Transportation Fossil Fuel Consumption

1. **Reduce Transportation Fuel Consumption and Greenhouse Gas Emissions (GHG).** A major challenge facing rural communities like Warwick is finding ways to provide convenient, cost-efficient access to jobs, shopping, recreation, services, schools, and health care. Trends over the past few decades separated many of these uses, making access between these uses dependent on cars. Planning approaches that combine transportation planning with innovative development policies can help Warwick support high-priority economic issues while also enhancing the quality of life for its residents.
   a. Warwick should consider developing a local program to educate residents and business owners about reducing idling of vehicles. This would compliment the State's anti-idling policy for diesel trucks and buses.
   b. One way to reduce GHG is by targeting denser development only in locations that are served by existing infrastructure and restricting the creation of new infrastructure by allowing the extension of existing grids of roads, sewer, and water networks to accommodate new development, only in areas deemed acceptable for compact mixed-use development, thereby limiting future sprawl in the Town.
   c. Continue to encourage infill development and redevelopment within the non-residential Zoning districts.
   d. Promote installation of bicycle and walking trails along all State and County highways in the Town, at such time as they are repaved or otherwise improved in the future.

e. Work with the three villages to create a complete community-wide bicycle and pedestrian network and plan.

f. Evaluate existing Town roads in terms of the concept of a "road diet" that looks for ways to reduce the number and/or width of lanes on roads by allocating excess capacity to parking lanes, bicycle lanes, landscaped medians, or sidewalks.

g. The Town Board should pursue State and other grants to create and implement a comprehensive streetscape improvement plan for the Town's commercial corridors to improve access for public transit, bicyclists, and pedestrians.

2. **Increase the Use of Clean Fuel Vehicles in the Region.** When replacing Town vehicles, consideration should be given to purchase of electric passenger cars and natural gas or other available alternative powered trucks for heavy duty requirements. Pursue grants from the State and/or Federal governments where available.

3. **Expand and Upgrade Mass Transit.** Where and when opportunities exist, expand the Warwick Transit Services to new locations, based upon demand.

4. **Provide Space for Transit-supporting Amenities.** The Town Board should consider adopting a complete streets policy to require bicycle, pedestrian, and transit (where feasible and desirable) facilities on all new or rebuilt local roads.

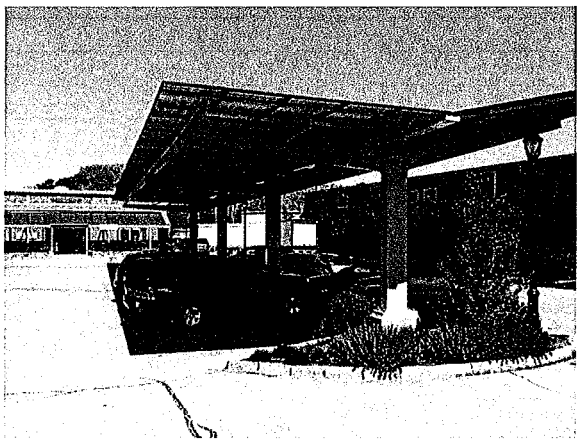
5. **Reduce Area devoted to Parking.** Currently, Warwick's parking regulations encourage shared parking. The Town Board should consider amending the parking regulations to require shared parking, during site plan review, for commercial businesses, public and community facilities in the CB, DS, TN-O, TOD and hamlet Zoning districts.

   a. Warwick should consider amending its "Minimum" parking space requirements to be more in line with state-of-the-art "Maximum" limits on the number of spaces. Combined with parking minimums, maximum standards create a parking range for different uses. Standards set a ratio of spaces to number of square feet of building area. For example, one way to achieve this would be to set a maximum off-street parking ratio of five spaces per 1,000 square feet of floor area for most uses and a minimum of three spaces per 1,000 square feet.

In a 5,000-square-foot building for example, 15 spaces would be required and the maximum cap would be 25.

b. A parking management plan should also be considered to take advantage of existing parking supply, and to reduce parking requirements for new buildings and redevelopments accordingly.

6. **Incorporate Electric Vehicle Infrastructure into Local Planning.** The number of electric vehicles used worldwide has risen from 13,000 in 2009 to 743,000 in 2015. Warwick should consider amending the Zoning to include creation of electric vehicle charging stations in the development review process. This might start with requiring a certain percentage of all new parking lots to incorporate electric vehicle charging stations into their parking layouts. The Town should also explore the potential for incorporating solar panels and electric vehicle charging stations in new parking lots, such as the carports shown in a parking lot at a supermarket in the photograph above. Warwick should amend its parking lot regulations to provide for this innovative method to reduce fossil fuel use.



(D) Improve Regional Infrastructure

1. **Mandate Improvements in Fleet Vehicle Fuel Efficiency.** As discussed in recommendation C(2) above, when replacing Town vehicles, consideration should be given to purchase of electric passenger cars and to natural gas or other available alternative trucks for heavy duty requirements. Pursue grants from the State and/or Federal governments where available.

2. **Make Biking Safer.** Amend the Zoning Law to promote traffic calming measures and create bike-specific infrastructure. Where possible, add traffic controls to Town roads that increase bicycle safety, such as advisory signs and pavement markings. Encourage the County and State to do likewise on highways under their jurisdiction in the Town. Consider designating bicycle routes on Town roads and coordinate with Orange County and New York State to work towards the development of regional bicycle routes.

(E) Reduce Energy Dependency & Strengthen the Economy

1. **Increase Building Efficiency and Ensure that New Construction Meets Strict Energy Performance Standards.** Increasing building efficiency benefits both the residents of the building and the environment. It does so by reducing the costs of heating, cooling and electrical energy use, an economic benefit, while increasing the health of the building's occupants. A green building minimizes the environmental impacts of the building over the course of its lifespan. Green building design is energy and resource efficient, reduces waste and pollution, and optimizes the health and productivity of its occupants. Warwick should continue to encourage increased building efficiency by considering an expansion of its current incentives for green building technologies (found in Section 164-41.1.D(e)[6]) to other development types.
2. **Create Community Energy Districts.** Community energy districts share a source of renewable energy among multiple buildings. Community energy districts increase supply diversity and resilience, energy efficiency, demand response capacity, and energy storage, all of which are attractive for private sector investment. If the grid goes down, buildings within the energy district can continue to operate. Warwick should consider the objectives of creating a community energy district and convene a group of local energy producers and community members to determine feasibility and direction.

3. **Expand Distributed Generation and Renewable Energy Production.** Distributed generation refers to power that is generated locally and then distributed to local users and/or stored for later use. This type of local energy generation eliminates the cost and complexity associated with transmission and distribution over long distances and shifts control of energy production to the consumer. Warwick already encourages the production of local energy generation through its Zoning Law. It does so through the residential siting guidelines in the AP-O District, its Site Plan requirements, its Special Use Permit regulations for "Manufacturing" uses and "Clean Renewable Energy Technology Businesses." The Town should research the feasibility of local distributed energy generation and consider its options to expand local power generation.
4. **Develop Innovative Project, Financing, and Policy Models.** The Town should review the materials and recommendations developed by New York State's "Reforming the Energy Vision" (REV) initiative to determine how Warwick can boost its local economic development efforts by taking advantage of the programs and funds available to help local municipalities through REV.

(F) Expand Renewable Energy Generation

1. **Capitalize on and Support the Diverse array of Well Established Renewable Energy Sources, Including Wind, Solar, Geothermal, Hydro, and Biomass.** The Town currently encourages solar and biomass energy sources through the Zoning Law. The Town Board should consider additional Zoning Amendments that similarly encourage development of other renewable sources. New developments in small-scale wind energy in particular have overcome some of the earlier objections about noise, aesthetics and other environmental impacts of such energy generation. Geothermal is a well-established technology already in use in the Town and the Town Board should consider Amending Chapter 150, Tree and Topsoil removal to reduce a current barrier to its use. Where appropriate and not in conflict with environmental considerations, hydro power, if designed and used in an environmentally sound manner, may also have potential in Warwick. The Town should consider the use of tax incentives to encourage individuals and businesses to support on-site renewable energy generation.

2. **Expand Distributed Energy Generation.** Warwick should research the feasibility of local distributed energy generation, and if feasible, should consider the options available for its use in the Town.
3. **Increase Demand Response Participation to Reduce Electricity Consumption by Joining the New York Battery and Energy Storage Technology Collaborative.** Encourage businesses and residents to participate in load management and demand response programs to reduce peak utility demand to voluntarily reduce consumption during specified high-demand periods. Make businesses and residents aware that, for consumers who reduce their electricity use during high-demand periods, they are eligible for utility rebates or other incentive payments.
4. **Strengthen the Town Code to Require More Energy-efficient Building Construction; Adopt an Energy Conservation Code.** Consider adoption of amendments to the Town Code to promote the use of light colored and reflective pavement and roofing materials. Consider adoption of a local energy conservation code, such as those adopted by the Village of East Aurora or Town of Babylon in New York State. Amend the Town Code to include provisions that facilitate the installation of photovoltaic systems. Consider a requirement that all new residential units be pre-wired and pre-piped with electrical conduit and plumbing that would allow for future installation of photovoltaics. The Zoning already incorporates site design guidelines for solar orientation in specific instances. The Town Board should consider a comprehensive approach in the Zoning Law that would incorporate site design guidelines for all solar energy projects in the Town.
5. **Develop Community Energy Districts to Help Manage Energy Supply, Distribution, and Use at a More Local Scale.** The Town Board should investigate and if feasible, allow for the development of community energy districts, so that individuals and businesses can share a source of renewable energy among multiple buildings. Community energy districts increase energy supply diversity, energy efficiency, demand response capacity, and energy storage, all of which are attractive for private sector investment while also increasing the resiliency of the energy system in the Town.

(G) Improve Resilience of Energy Delivery System

1. **Reduce the Risk of Interruption in Energy Delivery.** Warwick requires the burying of utility lines in new subdivisions, primarily for aesthetic purposes. However, this strategy is also a benefit for energy resilience as this can limit debris-related damage during storm events. Offering a reliable, affordable source of energy will help attract business investment. Warwick should consider expanding its requirements for burying utility lines in subdivisions to apply to all new development and redevelopment.
2. **Utilize Cool and/or Permeable Paving Materials.** The Warwick Zoning Law calls for consideration of, and in some cases, requires permeable paving materials in its Stormwater Management Regulations (Section 164-47.10) The Town Board should consider amending the Zoning Law to further encourage and/or require the use of permeable paving materials in the Regulations as well as its Site Plan and Subdivision requirements. Any amendments considered should also include use of solar reflective or "cool" pavements by requiring and/or encouraging reflective aggregate, a reflective or clear binder, or a reflective surface coating when roads, parking lots, and driveways are paved or repaved.
3. **Develop an Extreme Heat Event Emergency Plan.** A municipal preparedness plan addressing an extreme heat event includes notifying the public of potential risks, provides cooling centers and access to healthcare, and ensures that the most vulnerable residents have access to resources that help them cope with anticipated higher than normal summer temperatures. This can help to reduce the risk of deaths from extreme heat. Warwick should start by identifying model plans from comparable communities and then determining what is most appropriate for the Town.
4. **Design Tree-lined and Shaded Streetscapes.** To encourage walking and bicycling and discourage speeding, to reduce urban heat island effects, improve air quality, increase evapotranspiration, and reduce cooling loads in buildings, Warwick should update its Site Plan and Subdivision regulations as well as its Design Standards and Guidelines, to strengthen the provisions for providing tree-lined and shaded streets as well as generous landscaping on sites and along roads.

(H) Reduce the Volume of Solid Waste

1. **Create Policies and Programs that will Reduce the Overall Amount of Waste Generated.** The Town should consider establishing an overall long-term objective of achieving zero waste. Reducing the amount of waste generated will reduce the amount of material disposed, saving money, reducing GHG emissions and fuel use, and avoiding environmental impacts associated with material extraction and processing.
2. **Expand Organics Recycling.** In Warwick, approximately 13,500 acres of land are devoted to agriculture with almost 4,000 acres permanently preserved. This means agriculture will be an important land use for the foreseeable future. The Town should encourage small-scale composting by residents and should investigate the feasibility of in situ organics management or larger-scale Townwide or regional composting. The Town should Identify opportunities for large users to develop composting programs and potential sites for processing.
3. **Promote Product Stewardship and Environmentally Preferable Purchasing.** Warwick should identify best practices for operating Town government in a more sustainable manner. This includes addressing purchasing policies, use of energy-efficient fixtures and supplies at Town facilities, the purchase goods made from recycled materials, and considering the three "R's" in its policy decisions namely reduce, reuse, or recycle before disposal. A purchasing policy for energy efficient products will ensure that all procured appliances, information technology equipment, lighting and control equipment will have the greatest efficiency for their use, reducing utility bills and lowering operations and maintenance costs.
4. **Facilitate Inter-county Cooperation.** Warwick should cooperate with its three villages and other nearby municipalities to establish projects that are related to the sharing of resources and information, as well as the development of programs and processes for adoption of consistent materials accounting methodologies and definitions. Adoption of consistent and uniform labels to be used in marking different waste receptacles can help increase recycling and waste diversion efforts. Warwick should participate on any forums established to foster inter-county discussion of solid waste issues.

5. **Mitigate Construction-related Negative Impacts.** Construction activities have numerous negative effects on the environment regardless of the mitigation measures imposed under SEQR. Heavy machinery unavoidably compacts soils, destroys vegetation, and pollutes neighboring streams. Warwick should consider creating and adopting green construction codes to further mitigate the negative environmental impacts related to construction projects.
6. **Maximize the Useful Lifespan of Materials and Increase Recycling Rates.** Identify ways to reuse materials in new ways, either through passing them on to second owners or reclaiming raw materials for new uses. This will help reduce the environmental impacts associated with producing new goods and materials. This will also reduce GHG emissions from landfills. The Town should begin by establishing a place where residents can exchange and repurpose and/or reuse "stuff" that is still useful but is no longer wanted and can be given a second life.
7. **Create Local or Regional Management and Disposal Options.** By keeping material local, transportation costs and associated energy use and GHG emissions can be reduced. The Town should work towards local reuse of materials and a reduction in transportation-related costs and emissions by discussing local options with local waste management agencies.

(I) Increase Farming and Forestry Activities & Viability

1. **Bring Underutilized Land into Agricultural Production.** Warwick should review its regulations to find ways to encourage the use of vacant or underutilized land for agricultural production, where feasible and where it can be done without clearing productive forest land.
2. **Prevent the Loss of Prime Agricultural Soils and Soils of Statewide Importance.** Warwick contains a finite amount of prime agricultural soils, those that are best suited for producing the highest-value farm products. Soils of Statewide Importance are also of significance to agricultural production. Warwick should continue to encourage and, where possible, to require that prime agricultural soils are maintained for agricultural purposes. The Zoning Law should be reviewed for additional means to accomplish this goal.

(J) Advance Farming and Forestry Training

1. **Residue Management Including Mulch Tillage and No-tillage.** Mulch tillage leaves crop residues on the surface of the soil; no tillage means plants/crops are left untilled, which increases the amount of water that goes into the soil and also increases organic matter retention. The Town can encourage such practices on farms by educating local farmers to these practices. The Town can even promote such practices on residential and commercial sites so that landowners and land managers practice mulch mowing of leaves and grass, which eliminates or significantly reduces the need to collect and dispose of these materials. This initiative can greatly reduce costs, energy use, and GHG emissions due to grass and leaf removal. Mulch tillage also allows for *in situ* decomposition, which provides multiple benefits including reducing the need for fertilization. Warwick should study current regional residue management practices and distribute information on the environmental and economic benefits of switching to mulch- and no-tillage farming as well as local on-site leaf and grass recycling. One way to do so would be to offer a rebate, like Bowie, MD did, for residents who purchase a new mulching, electric or manual reel mower.
2. **Comprehensive Nutrient Management Plan Implementation.** Nutrient management practices include land application and/or composting of animal waste, food waste, and treated sewage as well as the storage of animal waste. Nutrient management can reap many benefits, such as preservation of local and regional water sources as well as the enhancement of farm efficiency and profitability by reducing fertilizer costs, improving soil quality and productivity, and protecting public health through the improvement of air quality and minimized impacts on the environment. The first step in developing a Comprehensive Nutrient Management Plan (CNMP) is a full engineering and conservation planning resource assessment of current site conditions, in a location or locations where such land application and/or composting are suitable, available, and appropriate.
3. **Use of New Technology such as GPS Guided Variable Rate Fertilization and Pest Management Systems.** GPS guidance divides agricultural fields into small units or cells that are then tested for nutrient levels. Fertilizer is metered for each unique cell and spread with the help of a GPS system. The use of GPS-guided variable

rate fertilization produces accurate and time-saving results. When used correctly, results have yielded significant improvement of plant health and quality of water in surface and ground water. GPS-guided precision farming can also reduce overlaps and over-application in the distribution of fertilizer. The Town should study current agriculture and silviculture techniques that could stand to benefit from the introduction of this new technology.

4. **Crop Rotation and Use of Cover Crops.** Crop rotation is the sequential planting of different crops in the same patch of soil. Cover crops are planted in between primary harvest crops. By rotating crops, nutrient levels can be held stable within the soil. Cover crops have several functions, including returning nitrogen to the soil, preventing soil runoff, and preventing weeds from forming in between plantings. The Town should encourage farmers to invest and engage in sustainable farming techniques such as these. Crop rotation and crop covers are simple and do not need monetary investment. Instead they rely on an investment of time and dedication by farmers to sustainable and environmentally conscious farming. A consistent harvest of healthy crops benefits farmers' bottom lines. Consumers also benefit because people today are more aware of where their food comes from and are demanding not only more local foods but more environmentally friendly practices by farmers. Maintaining soil health naturally reduces the need for chemical fertilizers, which also saves money and reduces the negative environmental externalities of farming.

(K) Increase Residents Access to Local Food

1. **Increase Access to Local Foods by Promoting Direct Marketing, CSAs, Farmer's Markets, and Other Market Access Programs.** Buying from local food systems benefits the health of the community. Small, family-run farms are more likely to focus on sustainable agricultural practices, such as no-till agriculture, composting, and minimized use of pesticides in crops. The produce is fresher than what is trucked in from California or Florida, as it does not have to travel a long way. Buying and eating locally is not only an environmentally conscious decision, but also has numerous health benefits that industrial and large-scale farming cannot offer. A benefit is that more local consumers means potentially higher prices and

greater volume of sales for locally-produced goods. The Town should continue to support direct marketing through allowances for farm stands and farm markets in its Zoning. The Town should also identify consumer opportunities that provide enhanced local access to healthy foods. One way to do this is to support a year-round farmers market by providing space at Town Hall for the Warwick Valley Farmers Market during the winter months, similar to what has been done for several years now in such diverse locations as Rhinebeck, Cold Spring, Millerton, Amenia, Red Hook, and Kingston, NY.

2. **Increase Access to Value-added Facilities and Distribution.** Investment is needed to create food hubs to serve the small and mid-sized farms of the Region, fostering economic development. Facilities may include distribution infrastructure such as shipping warehouses, USDA approved abattoirs[1] and kitchens, or local resellers of locally-produced goods. Investment is needed to create food hubs to serve the small and mid-sized farms of the Region, fostering economic development. Warwick should identify gaps in the local food processing system, use the resources of Cornell Cooperative Extension to help interface with USDA approved facilities and otherwise support local facilities that are key to a thriving agricultural economy.

(L) Reduce Water Consumption

1. **Implement Low Impact Development (LID) and Green Infrastructure Techniques.** Warwick should continue to address stormwater management and its emphasis on LID by regularly updating its Stormwater Management regulations when new green infrastructure technologies are developed. The Town should also seek ways to continually update its existing green infrastructure as new technologies are developed.
2. **Reduce Energy Use and GHG Emissions at Water and Wastewater Treatment Facilities.** Measuring energy use of water and wastewater infrastructure is a first step towards identifying strategies to reduce energy. Tools such as the US EPA's Energy Star Portfolio Manager can be readily used for facility benchmarking purposes. Warwick should consider establishing a centralized program to

[1] Also known as a slaughterhouse.

benchmark facilities' energy use, providing much needed data that can be used to prioritize investments in energy efficiency and ultimately reducing energy costs for the Town and therefore, its water and wastewater systems ratepayers. Warwick should start by instituting a program that measures the energy usage of water and wastewater infrastructure.

3. **Incentivize Local Funding for Preventative Maintenance and Capital Improvements by Removing Impediments to Local Tax Revenue Generation.** Some communities have experimented with "rain taxes" that charge users for the amount of stormwater runoff generated by a property, revenue that is used to repair or expand water treatment systems. Stormwater fees incentivize on-site treatment and provide revenue for investment. Warwick should identify whether heavy stormwater flows could be discouraged by such pricing.

(M) Protect Habitats & Water Quality

1. **Wetlands Preservation and Buffering.** The State and Federal governments both provide for wetlands protection. Warwick currently provides local wetland protection, to a certain degree, through its Cluster Development and Site Plan regulations as well as through the SEQR process for new developments and redevelopments. In both cases, the Town requires identification of wetlands during the development review and approval process, and then requires that such areas be preserved by designing development around them. In the case of cluster developments, the wetlands are preserved through their inclusion in the protected open space. Warwick should consider amendments to its regulations that recognize the need for upland buffers to be established to smaller wetlands, typically under the jurisdiction of the Army Corps of Engineers as Federal Jurisdictional (JD) wetlands, similar to those that currently exist for the State's Freshwater Wetlands Program, but based upon individual wetland functions and values.
2. **Continue to Create and Support Watershed Management Plans and Programs.** Watershed management programs implement land use and water management practices to protect wetlands and water quality, often by coordinating multiple municipal management programs across a single watershed. Watershed

management programs protect the quality of water entering a watershed and preserve critical riverine and coastal habitats. Warwick should identify critical watersheds, adopt local preservation practices, and coordinate with other jurisdictions within a shared watershed. The Southern Wallkill Biodiversity Conservation Plan is a good example of intermunicipal planning that addresses a resource spanning multiple jurisdictions. The Wappinger Creek Watershed Intermunicipal Council is another good example of how multiple jurisdictions can cooperate on watershed issues that transcend town boundaries.