Norwich PC Solar Siting Working Group
Special Meeting – July 22, 2025 6:30 pm

To be held via Zoom only:
Topic: Solar Siting Working Group Special Meeting
Time: July 22, 2025 6:30PM PM Eastern Time (US and Canada)
Join Zoom Meeting
https://us02web.zoom.us/j/83331125539
Meeting ID: 833 3112 5539
• 888 475 4499 US Toll-free

---

1. Approve Agenda
2. Public comment for items not on agenda
3. Correspondence
4. Review of the Charge of the Solar Siting Committee
5. Review of the work ahead - Summary of Solar Siting Status May 2025
6. Discussion of "Preferred Sites" to include in the Town Plan: Gravel pits; Brownfield sites; Parking lots; Commercial and Residential Roofs.
7. Discussion of "Unsuitable Sites" - discuss process for designating specific scenic resources, riparian, ridgeline, shoreline, vernal pools, steep slopes.
8. Approve minutes
9. Public comment
10. Adjourn

Enclosures:

1. Solar Siting Subcommittee - Charter 091923 (1) – REVISIONS
2. Summary of Solar Siting Status - May 2025
3. Plain Text version of 2020 Town Plan with prior proposed edits
4. Minutes from 12-17-2024

Solar Siting Subcommittee – ~~Charter and activity ideas 9.19.23~~Revised Charge for Discussion

OVERVIEW

This committee will work to:

- ~~Guide and encourage solar project siting in Norwich in~~ Determine locations which are appropriate for potential solar installations > XX ~~to~~ in Norwich bearing in mind the town's ~~with its unique~~ character, topography, location of three-phase power lines, and the desires of its residents.

- ~~Create a collaborative process, using~~Guided by state law, define clear ~~and defined~~ siting criteria~~, resident input, and~~. Ensure that the Town Plan provides clear guidance for any project requiring PUC review. ~~full participation in the PUC process~~.

- ~~Use the planning tools available, including revisions~~Revise the Town Plan to ensure that it reflects state laws and enable effective review of all proposed solar projects. ~~to the town plan, zoning by-laws, and subdivision regulations.~~

-

WORKING ASSUMPTIONS & GIVENS

State laws and regulations as well as access to three-phase power play ~~a d~~ominant rol~~s~~e in the siting of medium and large solar projects. ~~The town must understand how its inputs fit into this larger context to maximize our influence. T~~as these regulations have changed since the last revision of our town planning documents, the Town Plan, needs to be adjusted.~~.~~

~~There exists strong societal pressure for renewable energy. This creates a development pressure to build PV projects in Norwich.~~

~~PV~~ Solar Projects will be reviewed ~~projects done appropriately and sensitively are desirable,~~by laws and ~~within~~ guidelines set up by the State of Vermont and the ~~residents~~ Planning Commission of Norwich.

There are technical, environmental, safety, and aesthetic considerations associated with these projects, ~~such as economies of scale and design drivers relating to~~including (but not limited to) steep slopes, shading, infrastructure, potential for glare, ~~etc.~~impact on wildlife.

BACKGROUND

We will need to collect a ~~great deal of background~~the following reference material~~, which can be used by both this committee and the wider Norwich community to help understand all elements of the solar siting process. ~~:

This information will include:

Details of state statutes & PUC process

Regional energy plan

Norwich specific conditions:

- Maps indicating Topography, slopes, forest blocks
- Information regarding Agricultural soils, vernal pools, other significant water ways ~~and activities~~
- Rooftop solar opportunities
- State recognized preferred sites, e.g. gravel pits, parking lots
- Utility infrastructure – 3 phase power
- Current town plan, ~~zoning by-laws and subdivision regs~~
- ~~Recent project experience~~

SUBCOMMITTEE ACTIVITIES

- ~~Instigate and encourage town wide conversation on this important topic, including interested town groups and residents.~~

- ~~Understand and create reference materials for state, federal and regional laws. Specifically, u~~
- Understand changes in state law that must be incorporated in the Norwich Town Plan ~~our town plan and regs for Norwich's documents to be current.~~
-

- Review other towns experiences and best practices.

- Embed land use for solar projects into the bigger picture of land-use planning in Norwich.

- Discuss and clearly define criteria for solar project siting:
  - Slopes Ridgelines
  - Forest clearing Scenic views
  - Farmland Wetlands
  - Glare

- ~~Research and evaluate Norwich's methods for influence, using both incentives and limitations~~.

- Evaluate the possibility of creating an enhanced energy plan ~~as a method to increase influence.~~
-
  - Identify possible sites ~~that are~~on preferred sites. ~~Within the context of state energy policy and statutes it is not a valid strategy to say no to all PV projects. Such a stance would reduce the town's influence on projects that are proposed.~~
  -

SUBCOMMITTEE OUTPUT

1. Recommended changes to the town plan~~, zoning bylaws and subdivision regulations. These should include specific guidance on preferred siting~~. ~~These would be included in the overall effort of the Planning Commission to amend these documents.~~ Any changes would first be approved by the PC, then submitted to the Selectboard for approval.

2. A defined process for solar project siting with a focus on the Planning Commission's role~~,~~ ~~including use of party status~~, encouraging public participation~~, providing resources, etc.~~

Solar Siting Subcommittee

May 2025

Agenda

- Base case – Setting the ground rules
  - Town Plan's role in solar siting
  - Look at the Town Plan 2020
  - 5100 Rule and New Guidelines

- Goals of the Solar Siting Subcommittee
  - Ensure that the Norwich Town Plan is effective as a regulatory document
  - Per 5100 guidance, determine locations in town suitable for solar installations

- Options to explore
  - Surgical edits to ensure the document's regulatory effectiveness
  - Identifying specific sites as Preferred, Potential, and No Go to guide development

Setting the Ground Rules

- Solar Siting Reviews for CPG projects are based ONLY on Town Plans, not on Zoning Ordinances.
- Clear, regulatory language to review proposals is essential in order to ensure clarity for citizens, developers, Planning Commission (PC), Selectboard, and the state PUC.
- Per the state, solar generation facilities must be treated similar to other types and scales of development, in terms of allowable land uses in particular areas.
- While there were suggested targets for energy for every town, each town has unique circumstances that impact implementation.

Norwich 2020 Town Plan MUST be changed

- Current Town Plan “automatically” or by “default” bestows preferred site status on nearly all of Norwich. Such provisions **are no longer valid** under the New Net-Metering Rule.
- The Norwich 2020 Town Plan essentially gave a **“blank check”** to solar development in nearly all of Norwich and yet VERY LITTLE development occurred.

- **WHY was there little development (outside of residential development)?**
  - Topography of the town
  - Limited access to three-phase solar
  - Demand – people have chosen not to put solar installations on their property

What are the short-term options for change for the Town Plan?

- OPTION ONE: Clarify with regulatory language – Focus of the Solar Siting Committee
  - Specify the conditions and characteristics.
  - Use clear language (e.g. “must” and “shall”)
  - Given the lack of restriction in the current Town Plan, this will feel “more restrictive”

- OPTION TWO: Identify “preferred”, “potential” and “unsuitable” sites
  - Clearly identify in the plan specific areas
  - Requires mapping exercise
  - Consultation with landowners is beneficial

Option One: Solar Siting Effort thus far
Surgical edits to clarify intent

- Removal of default preferred solar siting for most of town area per 5100 Rule.
- The projects may not be located on land that have any of the following characteristics:
  - Slopes greater than 15% (to be discussed)
  - In the Historic Village District; Ridgeline Protection Overlay Area ; Shoreline Protection Area; High Priority Forest Blocks (See map in Town Plan); Riparian areas
  - For discussion: in Scenic areas
- Review of potential glare from solar projects
- For larger solar projects (>500kW) the proposed edits say these larger projects are prohibited OR perhaps permitted in specific identified sites. Identify these areas.
- Consider creating a Solar Energy district for preferred site areas.

Option Two: Identify Preferred, Potential and No Go areas

Preferred:

Gravel pits; Brownfield sites; Parking lots; Commercial and Residential Roofs.

From the State Document – other options:

Promote installation of solar projects

- where there is electric demand
- on locations where the land has already been impacted (e.g. roofs, parking lots, landfills).

Support updates to municipal building standards and energy codes that promote incorporation of solar photovoltaics for new construction and major renovations (including rooftops).

Promote or adopt building code requirements that require passive solar design and siting principles to be incorporated into new buildings that have a large hot water load (i.e. laundromats, hotels).

Develop guidelines for developers seeking preferred siting letters for net-metering projects

Prohibited – No Go - Areas

Need clarity of regulatory language and must be aligned with regulatory language of other development and must be specific regarding location by naming roads, ridgelines, districts.

- Riparian
- Shoreline
- Ridgeline
- Visible by “scenic” roads
- Vernal pools
- Steep slopes, e.g. greater than XX degrees

INTRODUCTION

Purpose

The Norwich Town Plan states the town's objectives, policies and actions for guiding future land use and development in the community. This plan is a guide for municipal decision-making. It also contains policies directing the deliberations of the Selectboard, Planning Commission, Development Review Board and other town and state boards and commissions in reviewing development proposals. This plans identifies current conditions and gathers public input as a resource for future public spending on community facilities, housing assistance and other municipal programs and services

Commented [ST1]: This plan is a policy statement guid***ing future land use and*** municipal decision making.

Authority

Under the Vermont Municipal and Regional Planning and Development Act (24 VSA Chapter 117), the Planning Commission has the duty to make and approve a Town Plan and then recommend its adoption to the Selectboard. State Law requires that a Town Plan be composed of several interrelated elements that address the following areas: land use, transportation, energy, economic development, utilities and facilities, educational facilities, natural areas, and plan implementation. The Act also requires that town plans promote goals set forth by the legislature related to both process and planning content. The process goals are designed to ensure that there is coordination across all levels of government, the development of the plan involves citizens, the plan considers the consequences of growth, and the plan encourages towns to work together. The 14 planning goals help to ensure that all town plans are coordinated and reflect the legislature's vision for how land in Vermont will be developed. Finally, the Act requires that a town plan study present conditions and trends, anticipate future internal and external influences that will affect the town, and formulate policies and actions that will ensure the health of the town in the coming years. Through the Act plans must also be compatible with the regional plan — Two Rivers Ottauquechee Regional Planning Commission (TRORC) Regional Plan. Once adopted the Norwich Plan remains in effect for eight years.

Having a duly adopted and approved plan will allow Norwich to reapply for Village Center Designation and seek support from the State for future planning studies and projects.

Planning Process

Norwich first adopted a town plan in 1968. The plan has been regularly updated and re-adopted since. This plan is a major change over the previous three plans adopted in Norwich. This plan includes input from an on-line survey conducted under the auspices of the Selectboard in 2018, a postcard survey in 2019 and numerous workshops and meetings spanning ten months where residents discussed:

- how to respond to the climate crisis;
- how to continue protecting important natural resources;
- how to increase housing stock, including the variety and type;
- preserving rural character and vibrant village life.

The Vermont Planning and Development Act establishes the process by which town plans must be adopted, which includes public hearings by both the Planning Commission and Selectboard. That process has been followed in the adoption of this 2020 plan.

Using the Plan

The Norwich Town Plan conveys a vision for thoughtful stewardship of rich cultural and natural resources, a commitment to address the climate crisis and fostering housing development that is appropriate in scale and responsive to community needs. The plan policies and recommendations will be implemented over time through many distinct actions, including capital improvements, land use regulation amendments, and changes to other municipal regulations and documents. The plan provides the policy platform for the integration and coordination of these decisions and actions. This plan also provides guidance on how the town's land use development regulations should be updated and enhanced to facilitate plan implementation. Vermont state statute requires that the town's land use regulations be consistent with the adopted plan.

When using this plan for a regulatory purpose, the objectives, policies and actions found throughout must be considered in context as part of a whole rather than individual statements meant to stand alone. Norwich (like any community) has competing objectives that must be weighed carefully when applied on an individual basis.

Commented [ST2]: ***Must be specific policies and land conservation measures***

This plan is a guide for such decisions. The plan is organized into seven subject area chapters. Each chapter opens with objectives, policies and actions.

- Objectives are attainable outcomes accomplishing one or more goals (see State Planning Goals). Where possible they should be specific and quantifiable so that the community can determine when they have been met.
- Policies are principles that guide progress to achieving one or more objectives. They guide all relevant decision-making by town government, and in those circumstances where the plan is intended to influence regional or state decision-making.
- Actions are the concrete activities or programs intended to achieve (or contribute to) one or more objectives that town government will implement

during the life of the plan (eight years)

This plan incorporates the state planning goals as Norwich's planning goals. The objectives and policies of each chapter are formulated to further these goals.

State Planning Goals

The 2020 Norwich Town Plan is consistent with the 14 state planning goals listed in the Vermont Development Act as demonstrated below. To be 'consistent with a goal' requires that one or more objectives identified in this plan will result in Norwich making substantial progress towards attaining the stated goal. The table below includes each goal and identifies the related objectives and policies established in this plan.

State Planning Goal		Chapter
1	To plan development so as to maintain the historic settlement pattern of compact downtowns and village centers separated by rural countryside.	Land Use, page 4 Economic Development, page 37 Housing, page 30
2	To provide a strong and diverse economy that provides satisfying and rewarding job opportunities and that maintains high environmental standards, and to expand economic opportunities in areas with high unemployment or low per capita incomes.	Economic Development, page 37
3	To broaden access to educational and vocational training opportunities sufficient to ensure the full realization of the abilities of all Vermonters.	Economic Development, page 37 Facilities and Services, page 45
4	To provide for safe, convenient, economic, and energy efficient transportation systems that respect the integrity of the natural environment, including public transit options and paths for pedestrians and bicyclers.	Transportation, page 40 Energy, page 21
5	To identify, protect, and preserve important natural and historic features of the Vermont landscape.	Land Use, page 4
6	To maintain and improve the quality of air, water, wildlife, forests, and other land resources.	Land Use, page 4 Transportation, page 40
7	To make efficient use of energy, provide for the development of renewable energy resources, and reduce emissions of greenhouse gases.	Energy, page 21 Transportation, page 40
8	To maintain and enhance recreational opportunities for Vermont residents and visitors.	Land Use, page 4
9	To encourage and strengthen agricultural and forest industries.	Land Use, page 4 Economic Development, page 37
10	To provide for the wise and efficient use of Vermont's natural resources and to facilitate the appropriate extraction of earth resources and the proper restoration and preservation of the aesthetic qualities of the area.	Land Use, page 4 Economic Development, page 37
11	To ensure the availability of safe and affordable housing for all Vermonters.	Housing, page 30 Land Use, page 4
12	To plan for, finance, and provide an efficient system of public facilities and services to meet future needs.	Facilities and Services, page 45 Land Use, page 4
13	To ensure the availability of safe and affordable child care and to integrate child care issues into the planning process, including child care financing, infrastructure, business assistance for child care providers, and child care work force development.	Facilities and Services, page 45 Land Use, page 4
14	To encourage flood resilient communities.	Resilience, page 53 Land Use, page 4

LAND USE

Objectives

- Plan development to maintain the historic settlement pattern of compact downtowns and village centers separated by rural countryside (24 VSA §4302 (c) (1).
- Increase the diversity and total stock of housing in Norwich by directing more intensive residential development to areas in, or adjacent to, the village while discouraging strip development along highways (24 VSA §4302 (c) (1) (A))
- Preserve rural character and working lands throughout the existing rural areas of town by developing in accordance with smart growth principles (24 VSA §4302 (c) (1) (D)).
- Identify, protect, and preserve important natural and historic features of the Norwich landscape, including: significant natural and fragile areas, outstanding water resources (including rivers, aquifers, shorelands and wetlands), significant roads, waterways and views, important historic structures, sites or districts (including archaeological sites) (24 VSA §4302 (c) (5)).
- Encourage and strengthen Norwich forestlands by maintaining and improving forest blocks and habitat connectors (24 VSA §4302 (c) (6) (C), (9)).
- Interconnect the existing system of trails for access to nature for Norwich residents and visitors (24 VSA §4302 (c) (1) (D) (4), (8) (B)).
- Revise Norwich Zoning and Subdivision Regulations informed by the climate crisis, specifically the ability of existing forest cover to provide ecosystem services such as carbon absorption and sequestration.
- [ADD]

Policies

- Increase the resilience of Norwich by avoiding, minimizing and mitigating conflict between land development and natural riparian functions along streams and rivers.
- Guide development away from priority forest blocks and discourage fragmentation or subdivision of land within those blocks that would adversely impact natural resource values, including absorption and sequestration of carbon dioxide.
- Guide development away from visually prominent locations on ridgelines and hills as viewed from public vantage points.
- Encourage conservation of primary agricultural soils for current and future agricultural use.
- Guide development away from steep slopes and require appropriate erosion control and stormwater management practices to protect water quality and avoid increased downstream flooding.

Commented [ST3]: ... Regulations ***and guide development through specific policies in this plan*** informed by ...

Commented [ST4]: Identify land in Norwich as being well-suited for the siting of solar installations

Commented [ST5]: ***Protect forest blocks and riparian wildlife connectivity***

Commented [ST6]: ***Development should not be permitted on ...***
(need to define or change 'public vantage point'
Suggest including a list of town roads with scenic views and add map identifying these areas

Commented [ST7]: ***Conserve*** primary agricultural soils ...

Commented [ST8]: ***Development should not be permitted on slopes greater than 15 degrees***

- Guide residential development in accordance with the objectives, policies and actions of this plan.
- Encourage use of conservation subdivision design and low-impact development practices in the rural areas of town in order to protect and conserve natural resources, open space and rural character.
- Encourage and support continued permanent conservation of farmland, forest land and natural areas.
- Encourage landowners to maintain or establish riparian buffers with native woody plants.
- Support the work of the Norwich Historical Society and Historic Preservation Commission to help inform land use decisions.

Actions

- Implement the recommendations made in this chapter (see Figure 1) and throughout this plan when revising the Norwich Zoning and Subdivision Regulations to
    - Maintain the rural character of Norwich by preserving working lands and forests
    - Recognize the important ecosystem services performed by forests
    - Facilitate appropriate scale mixed-use development in areas currently zoned
    - commercial-industrial
- Participate in state, federal and other efforts to protect the Connecticut River, including basin plans provided for under 10 VSA §1253.
- Develop a plan to address any potential conflicts between existing or proposed development on the edge of the village and mapped forest blocks.
- Continue to advocate for the preservation and adaptive reuse of historic Lewiston. Consider how to address barriers to development related to limitations on septic capacity, including a review of the findings of the 2005 study conducted by the Norwich Sewer Committee in light of current challenges and changes in wastewater management.
- Consider incentive programs to encourage adaptive reuse of historic structures.
- Update the inventory of barns at risk, and support owners in obtaining state grants to offset rehabilitation costs.
- Ensure the participation of the Historic Preservation Commission in any study of improving bike-ability and walkability in the village

Current Land Use

Norwich's current land use pattern (Figure 2, Figure 3) includes a densely settled village with a commercial core in the southeast corner with low density residential development accounting for the remainder. Union Village in the north and a few other hamlets hint at an earlier agrarian settlement pattern. There are significant areas of conserved land, Appalachian Trail lands along the southern border, riverine lands on the Ompomponoosuc River and higher elevation forest lands along the western border with Sharon (see Figure 5, Figure 6). Outside of the village there is some commercial development along Route 5 South. An expanse of conserved woodlands along the Connecticut River associated with the Montshire Museum gives way to school playing fields on the border with Hartford to the south.

Since the 1970s the predominant pattern of development has been subdivision of farm/forest tracts into lots for residential use some distance from the village. The rate of development has slowed significantly since the 1990s (see Figure 4). The rural character (wooded hillsides and hayfields) has largely been maintained, despite the continued loss of productive farms. There has been a recent resurgence in small-scale farming and rural enterprise.

Norwich has limited commercial development, dominated by small retail, banking and professional services in the village, and retail oriented to tourists and passing traffic on Route 5 South. The towns of Hanover, Lebanon and Hartford are major employment and commercial centers for Norwich households.

KEY FINDINGS

TRANSPORTATION The current settlement pattern is predicated on high levels of personal car use. Norwich currently supports Advance Transit to service the village and Route 5 South on a limited schedule. It is not feasible to extend transit routes or increase the schedule because of the low population density beyond the village. Norwich devotes considerable resources to road maintenance and repair, and low-density residential development increases these costs without significantly increasing the tax base to fund them. Increased commitments to improving transit and non-vehicular commuting would be needed to support a different settlement pattern in the future.

COMMUNITY FACILITIES & SERVICES The existing complement of facilities and services could accommodate modest growth, particularly if it occurs in or near the village. Marion Cross School has some capacity for additional students and is an asset for the community, although wastewater management is an unresolved problem. Childcare is in short supply and limited, however. Potable water is supplied to homes and businesses in the village.

Extensive recreation facilities including playing fields and a trail network for hiking and mountain biking support an active community. Absence of a wastewater system limits growth and expansion of the village and established commercial districts (Route 5 South) and imposes costs and constraints on existing property owners.

ENERGY. Current state energy goals, intended as a response to the climate crisis, require Norwich to dramatically reduce auto-dependence caused by low-density settlement and improve the thermal efficiency of the housing stock. Additional renewable energy generation is very unlikely to come from wind turbines given current technologies and existing siting needs. Large-scale solar installations away from valley floors are limited by topography. With current technology about 160 acres of solar panels (of 47,000 acres) could satisfy current electricity demand in Norwich.

HOUSING. The very low growth in new housing stock is unlikely to change within the life of this plan, given broader patterns and economic conditions. More effort to obtain compact development will be needed to achieve the energy and housing objectives of this plan. Increasing the variety of housing by type and price is needed to stem demographic changes apparent in the past twenty years (see page 34). This plan supports exploring how to provide for an expansion of the housing stock in the village, immediately adjacent to the village, and along Route 5 South.

ECONOMIC DEVELOPMENT. Norwich has a very small commercial base, which limits the number of in-town jobs. The existing commercial-industrial district is wellserviced by road, electricity infrastructure and transit, but requires on-site water and wastewater for development. The existing land use controls allow for traditional highway strip development and need to be amended to better reflect community values and standards. Growing employment opportunities in town can be a strategy for reducing auto-dependence. Diversifying the tax base can also contribute to offsetting the residential property tax burden. Lastly, a broader range of economic development can encourage a more diverse community.

Future Land Use

LAND CAPABILITY. A key principle of land use planning is to guide development towards land best suited to the purpose and discourage and prevent uses inappropriate to the landscape. Capability assessments identify landform attributes which can constrain future development. The following attributes influence future land use decisions in Norwich.

STEEP SLOPES are poorly suited to development. The landform of Norwich is dominated by narrow valleys and steep slopes. As severe weather events increase in frequency and intensity, reviewing land use regulations as they pertain to development on steep slopes will be needed.

SOIL TYPE is a major determinant of development in the absence of municipal wastewater systems. Norwich does not operate a municipal wastewater system. Norwich provides potable water in the village through the Fire District, accessing aquifers to the north of the village, which allows for denser settlement.

RIPARIAN AREAS (INCLUDING FLOODPLAINS) are sensitive environments often subject to flooding. Historically these areas have been used for agriculture (fertile silt deposits from stream action) and industrial power generation (for mills prior to the advent of electricity). Today, repeated private property and public infrastructure losses due to flooding and erosion from severe storms is best resolved by avoiding continued development in these areas.

FUTURE LAND USE MAP

The Future Land Use Map illustrates Norwich's desired future land use pattern by identifying Planning Areas. These areas are not intended to align with the current zoning district boundaries, nor represent the boundaries of any future zoning districts. Rather, they graphically depict the direction land development will likely take in response to the objectives, policies and actions established in this plan, which will inform any proposed changes to the town's zoning districts.

THE VILLAGE PLANNING AREA encompasses Norwich's historic village with a settlement pattern and architecture typical of 19th century Vermont. It is characterized by a mix of residential, commercial and civic land uses at higher densities. Buildings are set close to the street with pedestrian access and circulation. There is a concentration of commercial activity in the core surrounded by predominately residential land uses. Potential future growth is limited by physical constraints, commitment to the traditional village scale and form, and absence of wastewater infrastructure (the village is served by municipal water). The intent of the Village Planning Area is to maintain the historic village settlement pattern, architectural character and mix of uses.

THE MIXED USE PLANNING AREA includes land in two areas of Norwich. The area in Lewiston reflects the remnants of an earlier industrial development pattern focused around the railroad depot and river. The railroad continues to own a portion of the property

Commented [ST9]: *... and development on slopes greater than 15 shall be prohibited.*

Commented [ST10]: *Development in these shall be prohibited. (Need to refer to a map where these specific areas are identified)*

(exempt from local regulation). No significant changes in its use are anticipated during the life of this plan. The other area is on the east side of Route 5 South, part of the Connecticut River Scenic Byway. This area has evolved and developed in response to the transportation corridor it is bounded by (U.S. Route 5 and I-91). It is currently developed with a mix of commercial, institutional and residential land uses. While most of the land is developed, the current land use pattern is low density. The intent of the Mixed Use Planning Area is to reflect the existing development pattern and recognize that there may be opportunity for some mixed use infill with small businesses and housing over time, if constraints posed by the lack of infrastructure and institutional ownership of these lands are addressed.

THE RESIDENTIAL PLANNING AREA is composed of lands already developed into residential lots at moderate densities or suitable for such development due to their proximity to the village, access to transportation, and relatively few natural resource constraints. It is the intent of the Residential Planning Area to accommodate future residential development at densities similar or somewhat higher than currently exist in the area — as feasible — given the availability of infrastructure to support it.

THE RURAL PLANNING AREA includes lands outside the village that retain their rural character, although largely subdivided into residential lots. The settlement pattern is irregular in response to natural features and terrain. Much of the roadscape remains dominated by views of open meadows and wooded hillsides. The intent of the Rural Planning Area is to protect the rural character and maintain a low overall density of development in these areas which are further from the village and major transportation corridors.

THE RESOURCE PROTECTION PLANNING AREA is composed of lands with resource constraints or hazards that significantly limit their potential for future development, and lands not available for future development due to public ownership or private conservation easements. Despite the constraints, most of this land is part of a residential lot, albeit at extremely low densities. The intent of the Resource Protection Planning Area is to recognize the constraints and limitations that exist on a large portion of the land in Norwich. Little change in the use or development of these lands is anticipated and this plan discourages further disturbance or fragmentation of the remaining undeveloped portions of these lands through incremental, large-lot residential development. The high and medium priority forest blocks have been mapped and can form a basis for future decision-making.

[ADD]

Commented [ST11]: Solar Energy Area - Land where appropriate to locate solar installations

Forest Blocks and Habitat Connectors

The Vermont Agency of Natural Resources (ANR) has mapped and assessed the habitat value of forest blocks in Norwich as part of a state-wide exercise. Since 2018 municipal plans have been required by state statute (Act 171) to identify forest blocks and habitat connectors, and to plan for land development in these areas to minimize forest fragmentation and to promote forest health and ecological function.

The mature trees on these forest lands also perform critical ecosystem services including absorbing and sequestering carbon dioxide — a greenhouse gas. The combined area of the mapped forest blocks in the resource protection area is 17,202 acres. There is also considerably more forested land in other areas of town.

This plan and any implementing regulations treat mapped forest blocks in Norwich of 500 acres or more in area (as shown in Figure 8) as priorities for protection. The impact of proposed development on forest blocks may be considered during state regulatory processes. Due to the scale of the state forest block mapping, the boundaries of priority forest blocks should be more precisely delineated based on a site-level assessment before being used for regulatory purposes by the town or state. The mapped priority forest blocks occur in the rural residential district. Norwich subdivision regulations already consider natural resources, including steep slopes and forest cover. Nevertheless, alternative approaches could be explored. This could include a new resource protection zoning district with a significantly higher minimum parcel size to better protect against fragmentation of forest blocks. Other key areas to review include the development density algorithm to ensure development in forest lands is minimized.

Village Center Designation

Norwich's village center designation expired in 2018 (see Figure 10). It cannot be renewed until Norwich has a duly adopted plan subsequently approved by TRORC.

Village center designation supports the town's land use policies preserving the historic scale and pattern of development, while encouraging private investment in historic buildings. Participation in the designation program promotes infill and improves the walkability of the village. The program offers both the town and property owners within the designated area benefits including:

- Owners of income-producing buildings can access tax credits for eligible improvements;
- Land in or within ¼ mile of the village center could be eligible for the state's Neighborhood Development Area program;

Commented [ST12]: ... ***to assure that there is no undue adverse impact*** on forest fragmentation ***and wildlife habitat***, and to ....

Commented [ST13]: ***Delete***

Commented [ST14]: ... ***are delineated on a site level assessment ...***

Commented [ST15]: ***Delete***

Commented [ST16]: ***See*** [t]he mapped priority forest blocks ***that*** occur in the rural residential district ***Map TDB***

- The town is more competitive when seeking state grant funding for projects in the village center

Compatibility

Norwich is part of the Claremont-Lebanon micropolitan area (as defined by the US Census Bureau) which takes in Grafton and Sullivan counties in New Hampshire and Orange and Windsor counties in Vermont. The town is a member of the Two Rivers Ottauquechee Regional Planning Commission (TRORC) which comprises 30 towns in Orange and Windsor counties in Vermont. The history of Norwich is tied closely with Hanover and Lebanon, NH. Norwich is part of a bi-state school district, and Norwich residents depend on Hanover, Lebanon and Hartford for employment opportunities and access to retail and service functions. Many planning issues including housing supply and transportation (including bike-pedestrian accommodations) will involve a regional response.

NEIGHBORING TOWNS. There are no proposed changes to zoning districts or land use policies that will affect the neighboring towns of Thetford or Sharon. This plan identifies constraints to development in the Route 5 South Commercial-Industrial district, which borders Hartford to the south, caused by the need for on-site potable water and wastewater systems. The development potential of this district could change if municipal wastewater was provided. This plan is recommending that wastewater options for the village, adjacent areas and the commercial-industrial district be explored.

TRORC LAND USE AREAS. In previous regional plans the area east of I-91 (Lewiston neighborhood and lands to the east of Route 5 South) were identified as an 'interchange area'. In the 2019 TRORC regional plan, this designation has been dropped for Norwich and been replaced with mixed use and rural land use areas. Other adjustments were made, including defining principal retail, and allowing for mixed use development with some retail when combined with housing. These amendments followed discussion with Norwich. There is now a greater degree of compatibility between this plan and the regional plan. Norwich appreciates the greater flexibility and an application of regional land use areas that more closely resembles current land use patterns.

ENERGY

Objectives

- Reduce greenhouse gas emissions from Norwich municipal operations, businesses and residents (24 VSA §4302 (c) (7)).
- Reduce overall energy use in Norwich (24 VSA §4302 (c) (7)).
- Shift energy use in Norwich from non-renewable to renewable sources (24 VSA §4302 (c) (7) (A)).
- Increase the amount of renewable energy being produced in Norwich in a manner that is consistent with the goals, objectives and policies of this plan (24 VSA §4302 (c) (7) (A)). Pursue strategies identifies in the State Energy Plan (30 VSA §§202, 202b).

Policies

- Establish a mechanism to collect and appropriate funds to support projects that further the objectives of this Energy Plan.
- Ensure that the review of the Norwich Zoning and Subdivision Regulations is informed by the link between changing land use patterns and reducing fossil fuel use, including, but not limited to, consideration of increasing density adjacent to the existing village district, and the creation of new zoning districts.
- Promote bike and pedestrian as non-vehicular transport modes using best practices for traffic engineering such as sidewalks, bike lanes and dedicated trails.
- Consider lifecycle costs when planning to construct or upgrade municipal facilities. Develop programs that assist low-income households with weatherizing and improving the efficiency of existing dwelling units.
- Expand the authority of the Zoning Administrator to require the issuance of a Certificate of Compliance on all new construction over 800-sq ft ensuring that such work meets the VT Residential Building Standards (VT-RBES).
- Require large-scale commercial and institutional development to install solar panels on roofs and over any parking lots where feasible.
- For solar generation projects sized from 15kW to 500kW the presumption is that all of Norwich meets the Public Utility Commission definition of 'preferred site', notwithstanding the existing areas of local concern including the Ridgeline Protection Overlay Area, Shoreline Protection Overlay Area and the historic village district as identified in the Norwich Land Use Regulations.
- [ADD]
- Support Advanced Transit in providing a range of commuter services to Norwich, providing connections with locations where residents attend school, work and shop.

Commented [ST17]: ***Solar*** generation project sized from 15kW to 500kW ***that meet the*** Public Utility Commission definition of 'preferred site' ***must be located in Commercial/Industrial Zone outside of the Historic Village Center. They must not be located in the Ridgeline Protection Overlay Area, Shoreline Protection Overlay Area, the historic village district and Priority Forest Blocks*** as identified ***on Map TBD in the Town Plan***

Commented [ST18]: ***Solar Generation projects greater than 500kW are not permitted. Or discuss if the town would want to identify specific identified sites where permitted (e.g. major sand pits not visible from public roads)***

Actions

- Advocate before VTrans on behalf of non-vehicular road users for improved accommodations on state highways.
- Review hybrid and electric options for any municipal vehicle purchase or replacement.
- Consider how to address barriers to development related to limitations on wastewater capacity, including a review of the findings of the 2005 study conducted by the Norwich Sewer Committee in light of current challenges and changes in wastewater management. Encourage development projects to install solar collectors on rooftops and parking lots.
- Participate in the Section 248 process before the Public Utility Commission to make decisions that further the goals, objectives, and policies of this plan.
- Implement to the best of our abilities the (non-binding) Article 36 from the Town of Norwich 2019 ballot, which was passed by voters:
  Shall the voters of Norwich direct all Town officials to take immediate and sustained efforts to gradually and continually reduce the Town's direct use of fossil fuels, beginning at a rate of no less than 5 percent per year starting in the 2019-20 fiscal year and continuing until they are eliminated entirely, and shall the Town Manager be charged with monitoring such efforts and reporting on them each year in the annual Town Report, and no capital expenditures shall be made that contradict or undermine this direction, absent a majority vote of the Selectboard?
- Ensure that the Zoning Administrator or their designee has the training and resources to both enforce state Residential Building Energy Standards and issue Certificates of Compliance on development projects greater than 800-sf.
- Provide residents with information on:
  - cold-climate heat pumps, and other non-fossil fuel heat sources in new construction and in existing homes and buildings;
  - replacing fossil fuels powered vehicles with electric vehicles;
  - managing forest land for long-term, sustainable harvesting of wood.
- Raise climate crisis and energy awareness.
- Work with community groups and others to support non-vehicular transportation options in Norwich.

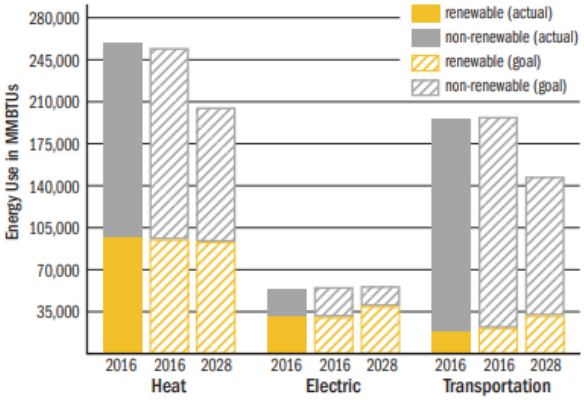
Overview

We have understood for at least fifty years that human dependence on fossil fuels is not sustainable. Only now are we beginning to grapple with the climate crisis resulting from burning fossil fuels. We also need to develop community resiliency to better withstand the disruptions caused by the changing climate. There is an active grassroots effort in Vermont and around the world to act locally in addressing the climate crisis and in building resiliency.

This chapter details an energy plan for Norwich residents, businesses, and town government in the context of Vermont's "90 percent renewable by 2050" energy goal. Policies and objectives focus on those decisions directly within the control of the town, assuming the current regulatory scope and commitment of resources. Opportunities for promoting changes in residential energy consumption with existing town volunteer resources are also identified. Assumptions made in the Vermont 2016 Comprehensive Energy Plan (CEP) and the shortcomings in available data are noted to encourage more rigorous planning at the state level, where the vast majority of decisions regarding energy markets (fossil fuel and renewable) are made.

Current Energy Use

According to the 2018 Progress Report by the Energy Action Network, Vermont greenhouse gas emissions have been increasing despite significant reduction commitments. Transportation and thermal energy (heating and cooling) are the largest contributors to the state's greenhouse gas emissions. This plan assumes that this state-level analysis applies to Norwich as well. The accepted estimate of the total amount of energy being used in Norwich is from the Energy Action Network Community (EAN Energy Dashboard). This source suggests that in 2016 (the latest year actual use figures are available) Norwich consumed 508,115 MMBTUs (million BTUs) for electricity, thermal, and transportation (see Figure 11). Energy use in Norwich reflects the settlement pattern, which is dominated by low density residential lots, and little or no industrial or commercial activity.



Source: Brighter Vermont Community Energy Dashboard

Figure 11. Energy Use and Goals by Sector

In developing this chapter, the town relied upon:

- 2017 Two Rivers Ottauquechee Regional Commission (TRORC) regional energy planning
- The EAN Energy Dashboard which tracks the progress of each Vermont community towards the state's goal of meeting 90 percent of local energy needs through efficiency and renewable energy by 2050.
- The Act174 Supplement prepared for Norwich by TRORC is incorporated into this plan and included in Appendix B.

Data on electricity consumption is specific to Norwich and up-to-date because Green Mountain Power (GMP) as a utility regulated by the VT Public Utilities Commission (PUC) provides detailed statistics about electricity generation and use as part of their license to operate. Approximately 60 percent of the GMP portfolio is made up of renewable energy, predominantly hydro-electric from Quebec. Current commercial transportation energy use and future trends were not assessed by TRORC as part of their Act 174 energy planning. The published figures for thermal and transportation energy are rough estimates, based on statewide averages and Census data. More reliable and accurate data is needed for town energy planning to be meaningful and effective

Renewable Energy Resources

Renewable Energy Resources Vermont's Renewable Energy Goals Greenhouse gas (GHG) emissions caused from human activities are driving the global climate crisis. In 2011 Vermont adopted a goal to obtain 90 percent of the total energy used in the state (primarily electricity, thermal, and transportation) from renewable sources by 2050. Advisory 2050 targets have been set for each Vermont municipality. The energy and conservation targets

for Norwich are shown in Figure 12. Specific targets for renewable energy generation are included in Appendix B, Energy Targets and Conservation Goals.

Figure 12. **Norwich Energy Targets**

Year	Renewable	Nonrenewable	Efficiency	Total
2014 (baseline)	144.3	380.1	0	524.4
2016 (actual)	145.4	362.7	8.7	508.1
2025 (target)	160.1	273.8	47.9	434.0
2035 (target)	174.5	177.2	91.5	351.7
2050 (target)	196.1	32.3	156.8	228.4

All values expressed in thousand MMBTUs.
Source: Energy Action Network 2050 Energy Pathway Analysis

Figure 12

Town-level efforts to meet the State's '90 by 50' goal will focus on redirecting energy demand to renewable electric sources. These efforts will be challenged by the limited authority of municipalities to affect energy use outcomes. Energy products (including efficiency and renewables) are allocated via markets which are regulated by State and US governments. Municipalities are best understood as institutional consumers who have no jurisdiction over the structure and operation of energy markets. In the case of Norwich, the town is a very small consumer, even compared to local school districts and larger regional employers.

Municipalities do have the authority to regulate land use (an authority granted to municipalities by state statute and case law). Because land use patterns in Norwich have been consistent for many decades, and the rate of development is exceedingly slow, changing land use patterns will not play a major role in achieving the targets within the timeframes identified by the VT CEP. Nevertheless, Norwich will use this opportunity to review the zoning and subdivision regulations to encourage future development patterns that reduce energy use and preserve forest and agricultural lands for ecosystem services. These concerns are addressed in more detail in the Land Use, Housing and Transportation chapters.

Fifty seven percent of the electricity consumed in Norwich is from renewable sources (based on the GMP renewable portfolio and local generation), 0.5 percent below the 2016 EAN Dashboard target. Converting current electricity use to renewable sources has been relatively straightforward in response to state policies such as the Renewable Energy Standard, which required utilities to procure 55 percent of their electricity from renewable sources in 2017. That figure will increase incrementally to 75 percent by 2032. Conversion of transportation and thermal energy (most of the energy used in Norwich) to renewable

sources are beyond the regulatory scope of the municipality, and thus the Town can only influence the outcome at the margins.

In summary, it is important to acknowledge that the town's ability to meet the ambitious and necessary state energy goals is limited. It falls primarily in 1) land use regulation, 2) modeling the adoption of energy conservation and renewable energy in Town facilities and equipment, and 3) ensuring local regulations are not a barrier to necessary change. Norwich is, nevertheless, determined to take concerted action to make progress.

R**enewable Energy Generation Potential**

Act 174 Maps. As required by the state under Act 174, TRORC has mapped areas of Norwich that have potential for renewable energy generation (see Appendix B). The maps for solar potential rely heavily on analyzing aspect (south-facing landforms are most suitable for solar generation). The maps do not correct for features that will limit uptake of solar projects including: current land use and lot boundaries, extent of forest cover, proximity to roads, and distance to electric distribution (particularly 3-phase power and transmission infrastructure). Each of these factors presents serious limitations to utility scale (>500 kW) solar energy development.

At present, the most salient factors for determining where non-residential renewable energy projects may feasibly be located is proximity to the existing power grid (3-phase power and transmission lines) and the capacity of the grid to accommodate additional load. As of 2019, the GMP Solar Map 2.0 indicated that there were system limitations on the circuit along the Thetford-Norwich border and to the far west of Norwich near the Sharon town-line. Norwich operates on circuit 71G1 of the Wilder substation, which the utility lists as having 72 percent of its capacity remaining (approximately 10.2 MW). Therefore, installation of numerous 150 kW solar arrays is feasible. Three-phase power lines currently run along Main Street as far as Willey Hill Road, Route 5 South, and Route 5 North (to just south of Farrell Farm Road). Beyond these areas infrastructure upgrades would be required for larger projects.

SOLAR POWER. The EAN Dashboard identifies 190 small PV sites in Norwich, with a total capacity of almost 1,800 kW (approximately 11 percent of the generation goal). The Norwich Energy Committee tracks solar installations, including households that have purchased shares of solar projects located in other towns. This count tallies 283 residences, businesses, or churches that have "gone solar" — more projects of this scale and type are likely. The EAN Dashboard ranks Norwich 12th out of 250 towns in Vermont for the number of solar electric sites.

While large scale development of solar energy will require proximity to a substation and three phase power, the utility grid in Norwich is well-suited for projects of about 150kW or smaller. Using the Act 174 mapping methodology 6,341 acres out of a total 28, 620 acres in Norwich has solar potential (southern facing slopes). But, 22,116 acres (or 77 percent) of Norwich is forested. About 67 percent of the area identified as having solar potential is currently under forest. Aside from the economic cost of clearing, the release of carbon from cleared lands would diminish the climate benefits of solar development on these sites. The mapping of solar potential also includes the Right-of-Way (ROW) for interstate 1-91 and other lands not available for development.

About 16 MW of installed solar would be needed for Norwich to meet its renewable energy generation target of about 20,000 MWh per year (Appendix B, table 1Q). This is the town share of projected statewide energy demand in 2050, in proportion to its population. Based on current solar technology. 16 MW of solar generation would require about 160 acres total, or about 0.5 percent of the towns total land area. Assuming that solar panels continue to increase in efficiency, the area needed to meet Norwich energy demand will decrease as a result. Today 150 kW solar arrays typically require about of a third of an acre. To the extent that homes and businesses take up roof and parking lot installations the need for larger ground-based solar arrays will be reduced.

BIOMASS. It is not known how much wood is harvested for fuel in Norwich on an annual basis. Wood is a renewable source of thermal energy and technological improvements have greatly increased the efficiency and reduced the pollution associated with burning wood. A large percentage of homes in Norwich use wood as either a primary or secondary heating source. The State of Vermont is encouraging schools and municipal facilities to install high efficiency wood pellet or woodchip heating systems. More recently Dartmouth College (in neighboring Hanover, NH) is reconsidering a proposal for a biomass plant to replace existing fossil fuel fired heat system, due to concerns about the risk of increasing greenhouse gas emissions (including the impact of trucking woodchips) and local air quality effects. While the climate benefits of burning wood for heat are being reassessed Norwich will promote the clear path of solar electricity and switching to electric heat and transportation.

GEOTHERMAL. There is one ground source heat pump installed at a residential property in Norwich, according to the EAN Dashboard. The feasibility of installing geothermal systems needs to be assessed on a site-by-site basis. As of 2019, the town is considering geothermal heat pumps for three town buildings (Tracy Hall, the Fire Department apparatus

bay, and the Town Garage).
HYDRO POWER. There are no hydropower facilities currently located in Norwich according to the Energy Dashboard. Small, run-of-the-river generators would be the only likely future hydro generation, given current state and federal regulations regarding the damming of waterways. However, just over 60 percent of GMP electricity is provided by contracts with Hydro-Quebec, a public utility.

WIND POWER. According to the Energy Dashboard there are no wind energy projects installed in Norwich as of 2018. There is no meaningful potential for utility- or communityscale wind generation in Norwich given current turbine technology, which generally requires an average wind speed of at least 6 meters per second. Only two locations in Norwich are identified through the Act 174 mapping process with wind speeds at 6 meters per second or above (accessed via turbines set between 50 and 70 meters high). Both are off Chapel Hill Rd along the Sharon townline. These sites are not currently accessible from roads suitable for this scale of development, nor to a power transmission line.

Energy Conservation and Efficiency
STRUCTURES. The scenario for meeting the state's renewable energy goal presented on the EAN Dashboard shows that by 2050 Norwich will need to use a total of 296 MMBTUs of energy less than it did in the baseline year of 2014. Under the US and Vermont constitutions, the town has no role in shaping or regulating the market provision of energy conservation or efficiency products and services. In addition, the annual rate of new construction, or even substantial improvement, is very low. Nevertheless, the town can still play a role by encouraging energy code compliance, modeling energy-efficiency in municipal facilities, supporting outreach and information-sharing with residents, and investigating how it could take on inspection and enforcement.

TRANSPORTATION. Of note here is the assumption that the town's total energy use for transportation will go from 205,793 MMBTUs in the baseline year of 2014 to 56,348 MMBTUs in 2050 (see EAN Dashboard, regional energy planning). That is, the town's transportation energy use in 2050 will be 27 percent of what it was in 2014. It is also expected that fully 90 percent of the 2050 transportation energy budget will be provided from renewable sources. This is a major change from the town's current modes of transportation and entirely outside the control of (existing) municipal decision-making. Land-use policy, a clear area of town authority, will play an important role, as will town support for regional public transit and town infrastructure for walking, biking, and electric vehicles. Land use policy can help support reductions in the number and length of car trips

— and thus greenhouse gas emissions — by encouraging future development to be located close to job and retail centers and public transit lines, and creating walkable neighborhoods.

Future Generation, Use and Conservation

Energy Targets Future targets for energy generation, use and conservation have been set for all Vermont municipalities as part of the state's enhanced energy planning under Act 174 (see Figure 12). The planning scenario presented on the EAN Dashboard envisions that total energy consumption of Norwich will decrease from the 2014 baseline consumption of 524,4000 MMBTUs to 228,400 MMBTUs in 2050. A reduction to 44 percent of 2014 levels. Moreover, only 32,300 MMBTUs (or 14 percent of the total) will be from non-renewable sources. This reduction will primarily rely on the efficiencies of weatherization and electric transportation.

This plan's land use, housing and transportation objectives and policies call for new housing and economic development to be focused in and adjacent to the village and mixed use areas. This is where people can live close to employment, shopping and services. Such proximity allows walking, biking and public transit, all of which reduce transportation energy use. Encouraging such a development pattern through the Town's land use regulations and public infrastructure are the most effective and direct measures Norwich government can take to move towards meeting the state's energy goals.

The 2017 TRORC Energy Plan recognizes that Norwich is currently generating 2.2 GWh/year of electricity from solar and sets a target for a total of 20GWh/year of renewable energy generation by 2050. This is based on Norwich's fraction of the regional population. The portfolio of renewable energy generating sources includes both rooftop and ground-mounted solar, wind, and hydropower. The TRORC energy plan suggests that there is 81 times more 'suitable land' than is needed to host such renewable energy projects (primarily for solar) in Norwich.

Renewable Energy Project Siting Standards

This plan supports renewable energy production in Norwich. For this policy to continue with broad community support it must be balanced with this plan's policies related to:

- Protecting natural resources, environmental quality, scenic resources and rural character
- Maintaining viable farms and the working lands needed to sustain them
- Focusing development in those areas of town already served by existing public infrastructure

- Preserving cultural resources within Norwich village
- Preserving the recreational and natural value of those lands identified in the Ridgeline Protection Overlay Area and Shoreline Protection Overlay Area
- Increasing the supply, diversity and affordability of housing in Norwich

This plan calls upon the Public Utility Commission to issue Certificates of Public Good for projects between 15 kW and 500 kW based on the presumption that lands in Norwich meet the so-called 'preferred site criteria', except in areas already mapped as Ridgeline Protection Overlay Area, the Shoreline Protection Overlay Area, and the designated village center.

Renewable energy projects in Norwich are further conditioned on the following standards:

- For individual or group net metered renewable energy projects, the property owner must take reasonable measures to site and/ or screen the installations to minimize any visual or noise impacts beyond the property line, particularly on sites where there are neighboring homes in close proximity.
- Projects larger than 150 kW must meet existing standards for setbacks, site design (landscaping, screening, lighting, stormwater, etc.) as laid out in the Norwich Zoning and Subdivision Regulations.
- Projects larger than 500 kW must have a management and decommissioning plan that will ensure the land will be returned to its prior condition when no longer actively used for renewable energy generation. Wherever feasible, the energy generation use must be combined with continued agricultural use of the land or habitat management, such that soil health and fertility is maintained.
- Projects larger than 500 kW must not clear land within a mapped forest block (see Figure 8) unless there is a management and decommissioning plan that will ensure the land will be re-forested and managed in accordance with a forest management plan, when no longer actively used for renewable energy generation.

Commented [ST19]: ***Delete***

Commented [ST20]: ***In the identified Energy Area and must not include projects*** areas already mapped ... ***forest blocks, steep slopes in excess of 15 degrees*** and the ....

Commented [ST21]: Solar arrays of all sizes must not produce glare that reflects on neighboring properties

Commented [ST22]: ***Move these standards into this plan or adopt a separate solar screening ordinance and refer to it in this plan***

Commented [ST23]: ***150kW ...*** a ***funded*** management and ...

Commented [ST24]: ***Delete***
Projects larger than 500 kW ***are not permitted OR are permitted only in specific identified areas.***

HOUSING

Objectives

- Ensure the availability of safe and affordable housing in Norwich which will meet the needs of diverse social and income groups, particularly for low and moderate income households (24 VSA §4302 (c) (11) (A)).
- Encourage new and rehabilitated housing conveniently located to employment and commercial centers, and coordinated with the provision of public facilities and utilities (24 VSA §4302 (c) (11) (B)).
- Encourage more intensive residential development primarily in the village and suitable adjacent areas and discourage strip development along highways, (24 VSA §4302 (c) (1) (A)).
- Allow for multi-family and manufactured housing in locations similar to those generally used for single-family conventional dwellings (24 VSA §4302 (c) (11) (C)).
- Increase the diversity of the housing stock in Norwich so that it includes a range of housing types suitable for people of different incomes and backgrounds and at different stages of their life. Increase the number of both homes for rent and sale. Reduce energy use and greenhouse gas emissions by increasing housing in areas served by public transit and with easy access to employment and retail centers, as well as through the use of green building materials and practices.
- Implement the Norwich Housing Strategy (see Appendix A) to increase Norwich's housing stock within the first five years of the plan by 10 accessory dwelling units (ADUs), ten units of "missing middle" housing (duplexes, triplexes, etc.), and at least 25 units of dedicated affordable housing

Policies

- Advance the following four key strategies included in the town's Housing Strategy:
    - Encourage the development of dedicated affordable housing.
    - Facilitate the development of lower-cost housing types.
    - Reduce barriers to the development of new housing.
    - Expand public understanding of housing issues

Actions

- Encourage the development of dedicated affordable housing by formalizing and growing the affordable housing revolving fund (currently $45,000).
- Encourage landowners to donate land for dedicated affordable housing.
- Investigate the use of land owned or controlled by the Town of Norwich for dedicated affordable housing.

- Conduct outreach to encourage developers of affordable homes to focus on Norwich.
- Implement the recommendations made in this chapter when revising the Norwich Zoning and Subdivision Regulations to:
- Ensure the continued right to construct multi-family and manufactured homes in any district where housing is a permitted use.
- Promote the construction of affordable housing through regulatory mechanisms such as:
    - Offering substantial density bonuses,
    - Using alternative density measurements to encourage smaller unit sizes,
    - Considering whether to require large projects to include affordable units,
    - Allowing for combined commercial and residential uses in a single structure as a permitted use in the proposed mixed use district.
    - Facilitate the creation of duplexes, triplexes and other "missing middle housing".
    - Require Certificate of Compliance inspections on all new dwelling units and major residential rehabilitations to ensure that the Vermont Residential Building Standards (VT-RBES) are met.
- Ensure that the new Norwich Zoning and Subdivision Regulations are clear, accessible and avoid any unnecessary barriers to developing housing.
- Continue to encourage accessory dwelling units (ADUs) to increase Norwich's stock of rental housing.
- Consider how to address barriers to development related to limitations on septic capacity, including a review of the findings of the 2005 study conducted by the Norwich Sewer Committee in light of current challenges and changes in wastewater management.
- Make it easier for developers and the public to understand Norwich's affordable housing policies by developing educational materials and conducting outreach.
- Develop educational materials that address frequently asked questions about affordable housing in Norwich and increase public understanding of how new development will affect town and school property taxes.
- Monitor the effect of short-term rentals (e.g. Airbnb).
- Encourage broad-based participation in community conversations around housing, including low and moderate income households, seniors, younger residents and renters.

- Norwich will contribute to regional discussions of housing issues and work collaboratively with other municipalities to explore creative solutions.

Regional Market

The major land use in Norwich is residential (see Figure 2). Situated just west of Hanover and Lebanon, New Hampshire, and north of Hartford, Vermont, Norwich is a predominantly rural residential bedroom community (with a vibrant village) for these employment and commercial centers. The housing situation in Norwich is best understood within the context of the Upper Valley residential real estate market. This chapter is based on outreach conducted over a period of 18 months with Norwich residents and professionals in the Upper Valley residential real estate market.

To meet the objectives and policies of this plan, consistent with state and regional policies, significant efforts will be needed, as outlined in Norwich's housing strategy. In addition to local efforts in Norwich, it is important for towns in the region to coordinate their efforts in order to meet the 5,000 to 6,000 regional housing unit shortfall as identified by the market analysis commissioned by Vital Communities. This shortfall is a major cause for concern for employers in the area who struggle to attract and retain workers due to high housing costs. Norwich, through its membership in the Two Rivers Ottauquechee Regional Planning Commission (TRORC) is participating in Keys to the Valley — an initiative of three regional planning commissions (TRORC, Upper Valley Lake Sunapee and Southern Windsor Regional Planning Commissions), covering 67 communities centered on the Upper Valley. This work follows a 2012 Housing Needs Assessment, which called for additional housing in the region based on population growth and employment trends in the preceding decade and a 2015 study; East Central Vermont: What We Want, a holistic report integrating key findings on housing, land use, economic and workforce development, transportation and infrastructure.

Local Housing Stock Characteristics

According to the Norwich Grand List, at the end of 2018 there were 1,325 residential properties in Norwich, including single-family homes (98 percent), mobile homes (1 percent), and commercial apartments (0.5 percent). The total stock of single-family homes in Norwich has changed little in recent years (see Housing Location Map, Figure 13). From 2010 to 2018, just 29 housing units were built. Most of these homes were located a considerable distance from the village and on larger, (more expensive), parcels. Not only has there been little new construction, the rate of property sales is also low, suggesting that entry into the Norwich housing market is challenging. Real estate property transfer tax data collected by Vermont Department of Taxes shows that from 2014 to 2018, 165 single-

family homes sold as either a primary or secondary residence. This represents an annual average of approximately 2.6 percent of all homes changing hands.

Figure 13. **Year Housing Unit Built**

Construction Year	Norwich %	Windsor Cty %
2000 – 13	9	12
1980 – 99	36	27
1960 – 79	24	23
1940 – 59	12	10
1939 or earlier	19	28

Source: US Census Bureau

Figure 14 below takes the total units counted at each US decennial census (gray bars), as well as the percentage growth during that decade (orange line). Norwich experienced substantial growth in housing units during the 1970s and 1980s, but much slower growth in the 2000s and 2010s. Growth in the decade following 2010 is estimated using the number of new E911 residential addresses.

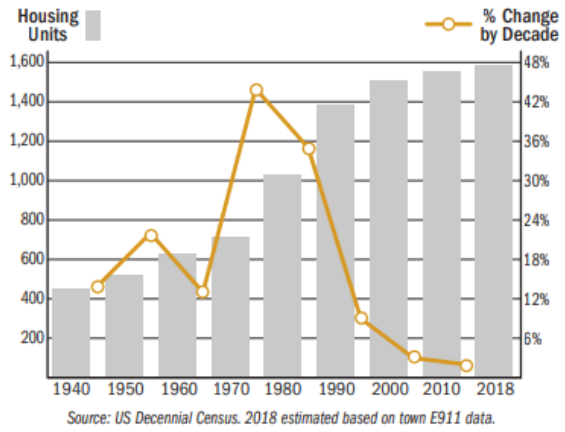


Figure 14. **Change in Housing Units 1940 – 2018**

Figure 14. Change in Housing Units 1940 — 2018 Regional real estate development professionals cite five reasons to explain the low level of housing development in Norwich.

- New Hampshire is perceived to have less stringent environmental and development review for projects of ten units or more (the threshold for the Vermont Act 250 review process)
- High construction costs due to high materials and labor prices (skilled labor is in short supply

- The high cost of providing wastewater systems for each development because there is no access to municipal wastewater
- The perception that Norwich residents will oppose development, making the development review and permitting process longer and more expensive
- There are relatively few parcels for sale in Norwich. Local developers have evaluated those well-located with regard to public transit, employment and commercial centers, and found them not economically feasible to develop.

Most of the existing stock of housing in Norwich is used as the primary residence of the homeowner. According to estimates by the Census Bureau, in 2017 about 21 percent of occupied housing units in Norwich were rented. These units are, according to industry experts, largely in singlefamily homes, either in a primary residence or a secondary unit on the same property — an accessory dwelling unit (ADU). The proportion of rental units is lower than Hartford (34 percent) and the remainder of Windsor County (26 percent).

Affordability

Housing affordability has been a prominent concern in Norwich since at least 2002, when the Planning Commission created an Affordable Housing Subcommittee. In 2019, the Affordable Housing Subcommittee, based on input provided during multiple listening sessions, prepared a draft of the town's housing strategy. After subsequent revisions to address further public input, the strategy was adopted by the Planning Commission in December 2019 (see Appendix A). The issues and proposals in the strategy echo the work of the preceding decades, demonstrating the persistence of housing challenges in Norwich. In November 2018, Norwich voters overwhelmingly approved the reinstatement of a $45,000 revolving fund for affordable housing.

Household Income

In the last two decades, the average income of Norwich households has increased. Moreover, there has been a marked increase in the share of Norwich households that have very high incomes, as documented by Census Bureau data summarized in Figure 15. This figure shows the percentage of Norwich families in various income brackets using the 2000 census and then the 2017 American Community Survey (ACS). The share of the Norwich population with annual income below $100,000 has dropped substantially since 2000, and the share of the population with annual income above $200,000 has increased.

Home Prices

In 2018, the median sales price of a single-family home in Norwich was $649,000, a jump from $564,500 in 2014, $480,000 in 2015, $431,000 in 2016, and $500,000 in 2017. As Figure 16 shows, in four out of the five most recent years, more than half of sales each year

have been for $450,000 or more. During 2014-2018, the average annual median sales price of single-family homes in Norwich was the highest of any town in Windsor County. The Norwich median sales price between 2014 and 2018 was $500,000 and significantly more than any other town in the county. The next highest was Woodstock, where over the five-year period the average was $397,000. In Hartford, the five-year average was $240,000. These high sales prices mean that few low-, moderate-, or even middle-income households can afford to purchase a home in Norwich. In addition to Norwich, several other towns in the Dresden School District and with proximity to job centers in Hanover and Lebanon, NH and White River Junction, VT, have housing sales prices that are high relative to the regional average. For example, the median purchase price of a single-family home in Hanover was $620,000 in 2018.

As documented in the Norwich housing strategy, only a small share of Norwich home sales are affordable to families at the median income for the county. For example, of the 35 single-family homes sold in 2018, just 5 were sold at a price that would be affordable for a family earning $76,454.

Rental Market

Current rents are also high in Norwich, as high or higher than the county-wide estimates produced in Out of Reach, a report by the National Low Income Housing Coalition. There is no centralized listing of rental properties in Norwich, so various websites from the college and the town listserv were reviewed.

On a day in June 2019, typically a period of high volume in the area rental market, seven single-family homes were listed for rent in Norwich, as well as six apartments on the property of a single-family home. The median asking rent for the houses was $2,250 per month, and for the apartments, $1,075. Again, this may miss some of the available inventory. But it suggests that house rentals are currently oriented more toward groups of graduate students or young professionals, and that many households likely struggle to find enough space that they can afford. Those that are able to stretch their budgets to afford renting in Norwich may be extremely vulnerable to changes in employment or unexpected financial needs.

Despite rents that are out of reach for many potential renters, local experts suggest that renting out a single-family home in Norwich is rarely profitable. Instead, many homeowners are motivated to rent their property as a way of retaining ownership and offsetting holding costs, so they can move back into the home in the future, or pass the property down to their family. This helps explain why few rental properties in Norwich are professionally managed

(there is not sufficient revenue to pay a management firm), and why there is no evidence for widespread purchase-andrent activity in the town.

Affordable Housing Need and Supply

In addition to the limited supply of affordable housing in Norwich, many existing residents struggle to afford their ongoing housing costs, including local property taxes. Census Bureau ACS data reveal that among homeowners with a mortgage in Norwich in 2017, 31 percent paid 30 percent or more of their household income for housing; 38 percent of renters paid 30 percent or more of their household income in gross rent.

The staff and school board for the Marion Cross School report that, each year, families that rent in Norwich must leave the school, and likely the wider Dresden School District, as well, because their rent rises beyond what they can afford. Some residents even struggle to afford the costs of food. The Upper Valley Haven, the area's principal service provider for individuals and families who are homeless or are at risk of homelessness, serves Norwich residents. In 2018, the Haven's food shelf, which provides free healthy food options, served 32 Norwich households (approximately 80 residents). Households can only visit the food shelf once a month, and on average they come four times per year. In the same year, eight Norwich households received case management services from the Haven. In recent years, the Haven shelters for homeless individuals, families, and those with seasonal (i.e. winter) needs have housed between one and three households that had lived most recently in Norwich.

Two developments in Norwich meet the definition of "dedicated affordable housing", with long-term, binding instruments to ensure the units remain affordable. Starlake Lane (built in 1992) is a neighborhood of 14 owneroccupied homes kept affordable through a shared equity model that strives to balance the community's interest in long-term affordability with individual asset building. The land is owned by the development's steward, Twin Pines Housing Trust, which leases individual parcels to the household purchasing the home. Twin Pines also makes grants to income-qualified homebuyers to assist with their initial purchase. Norwich Senior Housing (built in 1981) consists of 24 one-bedroom units of dedicated affordable housing in the village area in which tenants pay 30 percent of their adjusted gross income in rent. The demand for affordable senior housing in the area is such that there is an eight- or nine-year waiting list. The board of directors that oversees Norwich Senior Housing has in the past explored options for expansion on site but found that the infrastructure needs would make that infeasible.

Additional affordable housing units would be useful to meet the demand for affordable housing in Norwich from seniors, families with children, low-wage workers and others. A range of housing options is also needed to help current Norwich residents, especially seniors, remain in the community.

ECONOMIC DEVELOPMENT

Objectives

- Plan development to maintain the historic settlement pattern of compact downtowns and village centers separated by rural countryside (24 VSA §4302 (c) (1).
- Provide a strong and diverse economy that provides satisfying and rewarding job opportunities, maintains high environmental standards, and expands economic opportunities (24 VSA §4302 (c) (1) (2)).
- Ensure the economic vitality of the village business district, so residents can continue to access goods and services within proximity of their homes.
- Expand opportunities for individuals and households on lower and middle incomes.
- Encourage the manufacture and marketing of agricultural (especially locally grown food) and forest industries (24 VSA §4302 (c) (9), (A), (B)).
- Work to ensure that Norwich residents and businesses have adequate access to high-speed internet and mobile telephone services.
- Explore ways to support businesses providing products and services that directly address the climate crisis, such as solar energy design and installation.

Policies

- The town will encourage economic development by maintaining a strong relationship with the local business community.
- Support proposed development projects that reflect the values and priorities expressed in this plan.
- Assist businesses that require local or state permits to locate or expand operations in Norwich
- Review Norwich land use regulations to facilitate appropriate scale mixeduse development in areas currently zoned commercial- industrial

Actions

- Complete a study on how to maintain a strong and vibrant village center and consider recommended actions.
- Study implications of improved wastewater management for the economic vitality of the village area.
- Identify opportunities to foster economic development in the Commercial-Industrial district.
- Work with Green Mountain Economic Development Corporation (GMEDC) to recruit appropriate businesses to Norwich.

- Provide education on area services available for unemployed and lower income residents.
- Support agricultural and forest industries by encouraging participation in the Vermont Use Value Appraisal (UVA) Program, (current use) and conservation easements through the Upper Valley Land Trust.
- Consider how to address barriers to development related to limitations on septic capacity, in particular through reviewing the findings of the 2005 study conducted by the Norwich Sewer Committee in light of current challenges and changes in wastewater management.

Background

Data available to describe economic conditions in Norwich are difficult to obtain because of our small size. Most of the relevant data is collected at the county level. Data available to describe economic performance of the County can still provide some context. Unemployment in Windsor County was 2.3 percent in 2018, compared to a statewide average of 2.7 percent. The average wage was $50,850 compared to a state average of $47,635.

Figure 17. **Establishments, Employees and Wages**

	1980	1990	2000	2010	2018
NORWICH					
Establishments	72	100	136	133	145
Employees	556	670	814	861	981
Ave. Wages	32,100	33,800	38,600	44,100	50,800
WINDSOR COUNTY					
Ave. Wages	37,800	36,800	39,800	42,600	45,800
VERMONT					
Ave. Wages	35,900	39,300	42,000	45,200	47,600

Source: VT Department of Labor. Wages adjusted to $2018.

According to the most recent Department of Taxes data the median family income in Norwich for 2017 was $141,660, compared to a statewide median of $70,500.

The source of Norwich's economic strength lies mostly outside the town. The major employers in the region include Dartmouth Hitchcock Hospital, Hypotherm, Veterans Affairs Hospital and Dartmouth College. Only about 10 percent of Norwich residents who work do so in Norwich.

Between 1980 and 2018, the total number of employers (establishments) in Norwich increased from 72 to 145. In 2018, a total of 981 people were employed in Norwich,

approximately 213 of whom were residents. While accounting for a small percentage of employers, the public sector provides more than 10 percent of all jobs in town. Businesses in Norwich are generally very small, with an average of seven workers. Most of these private businesses are in the service sector. However, King Arthur Flour continues to grow, and their retail and school located on Route 5 South has become a tourist destination.

Barriers To Economic Growth

Housing

The high cost, limited variety of stock, and strong competition for rental dwelling units holds back economic growth in Norwich. A greater diversity of housing types (size, location, accessibility) at a wider range of price points is needed if more people are to be able to work and live in Norwich (see Housing, Land Use chapters).

Labor Market Characteristics

The dominance of Dartmouth Hitchcock, Veterans Affairs Hospital and Dartmouth College suggests that dual income households, where a worker is not in the medical or educational field, may face challenges building a rewarding career in the region. The Upper Valley is close enough to large metropolitan areas that skilled labor and a range of professions can commute into larger labor markets. A commitment to supporting spin-offs and start-ups in the region could increase viable career paths for all residents.

Land Use

Approximately 97 percent of Norwich is zoned Rural Residential. While this may reflect the town's character and development limitations (e.g. wastewater challenges), it raises questions about how and where new business opportunities could be supported.

The generally high land rents ensure that lands currently used for agriculture are under pressure from other more profitable uses (e.g. high-end estate-style residential development). Supporting local agriculture and forestry may require finding ways to reduce the economic pressure on these businesses.

More thought should be given to ensuring existing Commercial-Industrial lands are in fact capable of supporting more intense development. A full review of Norwich Land Use Regulations is needed to ensure that enough land is zoned to support local economic development that reflects the direction of regional growth and sustains local character.

TRANSPORTATION

Objectives

- Provide for safe, convenient, economic, and energy efficient transportation systems that respect the integrity of the natural environment, including public transit options and paths for pedestrians and bicyclers (VSA 24 §4302 (c) (4)).
- Reduce Greenhouse Gas Emissions (GGE) by encouraging access to mass transit, ride-sharing and EV use (VSA 24 §4302 (c) (7) (A)).

Policies

- Plan, maintain and provide for safe, efficient, sustainable roads and other facilities, such as bus shelters and bike racks to serve the town and connect to the region. Promote the construction of a variety of housing types in areas of town with good access to transit, employment, community facilities and retail opportunities.
- Encourage mixed use and commercial development in the Commercial Industrial District, where it can be served by existing transportation infrastructure including U.S. Route 5, the Connecticut River Scenic Byway, and transit service.
- Encourage improved access management on state highways and other high-traffic roads. Seek improved accommodation for bicyclists and pedestrians on state highways and other high-traffic roads.
- Ensure all private roads are constructed in accordance with town standards and any developer provide a maintenance agreement or equivalent for new private roads
- Maintain town ownership of Class 4 roads and legal trails as a public recreation resource.
- Continue to support Advance Transit.
- Continue to participate in the Transportation Advisory Committee facilitated by TRORC.

Actions

- Adopt Land Use Regulations with adequate standards for access. management, curb cuts, driveways and roads, to promote a safe and efficient transportation network.
- Develop a master plan for future trails, paths, sidewalks, and bikeways. Use the master plan as a basis for pursuing grants and other funding for design, right-of-way acquisition, and construction of planned improvements.
- Accommodate bicycle and pedestrian safety when rebuilding and upgrading roads and bridges.

- Create a long-range plan for construction and maintenance of sidewalks, bikeways, trails and park-and-ride lots.

Roads In Norwich

Interstate 91

Interstate 91 (I-91) was completed through Norwich in the early 1970s and runs north-south along the town's eastern boundary. Its intersection with I-89 five miles south at White River Junction provides Norwich with direct interstate highway access to Boston, Montreal, New York City, and points between and beyond.

State Highways

U.S. Route 5 parallels the Connecticut River along much of the 8.5 miles it travels through Norwich. U.S. Route 5 is part of the bi-state Connecticut River Scenic Byway and a popular bicycle route. Vermont Route 10A is a 0.9-mile connector between I-91 Exit 13 southbound and the Ledyard Bridge over the Connecticut River that links Norwich to downtown Hanover, New Hampshire. River Road is a 0.8-mile state highway connector between Vermont Route 10A at the Ledyard Bridge and U.S. Route 5 North along the Connecticut River. It does not have a state route number but is a designated state highway. Due to the proximity of River Road to the Connecticut River to the east and the railroad, significant changes to the road are not possible.

VTrans last updated highway sufficiency data in 2008. There is no reliable, current information available concerning the condition or capacity of state and federal highways servicing Norwich. A review of the Average Annual Daily Traffic Statistics reveals that all the figures are estimates interpolated from nearby counters. Therefore, actual changes are not identified.

Figure 19. **Estimated Average Daily Traffic Counts**

	1990	2000	2010	2018
I-91				
Exit 12-13			16,700	20,100
Exit 13-14		11,700	11,900	12,500
ROUTE 5				
Hartford line to Hopson Rd	3,385	5,200	5,000	4,700
Hopson Rd to Exit 13	4,790	5,700	4,200	7,200
Exit 13 to Main St	5,450	8,000	5,700	8,700
Main St to River Rd	1,125	920	1,300	1,800
River Rd to Route 132	1,635	1,700	1,700	1,500
Route 132 to Thetford line	1,305	1,300	1,300	1,200
ROUTE 10A				
Exit 13	10,540	11,900	12,400	11,400
Exit 13 to River Rd	12,370	12,800	13,700	13,000
River Rd to Hanover line	14,770	13,700	14,500	13,800

Source: VT Agency of Transportation

Town Roads

There are 96 miles of town roads. There are 14.5 miles of Class 2 roads (heavily traveled paved roads allowing travel from one town to another). There are 61.2 miles of Class 3 roads, passable by a regular passenger vehicle year round (11 miles are paved). There are 19.1 miles of Class 4 roads which are non-town maintained roads (bridges and culverts are maintained by the town). Some of these roads are trails. Norwich has 3.5 miles of legal trails, which are town owned rights-of-way not open to motorized vehicles.

Since 2018 towns in Vermont have been required to comply with Act 64, The Vermont Clean Water Act, by obtaining a Municipal Roads General Permit. This permit is intended to achieve significant reductions in stormwater-related erosion from municipal roads, both paved and unpaved. Municipalities will implement a customized, multi-year plan to stabilize their road drainage system. The plan will include bringing road drainage systems up to basic maintenance standards, and additional corrective measure to reduce erosion as necessary to meet a Total Maximum Daily Load (TMDL) or other water quality restoration effort.

Norwich residents' access to public transportation includes taxis, a regional bus system (Advance Transit), a van for seniors based at the senior center in White River Junction, and a district school bus system. There is also inter-city bus service to major cities and airports (Vermont Transit and Dartmouth Coach), train service (Amtrak), and a regional airport in West Lebanon.

The current Advance Transit bus system connects the Norwich village area and Route 5 South with hospitals, employment centers, and retail shopping areas throughout the Upper Valley. Advance Transit makes several stops in the Norwich village area, in downtown Hanover and around the Dartmouth campus, with service approximately twice an hour between 6:30 a.m. and 5:30 p.m. on weekdays. During peak commuting hours this includes a stop at the Norwich park-and-ride lot at Huntley Meadow. Bus ridership has been growing in Norwich for many years. The decision to make Advance Transit service free for riders spurred transit use. In 2016, 11,354 passengers boarded Advance Transit buses in Norwich. This compared to 2,168 in 1992.

A van operated by the White River Council on Aging provides transportation for seniors to the Bugbee Senior Center in White River Junction, medical appointments and shopping trips. Although donations are accepted, this service is largely supported by local and federal funding.

Directing future development in Norwich into the village and mixed use areas to be designated for future growth would facilitate the future expansion of public transportation by creating population and business-related centers within walking or bicycling distance to pick-up points.

Park-and-Ride Lots
Norwich built its first park-and-ride in 2009 at Huntley Meadow, off Turnpike Road, with 20 parking spaces served by Advance Transit. This has recently been improved with the addition of an EV charging station serving two parking spaces, and a bike fix-it station.

Regional Transportation Planning Issues Regional transportation planning in Vermont is now increasingly the responsibility of the regional planning commissions rather than state highway engineers in Montpelier. TRORC has a Transportation Advisory Committee (TA C) with representatives from its member towns. The TAC creates a Regional Transportation Plan that is coordinated with land use planning and is responsive to local needs and concerns. The Vermont Agency of Transportation will use the Regional Transportation Plan for determining which projects to fund.

In addition to TRORC, Vital Communities, a regional nonprofit organization based in White River Junction, hosts the Upper Valley Transportation Management Association (UV TMA), which is sponsored by Upper Valley towns, major Upper Valley employers and both regional planning commissions. The mission of the UV TMA is to provide leadership and education to promote planning, development, and implementation of transportation initiatives to

mitigate traffic congestion and reduce reliance on single-occupant vehicle commuting. The UV TMA provides information about alternative transportation, researches transportation issues, and works with towns and businesses on transportation issues and solutions. Norwich will participate actively in discussions of regional transportation issues through a variety of forums.

FACILITIES AND SERVICES

Objectives

- Provide the community services and facilities necessary to sustain the quality of life in Norwich.
- Meet the town's obligations under Vermont's Clean Water Act (Act 64).
- Coordinate strategic planning among town stakeholders, including the Recreation Department, the Marion Cross School and the Norwich Library, to develop cohesive approaches for early childcare through sixth grade.

Policies

- Focus development and any provision of utilities in areas of town already serviced by major roads and transit.
- Ensure that stormwater run-off from all developed land is managed at the source, thus avoiding a burden on public infrastructure.
- Seek solutions to the barrier that wastewater management presents to compact development in much of Norwich.
- Support expanded service area for ECFiber or other high-speed internet providers.
- Promote the development and use of a connected system of trails for recreation and enjoyment of natural and scenic areas in Norwich.
- Support provision of quality childcare (pre-K through grade six), education, vocational training and recreation services.
- Support the viability of high-quality infant and toddler care as a mechanism to make Norwich accessible for families of a wide range of income levels

Actions

- Maintain a capital improvement program that is aligned with the goals and objectives of this plan.
- Consider how to address barriers to development related to limitations on septic capacity, in particular through reviewing the findings of the 2005 study conducted by the Norwich Sewer Committee in light of current challenges and burdens.
- Develop a Stormwater Management Plan.
- Implement the strategic initiatives developed by the town's Trails Committee, including:
    - Identifying potential trail corridors to link existing trails with each other and with trail systems in neighboring towns
    - Developing a plan that identifies and promotes appropriate routes for different trail users, including those on foot, bicycle and horseback

    - Identifying and promote trails that relieve the burden on such popular trails as Gile Mountain
    - Identify how to expand visitor management and specifically parking at existing trailheads.
- Take a leading role in promoting opportunities and choices for parents in need of childcare by, among other things:
    - Creating a standing community committee to regularly convene stakeholders and experts on childcare and make formal policy recommendations to the Selectboard to improve the coordination and provision of childcare services in town
    - Exploring how to lower the costs of childcare provider background checks such as using the Norwich Police Department
    - Presenting to Town Meeting a proposal to support scholarships for low-income Norwich children at local childcare providers and ensure a living wage for teachers that care for Norwich children.
- Review existing land use controls to ensure that they do not present a barrier to home-based childcare providers.

Town Government Facilities

Norwich town government is based at Tracy Hall, located on Main Street. Most recently renovated in 1995, Tracy Hall comprises town offices, a gymnasium/auditorium and two meeting rooms. Parking is shared with the Marion Cross School. The facility is a focus of community activity including several Women's Club events, the Norwich Winter Farmers Market, and many others. The Public Safety building was completed in 2018 and houses the Norwich Police and Fire Departments. The Town Garage, adjacent to the town transfer station, has been recently renovated. The Department of Public Works (DPW) is located there. The Buildings and Grounds department comprises one FTE position, which reports to the Public Works Director. This department maintains Tracy Hall and other town buildings, in addition to extensive town-owned recreation facilities at Huntley Meadows. As of the writing of the plan there were no planned major capital improvements to municipal facilities.

Water Supply Infrastructure

The Town of Norwich currently has no direct role in public water supply. All properties, except for those within the Norwich Fire District, obtain potable water from on-site wells or small, state-regulated water systems. The District, managed by its Prudential Committee, operates a public water system serving the historic village center and some adjacent areas, roughly 20 percent of the parcels in Norwich. A 1988 well rehabilitation program resulted in

substantial water capacity beyond current needs. water service area has undergone only minor geographic expansions over the past 20 years. The last major expansion in the water service area was the addition of the McKenna Road properties.

Electricity Infrastructure
Green Mountain Power (GMP) provides electricity to utility customers in Norwich (see Figure 21 and Figure 22). Norwich has limited three-phase power available. There is a substation located in nearby Wilder. A VELCO 115kV transmission line passes through the western portion of town. As of 2018, there are no plans to significantly upgrade the electricity service to Norwich.

Telecommunications Infrastructure
Consolidated Communications operates the landline phone service, DSL and internet in Vermont. Comcast provides phone, internet and cable television service in much (biut not all) of Norwich. ECFiber provides high-speed internet and phone service over fiberoptic cable along several connector roads in Norwich, and plans to add more in the coming year.

There is one cellular phone telecommunications tower in town located primarily to provide service in the I-91 corridor. There is a small cellular phone repeater antenna in the village. Mobile phone service remains poor and unstable

Stormwater Infrastructure
Stormwater runoff management is a growing area of municipal operations due to the onset of the climate crisis and the increased awareness of damage to waterbodies and their ecosystems caused by sediment and contaminants. Over the next decade Norwich will be required to meet state clean water and road general permit requirements (Act 64). Over the same time increased attention will need to be paid to nitrogen laden run-off making its way to the Connecticut River. This will increase the need for town roads to have effective stormwater infrastructure. This includes swales, culverts and other engineered interventions designed to filter out sediment and contaminants and contain peak flows to avoid costly damage to public roads and private property.

Norwich has detailed requirements in its subdivision regulations preventing unmanaged stormwater from leaving the developed property. Nevertheless, the slow rate of development and the legacy of poorly regulated development will continue to impact the watershed for a long time.

Wastewater Provision

The private provision of on-site wastewater adds substantially both to the cost of development and ongoing operating expenses for all Norwich property owners. This acts as a brake on future economic development and residential growth. Examples of appropriate scale development that are currently constrained include converting large homes in the village into senior apartments or operating existing food service businesses for longer hours. The proximity of two municipal wastewater treatment systems to Norwich may provide cost-effective opportunities to ensure the ongoing viability of the existing village and possible new development nearby.

Solid Waste Facilities and Services
Residents may elect to use the transfer station operated by the town and/or contract with a local trash hauler.

Norwich is a member of the Greater Upper Valley Solid Waste Management District (GUVSWMD). This provides residents with additional options for disposing of hazardous waste at special collections in the District, and access to the Hartford Solid Waste/Recycling Transfer Center, where construction and demolition waste may be disposed, along with recycled materials and trash. The district's Solid Waste Implementation Plan (SWIP) is incorporated into this plan by reference.

Trails
Trails Norwich hosts a 697-acre reserve under the control of the National Park Service surrounding a segment of the Appalachian Trail. The trail follows the ridgelines of the Blood Brook watershed and is maintained by the Dartmouth Outing Club. In addition to this trail there is a significant network of trails on public and private land throughout town. The Norwich Trails Committee works with regional partners, including the Upper Valley Land Trust, the Upper Valley Trails Alliance, and the Upper Valley Mountain Bike Association, and town staff to promote the appropriate use and maintenance of town trails (see Figure 20)

Educational Facilities
The Norwich school system is made up of two school districts. The Norwich School District is responsible for educating children from kindergarten through grade six at the Marion Cross School in Norwich. The Dresden School District, which includes the towns of Norwich and Hanover, New Hampshire, serves Norwich children from grades seven through twelve in the Richmond Middle School and the Hanover High School, both in Hanover.

The Dresden School District was formed in 1965 and was the first interstate school district in the country. Before that time, Norwich educated students through eighth grade and high school students were tuitioned to other towns, primarily Hanover. The School Districts have their own boards, budgeting authority, and long-term planning processes as provided for by state statute. They present budgets and report on progress at Town Meeting each year.

The Marion Cross School, located adjacent to the Town Green on Church Street, has an enrolled population for the 2019-2020 academic year of 309 students. The Norwich School District is currently investigating solutions to a longstanding failure of the wastewater system leach-field (the Town Green), which is unsanitary. Voters can expect to be presented with information at Town Meeting 2020 or in a special election later that year.

Major capital programs at both the Richmond Middle School and Hanover High School were completed in the 2000s. The Richmond Middle School, which was formerly located on the same campus as the high school, moved to a new building on Lyme Road in 2005. A renovation of Hanover High School was completed in 2007.

Childcare

Most Norwich parents are employed, and they depend on childcare services for their infants, toddlers, preschool-age children, and children enrolled in kindergarten through sixth grade during the after-school hours, holidays and summer vacations. According to the 2011-15 ACS data from Norwich, only 8 percent (55 of 687) of school-age children and 49 percent (50 of 102) of preschool-age children live in a household that includes a parent who is out of the labor force.

The Marion Cross School offers a half-day preschool program, and an all-day kindergarten program. Marion Cross School also provides special education services to children starting at age three.

There are several childcare providers located in Norwich and many more in neighboring communities. The Childcare Center in Norwich serves children beginning when they are infants. The Norwich Nursery School has programs for toddlers and preschoolers during the school year. Other nearby daycare facilities serving Norwich families include FitKids Childcare at River Valley Club in Lebanon, New Hampshire; the Children's Center at Kendal at Hanover (a senior-living community); La Petite Creche in Hanover, New Hampshire; and childcare centers at Dartmouth College and at Dartmouth-Hitchcock Medical Center, which enroll children of employees of those institutions.

At all of these facilities, open enrollment spaces are severely limited. Norwich parents report waiting months or even years on multiple wait lists. By choice or necessity, some parents use the services of home daycare providers (i.e. not located in a dedicated facility). The Family Place, located on the border of Norwich and Hartford, offers referrals to licensed providers in the area. Websites maintained by area employers, including Dartmouth College, provide other helpful resources.

The Marion Cross School coordinates a small after-school program operated by the Child Care Center in Norwich, though open spaces rarely turn over. The town's Recreation Department is in the process of expanding its own afterschool offerings ahead of the 2020-21 school year.

Across age levels, demand consistently outstrips supply, presenting an opportunity for the town to explore deepening its own role and commitment to the issue.

Recreation

The Recreation Department organizes and facilitates programming for residents of all ages in Norwich. This includes adult programs for yoga, table tennis, basketball, pickleball, fencing, volleyball and bagua. Youth programs include baseball, basketball, lacrosse, mountain biking, soccer and trail running. Summer camps spanned the full summer break this year, covering a normal work week to ensure that parents had access to full-day affordable camps. In the past year the Weekday Wind Down pilot program was added for children in the down time between the end of school and commencement of organized afternoon activities and programs.

In addition to these offerings, the Recreation Department works collaboratively with the DPW maintaining Huntley Meadows, Barrett Playground/Bread Oven, and Ballard Park.

RESILIENCE

Objectives

- Mitigate potential flood and erosion hazards, and increase the community's resilience to flooding and other disasters through hazard mitigation planning (24 VSA § 4302 (c) (14) (C)).
- Prevent increased flood and erosion hazards resulting from inappropriate land use and development practices.
- Protect and restore floodplains and upland forest areas that attenuate and moderate flooding and fluvial erosion (24 VSA § 4302 (c) (14) (B)).
- Increase the use of flood insurance for structures within the Special Flood Hazard Area (SFHA).

Policies

- Guide development of new structures and impervious areas away from surface waters and encourage landowners to maintain or establish riparian buffers.
- Site public and private critical facilities outside of floodplains where feasible.
- Ensure that any development within the Special Flood Hazard Area (SFHA fully conforms to the National Flood Insurance Program (NFIP).
- Provide support to Norwich property owners through membership in the Community Rating System (CRS) of the National Flood Insurance Program.
- Ensure that stormwater runoff from developed land is managed at the source so it will not place an undue burden on public infrastructure, increase flood hazards or reduce water quality.
- Support efforts to reduce the severity of future floods, such as allowing rivers to access their floodplains, providing compensatory flood storage, and replacing/removing infrastructure constricting water flow

Actions

- Continue to participate and meet the requirements of the National Flood Insurance Program, so that owners within floodplains are eligible for flood insurance.
- Complete the Community Rating System (CRS) certification process to qualify for maximum state reimbursement for flood events and assist homeowners.
- Update and re-adopt the Norwich All Hazards Mitigation (HMP) and the Emergency Operations Plan (EOP), and ensure consistency with the goals, objectives, and policies of this plan.
- Implement the hazard mitigation programs, projects and activities identified in the Norwich 2015 All Hazard Mitigation Plan and subsequently adopted plans.

- Adopt revised land use regulations that will implement the objectives and policies of this plan related to flood hazards, riparian areas and stormwater management

Floodplains

The landform of Norwich is similar to many other communities in the Upper Valley – featuring winding streams draining narrow valleys, and backwater riparian features created as a result of flood control/energy generation dams installed in the early twentieth century. Roads and development compete with streams for space on valley floors introducing inevitable conflict. It is expected that this conflict will increase in magnitude and frequency as the climate crisis advances.

On August 28, 2011 Tropical Storm Irene moved through Vermont, and the resulting damage to public infrastructure in Norwich exceeded $1 million. On July 1, 2017, a severe storm impacted Norwich and caused an estimated $3 million in damage. Both events impacted roads, bridges and culverts. Flooding while frequently portrayed as a disaster, is better understood as a natural process that would occur with less damage to public infrastructure and private property where the following human activities are avoided:

- Development in floodplains conflicts with natural forces, which in turn leads to engineered protections of the poorly located investments. Such 'protections' include stream straightening, berming, and bank armoring to prevent erosion. These measures increase volume and velocity of flood waters causing even greater damage because floodwaters can no longer slow through meanders and access their floodplains, dissipating energy naturally.
- Undersized bridges and culverts contribute to ice jams, debris jams and blocked flow, causing unanticipated localized flooding
- Unnecessary and poorly planned tree clearing, compaction of soil, and addition of impervious surfaces all cause higher volumes and velocities of stormwater runoff. This increases the scouring of stream banks and sediment load, ultimately leading to more rapid downstream flooding.

Flood damage can be avoided by conscious human action. The principles of mitigation require understanding natural processes and forces at work in a stream or river, so that development in flood-prone areas can be appropriately sited and designed to avoid damage and contributing to flooding downstream.

Norwich is a member of the National Flood Insurance Program (NFIP) a federal program operated by the Federal Emergency Management Agency (FEMA). The purpose of the program is to improve floodplain management, and to assist communities and property

owners when severe flooding occurs. Property owners in Norwich can purchase flood insurance because the town is enrolled in the NFIP. To maintain eligibility, Norwich must continue to regulate development in the mapped floodplain, according to federal standards.

Norwich has 56 structures in the Special Flood Hazard Area (SFHA) (see Figure 7). 25 percent of these structures have flood insurance. Approximately 50 of these structures are dwelling units. There are no repetitive loss properties identified by the NFIP in Norwich. There are no critical or public facilities located in the SFHA.

The Community Rating System (CRS) is a program that recognizes communities for exceeding the minimum NFIP standards. Participation in this program earns insurance policy holders a five percent discount on flood insurance products. Belonging to CRS would also qualify Norwich for a higher state contribution through the Emergency Relief Assistance Fund (ERAF) in the case of a federally declared disaster, thus reducing the local pay-out for damage to public infrastructure. Joining the CRS is a key action of this plan.

Mitigation Plans

The risk to life and property associated with flooding in Norwich can be reduced through hazard mitigation. Norwich has an adopted Local Hazard Mitigation Plan (developed with TRORC) most recently approved in August 2015. The Local Mitigation Plan is adopted into this plan by reference, including the Hazard Mitigation Strategies: Programs, Projects and Activities on p38-39 of the 2015 plan. Persevering with the implementation of this plan will make Norwich more resilient, more adaptive to climate crisis changes and more responsive to disasters and disruptions, thus minimizing hardship

Norwich PC Solar Siting Working Group
December 17, 2024 Minutes **DRAFT**

Subcommittee members present: Mary Gorman, Ernie Ciccotelli, Jaan Laaspere
Steven True, Norwich PD/ZA

Public attending: Mary Albert, Paul Manganiello, Amy Stringer, Kathleen Shepherd, Stephen Gorman, Robert Gere

Meeting started at 6:32

1. **Approved Agenda -** unanimous

2. **Public comment** for items not on the agenda - none

3. **Correspondence**
   Acknowledged receipt of correspondence in packet

4. **Debrief of Planning Commission meeting**
   We discussed last week's PC meeting. It appeared more background communication from the working group was needed to create common understanding of the topic, including specifically what needed to change and how the town plan fit into other influences on solar siting.

   Gorman shared slides [see Appendix] attempting to capture the "givens".

   Laaspere outlined background information that would help clarify which variables were within the town's sphere of influence and what will be determined by other parties. Having summaries of these would be useful. These include state regulations (which will take precedence), regional commission policies, and commercial realities for solar developers. State regulations dictate many siting criteria including permissible forest cutting and wetlands disturbance. Commercial realities include the need for 3-phase power within a certain distance (~ ½ mile) of a prospective site.

   The group discussed whether the relatively minor changes to the plan that have been proposed were sufficient or whether a more significant overhaul was needed. Often multiple topics have overlapping influence, such as different types of development balanced with habitat and scenic preservation or the energy impact of transportation. How can we best reflect the desires of Norwich residents while quickly giving the town a more useful plan for solar siting?

   The solar siting topic comes down to the need for clear delineation of different areas of Norwich relative to potential for large ground-mount PV systems: Prime, Possible with mitigation and Prohibited, along with a clear and consistent process for evaluating specific projects.

This effort will use our scenic inventory, with this resource updated and maintained by the Planning Commission.

5. **Next steps**
   Incorporate comments into a comprehensive background presentation.

   Draft clear statements of justification and information needed for specifics such as solar project impact, prohibited / limiting criteria including slopes, scenic, ridgelines and riparian.

   Talk with TRORC to clarify their positions and justifications.

   Continue work to locate Prime areas for solar. Laaspere will contact the Energy Committee Chair about possible landowner and business contacts.

   Review 3-phase power map with the assumption that extending more than ½ mile reduces a project's viability – see appendix for map

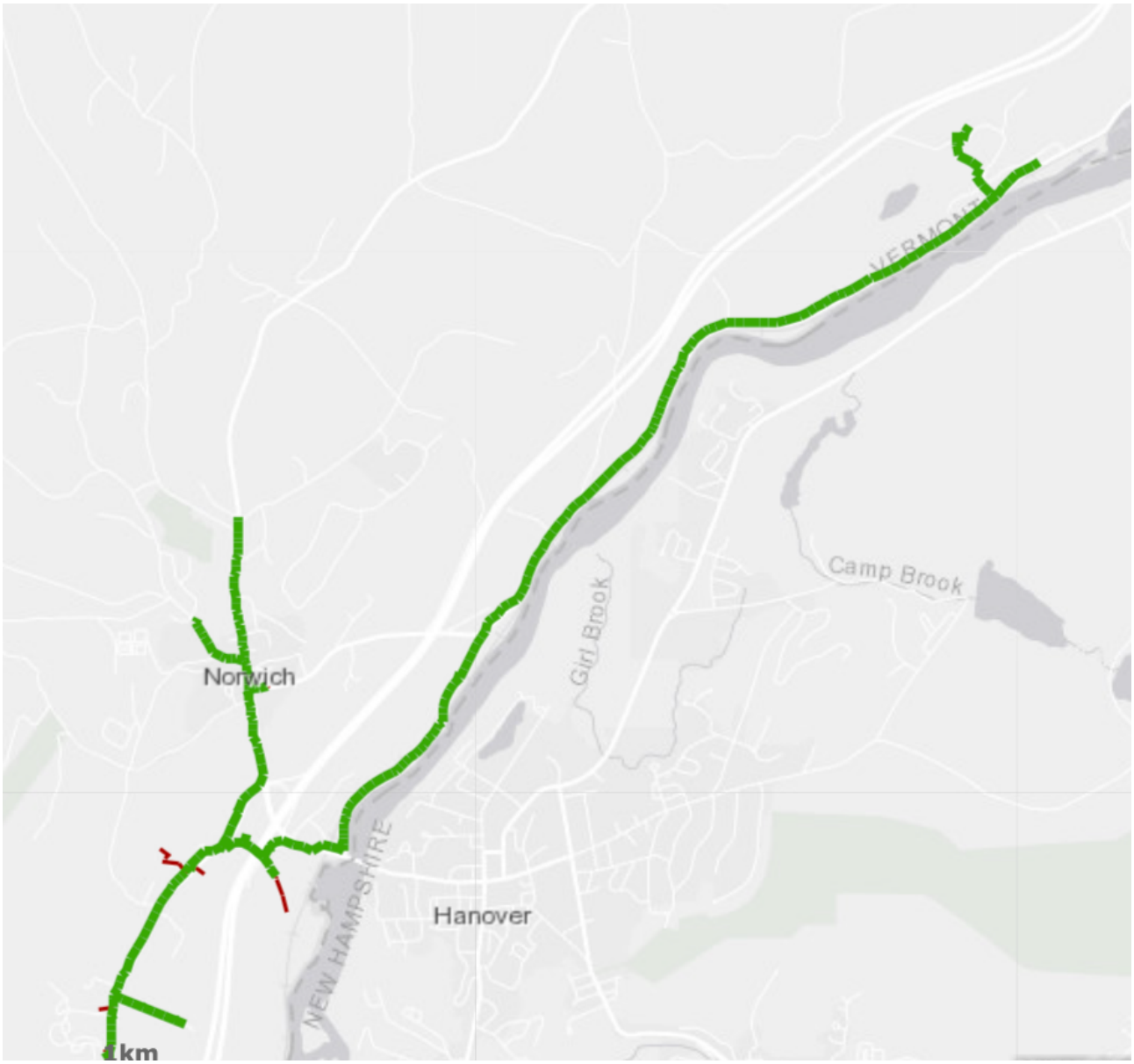
6. **Approved minutes of November 19 and July 16, 2024 -** Unanimous

Meeting adjourned at 7:34

Minutes submitted by Jaan Laaspere

Appendix:
3-phase power map of Norwich
Gorman presentation discussed in meeting

3-Phase power lines in Norwich



Solar Siting Subcommittee

December 2024

Agenda

- Base case – Setting the ground rules
  - Town Plan's role in solar siting
  - Look at the Town Plan 2020
  - 5100 Rule and New Guidelines

- Goals of the Solar Siting Subcommittee
  - Ensure that the Norwich Town Plan is effective as a regulatory document
  - Strive to meet a range of objectives in the town

- Options to explore
  - Surgical edits
  - Identifying specific sites as Preferred, Potential, and No Go

Setting the Ground Rules

- Solar Siting Reviews for CPG projects are based ONLY on Town Plans, not on Zoning Ordinances.
- Clear, regulatory language to review proposals is essential in order to ensure clarity for citizens, developers, Planning Commission (PC), Selectboard, and the state PUC.
- Per the state, solar generation facilities must be treated similar to other types and scales of development, in terms of allowable land uses in particular areas.
- While there are “quotas” or targets for energy for every town, the state now recognizes that towns have inherent limitations.

Norwich 2020 Town Plan MUST be changed

- Current Town Plan “automatically” or by “default” bestows preferred site status on nearly all of Norwich. Such provisions **are no longer valid** under the New Net-Metering Rule.
- The Norwich 2020 Town Plan essentially gave a **“blank check”** to solar development in nearly all of Norwich and yet VERY LITTLE development occurred.
- **WHY was there little development (outside of residential development)?**
  - Topography of the town
  - Limited access to three-phase solar

What are the short-term options for change for the Town Plan?

- OPTION ONE: Clarify with regulatory language – Focus of the Solar Siting
  - Specify the conditions and characteristics.
  - Use clear language (e.g. “must” and “shall”)
  - Given the lack of restriction in the current Town Plan, this will feel “more restrictive”

- OPTION TWO: Identify “preferred”, “potential” and “unsuitable” sites
  - Clearly identify in the plan specific areas
  - Requires mapping exercise
  - Consultation with landowners is beneficial

Option One: Solar Siting Effort thus far Surgical edits to clarify intent

- Removal of default preferred solar siting for most of town area per 5100 Rule.
- The projects may not be located on land that have any of the following characteristics:
  - Slopes greater than 15% (to be discussed)
  - In the Historic Village District; Ridgeline Protection Overlay Area ; Shoreline Protection Area; High Priority Forest Blocks (See map in Town Plan); Riparian areas
  - For discussion: in Scenic areas
- Review of potential glare from solar projects
- For larger solar projects (>500kW) the proposed edits say these larger projects are prohibited OR perhaps permitted in specific identified sites.
- Consider creating a Solar Energy district for preferred site areas.

Option Two: Identify Preferred, Potential and No Go areas

Preferred:

Gravel pits; Brownfield sites; Parking lots; Commercial and Residential Roofs.

From the State Document – other options:

Promote installation of solar projects

- where there is electric demand
- on locations where the land has already been impacted (e.g. roofs, parking lots, landfills).

Support updates to municipal building standards and energy codes that promote incorporation of solar photovoltaics for new construction and major renovations (including rooftops).

Promote or adopt building code requirements that require passive solar design and siting principles to be incorporated into new buildings that have a large hot water load (i.e. laundromats, hotels).

Develop guidelines for developers seeking preferred siting letters for net-metering projects

Prohibited – No Go - Areas

Need clarity of regulatory language and must be aligned with regulatory language of other development and must be specific regarding location by naming roads, ridgelines, districts.

- Riparian
- Shoreline
- Ridgeline
- Visible by “scenic” roads
- Vernal pools
- Steep slopes, e.g. greater than XX degrees