

The State of Solar Energy Conscious Land Use

An Analysis of How Zoning Regulations Influence
the Future of Solar Energy in Connecticut

Charles Vidich

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Encouraging Solar is State Policy

Public Act 78-314 Encouraged the use of solar energy through zoning

- The legislation did not mandate the use of solar energy

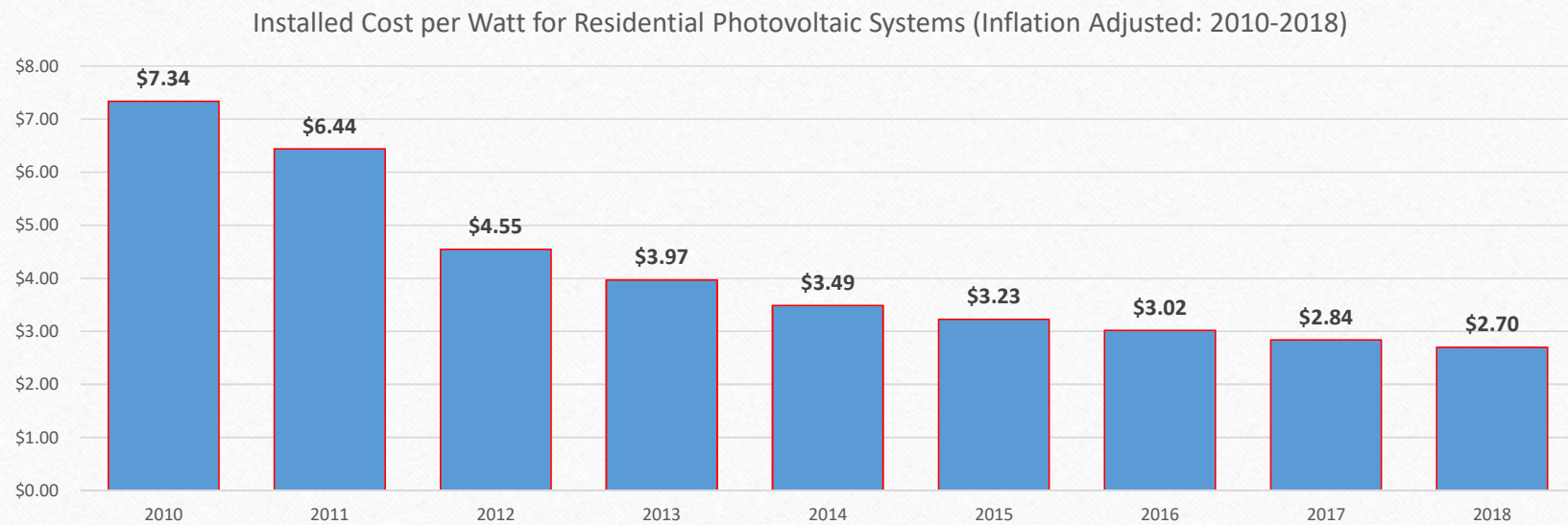
Changes in Energy Economics & Climate Change Heighten Solar Benefits

- The economics of Renewable energy have dramatically improved since 1978
- Awareness of the Role of Petroleum in Climate Change has also increased
- Connecticut requires Class 1 renewables to meet **40% of the state's electricity by 2030 – PA 18-50**

Have Connecticut's Municipalities Promoted Solar Energy Use?

What is the Current State of Solar Conscious Land Use Regulations?

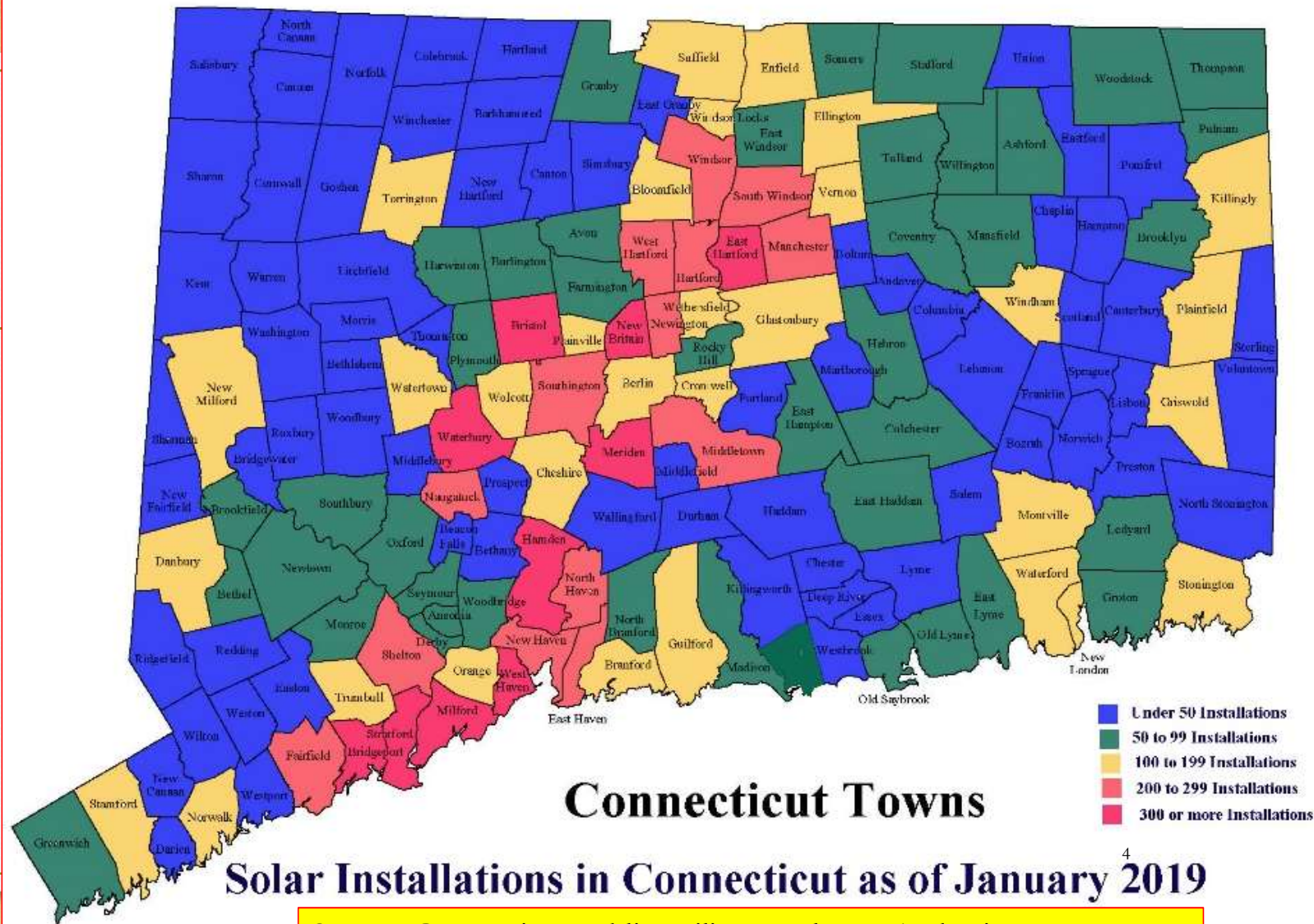
Installed Costs- Nearly 2/3rds Less than 2010



Source: U.S. National Renewable Laboratory, U.S. Solar Photovoltaic System Cost Benchmark: Q1 2018, November 2018, p. 22 3

Where is PV Solar Installed?

16,035 Solar PV
installations in CT
with 491 MW name
plate capacity.



Source: Connecticut Public Utility Regulatory Authority, January 2019

The State of Solar Conscious Zoning

A Comprehensive
Review of the State's
zoning has been
Completed

- It Reveals Significant Shortfalls in local efforts to Promote Solar

The Success of Solar
Energy Systems is
inextricably tied to
Zoning.

- Towns Lack guidance on appropriate regulatory approaches
- In many cases, zoning regulations create obstacles to its use

Specific Findings
from this study are
presented

- Recommendations for encouraging solar are provided
- Best practices are identified

What is a Solar Energy System?

Only 26
Municipalities have
defined a Solar
Energy System

- Lacking Definitions, most Municipalities take a Case by Case Approach

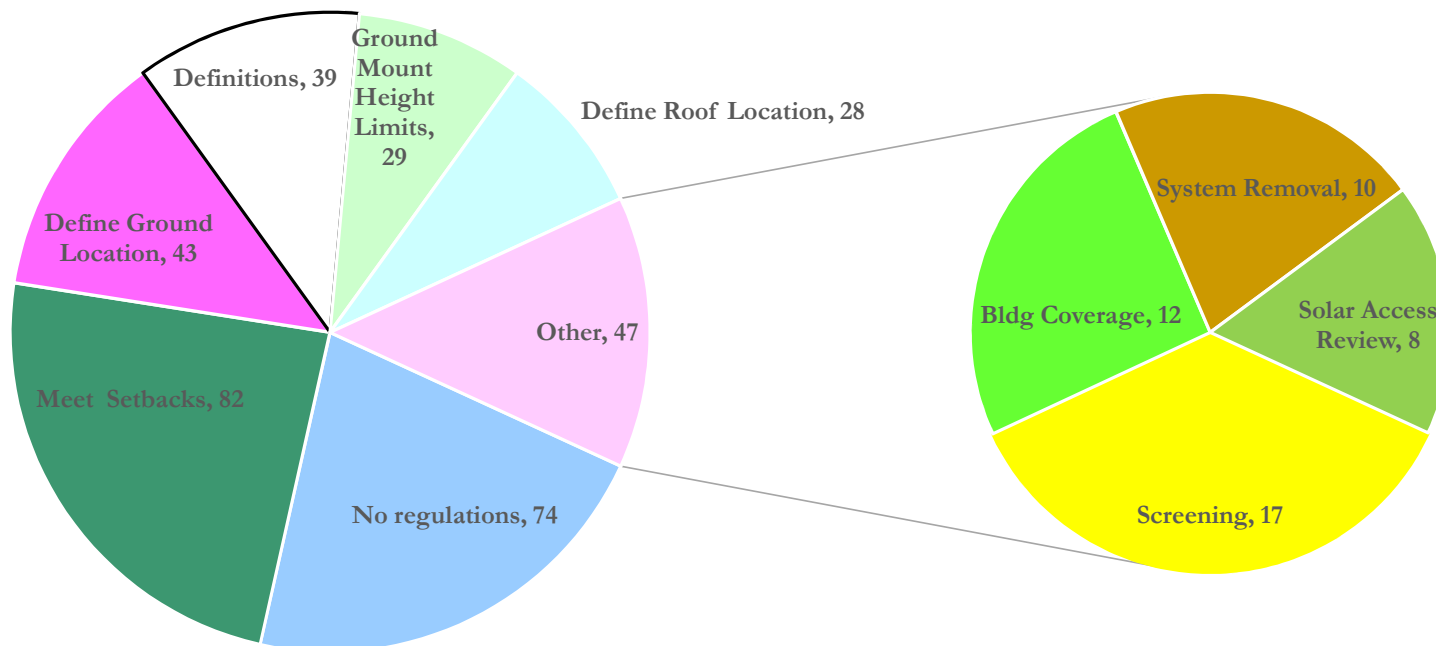
There are many
types of solar
energy systems

- Most definitions focus on Small Scale Solar (24):
 - Ground Mounted Solar Energy Systems
 - Roof Mounted Solar Energy Systems
 - Pole-Mounted Solar Energy Systems
- Few Regulate Large Scale Solar Energy Systems (13)
 - Large Scale Systems = Solar Farms & Industrial uses

What Rules Govern Solar Energy Systems?

- **Most Common Controls are as follows:**
 - Compliance with Setback Standards: 82 of 93
 - Limit Locations of Ground Mounted Systems: 43 of 93
 - Define Solar Energy Systems as Structures: 39 of 93
 - Height Limits for Ground Mounted Systems: 29 of 93
 - Limit Locations of Roof Mounted Systems: 28 of 93
 - Screening for Ground Mounted Systems: 17 of 93
 - Systems to meet Building Coverage Standards: 12 of 93
 - Removal of System after ceasing operations: 10 of 93
 - Solar Access Reviews: 8 of 93

Zoning Regulations Governing Solar Installations in Connecticut: 2019



Incentives for Solar Energy Systems?

- **Most Common Incentives:**

- Approve Roof Mounted Solar by Zoning Permit: 79 of 93
- Exempt Solar from Building Height Limits: 35 of 93
- Provide Solar Energy Districts for Large Scale Solar: 13 of 93
- Offer Flexible Setback Requirements: 9 of 93
- Provide Solar Access Protections: 6 of 93
- Approve Roof Mounted Solar by Building Permit: 4 of 93

Large Scale Solar Systems – Why so Few?

Thirteen Municipalities
Regulate Large Scale Solar
Energy Systems

- These are variously defined as generating 100 KW, 250 KW or an unspecified amount feeding electricity to the utility grid

CT Siting Council has
Exclusive Authority over
Grid Connected Systems

- Municipalities play an advisory role
- Council must consider views of municipalities
 - Zoning for large scale systems can be an important negotiating tool

Connecticut Municipalities
Need to be Aware of
Emerging Trends

- State focuses on large scale solar energy use
- Forewarned is to be forearmed over loss of forest and farmland.

What Additional Incentives are Needed?

- **Model Zoning regulations needed:**
 - **Standard Definitions for Solar Energy Systems**
 - **Exempt Solar from certain restrictions:**
 - **Flexible Setbacks** for ground mounted solar
 - **Standard procedures for screening** ground mounted solar
 - **Minimize Special Permit & Site Plan approvals**
 - Focus on zoning or building permit approvals
 - Minimize Commission workload
 - Depends on precise guidance for Zoning Enforcement Officer
 - **Use Solar Access Reviews**
 - Solar energy development requires solar access protection

Conclusions – Where Goes Our Solar Future?

- **Land Use Decisions Enable Solar Use**
 - **Building & Street Orientations – enables Solar**
 - **Right Sized Housing Reduces Energy Loads**
 - **Solar Access Protections are Critical**
 - Influenced by zoning height & setback restrictions
 - Supported through zoning review procedures
 - Enabled by solar easements in new developments
 - Created by incentives - Planned Solar conscious development
 - **Planning & Zoning Commissions are Gatekeepers for Solar Age**

Key Resources

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- **Model Zoning for the Regulation of Solar Energy Systems (2014)**
 - Massachusetts Executive Office of Energy and Environmental Affairs
 - **Planning for Solar Energy: Promoting Solar Energy Use Through Local Policy and Action (2014)**
 - American Planning Association
 - **Integrating Solar into Local Development Regulations (2012)**
 - American Planning Association
 - **Solar Community Engagement Strategies for Planners (2012)**
 - American Planning Association
 - **Connecticut Rooftop Solar PV Permitting Guide (2014)**
 - Connecticut's Clean Energy Finance and Investment Authority (CEFIA)
 - **Connecticut Solar Regulations Package (2019)**
 - **Summary of Significant Equations for Determining Shadow Length – A Reference Guide for Solar Access Evaluations (2019)**
 - Western Connecticut Council of Governments

Questions?

Charles Vidich

cvidich@westcog.org