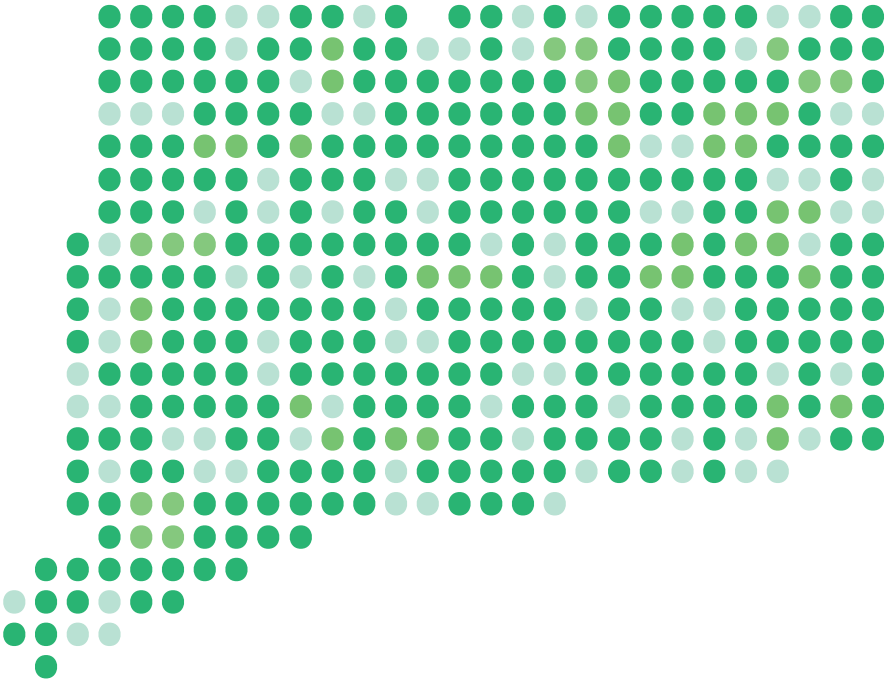
UConnPRSI

Connecticut Electrical Markets Policy Report

Preliminary Findings

BY Volodymyr Gupan **&** Charles R. Venator-Santiago



Policy Report | March 2025

UCONN
PUERTO RICAN STUDIES INITIATIVE

About this Report

This report was written at the behest of various members of the Connecticut State Puerto Rican and Latino legislative caucus. We were asked to examine what reforms could be enacted to reduce the energy rates for Puerto Rican and other working class rate payers residing in the state of Connecticut. The report provides an overview of our preliminary findings and recommendations. This report relies on publicly available data and some of the calculations may not reflect other conclusions based on data that is not readily available to the public.

About the Authors

Volodymyr Gupan (volodymyr.gupan@uconn.edu) is a data analyst and research assistant for the University of Connecticut's Puerto Rican Studies Initiative. Charles R. Venator-Santiago (charles.venator@uconn.edu) is the director of the Puerto Rican Studies Initiative.

Introduction

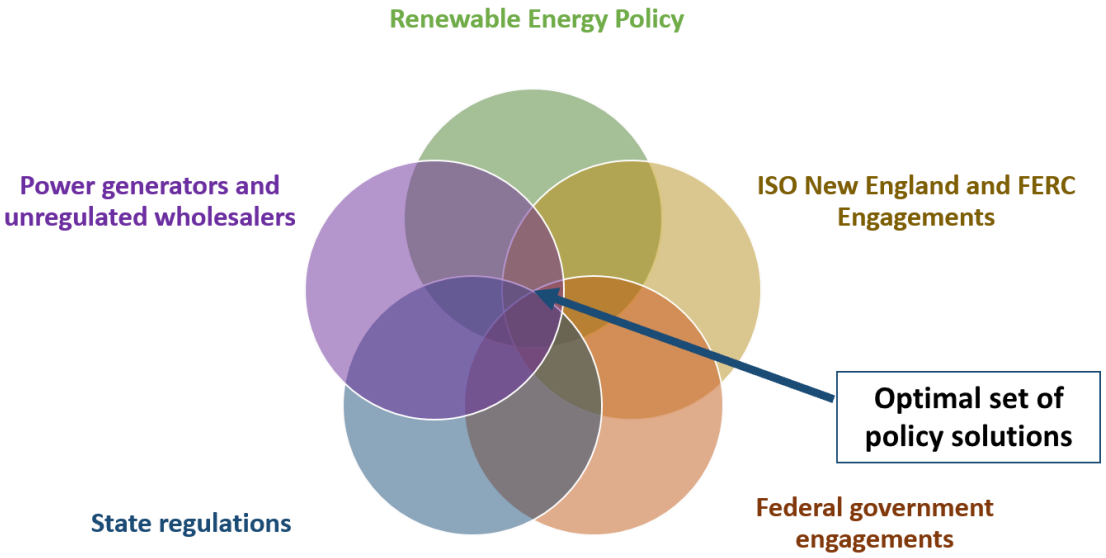
This report was written at the behest of various Puerto Rican and Latino state legislators, members of the Connecticut General Assembly's Puerto Rican and Latino Caucus. We were asked to examine what reforms could be introduced to reduce energy rates for Puerto Ricans and other working class residents in the state of Connecticut. This preliminary report identifies some key recommendations that, if implemented, can lead to significant reductions in the energy rates in Connecticut. Although our initial mandate was to explore energy reforms could help Puerto Rican consumers, we believe that our recommendations will benefit all rate payers in Connecticut.

This is a preliminary report that relies on publicly available data. We believe that there is more data that could be collected, or that is available, but we do not have access to this data at present. With more resources and better access to energy data, the UConn Puerto Rican Studies Initiative (UConnPRSI) would happily conduct more in-depth research on this topic. We would gladly collaborate with other researchers to provide more comprehensive analysis of Connecticut's electrical markets.

This report is divided in four parts. We make upwards of 43 recommendations to reform the state of Connecticut's energy policy. All recommendations and information in this report are interconnected and should be read as individual parts of a whole. Again, this report is only scratching the surface of a more complex energy problem in Connecticut.

We argue that any policies adopted by the state of Connecticut seeking to reform the energy sector should address at least five key policy areas. A piecemeal approach would provide some relief but would also open opportunities for various entities to exploit underregulated areas, exacerbating already existing local energy sector imbalances.

Figure 1. Five Key Energy Policy Areas



We believe that there are five key policy areas that are central to any energy reform in Connecticut, namely 1) Renewable energy policies; 2) Power generators and unregulated whole sellers; 3) State regulators; 4) Federal government engagement; and 5) ISO New England and Federal Energy Regulatory Commission (FERC) engagements (see Figure 1). These are key areas where the state of Connecticut should create new policies, update old policies, and collaborate with the private sector as well as with regional and federal entities. This collective approach could create a balance between environmental impacts, electricity rates, reliability of the grid, fiscal solvency and compliance with federal rules and regulations.

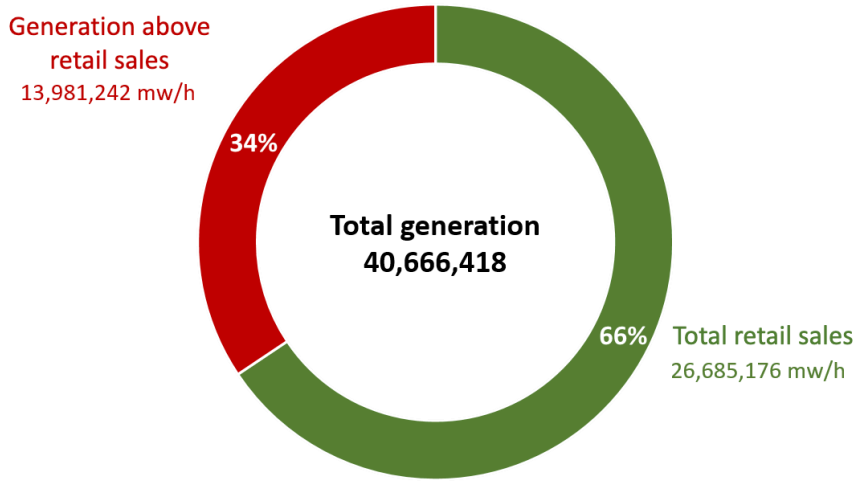
This report does not explore the possibility of rolling back the deregulation of electrical markets. While having regulated electricity or even not-for-profit electrical generation and utilities is likely to be beneficial to the state in the long run, the approach in this report is to create the best possible system under existing circumstances.

Surface level research demonstrates that states with vertically integrated electrical markets on average have lowest electricity rates. States that are not part of multi-state Regional Transmission Organizations (RTOs)/(ISOs) also on average have lower rates than those that are part of such operators.

Renewable Energy Policy

Power plants on Connecticut soil are generating more electricity than the state as a whole is consuming. The energy that is produced over the consumption level is being sold to customers outside of the state's borders.

Figure 2. Energy Generation to Retail Sales in Connecticut, 2023



Source: ISO New England Forward Capacity Market - Summary of ICR and Related Values

Source: US Energy Information Administration, Connecticut Electricity Profile 2023 https://www.eia.gov/electricity/state/connecticut/

Source: Connecticut General Statutes PA 17-3, JSS (Millstone Power Purchase Agreement)

Source: Connecticut Public Utilities Regulation Authority https://portal.ct.gov/pura/rps/renewable-portfolio-standards-overview

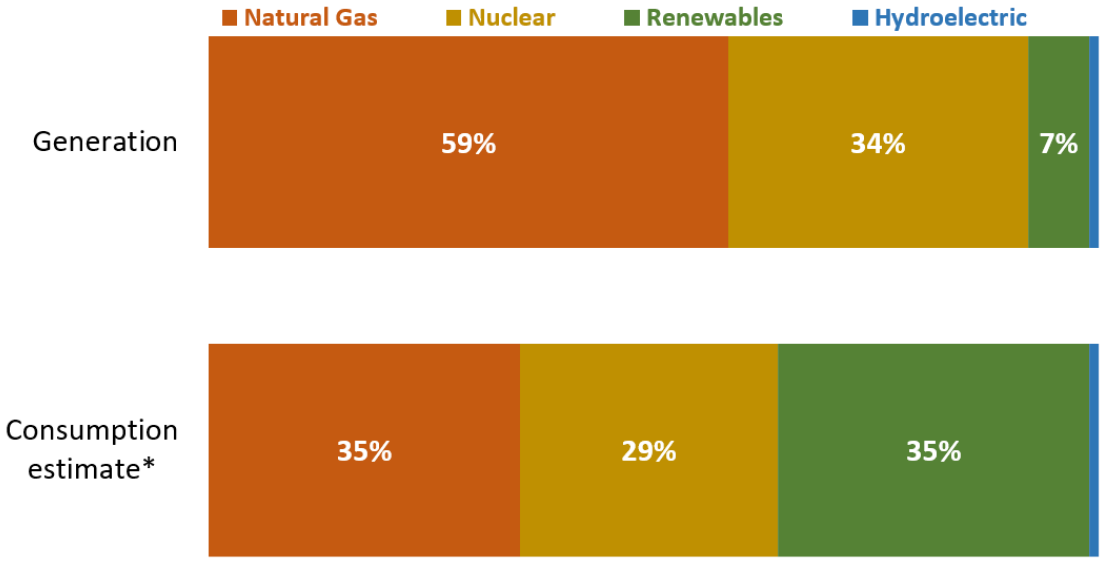
Source: Connecticut General Assembly, Office of the Legislative Research, Report on Millstone Power Procurement www.cga.ct.gov/2020/rpt/pdf/2020-R-0203.pdf

Figure 2 documents the energy generation to retail sales in Connecticut in 2023. Total energy retail sales in Connecticut accounted for two-thirds of the energy generated in the state. A third of the energy generated (13,981,242 mw/h) was not sold in Connecticut.

Every state in the United States that is a net exporter of electricity, whether it is deregulated or not, and whether it is a part of a regional RTO/ISO or not, has prices that are generally lower than their neighboring states, and certainly lower than states that are net importers of electricity. Despite Connecticut's surplus generation, its electricity rates are one of the highest in the nation. Per United States Energy Information Administration, in 2023 average price of electricity in Connecticut was the third highest only behind Hawaii and California.

Most of Connecticut energy generation comes from natural gas and nuclear power, however, state mandates require that upwards of a third of the electricity consumed in the state should come from renewable sources.

Figure 3. Electrical Generation and Consumption
Connecticut, 2023



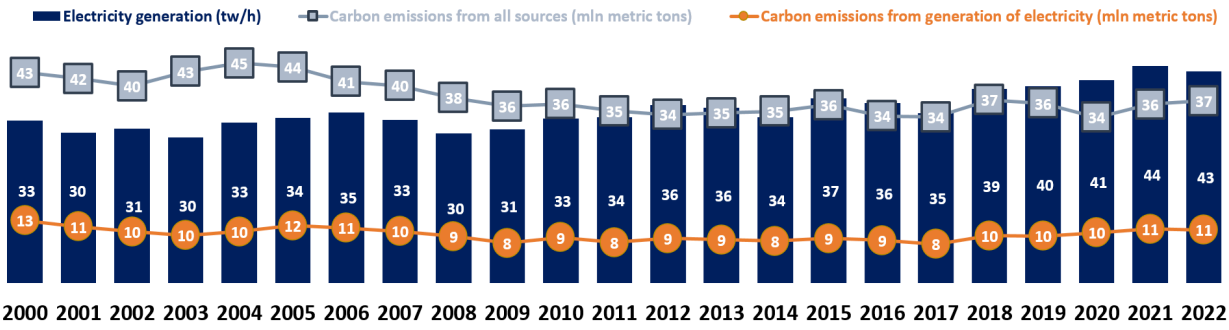
**Only electric utilities in the state of Connecticut can approximate energy from which sources is being consumed by the ratepayers, this estimate is based on public access data and Connecticut laws*
Source: US Energy Information Administration, Connecticut Electricity Profile 2023 https://www.eia.gov/electricity/state/connecticut/
Source: Connecticut General Statutes PA 17-3, JSS (Millstone Power Purchase Agreement)
Source: Connecticut Public Utilities Regulation Authority https://portal.ct.gov/pura/rps/renewable-portfolio-standards-overview
Source: Connecticut General Assembly, Office of the Legislative Research, Report on Millstone Power Procurement www.cga.ct.gov/2020/rpt/pdf/2020-R-0203.pdf

Figure 3 demonstrates how Connecticut generates its electricity and how a formal consumption structure looks like. The distinction between formal and real consumption is crucial, as the state's renewable electricity consumption goal relies mostly on Renewable Energy Certificates (RECs).

Renewable Energy Certificates are accounting attributes of the clean energy. Each megawatt of renewable electricity that is sold to the grid, has a REC attached it, while energy can be used in Florida, the REC associated with it can be sold in Connecticut to meet a renewable electricity requirement above what state can produce by itself. RECs were in use in the United States in a systematic way for over two decades, however currently there is no credible research that suggests that RECs in any way shape or form enhance investments into clean energy.

Overall emissions in Connecticut were mostly declining until roughly 2018, when except for 2020, emissions started increasing once again, surpassing 2009 levels.

Figure 4. Connecticut Carbon Emissions in Millions of Metric Tons per Year by Terawatt/hours Generated



Source: US Energy Information Administration, Connecticut Electricity Profile 2023 https://www.eia.gov/electricity/state/connecticut/

Figure 4 compares trends in electricity generation (terawatt/hours) to total carbon emissions and emissions from electricity generation (millions of metric tons). Despite ambitious emission reduction goals, the state was not able to effectively reduce its emissions past economic downturn of 2009. Data in this figure suggests that while formal consumption includes renewable energy on paper, it is not likely that this energy is generated from a renewable source. It is only priced as such.

Existing state and regional policy did not diminish fossil fuel electric generation, to the contrary it increased it between 2018 and 2022. During this period more energy was produced in state and most of that energy was coming from fossil fuels (natural gas). That's why emissions are also higher both from generation of electricity and total emissions.

The Connecticut Renewable Portfolio Standard (RPS) was established in 1998. On paper, RPS demonstrates significant progress towards the state's renewable energy goals. In reality most of the capacity provided through RPS is generated outside of Connecticut, and the largest source of this energy is wind power. In contrast, most of the energy capacity generated in state comes from solar sources, which are a notoriously unreliable source of electricity.

Renewable Portfolio Standard is a policy tool that sets specific renewable energy consumption goals per year and types of renewable energy that qualify under the standard, it combines both quota and feed-in tariff approaches towards promotion of renewable energy. Figure 5 shows the total nominal capacity of all generation plants that are compliant with the Renewable Portfolio Standard both in and out-of-state.

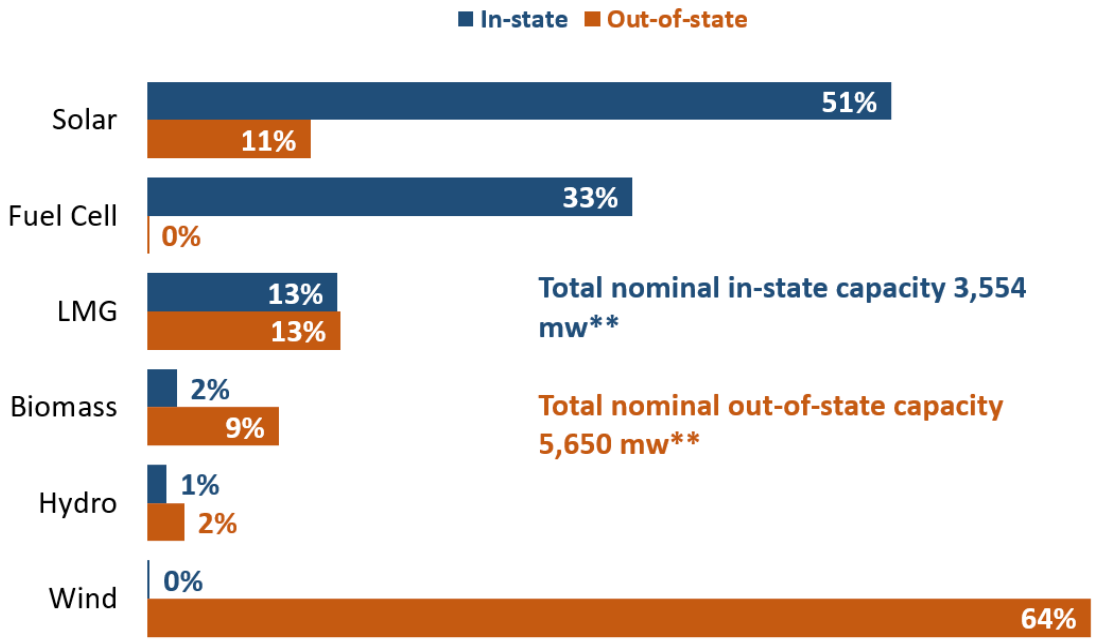
The quota approach to renewable energy policy is used to describe government's establishment of a certain percentage of renewable energy that will be sold in state's retail markets.

A feed-in tariff approach describes how the government establishes a direct fixed pricing scheme through legislation. Utilities are also paying an added premium on energy for such power purchase agreements (PPAs) with local renewable electricity power plants, compared to the wholesale price as spelled out in Public Law 18-50.1[1]

While nominal capacity of all RPS compliant resource looks impressive, none of these resources can provide a stable current and they all have different capacity factors that are applied to them when the total capacity calculation for the whole state is required.

1 *Available at: https://www.cga.ct.gov/2018/act/pa/pdf/2018PA-00050-R00SB-00009-PA.pdf*

Figure 5. Share of Specific Renewables From RPS Certified Facilities



**Resources that provide less than 1% of total capacity were removed*
*** Actual capacity cannot be established per data available*
Source: Connecticut Public Utilities Regulation Authority https://portal.ct.gov/pura/rps/renewable-portfolio-standards-overview

Summary of Existing Policy Effects on Electricity Supply, Rates and Carbon Emissions

To sum up, publicly available data suggests that Connecticut's current renewable energy policies have not effectively reduced emissions or the carbon footprint in the state. Connecticut's renewable energy policy is based on a hybrid of quota and feed-in tariff-based approaches.

The term quota approach for renewable energy policy is used to describe government's establishment of a certain percentage of renewable energy that will be sold in state's retail markets. Such approach could have been effective if state government also established a generation quota that mirrored the consumption quota, thus forcing existing power generators to diversify their generation portfolios.

Implementation of renewable energy production or generation quotas is impossible due to existing FERC rules, since mandating specific types of energy produced in deregulated markets amounts to wholesale market manipulation, at the same time implementation of consumption quotas through use of RECs have led to mostly non-existing results for the state's environment, while increasing rates paid by residents.

The feed-in tariff approach engages the government in establishing direct fixed pricing schemes through legislation, where utilities by signing power purchase agreements (PPAs) with local renewable power plants are simultaneously paying an added premium for such energy compared to wholesale price as spelled out in Public Law 18-50. Another way to implement this approach is through solicitations for specific generation projects and PPA's for renewable energy attached to these projects. While nominally a more effective approach, implementation of this policy by the state has very few results to show off when compared to the electricity volumes consumed in-state.

Current energy policy also has no space for existing nuclear and hydro resources. While they

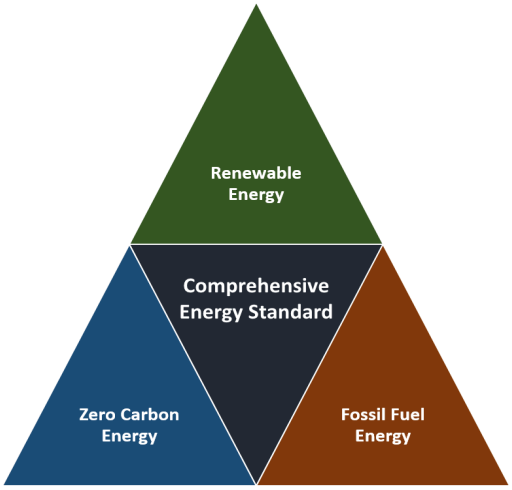
have some potential adverse environmental effects, they do not produce carbon emissions. Existing Zero Carbon policy is a construct created by the legislature in 2018 during the implementation of the Millstone Power Purchase Agreement. It is a hollow concept that currently creates more upward pressures on the price of electricity instead of mitigating it since this policy is not integrated with state's Renewable Portfolio Standard.

Under current market conditions, for better or worse, gas powered plants in Connecticut are here to stay. The state of Connecticut, however, needs to find a solution to integrate these natural gas power generators into its carbon neutral future. Without a comprehensive energy framework that addresses both state's goals to transition to a carbon neutral future and interests of the existing natural gas power plants the state of Connecticut is bound to deal with same problems over and over again, where no matter how much renewables are brought online, levels of emissions would remain higher than in neighboring states. The reality is that these power plants will keep working in the state and will keep polluting, simply because of ample regional demand, while residents aside of those being employed at these plants would see little benefit. These plants are the resource that the state has, and they should be integrated into the wider policy network, not as a nuisance or an afterthought, but as a valuable partner that might need to adjust how they generate electricity down the line when new carbon sequestration technologies become market viable.

Renewable Energy Policy Reform: Comprehensive Energy Standard Recommendations

The current Renewable Portfolio Standard should be replaced with an alternative that considers the current energy mix but also provides for a carbon free future at an affordable cost. We propose a new policy framework – a Comprehensive Energy Standard (CES) (see Figure 6). The features of the CES should include the following:

Figure 6. Comprehensive Energy Standard



1. *We recommend adopting a variable, adjustable schedule of renewable energy adoption that is tied to in-state generation or to generation by corporations that have direct transmission into the state and are headquartered in Connecticut. Per this schedule any renewable resource facility would be guaranteed a purchase of full generation volume based on fair market price for the specific type of energy. Should the wholesale price in ISO NE open market be higher than the fair market price, then that energy would be purchased at wholesale price with deferred adjusted cost schedule to protect ratepayers from sudden spikes.*
2. *We recommend implementing a new competitive bidding system for renewable energy projects designed to benefit the state of Connecticut.*
3. *We recommend that all hydropower facilities and all nuclear power facilities in the state should be guaranteed purchase of their existing generation volume through state solicited PPAs. We also recommend a more balanced approach towards negotiations with Millstone Power Station to ensure that Connecticut receives the best possible rate, comparable to what state ratepayers are currently being charged by, Seabrook Nuclear Power Plant in New Hampshire.*
4. *The rest of the power should come from what is available in-state at a fair market price whether it is a fossil fuel generated electricity or import from other states/countries.*

None of these purchases should be guaranteed in the same way as purchases of renewable or nuclear/hydropower energy at the state level.

5. *Current RPS contracts and obligations should be honored until their expiration date.*

Renewable Energy Policy Reform: Renewable Energy Recommendations

The current rigid PPA and RPS/REC system should be replaced with a system that is more flexible and market oriented but also one that benefits different areas of the state:

6. *The state should design a comprehensive map with specific renewable energy corridors that are best suited for specific parts of the state, so that local transmission upgrades would go hand in hand with renewable energy projects.*
7. *Instead of relying on fixed Power Purchase Agreements, the state should organize competitive dynamic PPAs or adjustable PPA auctions, where renewable project would offer competitive bids for two-price components.*
    - *A first component should create a strike price of energy that should not be higher than the energy that is traded at the ISO New England.*
    - *A second component should be the use of an adjustable dynamic price, that fluctuates depending on wholesale market conditions and guarantees a specific price floor to project developers. This price ladder would dynamically adjust to wholesale market prices, decreasing if wholesale market prices are over a certain threshold or increasing if the prices on wholesale market are low.*
    - *Such dynamic pricing would solve three issues: 1) it would ensure compliance with FERC and ISO NE rules, and 2) would protect renewable energy power generators from extremely low prices, and 3) would reduce price duck curves that are associated with large volumes of renewable energy at different times of the year.*
    - *Auctions should be done in specific renewable energy corridors for specific types of energy, to ensure that specific type of generation fits local conditions.*
    - *Power generators who win in these auctions should be awarded long term contracts. After the expiration of these contracts the state should guarantee purchases of electricity at fair market prices as long as it is in the best interest of ratepayers.*

- *All bidders have to commit to employing at least 95% of their workforce in-state, all construction contracts would have a first priority for local contractors, and companies should establish their headquarters in the state, or create a subsidiary responsible for managing bid related projects that would be headquartered in the state. Such headquarters should not be further than 15 miles away from the biggest population center in a specific renewable resource corridor.*

Renewable Energy Policy Reform: Zero Carbon Resources

We recommend the following policy proposals for the zero-carbon energy tier:

8. *The state should explore the potential for the development of small modular nuclear reactors, and nuclear reactors that run on spent fuel. Both technologies are popular in Europe, in fact one of the Connecticut's biggest trading partners – France, is a leader in both. General Electric Hitachi corporation headquartered in North Carolina, invested heavily in projects related to spent fuel reprocessing in Japan with a high degree of success. There are currently no explicit bans on either technology by the federal government, and Connecticut has an opportune moment to both invite these corporations to establish their presence in the United States with Connecticut headquarters while luring developers of AI datacenters with the promise of cheap and stable power supplies. There is unlikely to be much opposition from the federal government for such moves as it fits AI related agenda, and agenda related to encouragement of corporate, technological and manufacturing presence of international companies to boost U.S. economy.*
9. *Additionally, the U.S. Federal Government stores most of the spent nuclear material that cannot be currently used by existing nuclear power plants. The adoption of spent fuel technologies in Connecticut would provide a policy win to both the state through access to cheap nuclear material for new power plants, and to the White House for finding a solution for an existing and proven environmental headache, that it has to deal with and dedicate significant resources to maintain and contain. Spent fuel usage reduces the radioactive emissions of spent materials by 96%, and decreases electricity costs by*

about 20%-35%. This technology does need some significant investments, and cooperation with federal government is crucial, yet it has also a potential to create a brand-new industry in the state that can significantly boost state's GDP.

10. *Existing natural gas power plants should be given an option to retrofit their generators with carbon sequestration technologies, such as direct carbon capture or integrated natural gas fuel cell generation. Any natural gas power plant in the state, that retrofits its turbines or modernizes them to reduce carbon emissions by 90% and adds additional renewable energy component, such as solar, wind, or pumped storage, to balance out the remaining emissions, would qualify for the second tier of the CES as a zero-carbon producer. Installation of small modular nuclear power reactors would not count towards the balancing requirement.*
11. *If in 5 years after carbon sequestration or carbon reduction technology for gas power plants becomes viable, and natural gas generators are not adopting this technology, the state should levy a carbon tax of 5% of the average yearly wholesale price of mw/h at the ISO NE market for each metric ton of CO2 emitted.*

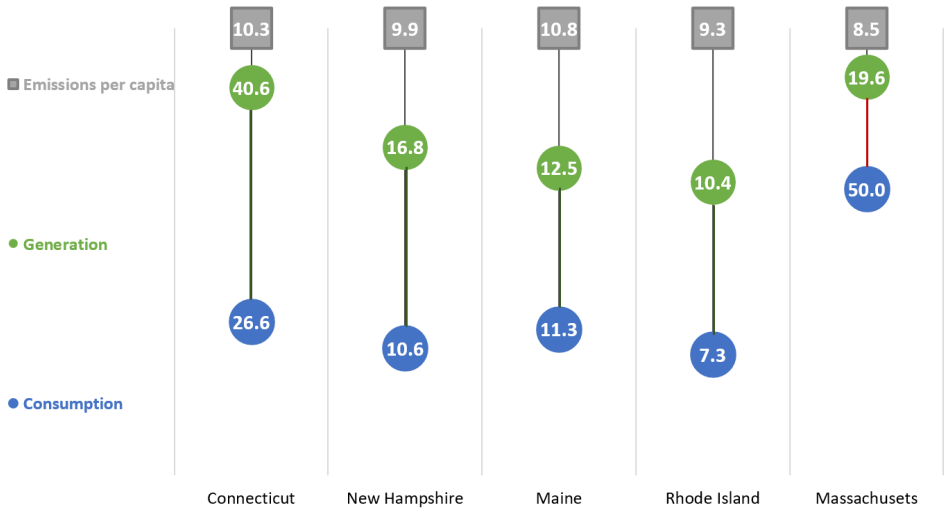
Additional Avenues for Cooperation with the Federal Government

12. *Under president Biden the federal government appropriated significant funds for renewable energy infrastructure, these funds are now under threat from the current administration. State officials can petition the federal government to keep the money but repurpose it for general upgrades to state grid and transmission updates that are tied to potential new data centers opening in the state and fit current administration's agenda.*
13. *The legislature can petition the White House for a waiver of the Jones Act for the shipment of liquefied natural gas. The current energy emergency state declared by President Trump, allows for such waivers. The White House is also unlikely to face any opposition from unions or dock workers related to such waiver, since there is not a single Jones Act compliant LNG tanker or company in the United States. Such a waiver would dramatically reduce the prices of natural gas in the region.*

Connecticut's Relationship to ISO New England

Massachusetts has the lowest emissions out of all deregulated electricity states in ISO New England, it also has the highest annual electricity deficit compared to neighboring states and nationally.

Figure 7. Terawatt/hours to per capita Emissions by New England states in 2022



Source: US Energy Information Administration, States Electricity Profiles 2023 https://www.eia.gov/electricity/state/

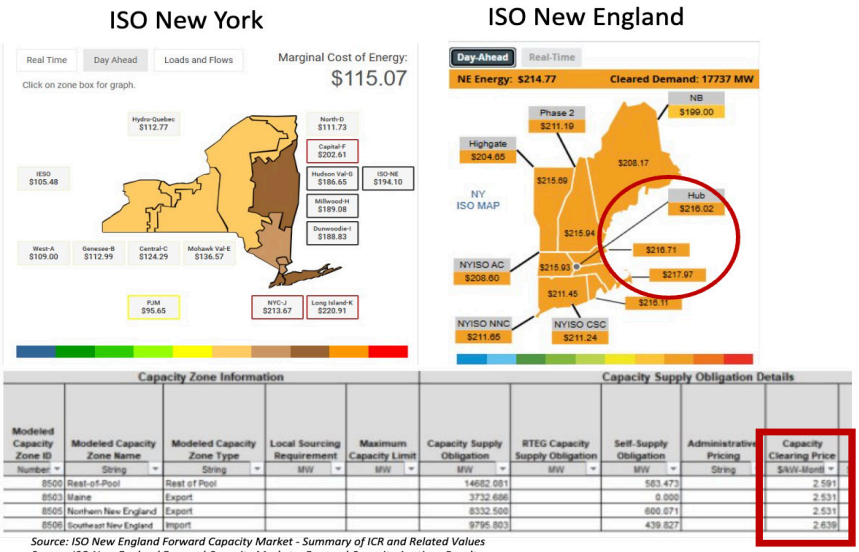
Figure 6 shows level of emissions in relation to generation and consumption of electricity in five deregulated electricity states in New England.

Electric plants in four out of the five New England states produce more energy than their respective states consume. Massachusetts is the only state that consumes more than it generates. Massachusetts also has the lowest level of emissions per capita, by about two metric tons of CO2 emissions less compared to Connecticut.

Between 1994 and until the California energy crisis of 2001, deregulation of electricity markets was hailed as the future where market competition would reduce electricity rates and increase reliability of the grid. However, the reality is that by 2025 ISO New England's rules created a socialized regional market structure where wholesale prices are smoothed out across the region and price differences per megawatt hour between resource constrained areas and the rest of the regional electricity pool are on average about $10 per megawatt hour. Among deregulated states in ISO New England, Massachusetts is the only state with a significant electricity defi-

cit. Yet the wholesale price of electricity in the state, and specifically in the Boston metropolitan area, is only marginally higher than the price in Connecticut, a state that produces more energy than it consumes.

Figure 8. ISO NY and ISO NE Daily Prices



Modeled Capacity Zone ID	Modeled Capacity Zone Name	Modeled Capacity Zone Type	Local Sourcing Requirement	Maximum Capacity Limit	Capacity Supply Obligation	RTEG Capacity Supply Obligation	Self-Supply Obligation	Administrative Pricing	Capacity Clearing Price
Number	String	String	MW	MW	MW	MW	MW	String	$/kW-Month
8500	Rest-of-Pool	Rest of Pool			14682.081		583.473		2.591
8503	Maine	Export			3732.686		0.000		2.531
8505	Northern New England	Export			8332.500		600.071		2.531
8506	Southeast New England	Import			9795.803		439.827		2.639

Source: ISO New England Forward Capacity Market - Summary of ICR and Related Values
Source: ISO New England Forward Capacity Market – Forward Capacity Auctions Results
Source: : ISO New England Real Time LMP Map (recorded 2/17/2025 7:00 pm EST)
Source: : ISO New York Real Time LMP Map (recorded 2/17/2025 7:00 pm EST)

Source: ISO New England Forward Capacity Market - Summary of ICR and Related Values

Source: ISO New England Forward Capacity Market – Forward Capacity Auctions Results

Source: : ISO New England Real Time LMP Map (recorded 2/17/2025 7:00 pm EST)

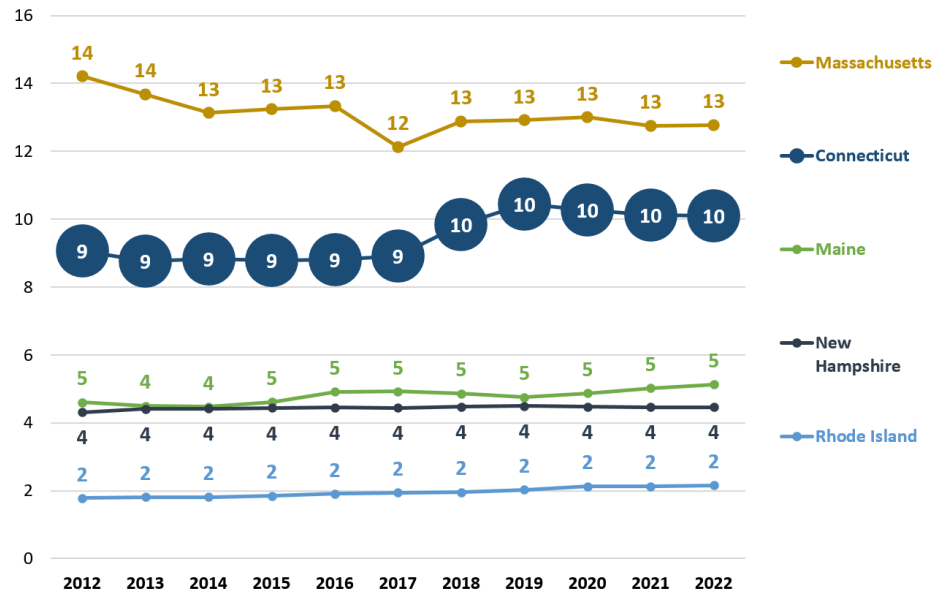
Source: : ISO New York Real Time LMP Map (recorded 2/17/2025 7:00 pm EST)

Figure 8 provides a real time snapshot of daily prices for both ISO New York and New England. As this snapshot reveals, the two ISO's use different market rules. Part of the difference between the two ISOs is due to the forward capacity auction rules, and other regulations. Forward capacity auctions are a regulatory tool used by Independent System Operators to ensure that the specific region has enough generation capacity for peak times.

Results of the most recent ISO NE forward capacity auction show that the price in resource constrained Southeast New England (Boston metropolitan area and state of Rhode Island), are only marginally higher compared to the prices of the region. All while Massachusetts as a state has an electricity deficit that is about 61% higher than its available generation capacity, the biggest deficit relative to consumption of all US states. Yet the price of electricity in the state was only marginally higher in 2024, and in 2023 it was lower compared to the price of electricity in Connecticut.

Figure 9 documents how New England states managed their total electric capacity between 2012 and 2022.

Figure 9. Electrical Capacity Trend, ISO New England, by Gigawatts



Source: US Energy Information Administration, State Electricity Profiles 2023 https://www.eia.gov/electricity/state/

All deregulated electricity markets in ISO New England, except for Massachusetts, increased their electric capacity between 2012 and 2022.

Recommended Changes to Connecticut's Relationship with ISO New England and FERC

Publicly available data related to ISO NE forward capacity rules and forward capacity auctions, clearly shows that, ISO sacrifices market competition for the benefit of grid reliability. Massachusetts is exploiting current ISO New England market rules, whether ISO NE acknowledges it or not. Existing real time prices and historic forward capacity auction results both demonstrate that ISO NE has sacrificed competitiveness of the wholesale market in its pursuit of a reliable grid. Simply suggesting that the resulting high electricity prices are the result of geographic location and cold climate are factually not true. The ISO New York, a single state independent state operator, has a different set of rules, while having similar climate and neighboring ISO NE. A more detailed analysis of all ISO rules and historical pricing data is required to strengthen argument that ISO NE is not treating states in its zone equally and that its rules are protecting prices for the sake of two states, Massachusetts and Rhode Island, one that refuses to produce enough electricity for internal consumption, and the other that does not invest enough in its transmission.

We believe that other states that produce more energy than they consume and also have deregulated markets such as New Hampshire and Maine are likely to follow Connecticut's lead if the state implements the following recommendations:

14. *We recommend that Connecticut ask ISO NE to relax forward capacity market requirements and structure them in a more competitive manner, similar to ISO NY.*
15. *We recommend that Connecticut ask ISO NE to use market-based mechanisms that would compel states with inadequate capacity or high congestion to pay more than others or to install more generation capacity in their states.*
16. *We recommend that Connecticut ask ISO NE to require states to maintain 80% of its required capacity in specific zones instead of relying on imports from neighboring zones.*
17. *If ISO New England does not change its rules and stops favoring the state of Massachusetts over the other member states, we recommend that Connecticut file a complaint with FERC suggesting that the ISO NE market is overregulated and is non-competitive, and that specific zones should pay real market-based price for the energy and capacity that missing in these zones.*
18. *We recommend that Connecticut consider switching from ISO NE to ISO NY.*
    - *There is a precedent of that when Duke Energy left Midcontinent Independent Systems Operator (MISO) in 2011 to join PJM Transmission.*
    - *Connecticut would most likely need to reimburse ISO NE a portion of costs related to transmission upgrades in Southwestern Connecticut.*
    - *The costs associated with these upgrades are currently under a billion dollars considering depreciation of assets, some of the costs related to underground wire infrastructure were never shared by other ISO NE participants in the first place.*
    - *Connecticut has a similar number of interconnections with ISO NY than it does with ISO NE states.*
19. *We recommend that Connecticut consider creating a Connecticut specific Independent System Operator similar to ISO New York, ISO California or the Electric Reliability Council of Texas (ERCOT). While Connecticut is significantly smaller, it is possible that with all of its existing resources, it can create a stable and reliable grid. Transmission and distribution upgrades that would be done within this single state zone would not need to be as excessive and these could be limited to state ratepayers only.*

Public Utilities Regulatory Authority (PURA)

Figure 10 examines the price of electricity in states with deregulated electricity markets and the number of members of the state's regulatory commissions. Although Connecticut law establishes that it's Public Utility Regulatory Authority (PURA) should have 5 commissioners, PURA has been run by 3 commissioners. On average states with smaller regulatory commissions have significantly higher electricity rates.

As Figure 11 notes, states that use retrospective prudent expense reviews also generally have higher electricity rates. The most effective approach is using a hybrid of retrospective reviews for smaller investments, such as tree cutting programs, and forward-looking reviews with pre-approvals for large capital investments into distribution and transmission upgrades.

The traditional rate review process provides lower utility rates. However, states that do not have a fully implemented performance-based review process, such as Connecticut, yield the highest electricity rates (see Figure 12). When compared to other states, the composition and regulatory approaches currently used in the state of Connecticut are some of the strongest factors contributing to the high average retail electricity rates.

Figure 10. 2023 Average Retail Price by Number of Commissioners, by cents
(deregulated markets)

Figure 11. 2023 Average Retail Price by Type of Investment/Rate Review, by cents
(deregulated markets)

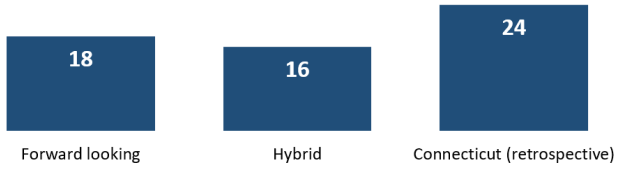
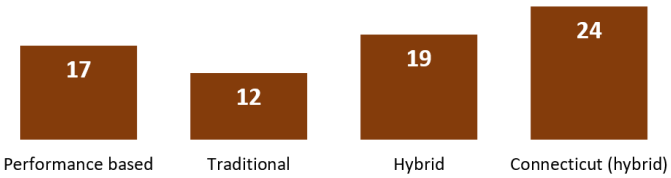


Figure 12. 2023 Average Retail Price by Rate Review Process, by cents
(deregulated markets)



Source: Connecticut Public Utilities Regulation Authority https://portal.ct.gov/pura/

Source: National Association of Regulatory Utility Comissions https://www.naruc.org/about-naruc/our-mission/regulatory-commissions/

Proposed Reforms of PURA

20. *We recommend that the legislature keep an existing statutory requirement that PURA has to have 5 members at all times, and that a 5-member commission should also be a quorum for all substantive rulings, rate cases and most, public benefit programs, and most permitting rulings. Each commissioner should be appointed a specific utility track: natural gas, water, electricity or telecommunications. The commissioner without a specific track should manage general administrative issues and conduct general management of PURA staff. Best practices suggest that the chairmanship should be combined with an administrative track.*
21. *We recommend that PURA Commissioners should be nominated for 6-year terms.*
22. *The PURA chair should be internally elected for two-year terms by the PURA commissioners, on the first day of an odd new year.*
23. *We recommend that the legislature should add a 30 day statutory requirement for the governor to appoint an interim commissioner when a vacancy arises. Such interim commissioner would serve in an interim role and only have a tie breaking vote capacity in a 5 member PURA, but their vote would still satisfy a quorum requirement.*
24. *Interim commissioners should serve a maximum of eight months if appointed between legislative sessions. If appointed during the session it is the responsibility of the legislature to confirm such commissioner by the end of legislative session. If the governor fails to nominate a new commissioner during that 30 day period, then the Speaker of the House and the Senate majority leader or chairs of Energy and Technology committee will name a compromise interim commissioner.*
25. *If the legislature fails to confirm an interim commissioner by the end of its session, and the interim commissioner served for more than 60 days, such commissioner should be automatically confirmed.*
26. *Commissioners missing three consecutive voting days without remote participation should vacate their positions. Exceptions to this rule include regular state guaranteed vacation time, state guaranteed sick time, parental leave, state guaranteed leave to take care of sick family members, bereavement leave or other protected leaves of absence.*

27. *In order to ensure transparency and accountability, unless the session includes a designated public hearing, all PURA meetings should be open to the public.*
28. *We recommend that the legislature add conflict of interest provisions, where current and future members, as well as career employees that manage a team of more than one employee at PURA will be banned for 10 years from working for entities that generate, distribute or sell electricity in the state of Connecticut. Additionally, entities that are manufacturing grid equipment, electricity generating equipment or battery storage, as well as interest groups that work to advance interest of such entities which includes trade associations, political action committees and lobbying firms. The only exemption would be if one of the entities becomes present/doing business in the state of Connecticut, five years since the last day of the PURA employee/commissioner in question. New employees and/or commissioners can only be hired/nominated if they were not employed by such entities in the last ten years.*
29. *Under the new appointment procedure PURA should be a regulator that is independent from executive branch and reports directly to legislature. PURA shall not be part of Connecticut's Department of Energy and Environmental Protection (DEEP). PURA should be funded by a separate charge on utility bills and not by utility assessments or appropriations to insulate it from political or private interests. This would total of 0.5 cents to a $1.5 monthly utility bill.*
30. *We recommend an increase of PURA review authority of utilities' capital investment plan reviews by providing funding for outside counsel and expert review of such plans, as well as impacts on grid reliability and rates. The forward based review would ensure predictability of regulatory environment and that utilities would be able to recoup their investments before takin additional risks upon themselves.*
31. *We recommend the creation of a requirement for PURA to conduct corporate management audits of utilities every two years and provide PURA with the authority to impose punitive corrective measures on utilities if management audits find inconsistencies with applicable laws or regulations.*
32. *PURA should provide the legislature with a biennial report of the state of energy in Connecticut.*
33. *PURA should be granted additional authority to ensure the implementation of audits,*

and review of utilities. If utilities are not meeting specific performance goals communicated to them at least two years in advance, or if utilities are not correcting inconsistencies found in corporate management audits, then PURA will be able to impose:

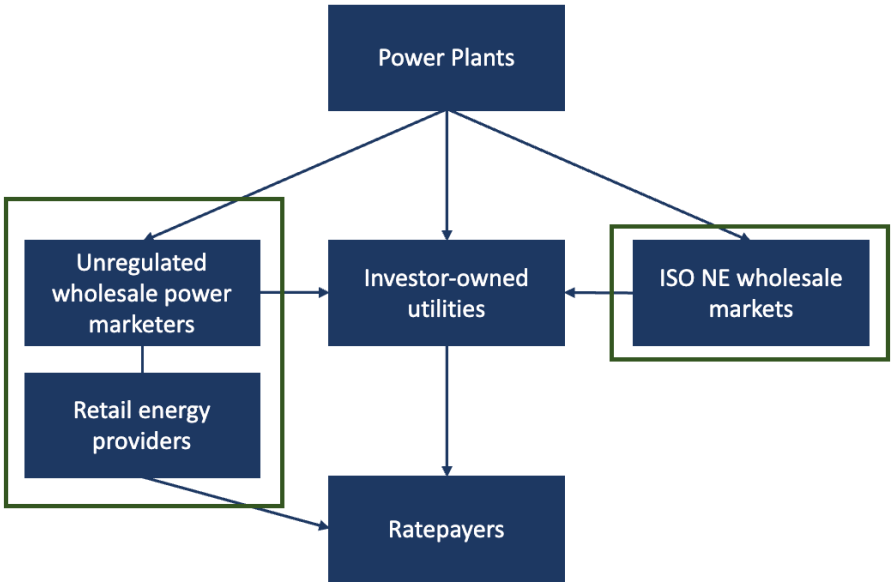
- *A 10% cap on revenue transfers between local utilities/generation facilities in Connecticut to their sister companies in other states.*
- *A 5% cap on revenue transfers for parent companies of utilities/generation facilities.*
- *A 7% stock buyback cap based on revenue received from operations in state of Connecticut.*

34. *The conditions that trigger such punitive measures should be explicitly stated, and lifted immediately when utilities fulfill their obligations.*
35. *The Legislature should ensure that the following corporate rules are applied to all utilities in the state on an equal manner.*
36. *Utilities would be required to maintain independent credit facilities, ensuring that their financial arrangements are distinct from those of unregulated affiliates (parent companies). This separation prevents financial contagion and protects the utility's creditworthiness.*
37. *Utilities' credit agreements and indentures must not include cross-default provisions that could trigger defaults based on the financial status of affiliated entities. This measure ensures that the utility's financial obligations remain isolated from those of its affiliates.*
38. *Utilities are mandated to maintain functional independence from their unregulated affiliates. This includes separate management, employees, and operational systems to prevent undue influence or the sharing of sensitive information that could advantage unregulated* entities.

Electricity Generators & Unregulated Wholesale Power Marketers

Figure 13 shows the current structure of Connecticut's deregulated market where, a new type of entity was created – wholesale power marketers – that while operating in the state, cannot be regulated in the same way as utilities, no matter how much electricity they sell to consumers through retail choice programs.

Figure 13. Deregulated Markets



Deregulation of electricity markets at its core was supposed to create competitive wholesale markets thus breaking utilities natural monopoly. Instead, the deregulation of markets enabled unregulated entities that created high levels of consolidation in wholesale markets. In Connecticut, these entities do not produce any electricity. They are only buying and reselling it.

Figures 14 and 15 show the price composition of standard service rate in Eversource service areas both in price per mw/h and share of total electricity purchased by Eversource.

Figure 14. Supplier mw/h Price per Eversource 2023 Supply Mix

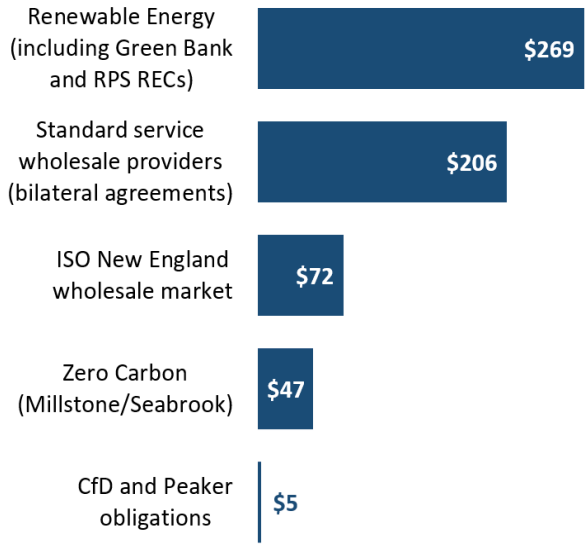
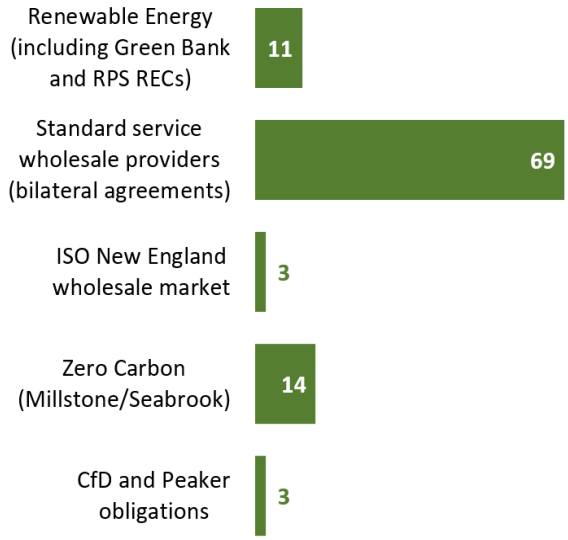


Figure 15. Percentage Share of Ratepayer's Total $ Amount in a Single Bill per Eversource 2023 Supply Mix



While renewable energy mandates contribute the most to the generation price on per hour/ megawatt basis, they are only about 11% of price that is passed onto consumer, most of the consumer rate is coming from prices set in contracts between utilities and wholesalers.

Wholesale power marketers such as Constellation Energy Corporation have exclusive bilateral agreements with power plants across the region. Other examples of exclusive contracts include the relationship between Constellation Energy and Kleen Energy LLC. The existence of the contract was publicized in media in the early 2000.2 However, since then it was renewed more than once per publicly available FERC data.

Most of these companies are also not domiciled in the state of Connecticut, and are benefiting from unitary cap on profits. In the proposed biennial budget, Governor Lamont, proposed the repeal of unitary cap, which would include these companies as well (see Figure 16).

Wholesale power marketers are charging significantly higher electricity rates when compared to ISO New England wholesale prices. A portion of these high prices can be attributed to renewable energy certificates. But part of these prices are an added margin for resale of electricity – speculative in nature.

Power Generators and Unregulated Wholesalers

Connecticut cannot directly influence wholesale price of electricity. However, the state has several options available to it that can ensure fair prices and avoid instances of price gouging on electricity that is sold to Connecticut ratepayers.

Currently all Connecticut gas fired power plants have contract for difference capacity agreements and peaker contractual agreements with utilities. Utilities were directed by the state to enter into these agreements, and Connecticut ratepayers are paying 80% of the cost of these contracts. Power plants in question however are not obliged to sell their electricity to Connecticut utilities and can sell it to anyone. Per FERC and ISO rules the only option that state has is to force those plants to provide state's utilities with an offer of first refusal. Such mechanism does not influence wholesale price but ensures that Connecticut ratepayers can realize the benefit from capacity and peaking payments.

39. *We recommend that the state of Connecticut should create a quasi-public power market wholesaler that would compete against similar for-profit entities. A quasi-public corporation that is not profit driven would be able to provide wholesale supply at lower prices, at the same time there are precedents of such corporations in other states or even in ISO New England. Usually, these corporations are municipal but there is not a single regulation that prevents states from creating their own. Such corporation would not be an energy aggregator that trades with wholesalers, the corporation will be competing with wholesalers.*
40. *Connecticut cannot regulate what wholesalers do in the state, but it can tax entities and transactions in the state as long as the law is applied equally. Hence, we recommend that Connecticut tax all for profits energy wholesalers, or other entities that engage in wholesale energy trade but are not electricity generators. The windfall tax should be tied to ISO NE wholesale price, where profits from sales of energy through bilateral contract should be taxed if they are 15% higher than the ISO NE average price per mw/h hour for the same year. The windfall tax would apply only to the portion that is over wholesale price +15% and on the sliding scale, where in every 10% difference*

increments additional 5% of tax liability would be added, with starting tax rate of 10%.

41. *If the state would prefer to take a more collaborative approach it can try, together with other states to force rules onto local generators to offer all their generation on ISO New England wholesale markets in competitive bids similar to the system that ERCOT implemented in Texas. Punitive measures might include emissions taxes if fossil fuel generators refuse to participate.*
42. *On top of that states may ask that ISO NE to create a separate REC marketplace where clean energy attributes can also be traded in competitive markets. In case ISO refuses, states can create an alternative open marketplace. While we generally believe that RECs should not be a part of renewable energy policy in Connecticut, such marketplace would close price gouging opportunities for some wholesalers who bundle RECs into their offers.*

A Note on the Green Bank Residential Solar Investment Program

As Figures 17 and 18 suggest, for the most part Green Bank Residential Solar Investment Program has primarily benefited middle-class and upper middle-class communities in the Eversource service area.

Figure 16. Costs of Wholesale Power Marketers

Wholesale Supplier	Mw/h contracted	Price per mw/h
New Brunswick Energy	1,336,911	$201
NextEra Energy Power Marketing, LLC	1,790,153	$179
Constellation Energy Corporation	4,494,176	$175
Vitol, Inc	4,617	$165
J. Aron	452,536	$146
DTE Energy Trading Inc	268,188	$121
Dynegy Marketing & Trade, LLC	139	$79
Deferred fuel costs		$29

Source: Connecticut Light and Power Company FERC form 1 for 2023

Figure 17. Coefficient of kilowatts of nominal solar capacity installed by population, top 10 Connecticut towns with highest capacity

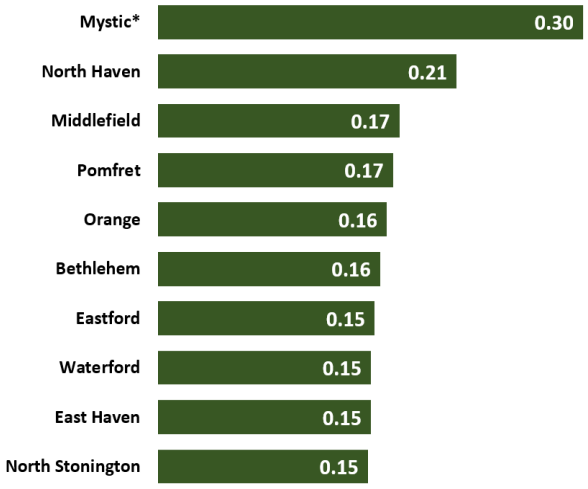
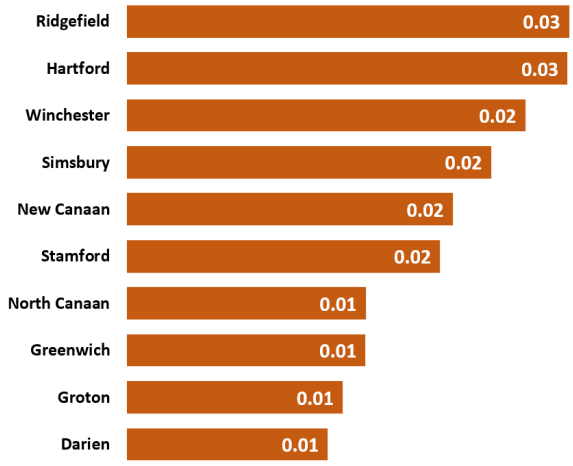


Figure. 18 Coefficient of kilowatts of nominal solar capacity installed by population, top 10 Connecticut towns with lowest capacity



** Due to the way PURA coded the dataset of compliant SHREC facilities, it is impossible to determine which are part of Groton and which are part of Stonington*
Source: Connecticut Public Utilities Regulation Authority https://portal.ct.gov/pura/rps/renewable-portfolio-standards-overview

Concluding Remarks

As we noted above, this report draws on publicly available data. There is a lot of energy data that is not readily available to the public and may tell a different story. In some instances, we have chosen to adopt fairly conservative estimates, mostly based on older data. In closing, we also recommend that the legislature create some sort of data transparency policy that will allow researchers to better assess the costs of energy in Connecticut. We can generate more recommendations with more information. We are happy to assist in whatever ways we can. Our goal is to use the research resources available at the University of Connecticut to support the state of Connecticut.

Finally, it is important to affirm that all recommendations in this report should be read systematically, as parts of a whole. When considering which recommendations to adopt, we suggest that careful attention be paid to the costs of adopting some recommendations without the others. We believe that the cost of energy in Connecticut can be significantly reduced for Puerto Rican and working class rate payers and for the residents of Connecticut as a whole.

Where Did We Get This Information From?

This report relies on publicly available data from various sources, including the United States Energy Information Administration, the State of Connecticut's Public Utilities Regulation Authority, and other sources of information cited throughout the report. Some of the information included in this report is dated and we suspect that some of the estimates that we make in this report may be quite conservative.

About Our Funding

The Puerto Rican Studies Initiative was initially funded by an American Rescue Plan Act grant awarded by the Connecticut General Assembly. It is currently funded by a grant from the Connecticut General Assembly, in collaboration with the Puerto Rican and Latino Legislative Caucus.

How To Cite This Report

2024. Volodymyr Gupan and Venator-Santiago, Charles R. *Connecticut Electrical Markets Policy Report, Preliminary Findings*. *Storrs*, *Connecticut*: University of Connecticut, Puerto Rican Studies Initiative.

The Puerto Rican Studies Initiative for Community Engagement and Public Policy (PRSI) is a research initiative seeking to document and support Puerto Ricans' vital economic, intellectual, and cultural contributions to Connecticut and provide research-based support for the development of public policies addressing the needs of Puerto Ricans in the State of Connecticut.

For more information, please visit our website:
https://puerto-rican-studies-initiative.clas.uconn.edu/

Designed by the UConn Digital Experience Group.
Map attribution: https://freevectormaps.com/united-states/connecticut/US-CT-EPS-01-3001?ref=atr

UCONN
PUERTO RICAN STUDIES INITIATIVE