

DEEP's Draft 2017 Comprehensive Energy Strategy: Electric Power Sector

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Issue

This report summarizes the recommendations for the electric power sector in the Department of Energy and Environmental Protection's (DEEP) [draft 2017 Comprehensive Energy Strategy \(CES\)](#).

Summary

DEEP's draft 2017 CES organizes electric power sector recommendations under two goals: (1) align existing programs with renewable portfolio standard (RPS) and Global Warming Solutions Act (i.e., emissions) goals and (2) support regional and state reliability and resiliency efforts.

Under the first goal, DEEP proposes several changes to the RPS, including (1) increasing the Class I RPS to 30% by 2030, (2) reducing the value of Class I biomass and landfill gas renewable energy credits (RECs), and (3) requiring the RPS increase to be met with 25% behind-the-meter and 75% grid-scale projects. DEEP also proposes creating a renewable energy production tariff and eliminating several other renewable incentive programs.

Statutory Requirement

By law, the DEEP commissioner must prepare a CES every three years ([CGS § 16a-3d](#)). The CES must incorporate an assessment and plan for all energy needs in the state, including electricity, heating, cooling, and transportation.

Among other things, the CES must include a statement of energy policies and long-range energy planning objectives and strategies to achieve various goals, including a sound economy, the least-cost mix of energy supply sources and measures that reduce energy demand, and security and diversity of fuel supplies and energy generating methods.

Also under the first goal, the department proposes evaluating the rate impact and environmental impacts for various scenarios involving the retention or retirement of the Millstone nuclear plant. DEEP also makes recommendations for shared clean energy facility policies, regulations for voluntary renewable offers from energy suppliers, and siting renewable facilities.

Under the second goal (reliability and resiliency), DEEP makes recommendations or comments on winter natural gas generation reliability issues, microgrids, grid infrastructure and coastal resiliency, and grid modernization.

RPS and the Global Warming Solutions Act Goals

Class I RPS Increase

The law designates certain types of renewable energy facilities as Class I, II, or III sources and, through the RPS, requires electric distribution companies (EDCs, i.e., Eversource and United Illuminating) and electric suppliers to use specified amounts of energy from each class. Class I sources include solar, wind, and other renewables. Under current law, the Class I RPS is 15.5% for 2017, increasing each year to 20% in 2020 and then remaining constant ([CGS § 16-245a](#)). The draft CES proposes increasing the Class I RPS by 1% each year between 2020 and 2030, reaching 30% by 2030.

DEEP argues that increasing the RPS is necessary to meet emission reduction goals in the state's Global Warming Solutions Act (GWSA, [PA 08-98](#)). The department also argues that expanding the RPS beyond 30% is not necessary for the following reasons:

1. other non-Class I resources may help meet GWSA goals (e.g., nuclear, hydropower, and energy storage);
2. DEEP intends to analyze the current RPS structure's effectiveness at meeting GWSA goals; and
3. changes in market rules may make renewable energy deployment and emissions reductions possible through mechanisms outside the RPS.

Global Warming Solutions Act
Connecticut's GWSA requires the state to reduce greenhouse gas emissions to 10% below 1990 levels by 2020 and 80% below 2001 levels by 2050 ([CGS § 22a-200a](#)).

Value of Biomass and Landfill Gas RECs

DEEP states it will reduce the value of Class I biomass and landfill gas RECs for each biomass and landfill gas project by limiting the amount of eligible generation to 50% of the facility's output. The reduction in value will begin either 15 or 20 years from when the Public Utilities Regulatory

Authority (PURA) approved the facility as a Class I resource, depending on whether the facility is “existing” or “new”. Generally, by law, existing facilities are those that began operation before 2003 and new facilities are those that began operation after 2003 or meet certain other criteria ([CGS § 16-1\(a\)\(20\)](#)).

According to DEEP, most biomass and landfill gas facilities meeting Class I RPS requirements are existing resources. DEEP argues that the department should restructure eligible Class I technologies to focus on developing new renewable resources. DEEP notes that this reduction was recommended in the [2014 Integrated Resources Plan](#) (IRP) and in [PA 13-303 \(§ 5\)](#).

Allocation of Increased RPS

As described above, the draft CES recommends increasing the Class I RPS by 1% each year between 2020 and 2030, reaching 30% by 2030. DEEP further proposes requiring 25% of the increase to be met with energy and RECs from in-state behind the meter resources and 75% of the increase to be met with grid-scale procurements. Generally, “behind the meter” projects are those that are installed on the customer’s property and produce energy that, through net metering, lowers an individual customer’s bill (e.g., residential solar), while “grid-scale procurements” are larger projects, usually procured by DEEP and PURA through a request for proposals (RFP) process, and not associated with an individual ratepayer. Under this proposal, by 2030, when the increased portion of the RPS is at its maximum value of 10% of total electric load, behind the meter projects would represent 2.5% of the total load while grid-scale projects would represent 7.5%.

DEEP argues that the 25/75 split is appropriate because grid-scale renewables are currently more cost-effective than behind the meter resources. DEEP states that it will assess the 25/75 split after a few years of procurements to determine if price changes warrant a change in the percentage procured. In future IRPs, DEEP will also assess (1) the state’s electric sector to identify if there is a need for additional renewable energy sources or zero carbon resources to meet RPS and GWSA goals; and (2) whether a need for additional capacity to meet electric load for the forecasted period warrants a procurement under the Public Utility Regulatory Policies Act (PURPA).

Integrated Resource Plan (IRP)

By law, every two years, the DEEP commissioner, in consultation with EDCs, must prepare an IRP to procure energy resources to meet projected customer requirements in a manner that minimizes cost and maximizes consumer benefits consistent with state environmental goals and standards ([CGS §§ 16a-3a, -3b, & -3e](#)).

DEEP proposes establishing the schedules and amounts for behind the meter and grid-scale resource mixes and pricing caps, as applicable, in the IRP. Under this proposal, the EDCs would run the procurement for behind the meter resources and the Green Bank would maintain its role for residential solar as a liaison between potential customers and developers. DEEP would procure the grid-scale resources.

Renewable Energy Tariffs

DEEP proposes restructuring net energy billing and implementing renewable energy tariffs for the energy and RECs generated by net metering and virtual net metering facilities (i.e., behind the meter projects). Under this proposal, a renewable energy production tariff is a power purchase agreement in which the EDC pays a fixed price (cents/kWh) for each kilowatt-hour the renewable project produces over the term of a set contract. Instead of net metering or virtual net metering, customers with eligible resources would purchase all the electricity they use at standard retail rates. They would also receive payments for their renewable generation at the tariff rate and those payments would be netted against the customer's electric bill.

Under DEEP's proposal, the EDCs would purchase energy and RECs produced by such projects for up to 0.25% of the electric load annually. Such rates could be set for a term of up to 20 years. DEEP believes these tariffs would eliminate the need for other incentives, including Low Emissions Renewable Energy Credits (LREC), Zero Emissions Renewable Energy Credits (ZREC), Residential Solar Investment Program (RSIP) and the Solar Home Renewable Credits (SHREC). DEEP could also establish bonus payments (or adders) to this tariff to advance other policy objectives (e.g., a bonus payment for renewable development on brownfields).

Net Metering

Under current law, a net metering customer receives a credit for each kilowatt-hour their renewable generation produces that essentially reduces the number of kilowatt-hours for which they are billed ("runs the meter backwards").

Virtual Net Metering

Virtual net metering customers receive a credit that reduces (1) the kilowatt-hours for which they are charged the generation service charge and (2) a portion of the distribution and transmission charges associated with that energy.

DEEP proposes changing existing net metering and virtual net metering laws to establish regulatory and competitive frameworks for the renewable energy tariff, which would have the same eligibility criteria as net metering but include additional requirements for the location and size of eligible resources.

DEEP would establish the amount of the tariff for larger behind the meter projects (100 kilowatts (kW) to 2,000 kW) through a competitive solicitation using a reverse auction process. (In a reverse auction, bidders submit bids in competition with one another, with the lowest bids selected at the close of the auction.) The auction would set a tariff price for energy and RECs for these large behind the meter projects.

For smaller projects for which the competitive process described above may not be appropriate, DEEP proposes two potential ways to set the tariff price. Either the tariff price for small projects could be based on the tariff price for large projects with an adder (e.g., 10%), or PURA could set a rate based on a particular clean energy resource's costs and benefits.

DEEP proposes allowing existing net metering and virtual net metering facilities to use their current incentive for up to 20 years from their in-service date. For both grandfathered projects and projects using the new renewable energy tariffs, DEEP proposes lowering their incentive to a set rate (e.g., the wholesale rate) after 20 years.

Scenarios for Nuclear Retirement and Retention

DEEP proposes evaluating the rate and environmental impacts for various scenarios involving the retention or retirement of the Millstone nuclear plant. They also propose investigating the following policy options to address these scenarios:

1. legislation giving the DEEP commissioner discretion to procure zero carbon resources (from Millstone or large-scale hydropower), provided there is a clear demonstration of need based on operating costs and market revenues and the procurement is in ratepayers' best interest;
2. PURA offering longer-term contracts (presumably, with Millstone) for its standard service rate; and
3. creating a clean energy standard (similar to New York's Zero Emission Credit) to compensate zero carbon resources for the benefits they provide to the state.

The department notes that a contractual purchase of Millstone's energy would allow the state to claim all the environmental attributes associated with the purchased power. (Currently, Millstone's power may be consumed anywhere in the New England region and potentially elsewhere.) This could increase the amount of energy the state can claim as carbon free (presumably, to meet GWSA goals).

DEEP also states that it is prepared to take action if a significant carbon free resource is in jeopardy of leaving the market and such an exit is not in ratepayers' best interests.

Shared Clean Energy Facility (SCEF) Policies

[PA 15-113](#) required DEEP to establish a two-year pilot program to support the development of shared clean energy facilities (SCEF), which, by law, are clean energy-powered electricity generating facilities to which customers subscribe for a portion of the total energy produced. [PA 16-116](#) established a financing mechanism for the pilot project and made other changes. DEEP established the pilot and, in the draft CES, makes recommendations based on its findings.

If there is a statewide SCEF program, DEEP recommends the program require all participating customers to purchase solar panels or a percentage of the facility output and either pay the full cost upfront or enter into a long-term lease arrangement requiring a fixed payment each month that is not tied to the facility's output. The pilot program did not require purchase or lease of a portion of the system, allowing customers to receive a credit from the EDC and pass a portion of that credit to the solar developer. DEEP also states that a portion of the 0.25% of the load procured under the method described above could include SCEF projects.

If SCEF is not expanded statewide, DEEP believes SCEF objectives could be achieved through a stronger voluntary renewable energy product (see below).

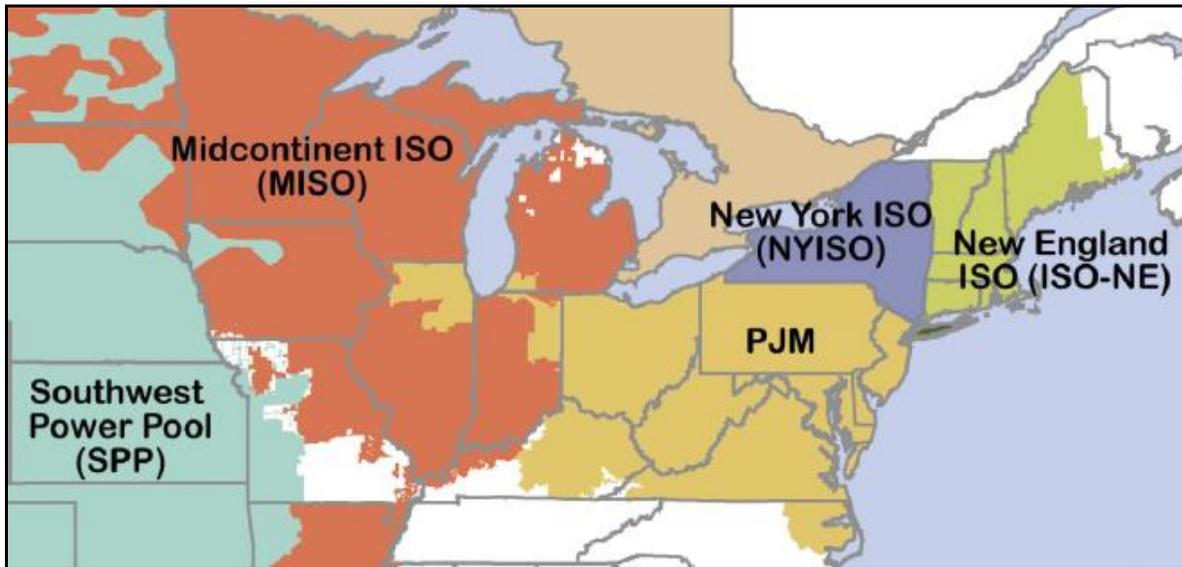
New Regulations for Voluntary Renewable Energy Supplier Offers

PURA has opened a docket ([Docket No. 16-08-23](#)) to, among other things, develop rules and disclosure forms for voluntary green products. DEEP recommends that these rules require that the renewable products offered by competitive energy suppliers meet the same standards as the Connecticut Clean Energy Options (CCEO) program, which allowed ratepayers to pay extra in return for clean energy suppliers adding energy to the system in an amount matching customer usage. (In 2016, PURA ruled that CCEO should be eliminated.)

DEEP argues that PURA should establish a market for voluntary REC offerings and the EDCs should implement a tracking and verification process for the RECs. Among other things, DEEP suggests:

1. requiring suppliers to unbundle voluntary REC offerings from their generation supply that meets RPS requirements;
2. limiting products to regions served by the Independent System Operator of New England (ISO-New England) and PJM (the regional transmission organization (RTO) that serves several other states, as shown in Figure 1);
3. requiring various disclosures, including the geographic location of renewable energy sources; and
4. limiting offerings to either 50% or 100% renewables.

Figure 1: ISO and RTO Territories



Source: [Federal Energy Regulatory Commission \(FERC\) \(2015\)](#)

Siting Renewable Facilities

Among other things, [PA 17-218](#) requires the Siting Council to receive confirmation before issuing a certificate by declaratory ruling for certain projects from (1) DEEP that projects will not affect core forest and (2) the Department of Agriculture (DoAg) that the projects will not affect prime farmland. The act also requires DEEP, when evaluating proposals received in response to certain solicitations, to consider environmental impact, including the impact on (1) prime farmland and core forests and (2) the reuse of sites with limited development opportunities, such as brownfields and landfills.

In the draft CES, DEEP makes the following recommendations:

1. DEEP and DoAg should provide the Siting Council with standards to determine whether proposed projects materially affect the land's status as a core forest or prime agricultural soil; and
2. various stakeholders should identify priority areas around the state, like brownfields, state properties, or previously developed sites that would benefit from hosting Class I renewable energy sources or minimize siting issues.

The department also states that it plans to outline specific siting criteria in future DEEP RFPs and make such criteria a threshold requirement (i.e., DEEP will not consider proposals that do not meet the siting requirements).

Reliability and Resiliency

Winter Natural Gas Generation Reliability Issues

Natural gas plants generally get fuel through non-firm fuel contracts, while local distribution companies and others selling natural gas for heat get fuel through firm contracts. During winter, this can cause supply strain for natural gas plants that can lead to price spikes and other issues. In the CES, DEEP states that it maintains its authority under [PA 15-107](#), which, among other things, allows DEEP to solicit proposals for interstate natural gas transportation capacity and other natural gas resources. However, DEEP argues that the winter reliability issue is regional and therefore ISO-New England should lead efforts to address it.

Microgrids

A “microgrid” generally refers to a small-scale electric distribution network that (1) links several users to one or more nearby distributed (onsite) energy resources and (2) can be operated in conjunction with the larger electrical grid or independently from the larger grid during a storm or other power outage. DEEP currently administers the Microgrid Grant and Loan Program, which funds microgrids that support critical facilities (e.g., hospitals and police stations). DEEP states it will continue outreach efforts for the program and participate in meetings with EDCs, municipal electric utilities, and municipalities to discuss microgrid costs and benefits. DEEP plans to work with the Division of Emergency Management and Homeland Security to develop a comprehensive microgrid deployment strategy for the state and increase outreach in areas without nearby microgrids.

Grid Infrastructure and Coastal Resiliency

According to DEEP, ISO-New England rules do not have clear guidelines for when transmission operators may address resilience issues regionally rather than through the local regulator. DEEP is working through ISO-New England’s stakeholder organization (NEPOOL) to encourage the development of standard guidelines to address such threats to the electric grid caused by climate change.

Grid Modernization

DEEP describes the U.S. Department of Energy’s (DOE) Grid Modernization Initiative and states that the department will continue to engage with DOE; evaluate opportunities to host proceedings or disseminate information; and collaborate with DOE, Connecticut utilities, and other stakeholders to leverage federal efforts. Grid modernization generally describes efforts to transition the electric grid from a system that moves power from distant sources over high voltage transmission wires to local

distribution systems to a system that accommodates distributed energy resources (i.e., energy produced and used on site, such as residential solar) and otherwise allows or facilitates various policy goals. U.S. DOE identifies the following six characteristics of a modern grid:

1. greater resilience to hazards of all types,
2. improved reliability for everyday operations,
3. enhanced security from an increasing and evolving number of threats,
4. additional affordability to maintain economic prosperity,
5. superior flexibility to respond to variability and uncertainty of a range of energy futures, and
6. increased sustainability through energy-efficient and renewable resources.

Separate from those federal efforts, DEEP also recommends that PURA initiate a proceeding on grid modernization and how utility business models should adapt. DEEP suggests the following topics for PURA's proceeding:

1. the feasibility of requiring the EDCs to conduct an alternatives analysis in distribution system planning;
2. dynamic pricing and robust time-of-use rates that allow EDCs to maximize the benefit of distributed resources;
3. the role of energy storage systems to lower ratepayer costs, efficiently integrate intermittent distributed energy resources, and defer distribution upgrade expenses; and
4. whether EDCs should own, operate, and dispatch grid-enhancements (e.g., microgrids and storage)

DEEP also repeated its request that EDCs submit energy storage proposals for DEEP's grid-side system enhancements pilot program ([CGS § 16-244w](#)). In its [final decision notice](#) for the pilot program, DEEP declined to approve EDC storage projects but encouraged the companies to revise their storage proposals to respond to DEEP's concerns and submit the proposals directly to PURA. According to PURA staff, PURA has not received revised proposals but has been told that the EDCs are reworking them.

Resources

DEEP, [“Demonstration Projects for Grid-Side System Enhancements to Integrate Distributed Energy Resources: Notice of Final Determination.”](#) February 2017.

DEEP, [“2014 Integrated Resources Plan for Connecticut.”](#) March 2015.

DEEP, [“2017 Comprehensive Energy Strategy.”](#) July 2017

FERC, [“Regional Transmission Organizations.”](#) November 2015.

PURA, [“PURA Promulgation of Regulations Concerning RPS and Voluntary Green Products \[16-08-23\].”](#) August 2016.

U.S. DOE [“Grid Modernization Multi-Year Program Plan.”](#) November 2015

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