

Draft Clean Energy Standard Offer Program (CESOP)

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Summary: Improving heat and power generation efficiency and lowering energy costs are keys to American competitiveness and profitably reducing greenhouse gas emissions. The electric regulatory system has produced a wonderful infrastructure, but is biased towards inefficient, dirty generation. Past attempts to improve the electric system efficiency have effectively failed because the benefits were not shared with all stakeholders. In order to encourage clean energy, states should offer long-term contracts to high efficiency generation plants at 85 percent of the best alternate cost of new delivered power from electric-only plants. The proposed Clean Energy Standard Offer Program (CESOP) would provide consumers with clean energy at a discount, enable states to reduce pollutant and greenhouse gas emissions, and enable electric distribution utilities to maintain their customer base and profits.

Giving Clean Energy a Chance

In order to give CLEAN ENERGY a chance, Congress could require all distribution utilities to offer long term contracts at 85% of the cost of the best new electric-only generation to anyone who can supply clean power that achieves at least 60% annual fossil efficiency, which is almost double the U.S. average delivered electric efficiency. The CESOP proposal addresses the major problems of the 1978 Public Utilities Regulatory Policies Act (PURPA) by allowing savings to the public, allowing the distribution utilities to keep their customers and profits, and by raising the minimum fossil efficiency to qualify to 60%, which compares to the U.S. grid efficiency of 33%. Such a Clean Energy Standard Offer Program (CESOP) would provide everyone with clean energy at a discount, would reduce emissions of regulated pollutants and of greenhouse gases, and would maintain distribution utility profits.

It is vital to the economic and environmental health of the United States to rapidly improve the fossil efficiency of electric generation and thus profitably reduce greenhouse gas emissions. Electric generation accounts for 42% of CO2 emissions and production of thermal energy accounts for another 27%. Improving the efficiency of generating and delivering heat and power therefore addresses 69% of total U.S. CO2 emissions.

The proposed CESOP details follow:

1. Distribution utilities or Independent System Operators shall offer 20-year CESOP contracts for electricity generated by qualifying CLEAN ENERGY facilities, as defined in Subtitle E of the Energy Independence and Security Act of 2007.¹

- That Act requires a qualifying plant to achieve 60% annual efficiency compared to the approximately 45% efficiency required to qualify for PURPA and 32% delivered efficiency from average electric-only generation.)
- Input energy of otherwise wasted byproduct energy will not be counted as input fossil fuel and could include exhaust heat, steam or gas pressure drop that otherwise would have been wasted, or off-gas from some industrial process that otherwise would have been flared. Power plants that recycle this otherwise wasted energy will automatically qualify as CLEAN ENERGY facilities.

2. The contracts shall be offered at 85% of the delivered cost of power from the best option for a new electric-only base load plant. The calculation of delivered cost for centrally generated power shall include the long-run marginal costs of delivering that power include generation and transmission capital avoidance, line loss avoidance, operating costs and profits margin for the best new base load central plant that meets current environmental standards.

- New qualifying CLEAN ENERGY plants shall receive a fixed capacity payment per megawatt (MW) of demonstrated capacity equal to 85% of the avoided amortization of the capital cost of building a new base load plant and the associated transmission and distribution wires capable of delivering one megawatt to end customers.
- The CLEAN ENERGY plants shall also receive an operations payment per MWh equal to 85% of estimated the cost of operating the new central electric-only base load plant, including the cost of transmission maintenance and line losses, which payment shall be increased with inflation.
- The CLEAN ENERGY plants shall receive a fuel payment per MWh equal to 85% of the delivered heat rate from the same central plant, paid at the prior month's delivered index price for the relevant fuel of that central plant.²

3. Distribution utilities or the Independent System Operator shall facilitate the deployment of CLEAN ENERGY plants without losing their normal profit margins as follows:

- They shall be responsible for the design, construction, commissioning and operation of the interconnection of each qualifying CESOP power plant to the grid, and may put the capital and operating costs of the interconnection into rate base and earn the allowed rate of return.
- They will continue to provide retail power to the host facility of the CESOP power plant at applicable rates for like customers, and will not charge the host facility any backup or standby charges other than the system costs imbedded in comparable electric service customers.

- Distribution utilities or ISOs shall, where appropriate, contract for voltage support and power-factor correction services from the CLEAN ENERGY plants, paying 85% of the long-run avoided capital costs of capacitance and inductance banks, and 85% of the calculated savings in line losses due to the voltage support supplied by the individual CLEAN ENERGY plant. Distribution utilities shall bear any capital cost additions to the plant associated with monitoring and remotely controlling the CLEAN ENERGY plant's generation power factor.
 - Distribution utilities will work with each CLEAN ENERGY power plant to qualify the output for clean energy credits, including sale of renewable energy credits, satisfaction of Renewable Portfolio Standards, and voluntary or mandatory greenhouse gas emission reduction credits. In the event utilities in a state are required to purchase such credits, the CLEAN ENERGY plants will agree to sell such credits to distribution utilities at 85% of the market price.
4. States shall be asked to analyze existing rules and regulations governing CLEAN ENERGY projects to identify any financial, health, safety or environmental regulations that impede the construction or operation of CLEAN ENERGY projects, and then attempt to revise the regulation to satisfy the original societal purpose, if it still exists, in a manner that does not create a barrier to more efficient generation of heat and power.
 5. Distribution utilities or ISOs shall not be required to contract for new CLEAN ENERGY plant megawatts of capacity in excess of the state's expected requirement to meet load growth and replace aging generating units over the next ten years.
 6. Eligibility for a CESOP contract extends to all new power plants within the state that commenced construction after the date of this CESOP offer, or to power plants built prior to the CESOP offer that are not bound by a power purchase contract with the distribution utility or ISO, providing that each plant self-certifies that it will meet the CLEAN ENERGY efficiency requirements going forward.³
 7. All CESOP plants shall be required to provide complete fossil-energy efficiency records that are certified by a reputable third party expert within 60 days of the close of each contract year. Should a plant with a CESOP contract fail to meet the annual efficiency tests for the prior year and also fail to have achieved cumulative overall efficiency from the start of the plant's operations consistent with the CLEAN ENERGY standards, the rates paid for the power shall be reduced by 20% until the plant owner provides a third-party certification that the plant has met the CLEAN ENERGY efficiency standards for the prior 12 months.
 8. Each CESOP plant shall be required to provide at least 85% of contracted capacity during the peak system hours during each contract year. Should a CESOP plant fail to meet this test, the rates for capacity shall be reduced by 20% until such time that the plant owners demonstrate that the CLEAN ENERGY plant has met the 85% on-peak test for the prior 12 months.

CESOP Compared to PURPA

In 1978, Congress enacted the Public Utility Regulatory Policies Act (PURPA) to improve electric efficiency by encouraging ‘cogeneration,’ of heat and power. PURPA’s implementation was left to each state and the results over the ensuing three decades vary widely. The percentage of total U.S. generation from combined heat and power has risen from 3% in 1978 when PURPA was enacted to 6.4% in 2007. However, central fossil-fueled generation has become less efficient due to Clean Air Act prohibitions on modifications and the addition of emission control devices that add parasitic loads. The overall efficiency of all U.S. fossil fuel electric generation has remained at 33% since 1960.

Electric utilities oppose PURPA and many state governments resisted promotion of PURPA eligible generation. This Clean Energy Standard Offer Program addresses various objections and corrects other major shortcomings of PURPA. In order to encourage deployment of more efficient and cleaner energy, the CESOP plan shares the advantages of CLEAN ENERGY with all stakeholders. The differences between CESOP and PURPA are highlighted below:

1. PURPA did not adequately define the method of calculating ‘avoided costs’ and states calculations did not include the costs of distribution and transmission or the impact of line losses. CESOP is more specific about defining avoided costs. CESOP requires state regulatory commissions to identify the long-range marginal costs of delivered power, including expected carbon dioxide emission costs, from the best option for new central power generation. This approach reflects the true impact of any decision to construct a new base load central power plant.
2. PURPA offered no visible economic benefit to the public. CESOP shares the inherent efficiency savings with the public by requiring rates that are only 85% of the true avoided costs of delivering a new unit of electricity from the best central generation option.
3. To qualify under PURPA, a fossil-fueled cogeneration plant had to achieve roughly 45% annual efficiency, a 36% improvement over the 1978 grid efficiency. To qualify under CESOP, a fossil-fueled plant must achieve 60% annual conversion efficiency, which is an 81% improvement over the 2007 grid efficiency. (In 2007, the U.S. electric system was the same 33% efficiency of 1978.)
4. PURPA allowed a cogeneration facility host to buy electricity from the cogeneration plant and stop buying from the distribution utility. Faced with lost revenues and profits, distribution utilities typically employed multiple tactics to delay or block new local generation. Regulatory commissions, faced with possible rate increases to other distribution utility customers due to lost loads from cogeneration plants, allowed distribution utilities to offer special discounts to block more efficient generation. CESOP avoids this bizarre result by limiting eligibility to CLEAN ENERGY plants that do not sell power to the host industrial or commercial facility except when the grid is down.

Under CESOP, the distribution utility profits will not be reduced as generation efficiency improves.

5. PURPA assumed cogeneration plants would only benefit the host and thus placed the cost of interconnection on each qualifying facility, which resulted in much contention. Distribution utilities must control interconnection design to preserve system safety and integrity, but under PURPA, often demand ‘gold standard’ interconnection designs as a way to discourage local generation. CESOP requires the relevant distribution utility to design and build the interconnection at its expense, but then allows that utility to earn allowed rates of return on the interconnection investment.

Other Organizations Developing Clean Energy Standard Offer Proposals

The Tennessee Valley Authority and Ontario Power Authority are developing CESOPs, arguing that a Clean Energy Standard Offer Program is good for the customer, for the society, and for the distribution utility. In summary, CESOP is a way to give CLEAN ENERGY a chance to compete and will cause the profitable reduction of fossil fuel use and greenhouse gas emissions.

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¹ The 2007 Energy Act requires a qualifying plant to convert at least 60% of the fossil fuel the plant burns to useful energy services. To qualify, a CLEAN ENERGY plant must produce useful electricity and thermal energy with total energy content at or above 60% of the HHV energy content of all fossil fuel burned by the CLEAN ENERGY plant. (This 60% efficiency compares to the approximately 45% required by PURPA and 32% delivered efficiency from average electric-only generation that supplies 93% of U.S. electricity.)

² For example, If the best new electric-only base load plant is determined to be a combined cycle gas turbine, the CESOP heat rate would be 6153 Btu’s HHV, assuming the best new CCGT plant has a heat rate of 7,000 Btu's at the central plant, divided by 0.91 to correct for average line losses, and then multiplied by 85% to produce a savings to the state or province. If the State PUC or ISO operator determines that the best new central base load plant is a conventional coal plant with a 10,000 Btu delivered heat rate, then the CESOP fuel rate shall be 85% or 8,000 Btu’s of coal times the index cost of comparable coal in the state in the prior month.

³ Making existing plants eligible, providing the plant meets the efficiency requirements will encourage owners of existing CHP plants that are less than 60% efficient to reconfigure the plant design/sale of thermal energy/operating procedure to meet the 60% efficiency test. For example, a so-called “PURPA Machine” that overbuilt electric generation relative to thermal load might produce electricity with a 45% delivered efficiency. That plant could qualify for a CESOP contract by either extending its thermal sales to other nearby thermal users, or by adding an additional combined cycle to the electric generation, or by reducing generation to match the thermal load and not operating the remaining electric generation capacity, which is effectively electric-only generation.