



## Executive Summary

Connecticut's Draft Comprehensive Energy Strategy gives the State a more systematic basis for addressing energy opportunities and challenges. It provides a foundation for better informed policy, regulatory, and legislative decisions – as well as better energy choices at the household and business level. This Draft Strategy covers all fuels in all sectors with a planning horizon out to 2050. It offers analysis of the State's current energy circumstances and a set of recommendations designed to advance the Governor's agenda of moving Connecticut toward a cheaper, cleaner, and more reliable energy future.

At the heart of the Draft Strategy is a series of policy proposals aimed at expanding energy choices, lowering utility bills for Connecticut residents and businesses, improving environmental conditions, creating clean energy jobs, and enhancing the quality of life in the State. The Draft Strategy offers recommendations in five major priority areas:

- Energy efficiency
- Electricity supply including renewable power
- Industrial energy needs
- Transportation
- Natural gas

In integrating energy, environmental, and economic goals, the Draft Strategy breaks new ground and advances a broad and robust structure for thinking through energy options. It moves away from subsidizing favored technologies or companies toward a flexible "finance" model that encourages entrepreneurship and private sector leadership in scaling up clean energy projects. Emphasis is placed not on picking "winners" but on using limited government resources to leverage private capital and increase the flow of funds into energy efficiency, renewable power, natural gas availability, and a 21<sup>st</sup> century transportation infrastructure that promotes mobility options, transportation-oriented development, and market-based opportunities for clean fuels and clean vehicles.

This Draft Strategy builds on the fundamental premise that the public's interest in and ongoing commitment to clean energy depends on the emergence of new technologies that out-compete fossil fuel alternatives. It therefore proposes an array of economic incentives designed to drive down the cost of new energy technologies. By harnessing market forces and competitive pressures, this policy framework promises to spur innovation while offering support for a portfolio of renewable power generation alternatives.

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The Draft Strategy further seeks to align Connecticut’s energy future with the emerging opportunity provided by shale gas for a lower-cost, less-polluting, and domestically available (and thus more reliable) foundation for society’s energy needs. In identifying natural gas as a bridge to a truly sustainable energy future, it puts forward a seven-year game plan for expanding natural gas use across Connecticut with a goal of providing nearly 300,000 Connecticut homes, businesses, and other facilities with access to gas.

DEEP analysis suggests that the initiatives advanced below will measurably reduce Connecticut’s greenhouse gas emissions -- putting the state on a trajectory toward progress on climate change. But significant additional measures and breakthrough technologies will be required to achieve the goal of an 80% emissions reduction by 2050 as spelled out in the State’s 2008 Global Warming Solutions Act.

### ENERGY EFFICIENCY STRATEGY

Energy conservation offers a mechanism for reducing utility bills for every family and business in Connecticut while creating thousands of new jobs. The Draft Strategy calls for an expanded commitment to “all cost-effective” energy efficiency through programs that will:

- Reach all sectors and all buildings – government, municipalities, universities, colleges, schools, hospitals, places of worship, commercial and industrial facilities, and homes including houses, apartments, condos, and senior living centers – with special focus on groups that have not been fully reached by past efficiency programs such as small businesses and the low-income community
- Go beyond a traditional focus on upgraded lighting and weather stripping to deliver deeper efficiency gains in heating, air conditioning, ventilation, insulation, windows, furnaces, boilers, and other appliances such as refrigerators as well as process efficiencies in the manufacturing sector
- Leverage private capital through innovative financing mechanisms including Connecticut’s first-in-the-nation Green Bank (the “Clean Energy Finance and Investment Authority”), standardized energy efficiency performance contracts, and the State’s new Commercial Property-Assessed Clean Energy (C-PACE) program
- Reinvigorate and broaden the existing Home Energy Solutions program to ensure that additional ratepayer dollars achieve maximum reach and impact
- Incentivize Connecticut’s utilities to deliver on efficiency goals through “decoupling” and other performance-based mechanisms
- Establish building efficiency standards for both new construction and retrofits as well as a mechanism for benchmarking building efficiency and disclosing efficiency scores at the time of rental or sale
- Advance information technology opportunities for greater efficiency including a smart grid, advanced meters, and smart appliances on a carefully structured basis.

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### ELECTRICITY SECTOR STRATEGY

Providing Connecticut’s citizens with cheaper, cleaner, and more reliable electricity is a core focus of the Draft Strategy. To advance this agenda, DEEP proposes to:

- Build on the analysis of the recently released Integrated Resources Plan to ensure that Connecticut has adequate power generation capacity over the next decade to match electricity supply with demand
- Keep both generation and transmission costs down through proper planning, infrastructure investments, and engagement in federal and regional energy decisionmaking processes including increased scrutiny of the rules and incentives established by the Federal Energy Regulatory Commission and the Independent Systems Operator (ISO New England) which runs the wholesale electricity marketplace in our region
- Use economic incentives (including reverse auctions, declining subsidies, Power Purchase Agreements, etc.) to bring down the cost of renewable electricity, spur innovation, and promote a portfolio of alternative energy technologies that can compete with existing fossil fuel generation over time
- Focus on the deployment of renewable energy at scale using limited government resources to induce private sector investment through the Connecticut Green Bank (CEFIA), Zero (and Low) Emissions Renewable Energy Credits, and other innovative financing mechanisms
- Study Connecticut’s Renewable Portfolio Standard (which calls for 20% renewable power by 2020) with an eye toward considering: (1) raising the target, (2) broadening what counts as “renewable,” and (3) expanding in-state clean power generation
- Promote more “distributed generation” with proposals to expand virtual net metering and examine submetering, and to launch a pilot program of microgrids that would keep critical facilities (hospitals, prisons, sewage treatment plants, etc.) and core services (police and fire departments, warming centers, grocery stores, gas stations, pharmacies, banks, and phone charging locations) in a number of cities and towns “up” when the grid is down
- Ensure greater grid resilience through tree trimming, hardening of wires and poles, and funding for improved information technologies that allow outages to be tracked and restored more quickly while providing better communications with affected communities and individuals
- Launch an Advanced Energy Innovation Hub at UConn in the University’s new Technology Park that would support basic research on topics such as: fuel cells, batteries and storage, microgrid engineering, and small-scale hydropower.

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### INDUSTRY SECTOR STRATEGY

Connecticut's competitiveness and prospects for economic growth require special attention to energy needs in the manufacturing sector. Thus, the Draft Strategy proposes to:

- Ensure that expanded energy efficiency programs reach all of the State's manufacturing companies
- Provide the industrial sector with support for efficiency investments that go beyond buildings to include specialized process efficiency programs and combined heat and power projects
- Prioritize factories and other industrial "anchor loads" in the extension of natural gas mains
- Launch a Clean Energy Business Solutions Program to be managed by CEFIA under the direction of the Department of Economic and Community Development in support of job creation and retention where energy costs are a critical factor

### TRANSPORTATION SECTOR STRATEGY

Cars, trucks, buses, trains, and planes account for 32% of the energy consumed in Connecticut and an even higher percentage of the fossil fuels burned. Providing the State's citizens with mobility options is therefore a high priority of the Draft Strategy, which calls for:

- Expanded commitment to transport-oriented development and a broader mobility focus that encourages bikeways, walking paths, and other quality of life investments
- Secure funding for transportation infrastructure in support of reduced road congestion, improved air quality, and a strengthened platform for economic growth and job creation
- Investment in a clean fuels/vehicles initiative that will ensure that the basic infrastructure needed for vehicle choice will be in place including:
- Sufficient electric vehicle charging stations (about 100 statewide) so that no one in the state need suffer from "range anxiety"
- Support for conversion of fleets (delivery vans, taxis, garbage trucks, public works vehicles, etc.) to natural gas in conjunction with private sector-funded construction of natural gas filling stations that will be publicly available
- Establishment of a core set of Liquefied Natural Gas stations at truck stops in support of the growing number of long haul trucking fleets considering conversion to natural gas as their primary fuel
- Expanded hydrogen filling stations as demand for fuel cell-powered vehicles grows
- Support for better fuel economy in Connecticut vehicles and development of second-generation biofuels such as biodiesel from food waste

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### NATURAL GAS SECTOR STRATEGY

America's energy situation has been dramatically transformed by the increased availability of domestic shale gas at prices that are now significantly lower than oil. One of the nation's largest reserves of this gas, the Marcellus Shale, is in Pennsylvania and New York (as well as Ohio and West Virginia) less than 100 miles off Connecticut's western border. Because natural gas combustion produces lower emissions than oil or coal, conversion to natural gas promises a cheaper, cleaner, and more reliable fuel for heating, power generation, and perhaps transportation. DEEP acknowledges that there are significant environmental and public health issues associated with the drilling and transport of natural gas, which the State will actively address wherever possible.

As things now stand, Connecticut is not well positioned to take advantage of the emerging natural gas opportunity. Only 31% of Connecticut homes heat with gas today, compared with 47% in Massachusetts and 48% in Rhode Island. The percentage of commercial and industrial entities with access to gas is only slightly higher. The Draft Strategy proposes to make gas available to as many as 300,000 additional Connecticut homes and businesses, beginning with the roughly 217,00 customers who are on gas mains now but not heating with gas. Specifically, it calls for:

- Financing options to be made available to homeowners and businesses to eliminate the upfront burden of converting furnaces, boilers, and other appliances to natural gas – with the average residential cost of about \$7500 being paid back over a decade through an “on-bill repayment” system that would be collected by the gas companies (but funded by banks and the capital markets), providing the average household with immediate cost savings of about \$800 per year
- Alternative financing for low-income homeowners through community banks and credit unions with the State providing incentives or financing through CEFIA
- Regulatory changes (i.e., extended payback periods) that would enable potential gas customers who are not on but are near gas mains to have their connections financed by the State's three gas companies and repaid through the added revenues of the new customers
- Roughly 900 miles of gas mains to be built with a particular focus on providing “anchor loads” (factories, hospitals, schools, or other facilities with significant energy consumption) with access to gas mains
- Funding as follows:
  - The \$3 billion needed for heating system conversions to be funded by private capital
  - The roughly \$815 million required to connect those on or near gas mains to be financed by the gas companies

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- The approximately \$1.4 billion needed for the construction of new gas mains to be spread across some combination of new gas customers, all gas ratepayers, and bond funding
- Incentives for the State’s gas companies to ramp-up the required construction quickly, which DEEP estimates will translate into as many as 7000 jobs
- Utility construction projects to be linked so that the construction cost of new gas mains can be shared with those installing water or sewer pipes, fiber optic cables, or underground electric lines.

This Draft Connecticut Comprehensive Energy Strategy is meant not just to offer a policy direction but also to launch a dialogue. The recommendations and analysis highlighted above and discussed in more detail in the full report will be the subject of a series of public hearings, technical meetings over the next several months. To view the full schedule of hearings and meetings, and to learn more about how to submit written or oral comments on the Draft Strategy, please visit the DEEP website at [www.ct.gov/energystrategy](http://www.ct.gov/energystrategy). In light of the comments received and in consultation with the Connecticut Energy Advisory Board and relevant state agencies, DEEP will refine the draft analysis and issue a final Strategy early in 2013.