

## CONNECTICUT:

Connecticut has long been a leader in addressing climate change. The State's commitment began as early as 1990 when it passed its landmark Public Act 90-219, An Act Concerning Global Warming, which required the state to implement a wide range of measures to reduce energy consumption and associated greenhouse gas emissions. The state strengthened its leadership efforts when it passed Public Act 08-98, An Act Concerning Connecticut Global Warming Solutions. This requires the state to achieve a 10 percent reduction from 1990 emissions by 2020 and an 80 percent reduction from 2001 emissions by 2050. To achieve its ambitious carbon reduction goals, Connecticut is implementing a suite of complimentary strategies that help grow the economy, improve the quality of life for its citizens, and ensure a sustainable future. The range of GHG reduction actions include direct regulations, monetary and non-monetary incentives, market-based mechanisms, and recognition for voluntary actions.

On Earth Day 2015, Governor Malloy issued Executive Order 46, creating the Governor's Council on Climate Change (GC3). The Council is composed of 15 members from state agencies, quasi-state agencies, companies, and nonprofits. Governor Malloy tasked the Council with:

- establishing interim goals that will guide the state to the 2050 emission reduction target;
- annually monitoring statewide GHG emissions to determine if the state is poised to meet its 2050 target and any established interim goal(s);
- examining the efficacy of existing policies and regulations designed to reduce GHG emissions; and
- recommending new policies, regulations, or legislative actions that will assist in achieving established emission reduction targets.

The Council's current efforts are focused on analyzing greenhouse gas emission reduction scenarios to inform its recommendations on strategies that lead to long-term emission reductions, ensuring the state is on a path to meet its Global Warming Solutions Act goal of 80 percent below 2001 levels by 2050.

### Connecticut Basic Facts:

- Population 3.576 million
- GDP 263,379 (millions of current dollars)

## FINANCE

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- *The Connecticut Green Bank*, established in 2011, has pioneered multiple programs to expand the deployment of rooftop solar photovoltaics (PV) in Connecticut, while driving down installed costs and ratepayer incentives. The Bank has employed its model of leveraging limited state funding to attract private capital and investment in clean energy to ramp up the deployment of renewables and energy efficiency throughout Connecticut. A program goal of installing 30 MW of rooftop solar PV under the Residential Solar Incentive Program was met in 2015, 8 years early. Public Act 15-194 requires the Connecticut Green Bank to offer incentives to support the deployment of 300 MW of residential solar by 2022. The Green Bank is partnering with the state's electric utilities in the Solar Homes Renewable Energy Credit (SHREC) program to enable purchase long-term contracts for Renewable Energy Credits produced from a homeowner's solar systems, making solar more accessible and affordable to ratepayers throughout the state. In addition to this the Green Bank's Commercial Property Assessed Clean Energy (C-PACE) is an innovative program that is helping commercial, industrial and multi-family property owners access affordable, long-term financing for smart energy upgrades to their buildings. C-PACE allows building owners to finance qualifying energy efficiency and clean energy improvements through a voluntary assessment on their property tax bill. Property owners pay for the improvements over time through this additional charge on their property tax bill, and the repayment obligation transfers automatically to the next owner if the property is sold. Capital provided under the C-PACE program is secured by a lien on the property, so low-interest capital can be raised from the private sector.

## POWER SECTOR

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- Connecticut's *renewable portfolio standard* (RPS) requires all retail electricity suppliers to obtain at least 27% of their supply from renewable sources by 2020. In recent years, Connecticut has launched new initiatives that harness market forces to boost the supply of low-cost, in-state renewables. Small-scale (up to 1-2 megawatts) renewable distributed generation projects can compete for long-term power purchase agreements that Connecticut's electric distribution companies are required to offer through reverse auctions. These projects

support local economic development and also reduce local electricity consumption. At the regional level, in 2013, Connecticut's electric companies have signed long-term power purchase agreements that will bring more grid-scale solar and wind to the regional wholesale power market, while staying on track to meet its RPS goals and displace fossil fuel generating units.

- Connecticut participates in the *Regional Greenhouse Gas Initiative* (RGGI), in partnership with the other New England states, Delaware, Maryland and New York. RGGI is the nation's first market-based, regulatory cap-and-trade program to reduce greenhouse gas emissions from large fossil fueled power plants in the region. Collectively, the RGGI states have cut carbon pollution from the power sector 45 percent even as their economies grew 8 percent. In Connecticut, carbon emissions from the electric power sector have declined significantly – 39 percent from 1990 to 2013.

From 2008-2015, Connecticut has received a total of \$155 million in proceeds from RGGI auctions. More than 90 percent of these proceeds are invested in energy efficiency projects and clean and renewable energy programs that are harnessing market forces and competition to scale clean energy deployment and increase energy efficiency at the lowest cost. Connecticut's proceed investments have resulted in over 450,000 tons of CO<sub>2</sub> avoided and \$150,000 energy bill savings.

- Through Connecticut's *Competitive Regional Procurements for Grid-Scale Clean Energy* the state has embraced the use of open, competitive procurements of renewables and large-scale hydropower through long-term contracts as the best way to secure investment in new clean generation at the least cost to the state's ratepayers. A new, 20 MW solar facility in Sprague, Connecticut, that was contracted under Section 6 of Public Act 13-303 is expected to come online in November 2017. Recently, the Connecticut Department of Energy and Environmental Protection (DEEP) selected large scale clean energy resources totaling over 400 MW shared with Massachusetts and Rhode Island and smaller scale clean energy resources, including an energy efficiency proposal, for over 400 MW for long-term contracts pursuant to Public Acts 13-303 and 15-107. Under those statutes, DEEP has the authority to contract for up to 4,250 gigawatt hour, or approximately 15% of the state's electricity demand, from clean energy resources. The Connecticut Public Utility Regulatory Authority is currently reviewing the contracts entered into resulting from those two solicitations and a final decision is expected early this fall.
- Connecticut's *Microgrid Program* was developed in 2012 in response to the recommendation of the Governor Malloy's Two Storm Panel regarding the use of microgrids to minimize the impacts to critical infrastructure associated with emergencies, natural disasters, and other events when these cause the larger electricity grid to lose power. Microgrids provide electricity to critical facilities and town centers on a twenty-four hour basis and will include an isolation system so the microgrid can provide power despite any large-scale outages and support critical facilities. DEEP conducted two competitive solicitations for microgrid projects and awarded \$20.1 million in grants to ten projects.
- Connecticut's *Shared Clean Energy Facilities (SCEF)* pilot program authorizes up to 6 MW of community clean energy statewide to increase access to renewables for customers who cannot participate in rooftop solar. In June 2017, DEEP selected three projects to participate in the pilot program at a direct cost that is cheaper than rooftop solar. The projects are expected to come online before 2020.

## TRANSPORTATION

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- *EVConnecticut* is a partnership between the Connecticut Department of Energy and Environmental Protection and the Connecticut Department of Transportation working to introduce more electric vehicles into Connecticut. Connecticut's cheaper, cleaner and more reliable energy future depends on electric vehicles putting us on a path toward greater energy independence.
- Connecticut pursued the development of its *electric vehicle charging infrastructure* through the EVConnecticut municipal and business charging station grant programs. The grant programs covered varying costs of the installation of electric charging stations in public locations, making them accessible to all Connecticut residents at no cost. Momentum for the build out of EV chargers caught on quickly, with initial demand for EV charging centered on Level 1 and Level 2 charging. As a result of these efforts, EV infrastructure installations have far outpaced the 2013 Comprehensive Energy Strategy goal of 50 new, publically available, Level 2 EV chargers. Public and private demand along with increased funding support from other sources has prompted installation of 200 additional public chargers since 2013, which greatly expanded the infrastructure and helped reduce EV drivers' "range anxiety" barriers.

- In May 2015, Connecticut launched the *Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR)* program. CHEAPR provides residents with a point-of-sale rebate on the purchase or lease of new ZEVs, up to \$5,000. Rebates are offered on a sliding scale based on battery capacity and vehicle technology. CHEAPR has disbursed over \$3.7 million for 1,600 new vehicle leases and purchases. DEEP also partnered with the Connecticut Automotive Retailers Association to establish a dealer recognition and cash bonus award, both of which incentivize dealers to actively sell EVs. This public-private partnership also has encouraged auto dealers to install free public EV charging at their local dealerships.
- Connecticut is one of seven states signed onto the *Zero Emission Vehicle Memorandum of Understanding* which commits the states to collectively deploy 3.3 million ZEVs on the road by 2025. Connecticut's portion of this commitment is approximately 150,000 EVs. Connecticut is implementing the steps laid out in the Multi-State Action Plan which focuses on developing ZEV infrastructure and supporting policies, codes, and standards to advance the deployment of ZEVs. With the implementation of the revised travel provision, ZEV sales in Connecticut and other New England states are expected to increase beginning in 2017.
- Connecticut has created an *Interagency Transit Oriented Development (TOD)* workgroup focused on increased mobility, reduced emissions, and creating more livable communities in Connecticut. This group also oversees a competitive grant program that has issued over 31 grants totaling over \$11M for projects that will improve pedestrian connections, increase multimodal transportation options, encourage infill development and discourage sprawl.

## EFFICIENCY

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- *Energize Connecticut<sup>sm</sup>* is a resource dedicated to empowering Connecticut citizens to make smart energy choices, now and in the future. A joint partnership of the Connecticut Energy Efficiency Fund, the Connecticut Green Bank, the state Department of Energy and Environmental Protection, and the local electric and gas utilities, this successful initiative provides Connecticut consumers, businesses and communities the resources and information they need to make it easy to save energy and build a clean energy future.
- The *Connecticut Energy Efficiency Fund* plays a vital role in reducing emissions and increasing economic activity in the state. For every \$1 spent on utility-administered energy efficiency programs, Connecticut receives electric, gas, fuel oil, and propane system benefits valued at nearly \$2.408. This continued return on investment demonstrates that Energy Efficiency Fund programs are a powerful economic catalyst: they reduce customer costs, generate jobs, and make the state's businesses more competitive. The lifetime energy savings achieved through Energy Efficiency Fund programs in 2014 resulted in 4.2 billion kilowatt hours reduced; 103 million CCF (centum cubic feet) of natural gas saved; 42.2 million gallons of fuel oil and propane reduced; and avoided emissions of 3.2 million tons of carbon dioxide equivalent, which is the same as removing 466,259 cars from the road for a year.
- As part of a broader effort to model environmentally preferable practices, since 2013, the inter-agency team of DEEP, the Department of Administrative Services, the Attorney General's Office, the Office of the Treasurer, the Office of Policy and Management, the Connecticut Green Bank, the companies, and others, have advanced the "*Lead by Example*" energy management programs, including customized initiatives and financing mechanisms to reduce energy use in state buildings. DEEP has developed an implementation pathway to reduce energy costs from state buildings by benchmarking energy consumption, conducting investment grade energy audits to identify energy saving opportunities, and identifying appropriate financing mechanisms for implementing energy efficiency measures across all state agencies.
- *Clean Energy Communities (CEC)* is a nationally-recognized Energize Connecticut program to help cities and towns save energy and increase the installation of renewable energy. Participating municipalities pledge to reduce their municipal building energy consumption by 20 percent, attain 20 percent of municipal electricity needs from renewable sources, and take other actions to support the deployment of clean energy by 2018. Energy experts from the two electric utilities work with each municipality to develop a Municipal Action Plan to achieve these goals, which includes benchmarking the energy usage of municipal buildings – this evaluation of each building's energy usage is one of the first steps to identifying solutions to reach program goals. Municipalities are provided customized energy solutions and innovative financing options to complete energy efficiency work for the benefit of the entire community.

## NATURAL RESOURCES

### ADAPTATION AND RESILIENCY

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- *Connecticut Institute for Resilience and Climate Adaptation (CIRCA)* is a multi-disciplinary, center of excellence that brings together experts in the natural sciences, engineering, economics, political science, finance, and law to provide practical solutions to problems arising as a result of a changing climate. The Institute will help coastal and inland floodplain communities in Connecticut and throughout the Northeast better adapt to changes in climate and also make their human-built infrastructure more resilient while protecting valuable ecosystems and the services they offer to human society (food, clean air and water, and energy). The Institute will combine the world-class research capabilities of UConn and the progressive policies and practical regulatory experience of the DEEP to translate sound scientific research to actions that can ensure the resilience and sustainability of both the built and natural environments of the coast and watersheds of Connecticut.
- *Planning.* The State has an overriding plan of conservation and development that now incorporates climate change mitigation, adaptation and resiliency. Other state plans are required to be consistent with the Plan of Conservation and Development, including our state's Comprehensive Energy Strategy, Open Space Plan, Wildlife Plan, and Forest Plan. For example, in our State's Open Space Plan, we are actively seeking to purchase properties that protect habitats at risk from a changing climate, such as cold water streams and critical marsh habitat. In addition, as part of our statewide planning efforts, we are currently developing a science-based evaluation of local sea level rise, in conjunction with CIRCA.
- *Statewide Resilience Roadmap.* In October 2015, Governor Malloy issued Executive Order No. 50, creating the State Agencies Fostering Resilience Council ("SAFR Council"), which is responsible for creating a Statewide Resilience Roadmap based on the best climate impact research and data, and helping create a state policy on disaster resilience.
- *Education and outreach.* In addition to the efforts undertaken by CIRCA, Connecticut Sea Grant and UConn's Center for Land Use Education and Research (CLEAR) are partnering with researchers, consultants and other professionals to work with municipalities and relevant professionals on climate resiliency through the Climate Adaptation Academy (CAA).