Promoting Economic Development

Economic Development

"Reinventing Connecticut is a broad idea that revolves around one central principle — creating jobs and spurring our economy." — Governor Dannel P. Malloy announcing approval of plans for the Jackson Laboratory for Genomic Medicine to build a research center and create hundreds of high-paying jobs in the state, January 5, 2012

In his first budget address, Governor Malloy made it clear that economic development and job growth would be a defining priority of his administration. Under his leadership, the state immediately developed growth strategies to support Connecticut's historic core industries — advanced manufacturing, insurance, and financial services — as well as begun new investments in burgeoning industries — healthcare and bioscience, digital media, technology, and tourism — designed to create jobs for the next generation.

Progress during the Malloy administration:

- Dropped unemployment rate from 9.3 percent in December 2010 to 4.3 percent in October 2018.
- Added **126,400 private sector jobs** and increased the number of new firm creation by 24 percent since the recession while Executive Branch staffing is at its lowest levels since the 1950's.
- Assisted 2,100 companies by June 2018, **creating and retaining more than 119,000 jobs** along the way. Prior to 2011, the state had only assisted 118 companies in the previous eight years.
- Cemented historic partnerships with large employers including UTC, Sikorsky, Electric Boat, Cigna, ESPN, AETNA, Synchrony, and many more, to ensure their corporate headquarters presence in Connecticut for the next generation.
- Increased the number of Fortune 500 companies in the state from 11 to 17.
- **Attracted more than 100 new companies,** including Charter Communications, NBC Sports, and The Jackson Laboratory.
- Created more than 30,000 Connecticut jobs through combined investments in renewable energy and energy efficiency.
- **Tripled the number of incubators in urban areas** with support from CTNext and Connecticut Innovations, and created 22 new accelerators contributing to a dramatic growth in the number of new ventures and entrepreneurs in the state.
- Invested approximately $206 million on brownfields revitalizing more than 250 properties in 72 cities and towns, leveraging over $3 billion in other funds.

Leading a Bipartisan Jobs Effort

In 2011, Connecticut continued to feel the impact of the Great Recession. In addition to balancing the state budget, the Malloy administration made economic development a top priority in order to create good jobs for Connecticut residents.

After passing a budget that closed a deficit of more than $3.6 billion, Governor Malloy issued a call for a special legislative session focused on jobs and the economy. Leading into that session, the Governor embarked on a statewide tour to hear from residents and business owners for their ideas on legislation to support job growth, meeting with hundreds of companies across Connecticut. On October 6, 2011, Governor Malloy hosted an Economic Summit that combined experts and speakers from academia, the private sector, and government to discuss ways in which the state could lead the way in a 21st century economy. Later that month, he released a bipartisan strategic plan for reinventing Connecticut's economy and strengthening the state's overall competitiveness.[1] That plan, which has been updated[2], encompassed all key components aimed at driving economic growth including transportation, housing, education and economic development investments.

Ultimately, Public Act 11-1, *An Act Promoting Economic Growth and Job Creation in the State*[3] passed both chambers of the General Assembly with an overwhelming bipartisan vote on October 26, 2011. The 2011 Jobs Bill:

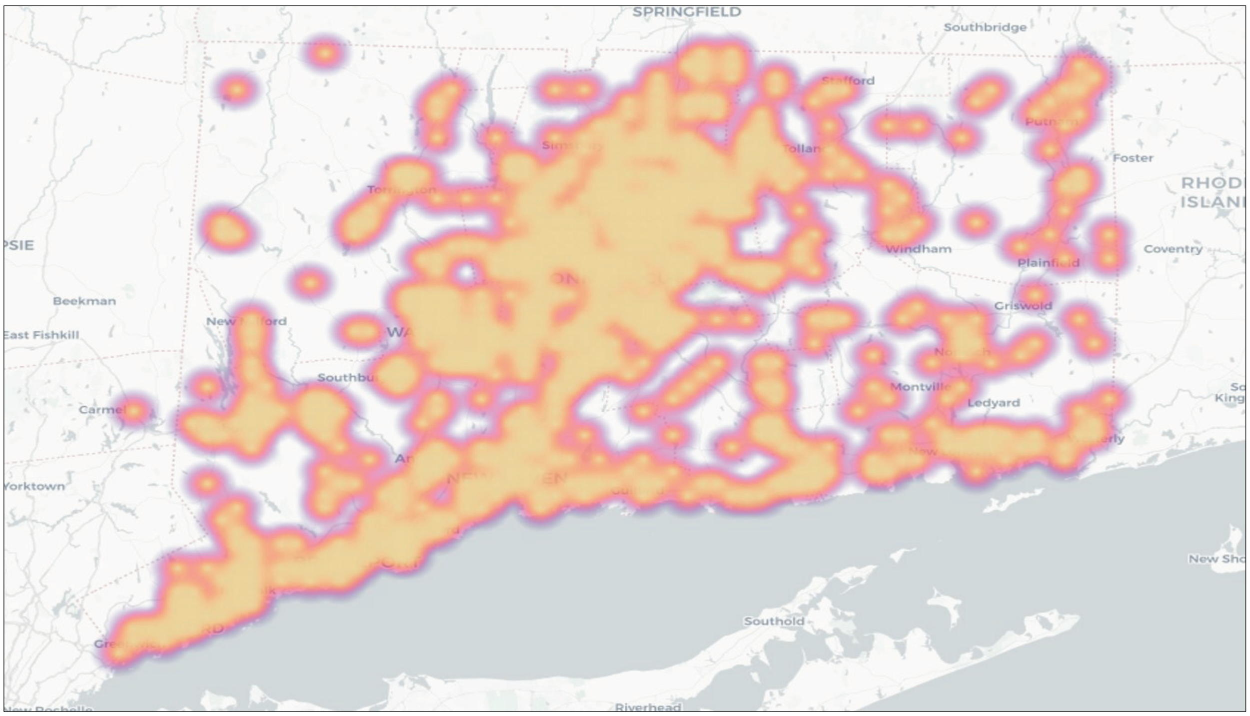
- Created the Small Business Express program, and directed $180 million to support small business growth;
- Increased bond authorizations for the Manufacturing Assistance Act (MAA) by $240 million;
- Authorized $20 million for brownfield remediation;
- Shortened timeframes for obtaining critical permits and eliminated burdensome regulations;
- Created a new e-business portal to make it easier for companies to access programs and services;
- Included $125 million for Connecticut innovations to make new investments in startup companies and to help build an innovation and entrepreneurship ecosystem;
- Increased the tax credit available to "angel" investors to spur private investment in high-tech and emerging technology startups;
- Included workforce development measures to align the state's talent pipeline to business needs; and
- Directed $20 million to modernize advanced manufacturing programs within community colleges.

Small Business Express

The Small Business Express Program (EXP) was one of the first programs launched, designed to address the lack of capital available to small businesses after the great recession. The program quickly became a popular and effective tool to assist Connecticut's small business community.

Administered by the Department of Economic and Community Development (DECD), EXP provides small businesses with access to capital, job training, and encourages private investment and hiring. The program supports the retention and growth of small businesses in Connecticut using a streamlined process that provides financial assistance in the form of revolving loan funds, job creation incentives, and matching grants.

As of September 2018, DECD had awarded more than $319 million through EXP to help more than 1,950 small businesses, ranging from "mom and pop" stores to advanced manufacturing firms. These companies are expected to create more than 8,000 jobs and retain more than 21,000 jobs.



Map of small businesses that participated in DECD's Small Business Express program since its launch in 2011.

Mid-sized Companies Help Drive Regional Economies

In addition to helping small businesses, the state recognized that medium and large-sized employers are invaluable contributors to the state's economy, and specifically to helping drive regional economies.

Since 2011, the state was an active investor in their growth through the Manufacturing Assistance Act (MAA). In particular, MAA supports companies in the state's most strategic industries, including advanced manufacturing, bioscience, and financial services. Between 2011 and 2018, MAA funds were used to assist 211 companies in 78 municipalities in the state's largest urban centers, suburban towns, and small rural communities. MAA-funded companies are expected to retain approximately 37,000 jobs and create 12,600 new jobs. Approximately $587 million in total state assistance in this program has leveraged $1.6 billion in private investment.

First Five Plus

As states face constant competition for business' facilities and headquarters, Connecticut's high quality of talent, strategic location, and unparalleled quality of life were a strategic asset in retaining and attracting employers to the state. Creating win-win partnerships with large employers and thought-leaders would help secure jobs for not just the current population of the state, but for generations to come.

To secure the long-term viability of our targeted industries, the First Five Jobs Initiative was created through Public Act 11-86, *An Act Creating the First Five Program*[4] with bipartisan support of the General Assembly to provide assistance to large-scale business projects as a means of encouraging business expansion, relocation, and job creation. Companies participating in the program must promise to create 200 new jobs within two years or invest $25 million dollars and create 200 jobs within five years.

As of September 2018, 19 businesses had participated in the program, including many household-named companies such as Cigna, ESPN, NBC Sports, Deloitte, Charter Communications, Pitney Bowes, Synchrony Bank, Henkel, Amazon, and Electric Boat.

Combined, the companies pledged to retain 30,164 jobs and create at least 4,000 jobs. As of May 2018, the companies had surpassed that goal and created 4,245 jobs. Additionally, these businesses bucked the trend of slow growth in large companies and brought significant economic value through their private investment of more than $2.8 billion, leveraging 6.8 times the total state investment. The continued retention and growth of these major employers provides thousands of workers with high-paying jobs (average salaries of over $125,000) and ensures the positive economic impacts of their presence in Connecticut continues to be felt for years to come.

Strengthening Advanced Manufacturing

With more than 4,500 manufacturing companies in Connecticut, advanced manufacturing is and will remain a critical part of Connecticut's economy. From 2011 to 2018, the state made significant investments to turn the industry around by ensuring all manufacturers had access to state-of-the-art technologies and equipment, as well as continued access to our highly skilled talent pipeline. These investments helped foster an environment of long-term sustainability and success for Connecticut manufacturers.

Going back to the 1980s, Connecticut lost 100,000 manufacturing jobs. In 2011, the state's response was to bring back advanced manufacturing by working with companies of all sizes, as well as universities and colleges to ensure Connecticut was best prepared to support advanced manufacturing work. Recognizing the rising global demand for aerospace and the evolving United States defense strategy, the state positioned itself to leverage these trends and build upon Connecticut's high quality, high-productivity, and location for precision manufacturing. In particular, the strategy was designed to:

- Build long-term relationships with the largest companies in the State of Connecticut;

- Ensure that small to mid-sized supply chain companies would benefit from growth happening across the sector;
- Develop a more robust pipeline of well-trained talent (from factory floor to Ph.D. engineers); and
- Provided companies with access to capital to strategically invest in equipment and people.

United Technologies

On February 26, 2014, a historic agreement with United Technologies Corporation (UTC) that ensured the Fortune 100 Company's presence in Connecticut for the next generation was announced. The agreement had, and continues to have, a positive impact on more than 75,000 jobs in the state.

Under the agreement, UTC pledged to invest up to $500 million to upgrade and expand its aerospace research, development, and manufacturing facilities between 2014 and 2019. Overall, UTC expects to invest up to $4 billion in research and other capital expenditures in the state.

In 2017, the United Technologies Research Center unveiled its new expanded $60 million innovation hub on its East Hartford campus made possible by the collaboration with the state. UTC then committed to investments of $75 million in an Additive Manufacturing Center of Excellence and a $40 million Engine Compressor Research facility in Connecticut.

Sikorsky/Lockheed Martin

Sikorsky, headquartered in Connecticut for more than 85 years was purchased by Lockheed Martin in November 2015 from United Technologies. Competition ensued as Lockheed Martin considered numerous states for production of nearly 200 CH-53K King Stallion Helicopters — the world's premier heavy lift helicopter — for the United States Navy. Despite stiff competition, Lockheed Martin and Sikorsky chose to build in Stratford where they had access to skilled laborers and strong workforce.

The agreement with Lockheed Martin resulted in secured Sikorsky Aircraft's worldwide headquarters in Stratford through at least 2032, and a commitment to create and retain approximately 8,000 direct jobs. As part of the agreement, Sikorsky also pledged to nearly double its spending of $350 million per year among in-state suppliers — a boon for the thousands of small and mid-size advanced manufacturers in Connecticut.

In exchange, the state committed financial incentives totaling up to $220 million in earned annual grants and tax credits over the term of the agreement. Legislation approving this agreement was passed the General Assembly by an overwhelming, bipartisan vote of 35-1 in the State Senate and 136-6 in the House of Representatives.

Manufacturing Innovation Fund

With strategic investments in UTC, Sikorsky, and Electric Boat expected to result in a ramp up of production and hiring, the Manufacturing Innovation Fund (MIF) was introduced in 2014, to help small to mid-sized manufacturers in the state modernize, invest, and grow. Since the program's inception, MIF has strengthened the aerospace and shipbuilding supply chain, connected manufacturers with innovative new technologies, and updated the state's apprenticeship and training programs.

As of June 30 2018, the MIF had assisted more than 1,130 companies and invested more than $58 million to help accelerate growth, cultivate talent, and boost investment in innovation.

Preserving the Naval Submarine Base and Strengthening Electric Boat

In 2011, the state recommitted to preserve and enhance the state's 150-year-old relationship with the U.S. Navy and the Submarine Base (SUBASE), which generates $5 billion in annual economic activity and supports over 15,000 jobs. Connecticut has actively partnered with SUBASE by funding vital infrastructure improvements to support the base's national security mission. Thanks to this partnership, SUBASE, once pegged for closure, was described by Navy Secretary Ray Maybus as, "one of our absolute crown jewels," during a 2016 ceremony at which he presented Governor Malloy with the Distinguished Public Service Award — the U.S. Navy's highest civilian award for public service.

This commitment to the SUBASE was particularly crucial during the recent period of federal fiscal austerity (and Pentagon requests for another round of base closures) following passage of the Budget Control Act in 2011 which severely constrained the growth of defense funding. Despite tight budgets, SUBASE has thrived and modernized, in large part because of this unique partnership with the state. Navy Secretary, Richard Spencer, in a 2018 correspondence with Governor Malloy described it as a "model relationship for the rest of the country."

While investments in our submarine industrial base are concentrated in southeastern Connecticut, the impacts are felt statewide. For example, more than 900 suppliers in the *Virginia*-class program, are dispersed across all five of the state's congressional districts, with the largest concentration in central Connecticut's 1st District. All together, they supply more than $1 billion worth of goods and services over a five-year period. Connecticut's continued support of the SUBASE will be beneficial for decades to come.

Transformation of the SUBASE

Over the last ten years, in partnership with Connecticut, the SUBASE has undergone a transformation as old infrastructure is demolished and replaced with modern capacity specifically designed for unique operations, specialized training and high-tech support functions associated with producing and maintaining our nation's submarine force.

Since 2011, Connecticut has invested more than $16 million in improvements to the SUBASE, which included construction of new buildings to support operations and maintenance, construction of training equipment, utility upgrades to enhance efficiency, and purchases of land for encroachment mitigation on the northern, southern and western boundaries of the base.

Furthermore, the state initiated discussions with the U.S. Navy that resulted in two new projects to enhance the base. The first strengthens SUBASE's storm resiliency and provides energy security to the base by funding installation of a microgrid. This will allow SUBASE to disconnect from the community utility grid during a power disruption and dispatch power through the on-base microgrid to mission critical loads, such as homeported submarines. The second project funds and relocates the main gate construction of a consolidated emergency management center to enhance SUBASE's military value and base security.

Central to the argument Connecticut advanced in the last Base Realignment and Closure (BRAC) round was that the SUBASE deserved greater credit for the unparalleled synergy created by the close proximity and interactions among so many public and private submarine defense industry and Navy organizations in Groton and New London. Submarines are designed and built at Electric Boat in Groton and all submarine personnel receive basic and advanced training at the Naval Submarine School on SUBASE. A navy SUBASE depended on securing Electric Boat, another goal achieved by the administration.

Electric Boat – General Dynamics

Connecticut-based General Dynamics Electric Boat (EB), is the world's premier designer and builder of nuclear submarines and one of the state's largest employers. Since 2011, the State and Electric Boat have collaborated on two historic investments, which affirm Connecticut's continued commitment to grow jobs and remain the global leader in the construction of nuclear submarines.

In October 2014, the state announced an agreement with EB to help finance the company's expansion in Groton. Under the terms of this agreement, DECD provided a $10 million loan to EB in support of $31.5 million project, led to the company adding 200 employees to its 8,700 workforce in July 2015.

In May 2018, Electric Boat and Connecticut reached a historic First Five Plus agreement supporting the company's major expansion, as well as maintaining its headquarters and primary submarine facility in the state. Through the agreement, 1,900 new Connecticut-based jobs in the state are anticipated and approximately 11,000 jobs will be retained. Senator Cathy Osten, a longtime supporter of job expansion and retention, played an integral role in the advancement of Electric Boat. The deal allows the company to retain and enhance its ability to bid competitively on U.S. Navy contracts, which will positively impact jobs for the next generation and beyond.

Under the agreement, the state committed to provide assistance over 17 years with certain minimum requirements, targets and associated benefits. This includes a sales and use tax exemption with a value of up to $20 million related to capital expenditures of at least $852 million, $8 million for workforce development, $20 million for assistance with dredging related to the company's growth, and the provision of a loan of $35 million where loan forgiveness may be earned for achieving employment and supply company spend targets.

Investing in Bioscience

Healthcare and Bioscience promise to be strong drivers of employment in the coming decade. Traditional jobs in healthcare delivery will grow with the aging of the baby boomers and their need for additional healthcare services. Connecticut will see growth from its strong position in life sciences (including pharma, medical devices, and genomics) due to the strength of the university research community — mainly the University of Connecticut (UConn) and Yale — and the strong array of companies expanding their Research & Development and manufacturing presence in the state.

Given bioscience's potential for growth and Connecticut's strategic location in the heart of the Knowledge Corridor, targeting strategic investments in the industry was an obvious choice. Bolstered by the state's educated and productive workforce, with the sixth highest percentage of science and engineering doctorates in the nation, Connecticut quickly established itself as a bioscience hub focused on job creation and economic growth.[5]

To leverage these strengths, the state made strategic investments. In 2011 the state undertook a major bioscience investment of $864 million at UConn Health aimed to improve research and development at the Medical School. This was followed by Science Technology Engineering and Math (STEM) funding for UConn of $1 billion over ten years. The goal was to dramatically increase our talent base in key science areas.

The Jackson Laboratory

To gain more momentum and be more competitive, the state also needed to attract more private sector participation. Governor Malloy's plan to invest in bioscience started with the recognition that investing in UConn Health would signal the state's commitment to the industry at large. This announcement quickly generated interest from The Jackson Laboratory (JAX), a world-renowned research institute.

In September 2011, the state announced a $1 billion initiative with JAX bringing the lab's new personalized medicine facility to the campus of UConn's Health Center. JAX created 385 positions by 2018, achieving their commitment of at least 300 positions four years ahead of schedule.

Once JAX Genomic Medicine is fully developed, the institute is expected to employ 600 scientists and technicians in 250,000 square feet of state-of-the-art lab space. The total 20-year capital and research budget for the institute is projected to be $1.1 billion, of which the State of Connecticut has approved $291 million: $192 million in a secured, forgivable construction loan and $99 million in grants for research and related activities.

As of June 2018, the bioscience cluster in Connecticut was composed of nearly 39,000 employees at more than 2,500 companies.[6] Many other bioscience entities identify Connecticut as a hub and have relocated to the state, significantly, Sema4 and SCA Pharmaceuticals.

Connecticut Bioscience Innovation Fund

The State of Connecticut demonstrated a commitment to facilitating forward-thinking work in the bioscience field with the creation of the Connecticut Bioscience Innovation Fund (CBIF) in 2013. As of June 2018, the CBIF had invested more than $61 million in innovative and promising bioscience research and companies.

Bolstering the Insurance & Financial Services Sector

From 2011 to 2018, the state supported the insurance industry, making Connecticut an attractive home, through regulatory efficiency, premium tax reduction, incentives, and other reforms which solidified and grew the sector. For more than 150 years, Connecticut has been the center for insurance excellence. Connecticut leads the nation in insurance jobs per capita (2.6 percent), the insurance industry in the state accounts for nearly 60,000 direct jobs and 114,000 indirect jobs in state, and has the highest concentration of actuaries in the country.

This commitment to state-based insurance regulation gave Connecticut an important voice in national and international discussions to ensure the state's domestic insurance and reinsurance industry will continue to compete vigorously across the U.S. and globally. With 111 companies domiciled in the state — including industry leaders The Hartford, Travelers, Aetna, Cigna, Hartford Steam Boiler, Voya, Gen Re, and Odyssey — the Connecticut insurance industry accounts for $170 billion in direct written premiums. In addition, the state has over 1,300 non-domestic insurance companies licensed to do business here.

Incubators

The insurance industry is utilizing technology and innovation to provide better service to its customers. Since 2011, Connecticut's solid industry base gave rise to companies like InsurTech, Connecticut's first insurance accelerator, which is increasing innovation and start-ups, as well as developing a strong pipeline of talent.

The state capitalized on the captive insurance market by enabling legislation and subsequent supporting legislation to create a captive insurance market, which did not exist before 2011. As of June 2018, the industry accounted for more than $360 million in premiums and provided businesses of all sizes and disciplines with a tool to manage their costs. This gave rise, among other things, to Connecticut becoming a home to captive insurers created by some of the largest state-based corporations such as Aetna, Stanley Black & Decker, and Charter Spectrum, as well as mid-size employers like MasoniCare, grocery chains, and the trucking and construction industry.

Hedge Funds and Venture Capital Investment

In addition to the robust insurance industry, Connecticut benefits from the presence of myriad of other financial services organizations, including private equity firms, hedge funds, venture capital firms, and several national and international banks. The finance industry in Connecticut is projected to grow by as much as 30 percent by 2024.[7] In 2016, finance and insurance accounted for 12.8 percent of the state's gross domestic product.[8] With more than 100,000 insurance and financial service employees, Connecticut has a vast array of talent in the industry.

The state is currently second in assets managed in hedge funds with more than $300 billion managed by Connecticut firms. Given the strength of this sector and the large amount of data gathered by Connecticut companies, there is also growing presence of data analysis, data management, and cyber security firms in the state, including global companies such as Infosys and Gartner.

To support these key industries, the Malloy administration:

- Partnered with industry groups such as the Insurance and Financial Services Cluster to promote educational programs focused on the specialized accounting, actuarial, and legal aspects of the industry;
- Promoted Connecticut's regulatory environment and talent at conferences designed to attract firms from around the country and the;
- Extended tax and other incentives designed to promote the industry; and
- Signed legislation to protect Connecticut residents and employers from the negative effects of the federal Republican tax law that was adopted by Congress and signed by President Trump in 2017. Among the changes was a revenue-neutral tax on pass-through entities, fully offset by a personal income tax credit, which prevented Connecticut's small business owners from being targeted by the federal tax law.[9]

Green Jobs & the Economy

While Connecticut may not be rich in natural resources, it does have a vibrant green tech sector that has grown to 30,000 jobs, representing an important part of our state economy. A national leader in fuel cell manufacturing and home to a productive solar installation industry, Connecticut is now leveraging its manufacturing expertise to become the east coast hub for offshore wind assembly.

Fuel Cells

For fifty years, Connecticut has evolved fuel cells to be a viable alternative energy source. Under the leadership of the administration and the Representatives David Arconti and Michelle Cook, Connecticut's homegrown fuel cell sector benefitted and grew thanks to state support for long-term commitments investing in fuel cell deployment across Connecticut. Altogether, over the life of Connecticut's long-term procurements, the state will have invested nearly $1 billion in incentives to deploy 100 megawatts (MW) of fuel cells throughout the state — a more significant per capita investment than states like California. With a strong manufacturing presence and industrial supply chain in Connecticut, the industry generates approximately $601 million in revenue and investment annually.

Offshore Wind

As the price of offshore wind falls, Connecticut has seized this new opportunity. Governor Malloy called for the first significant state investment in wind energy, and in a 2018 procurement, 200 MW of offshore wind was added to the state's energy portfolio. With this wind contract comes a $15 million private investment in infrastructure improvements to the New London State Pier to support construction and assembly on wind turbines and to spur significant economic development with additional offshore wind development. The wind project is expected to lead to the creation of more than 1,400 direct, indirect and induced jobs.

Finally, green tech jobs are precisely the kind of well-paying, skilled jobs that the state needed to invest in to cultivate a talent pipeline. In collaboration with our community colleges, the state helped to initiate an Innovative Energy Management Associates program to close this workforce gap. [For more on fuel cells and offshore wind see "Tackling Climate Change with Cleaner, Cheaper, More Reliable Energy Policy" on page 52]

Nonprofit Sector

In 2011, the Governor's Cabinet on Nonprofit Health and Human Services was established. Its purpose is to analyze existing public-private partnerships with respect to the state's health and human services delivery systems and to make recommendations to the Governor to enhance the effectiveness of those systems in regard to client outcomes, cost-effectiveness, accountability and sustainability. Since its creation, the Cabinet has developed and presented 62 recommendations to the Governor based on the premise that a financially viable human services delivery system is vital to the health, quality of life and economic well-being of the state.

Nonprofits serve our neediest citizens, in many ways. In 2013, the state launched the first-ever Nonprofit Grant Program (NGP), which funds capital projects for nonprofit health and human services providers. These projects enable community-based providers to undertake energy efficiency, building improvement, information technology and other capital improvement projects that create efficiencies and service delivery improvements. As of June 30, 2018, approximately $105 million in NGP funding had been awarded, close to 600 projects, and another $30 million in July 2018.[10]

Digital Media

Digital media is a fast-growing creative industry that is comprised of production and post-production facilities, digital animation, film, and gaming companies. Since 2006, average spending in this industry in Connecticut has been $200 million per year.[11] Already home to many digital media industry giants such as ESPN and WWE, television networks such as YES and A&E, and talk show and digital movie studios like Blue Sky Studios, a division of 20th Century Fox, digital media was another industry the state targeted for growth.

Recognizing its potential, further the state supported attractive tax credit programs competitive with other key states. Additionally, the state fostered the creation of two UConn undergraduate degrees in digital media and design. The degrees are cross-disciplinary programs intended to give Connecticut students a competitive edge for career success in the rapidly growing job market and to provide employers with skilled talent they need to expand.

Connecticut's favorable policies and efforts culminated in innovative and influential companies like NBC Sports, Charter Communications, and ITV relocating to Stamford, Connecticut.

Technology and Innovation

Connecticut has always been home to innovative people and companies. The state's highly educated and productive workforce provides companies of all types with a major competitive advantage.

Companies like Infosys and Ideanomics announced plans to establish operations in the state due to several competitive strengths. First, tech talent is easier to access and more affordable than many other metropolitan areas in the U.S. Companies understand Connecticut's cutting-edge educational systems produce an enormous level of talent that can drive future success and business growth. Second, the state's smaller size leads to easier access to leaders in business, government and capital providers helping enterprising companies grow and innovate.

In order to ensure that Connecticut maintained—and strengthened—its competitive position in the technology and innovation arenas, the state took the following steps:

- Provided $125 million to Connecticut Innovations (CI) to accelerate growth in young, entrepreneurial companies. CI dramatically increased its work to support early stage companies with needed capital as well as the development of innovation ecosystems in the state through its subsidiary, CTNext. In 2017, CI invested $38 million in 74 companies and had 158 companies in its portfolio as of June 2018.
- Seeded with $10 million in the Tech Talent Fund, which is focused on building the high-tech workforce pipeline that employers need, both now and in the future. Major fund initiatives include new boot camps for in-demand IT sectors and technology internships support, bringing employers together with the talent around the state.
- Created the first in the nation, "Green Bank", to help companies and consumers finance clean energy projects to lowering their energy costs.
- Increased the number of bachelor's degrees in computer science at public colleges and universities by 136 percent and by 81 percent in private colleges and universities during that same period.
- Launched the Innovation Places program in 2017, designed to create compelling urban areas, which would welcome entrepreneurs, innovators and their business partners. Four cities in the state are now creating strategic place making investments in incubators and accelerators, mentor networks, bike paths, and other elements. Together, these changes are already helping the state dramatically grow the innovation sector, with new company creation up considerably in 2017.

Tourism

Connecticut's tourism marketing was practically non-existent before 2011, having at one point been reduced to a single dollar. This was allowed to happen despite the state's natural beauty, diverse arts community, cultural activities and events, and premier destinations being tremendous economic assets.

Connecticut went from being completely excluded from New England tourism maps to being a $14.7 billion tourism industry. Key to the state's economic development strategy, and even in the midst of extremely challenging budget circumstances, Governor Malloy made tourism funding a priority once again. Connecticut launched the award-winning[12] "Still Revolutionary" marketing and branding campaign in 2012, including the new CTvisit.com, which promotes more than 4,000 different hotel, restaurant, attraction, and event partners. Since 2011, the state made huge gains in reestablishing as a prime Northeast destination.

After just four years of a renewed focus on the industry:

- Tourism contributed $14.7 billion to the local economy in 2015 (total business sales) — a 4.6 percent increase since 2013.
- Tourism supported 82,688 direct jobs in 2015 — a 2 percent increase over 2013 — and 121,527 jobs were indirectly supported by tourism activities.
- One of every 18.8 jobs (5.3 percent) of all employment in Connecticut was supported by visitor spending in 2015.
- Tourism generated $1.7 billion in tax revenues in 2015, including $910 million in state and local taxes.
- Direct traveler spending totaled $8.7 billion in 2015, up 5.1 percent from 2013.
- Traveler spending increased by $1.5 billion since the recession — 20 percent higher in 2015 than in 2009.

Modernizing Connecticut's Liquor Laws

Connecticut's liquor laws are the most antiquated liquor laws in the country. These archaic laws have resulted in higher prices for Connecticut customers and lost sales to neighboring states.

Rolling Back Connecticut's Blue Laws

Prior to 2012, consumers could not legally purchase alcohol on Sundays in Connecticut. To make Connecticut competitive once again and to provide our citizens with convenience in their purchases, Governor Malloy introduced and signed into law Public Act No. 12-17, *An Act Concerning Competitive Alcoholic Liquor Pricing and Hours of Operation for Permittees*[13]. This law allows off-premises sale and dispensing of alcohol on Sundays from 10:00AM to 5:00PM and on the following holidays: Memorial Day, Independence Day, and Labor Day. In 2015, Liquor store hours were statutorily extended again by one hour each day for off-premises alcohol sales[14]. In addition to expanding store hours, the law also allows farmers market wine sales permittees to sell wine on any day between the hours of 8:00AM and 9:00PM.

Because the legislature was not prepared to fully eliminate the unfair "minimum bottle" pricing scheme, Public Act No. 12-17 took Connecticut a step forward by allowing retailers who sell for off-premise consumption to sell one item below cost each month.

Building off the 2015 reforms, Governor Malloy supported and signed legislation that[15]:

- Created an alcoholic manufacturer permit to allow manufacturers who produce less than 25,000 gallons of alcoholic liquor in a calendar year to sell, at retail, their product on their premises for off-premises consumption.
- Allow cider manufacturers to offer free samples of their product
- Created a farmers market beer sales permit that allows manufacturers to sell their product at up to three farmers market locations a year.

More Work to Do

While great strides were made over the last eight years, work remains to further increase economic activity in the state. With more than 126,000 jobs added since the recession, the state is on the right course. At the same time, many areas need continued attention.

If Connecticut wants to continue to be competitive, the state should focus its attention on retaining and supporting companies that are in targeted industry clusters where Connecticut has the best opportunity for growth: advanced manufacturing, bioscience, insurance and financial services, and tech-based areas such as green technology. With thousands of advanced manufacturing and technology jobs expected to come online because of strategic investments in these industries, Connecticut must continue to invest in STEM education, which provides the pipeline of talent that will be needed to fuel the state's economy.

A major focus should be to further enhance Connecticut's urban centers to attract a younger workforce. *Live, work, play* initiatives can be leveraged to highlight the state's cities as attractive alternatives to the big city congestion of the northeast. In addition, the state should continue to invest in the innovation ecosystem in our urban centers to foster both economic activity and urban excitement.

Transportation is another critical factor for companies in the state. Repeatedly, it is a decision factor in where businesses grow or relocate according to surveys. The state must continue to invest in infrastructure, including rail, highway, bus, bike, and high-speed internet.

While the economic development toolbox improved under the Malloy administration, restructuring of certain tax credits is in order. The most effective programs require recipients to deliver jobs, capital expenditures and other promises before they can receive financial assistance. In this way, the state is assured that the benefits the state incentivizes are delivered with positive return on state investment. Each of the tax credit programs should be reviewed to ensure they are endowed with these types of specific conditions for funding. We also strongly recommend that successful programs, such as the Small Business Express, Manufacturing Assistance Act, Manufacturing Innovation Fund, Bioscience Innovation Fund, be continued with a disciplined eye on producing a positive return on investment for the state. To be competitive globally, Connecticut needs to continue with strategically crafted and targeted incentive programs. With, close coordination with other state agencies can leverage community investments. Ensuring a cohesive strategy, across the state and with key business and local partners, will ensure more impactful investment for each economic development dollar spent. Further, to keep tourism growing and thriving in the state, there needs to be an increase in the level of funding for the Statewide Tourism Fund, returning to at least $15 million annually to ensure Connecticut is competitive with surrounding states. We also recommend that the state Welcome Centers be re-opened and appropriately staffed by tourism personnel.

In order to foster a more competitive marketplace for liquor and promote fairness to Connecticut consumers, the state-mandated price fixing mechanism known as “minimum bottle” needs to be repealed. Connecticut consumers deserve convenience that can support businesses of all sizes, craft breweries to family package stores and groceries. Connecticut’s package stores could also benefit by selling a wider variety of complementary products and filling craft beer. Another improvement for consumers would be to permit the sale of wine in grocery stores.

Successful economic development requires a comprehensive understanding of economic drivers as well as engagement with the critical stakeholders in the state. While much progress was made in the Malloy years, failure to continue to invest in the key levers of economic growth as described above could reverse the progress to our business climate.

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[1] Reinventing Connecticut: An Agenda for Action in the Special Session on Jobs
[2] 2018 Economic Development Strategy
[3] Public Act 11-1: An Act Promoting Economic Growth and Job Creation in the State
[4] Public Act 11-86: An Act Creating the First Five Program
[5] 2017 Connecticut Economic Review, Eversource (DECD 2018 Strategic Plan)
[6] Economic Modeling Specialists International, 2016 (DECD 2018 Strategic Plan)
[7] Connecticut Economic Resource Center, 2014 (DECD 2018 Strategic Plan)
[8] U.S. Bureau of Economic Analysis, 2016 (DECD 2018 Strategic Plan)
[9] Public Act 18-49: An Act Concerning an Affected Business Entity Tax, Various provisions Related to Certain Business Deductions, the Estate and Gift Tax Imposition Thresholds, the Tax Treatment of Certain Wages and Income and a Study to Identify Best Practices for Marketing the Benefits of Qualified Opportunity Zones
[10] Office of Policy and Management: Success Stories of the Nonprofit Grant Program
[11] 2018 Economic Development Strategy
[12] Since its launch in 2012, Connecticut still revolutionary marketing efforts have been recognized with 34 awards for public relations, advertising, social media and website development from several prominent organizations, including the Public Relations Society of America (PRSA), Hospitality Sales & Marketing Association International (HSMAI), United States Travel Association (USTA), the CT Ad Club and International Economic Development Council (IEDC).
[13] Public Act 12-17: An Act Concerning Competitive Alcoholic Liquor Pricing and Hours of Operation for Permittees
[14] Public Act 15-244: An Act Concerning the State Budget for the Biennium Ending June 30, 218 and Making Appropriations Therefor, and Other Provisions Related to Revenue, Deficiency Appropriations and Tax Fairness and Economic Development
[15] Public Act 15-24: An Act Concerning Alcoholic Liquor

Enhancing Students' Post-Secondary Education Opportunities

"A highly-educated and skilled workforce will provide leading manufacturers with the means they need to expand, increase production, and create good-paying jobs with good benefits right here in Connecticut. Time and again, I hear from manufacturers about their need for workers equipped with the tools necessary to fill some of these in-demand, modern technology manufacturing positions. To compete, we must show these employers that we are training our students for real-world jobs they want to fill." — Governor Dannel P. Malloy announcing an expansion of advanced manufacturing programs at the state's community colleges, September 2014

The University of Connecticut and the Connecticut State Colleges & University systems are crucial economic drivers for Connecticut, as local businesses are dependent upon graduates for their workforce. These needs span industries from insurance to bioscience, finance, and advanced manufacturing. With new demands and pressure on higher education institutions to give students the necessary knowledge and skills to secure and thrive in 21st century jobs, the Malloy administration made college affordability and accessibility a key focus. Additionally, the administration prioritized innovative apprenticeship programs to meet the growing needs of the state's key industries.

Progress during the Malloy administration:

- **Made historic investments in its institutions of higher education**, including Next Generation Connecticut, a transformative, ten-year, $1.5 billion investment in UConn that increased enrollment, with specific growth at the engineering school and among women pursuing Science, Technology, Engineering and Math (STEM) degrees.
- **Created the Board of Regents for Higher Education**, bringing 17 schools under one umbrella — CSCU to improve outcomes for students and streamline functions.
- Granted in-state tuition and financial aid to eligible DREAMers.
- Grew the CSCU system's advanced manufacturing centers from one to eight to better develop a pipeline of skilled workers for Connecticut's manufacturers.
- With nearly 6,000 apprentices, Connecticut has the **highest per capita number of apprentices in New England**, having expanded its footprint into insurance and nursing occupations, and is developing apprenticeships in banking and cybersecurity.

Higher Education Expansion

Creation of the Board of Regents for Higher Education

In 2011, Governor Malloy spearheaded the transformation of the state colleges and university system to address three areas of concern:

(1) Connecticut's rate of increase for young adults with degrees dropped to 34th out of 50 states while nearly every state was growing in the percentage of adults with degrees;
(2) college tuition was rising at the same time students were taking longer than two or four years to complete their degrees, if they even reached graduation; and
(3) The Connecticut State University System and community colleges spent less of its total operating budget on teaching than comparable northeastern states.[16]

It was long past time to provide Connecticut's young people with a competitive edge. Students who attended the state's universities, community colleges, or Charter Oak State College needed student-friendly pathways to help overcome challenges that prevent timely graduation. Moreover, students demanded efficient transfer of credits, while employers demanded career-oriented programs.

The sweeping plan to overhaul the state's higher education governance structure and organization was aimed at ultimately providing more resources for classroom teaching and instruction and, thus increasing the number of students receiving degrees. The Connecticut State University System, Connecticut Community College System, and Charter Oak State College merged to form the Connecticut State Colleges and University System (CSCU) bringing 17 schools under one single Board of Regents to improve outcomes for students and streamline functions to the benefit of students, faculty, and staff.

Under the new Connecticut State Colleges and University System, several forward-thinking initiatives were established to the benefit of students:

- Advanced manufacturing education expanded from one program at Asnuntuck Community College to eight Advanced Manufacturing Centers across the state, tripling the number of students enrolled in these programs and feeding a tremendous workforce need.
- After years of delay, a simpler credit transfer process was put in place enabling students to complete degrees across different campuses in the system. As of June 2018, these pathways are available in 26 major areas of study benefitting more than 3,500 students by 2018.
- The Student Success Center launched the "Guided Pathways" initiative, part of a national movement to help students efficiently earn credentials, transfer, and attain jobs with value in the labor market.
- To increase enrollment and hold down the tuition increases for Connecticut students, the Board of Regents chose to offer in-state tuition to students from bordering states.
- The Second Chance Pell program launched at four community colleges offering eligible inmates the opportunity to pursue a postsecondary degree improving their chances of getting

a job upon re-entering the community after incarceration. CSCU has had tremendous success with this pilot. Over the past year and a half, it has helped 962 students pursue a post-secondary education, with 61 of them completing a certificate or degree in spring 2018. [For more on the Second Chance Pell program in the Criminal Justice Reform chapter on page 103]

Transformation of the state's colleges and universities is not a simple process. In 2018, efforts continued to consolidate duplicative functions at the university and community college level with a laser-like focus to improve academic funding and the student experience.

UConn Expansion

Under Governor Malloy's leadership, the state's flagship, University of Connecticut (UConn) undertook two major expansion efforts. First, Bioscience Connecticut, an $864 million investment in UConn Health, improving UConn's capacity for bioscience research and development was launched. Through Bioscience Connecticut, a new hospital tower was built, business incubator space at the university doubled. This investment was also instrumental in helping Connecticut land the acclaimed Jackson Laboratory for Genomic Medicine, co-located on the UConn Health campus.

Second, Next Generation Connecticut, a transformative $1.5 billion investment in UConn over ten years was initiated to increase enrollment, specifically at the engineering school and among women pursuing Science, Technology, Engineering and Math (STEM) degrees.[17] As of 2018, new science and lab space was under construction and a new state of the art dormitory was completed with a makerspace and an idea lab. [See more on the UConn Expansion in the Economic Development chapter on page 20]

Furthermore, in August 2017, UConn opened a new, modern branch campus in downtown Hartford with 3,000 students and 200 faculty. Additionally, the state invested in and opened a new residence hall on UConn's fast-growing Stamford campus to house 300 students.

In 2017, UConn was ranked number eighteen among U.S. News & World Report's list of the nation's top public universities — the university's highest ranking to date.

Improving College Affordability

In 2015, Governor Malloy proposed and signed Public Act 15-200, *An Act Concerning the Duties and Authority of the Connecticut Higher Education Supplemental Loan Authority* to more easily refinance student loans at lower rates through the Connecticut Higher Education Supplemental Loan Authority (CHESLA).[18] The rates offered by CHESLA in 2018 for in-school loans was 4.95 percent and refinancing loans started at 4.75 percent.

To help families start saving for college at birth and prevent onerous student loan burdens, CHET Baby Scholars was created to encourage opening a college savings accounts for newborns and newly-adopted children.[19] Once an initial contribution is made, the state contributes a matching grant to incentivize the practice of routine contributions. As a result, Connecticut was recognized in 2017 for the significant uptick in the number of CHET college savings accounts opened between 2014 and 2017. As of June 30, 2018, more than 8,300 accounts have been opened in Connecticut.

DREAMers

Accessibility to higher education for all has been a top issue for the administration. Undocumented students have attended American elementary and high schools and have long been a vital part of the state's communities. Denying undocumented students or DREAMers, access to affordable higher education goes against the very core of Connecticut's identity. DREAMers deserve to continue their education so they can join the workforce and give back to the state they know and love as their own. Immigrant families bring value to the state's communities and contributions to the economy. A comprehensive report[20] published in 2016 by the New American Economy found that immigrants in Connecticut pay $6.2 billion in local, state, and federal taxes and represent $14.9 billion in spending power.

In 2011, Governor Malloy introduced and signed Public Act 11-43, *An Act Concerning Access to Postsecondary Education* granting in-state tuition to undocumented students at Connecticut's public higher education institutions for the first time.[21] Four years later, he introduced and signed into law Public Act 15-82, *An Act Concerning In-State Tuition Eligibility* expanding access and easing requirements for undocumented students to access in-state tuition.[22] Finally, in 2018 the Governor supported and signed Public Act 18-2, *An Act Assisting Students without Legal Immigration Status with the Cost of College*[23] making institutional aid available to undocumented students.

Additionally, Connecticut began participating in an initiative called "The DREAM.US" to give hundreds of DREAMers who live in 'locked out' states — those that don't offer in-state tuition to undocumented students — the chance to earn a college degree. The partnership provided funding for up to 500 out-of-state students to attend either Eastern Connecticut State University or Delaware State University.

Workforce Development

Advanced Manufacturing Centers

In 2011, the state had only one advanced manufacturing program, located at Asnuntuck Community College. To develop a talent pipeline of skilled workers for Connecticut's manufacturers, Connecticut invested $10.2 million in capital funds to expand the advanced manufacturing program extensively across the state. Ultimately, this led to seven additional centers located at Housatonic, Naugatuck Valley, Quinebaug Valley, Manchester, Middlesex, Three Rivers, and Tunxis community colleges, as well as upgrades to the original Asnuntuck campus. This investment *tripled the capacity* of the advanced manufacturing center program.

United Technologies Corporation Chairman and CEO Louis R. Chênevert takes Governor Malloy on a tour of the Pratt & Whitney Engine Center in Middletown. (April 5, 2011)

Upon completion of the advanced manufacturing program, students graduate with 34 college credits, a certificate in Advanced Manufacturing Technology and the opportunity to obtain at least four nationally recognized industry credentials. Over seven years, approximately 3,500 advanced manufacturing students graduated and benefitted from a 95 percent employment placement rate.

Apprenticeship

To meet growing workforce demands, particularly in the advanced manufacturing sector, the Malloy administration prioritized apprenticeship opportunities to create careers for Connecticut residents. Registered Apprenticeships offered through the Connecticut Department of Labor's (CTDOL) Office of Apprenticeship Training provide the opportunity to earn a wage and progress in a well-paying career track through a combination of on-the-job and classroom training. Apprentices also earn a portable credential recognized in any state. Currently there are 6,343 registered apprentices in the state — approximately 40 percent increase from 2013.

In 2011, Registered Apprenticeships in Connecticut were mainly found in the construction industry. As of 2018, thanks to state and federal support, Connecticut partnered with public and private entities to successfully expand the apprenticeship concept to the advanced manufacturing, health care, nursing, information technology, and insurance industries. Additionally, new models were in development for the banking and cybersecurity fields. In particular, Registered Apprenticeship expanded to schools, large companies that had long-ago abandoned these programs, and in smaller companies struggling to find skilled employees to meet growing demand and a changing economy. The State Manufacturing Incentive Fund Apprenticeship Program provided $10.7 million for manufacturers to provide wage subsides and reimbursements to apprentices, serving approximately 455 individuals. Additionally, the state was awarded several federal grants to support an additional 800 apprentices. In all, as a result of targeted investments in apprenticeship programs:

- The number of registered apprentices and pre-apprentices in Connecticut grew by approximately 40 percent or nearly 2,000 individuals;
- The number of apprentice sponsor employers grew from 1,405 in 2011 to 1,674 in 2018;
- Connecticut had the highest per capita number of Registered Apprentices in New England according to the U.S. Department of Labor;
- Expanded apprenticeship opportunities, including coming soon, opportunities in the cyber and banking industries.

On the local level, partnerships with the business community are critical if we are to sustain a competitive workforce in Connecticut. The existing CTDOL and DECD partnership program enables manufacturers to transform into innovative technology-driven businesses in engineering, bioscience and allied health by offering offers matching funds for advanced training to an employer's workforce. Of the more than 320 employers participating, 61 percent expect that upgraded employee skills will increase production.

More Work to Do

Despite the many efforts to improve our higher education system and expand our workforce development programs, work remains to be done in order to sustain and build upon the progress made. Both higher education systems — UConn and the Connecticut State Colleges and Universities must continue to be well-funded to prevent sharp increases in tuition and sustain their key roles in supporting Connecticut's economy. In order to maintain a world-class flagship university, the state must continue to invest in UConn's students and research faculty. The Bioscience and Next Gen initiatives must be supported if more students, major Connecticut employers and the growth areas of Connecticut's economy are to benefit.

Furthermore, the CSCU system also must be funded in its transition and with a renewed focus on the student experience to significantly improve post-secondary education credential attainment and meet workforce demand. While much progress was made, efforts to consolidate functions and improve the student experience must continue.

More broadly, the next administration should aggressively work towards achieving the higher education goals adopted in 2015[24] (CGS Sec. 10a-11c). These goals include increasing the education attainment of Connecticut's residents — by 2025 at least 40 percent of Connecticut adults should hold bachelor degrees and 30 percent should hold associates degrees or postsecondary credentials - to ensure that the state has a globally competitive workforce with the skills required to meet our major employers' needs. Policy alignment and implementation across state government should be based on a strategic plan with metrics to track progress toward the statutory goals. Any metrics should be reported annually so that the state is held accountable to the vision of Connecticut we all want to see. Without transparent metrics, there will be no incentive for change.

To achieve these goals the next administration should focus on college persistence — the continued enrollment of a student in a degree program leading toward the completion of the program, and retention of students by tackling barriers that prevent students from completing their degrees in a timely way. It is imperative that the state operate with an equity mindset seeking to help underserved populations attain credentials and degrees. This means serving three distinct populations — vulnerable high school students, first in the family college students and adults who left college — differently than in the past.

Connecticut made great progress on apprenticeship programs and should strive to scale them up to keep up with the growing demand for a skilled, well-prepared and inclusive workforce pipeline for this century. Proven and effective workforce training and apprenticeship programs should expand to meet employers' actual needs. Existing effective programs need to be brought to scale, not simply duplicated. In particular, the state should expand the number of students served by advanced manufacturing centers to help fill the thousands of highly-skilled jobs that are currently open and will come online as a result of historic state investment at Pratt & Whitney, Sikorsky and Electric Boat. The partnership between CTDOL and CSCU should continue to further develop apprenticeship opportunities at the community colleges to train a skilled workforce to meet Connecticut employers' needs.

In addition, the state should foster dual track opportunities for high school students to pursue high school diplomas and associate's degrees simultaneously, building upon the success of the CT-ECO and P-Tech initiatives. The state should further use and expand the credit transfer and articulation process and the "Guided Pathways" initiative, to support these students whether they are in certificate, associate degree, or four-year degree programs.

Also, the state must continue to expand Registered Apprenticeships. With the increase in advanced manufacturing jobs and a large percentage of the existing workforce planning to retire in five years or less, apprenticeships offers opportunities to connect businesses with a skilled workforce. Going forward, Connecticut needs to further expand apprenticeships in advanced manufacturing, information technology and business services.

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[16] Public Act 11-48: An Act Implementing Provisions of the Budget Concerning General Government
[17] Public Act 13-233: An Act Concerning Next Generation Connecticut
[18] Public Act 15-200: An Act Concerning the Duties and Authority of the Connecticut Higher Education Supplemental Loan Authority
[19] PA 14-217 An Act Implementing Provisions of the State Budget for the Fiscal Year Ending June 30, 2015
[20] New American Economy 2016 Report: The Contributions of New Americans in Connecticut
[21] Public Act 11-43: An Act Concerning Access to Postsecondary Education
[22] Public Act 15-82: An Act Concerning In-State Tuition Eligibility
[23] Public Act 18-2: An Act Assisting Students without Legal Immigration Status with the Cost of College
[24] Connecticut General Statutes Sec. 10a-11c. Goals and policies of higher education in the state.

Transportation

"If we want to improve our state's economy, if we want to grow jobs and support business, then we must make these crucial investments in our infrastructure." — Governor Dannel P. Malloy announcing approval of his Let's Go CT! initiative to modernize the state's transportation infrastructure, July 28, 2015

Connecticut has one of the oldest transportation systems in the country, a system that has been inconsistently maintained and at constant risk of falling into disrepair or obsolescence. For the safety of our citizens and the future strength of our economy, Connecticut must continue to prioritize investments in our economic arteries and turn this weakness into a strong foundation for economic growth.

Progress under the Malloy administration:

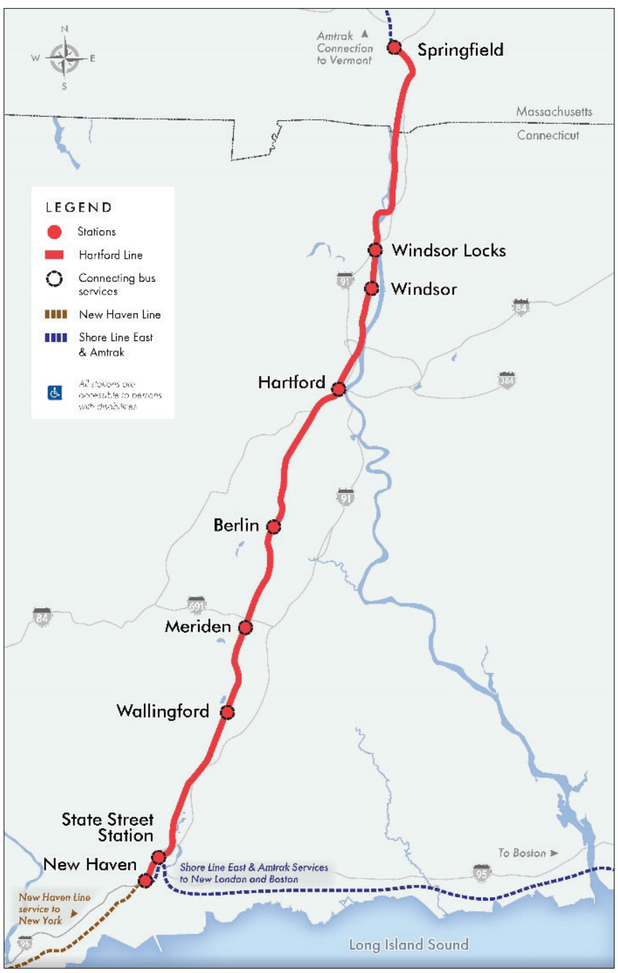
- Launched a visionary 30-year transportation plan and implemented a 5-year-ramp-up **investment of $2.8 billion** in the most critical projects across Connecticut.
- **Completed and opened the Hartford Line** to provide those living, working or traveling between New Haven, Hartford and Springfield with high speed, regional rail service; and spurred economic development.
- Ensured a constitutional "lockbox" for transportation was on the November 2018 ballot.
- **Launched CTfastrak**, which **exceeded ridership levels not expected until 2030** in its first year of operation and surpassed 15 million riders in 2018; and spurred economic development.
- **Completed the largest project in CT DOT history** — the Pearl Harbor Memorial Bridge — ahead of schedule **and $200 million under budget**.
- Revamped and modernized CTDOT's project delivery and construction processes to facilitate faster, more, efficient delivery of projects at a lower cost and with less disruption of traffic.
- Secured ½ a cent from sales tax for the State Transportation Fund and weaned Connecticut off of using transportation funds to supplement the general fund.

Investing in Infrastructure

Let's Go CT

In February of 2015, Governor Malloy released the $100 billion, 30-year transportation plan known as *Let'sGoCT!*[25] After working with residents, businesses and stakeholders, this bold vision for a first-in-class transportation system included — two-thirds of this bold vision is dedicated to upgrading to upgrading the state's transportation infrastructure. The additional projects and initiatives represent important, strategic investments to increase safety, decrease congestion, help attract and retain a highly talented workforce, ease movement of people and goods, improve quality of life, and position Connecticut for sustained economic success.

This renewed focus on Connecticut's infrastructure resulted in major accomplishments — across all modes of transportation and regions of the state — that will continue to bolster the state's economy for years to come. Investments in the state's airports, marine ports and harbors, transit-oriented development (TOD), brownfield remediation, multi-use trails and surface transportation infrastructure and transit systems began to bear fruit during the Malloy years.



Route of the CTrail Hartford Line passenger rail service, which launched on June 16, 2018.

In addition to the 30-year transportation plan, Governor Malloy implemented a 5-year-ramp-up of the transportation program with a focus on the most critical investments across the state.

CTrail: Hartford Line

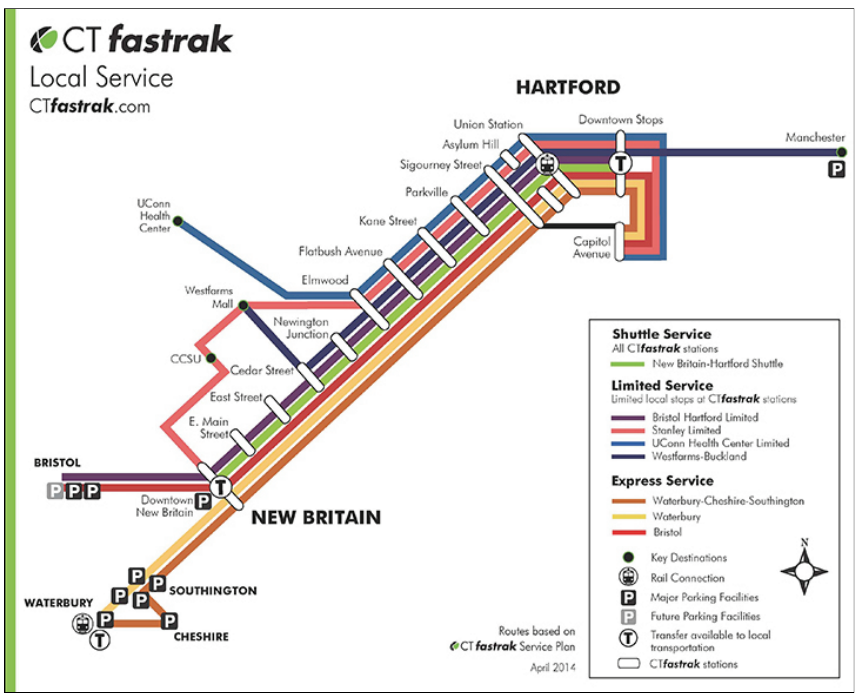
Governor Malloy worked tirelessly to develop commuter rail service along the New Haven-Hartford-Springfield corridor, emphasizing that a more active rail line in the region is crucial to making more livable communities, attracting businesses and skilled workforce, and keeping the economy moving.

The Hartford Line represented a broad partnership between the State of Connecticut, Amtrak, and the Federal Railroad Administration, as well as the states of Massachusetts and Vermont. The goal was ambitious — to provide those living, working or traveling between New Haven, Hartford and Springfield with frequent, fast rail service, as well as creating new rail connections to New York City and eventually Boston.

Completed and launched in June 2018, the CT*rail* Hartford Line service expanded Amtrak service and created new regional trains operated by the Connecticut DOT to offer more frequent, convenient, and faster passenger rail service between New Haven, Hartford, and Springfield. The Hartford Line increased the number of round trip trains from six daily to a total of 17 round trip trains a day to Hartford, and 12 trains per day to Springfield. Trains operate at speeds up to 110 mph with a travel time between New Haven and Springfield of approximately 81 minutes.

The Hartford Line connects with the Metro-North commuter rail and Amtrak Acela high-speed rail services on the New Haven Line, further linking the region to New York, New London, and Boston. With this level of direct and connecting service in the region, towns along the Hartford Line will become magnets for growth — ideal places to live and to relocate businesses that depend on regional markets and travel.

Future stations are under design for North Haven, Newington, West Hartford, and Enfield, and upgraded stations are also under design for Windsor and Windsor Locks. In addition to faster and more frequent service, the Hartford Line features new and upgraded pedestrian and bike-friendly stations and transit hubs along the corridor.



Route of the CTfastrak bus rapid transit system, which launched on March 28, 2015.

In total, the state invested $564.3 million in the $769.1 million Hartford Line design and construction. Meriden, Windsor, Windsor Locks and other communities along the line have already realized more than $400 million in new development around their stations.

CTfastrak

Building on the work of prior administrations and the state's partnership with the federal government, Connecticut unveiled the state's first Bus Rapid Transit system, known as *CTfastrak*, in 2015. After just one year, *CTfastrak* exceeded ridership levels not expected until 2030. By 2018, the award-winning, nationally recognized system surpassed 15 million riders, with an average ridership of 19,000 people per week.

The new service has already generated more than $200 million in redevelopment projects around stations in Hartford, West Hartford, and New Britain.

When it first launched, the *CTfastrak* system provided direct service to and from Waterbury, Cheshire, Southington, Bristol, Plainville, New Britain, Newington, West Hartford, Hartford, and Manchester with routes taking advantage of the bus-only CTfastrak roadway. The CTfastrak system provides a one-seat, no-transfer ride to many major regional employment, shopping and healthcare destinations as well as connections to the New Haven Line-Waterbury branch rail in Waterbury and Amtrak/*CTrail* service in Hartford.

In August 2017, CT*fastrak* expanded east to the UConn Storrs campus, linking students, faculty, and staff via public transit to the new downtown Hartford campus, UConn Health in Farmington, and a variety of destinations in between for the first time ever.

In addition to providing transit options and flexibility for citizens who need to get to work, the grocery store, or the doctor's office, *CTfastrak* has galvanized Transit Oriented Development across the system with housing, restaurants, and breweries opening near stations.

Pearl Harbor Memorial Bridge

In 2016, the 18-year, nearly $2 billion I-95 New Haven Harbor Crossing Corridor Improvement Program was completed ahead of schedule and $200 million under budget. The multi-modal transportation project was designed to increase capacity and safety and reduce congestion in the area. The new ten-lane, innovatively designed Pearl Harbor Memorial Bridge — informally known as the Q Bridge — was a central component of the project.

The new Pearl Harbor Memorial Bridge, which replaced a functionally obsolete and structurally deficient existing bridge, was the first-of-its kind cable-stayed bridge in the United States. The construction of this bridge and the new I-95/I-91 interchange are considered the largest, most comprehensive projects ever undertaken by CTDOT. The bridge now provides four additional lanes and much needed congestion relief in one of the most heavily traveled segments of the northeast corridor between New York and Boston. It accommodates traffic volumes in excess of 140,000 vehicles per day — more than three times the 40,000 vehicles per day its predecessor was designed to carry. CTDOT was honored with the Grand Prize at the 2016 America's Transportation Awards competition in recognition of the agency's successful work on creating the new Pearl Harbor Memorial Bridge.

Interstate-84 Improvements

After decades of neglect, Governor Malloy prioritized improvements to Interstate 84 (I-84) across the state. In all, this administration invested $810 million to begin addressing critical improvements to the highway.

- The I-84 Mixmaster[26] project in Waterbury involves the rehabilitation of numerous bridges located within the Route 8 – I-84 Interchange to ensure their preservation and structural integrity.
- Also in Waterbury, the I-84 Widening[27] project will add a third lane of travel and full width shoulders in each direction, as well as realignment to eliminate the "S" curve alignment near Harpers Ferry Road.
- The I-84 Hartford[28] project will address the aging bridge structures of the highway, which were built in the 1960s and are in need of extensive maintenance and/or replacement.

New Haven Line

Governor Malloy also oversaw significant investments in the Metro-North New Haven Line. For example, between 2010 and 2016, the state completed deployment of a fleet of 405 new M8 rail cars for the line, at a cost of $745 million. Currently, CTDOT is in the process of completing full replacement of the entire New Haven Line mainline catenary system with more reliable technology that will allow trains to take advantage of higher maximum speeds.

Additionally, construction of a dedicated, first-class maintenance facility called the New Haven Rail Yard (NHRY) is underway. The NHRY provides storage, dispatching, inspection, maintenance, and cleaning of rail cars. Five additional projects are still underway. As each project is completed, customers can expect better and better service due to more efficient and effective maintenance and support.

Lastly, with safety concerns mounting on infrastructure, the installation of Positive Train Control (PTC) systems for all train lines in the state, including the New Haven Line was a priority. These important systems are designed to monitor train activity, prevent collisions, and convey and enforce speed restrictions. For the New Haven Line the project has a total cost of $185 million, and CTDOT continues to work with Metro-North to ensure the Line is upgraded with these critical safety measures. DOT expects installation to be completed by December 31, 2018.

Walk Bridge

In 2015, the critical replacement of the New Haven Line's 122-year-old Walk Bridge in Norwalk began. Connecticut was awarded $161 million of Federal Disaster Relief funding for this project.

The replacement of the Walk Bridge will provide safe, reliable rail service, and enhance Connecticut's transportation system, now and for the future. As one of the oldest movable bridges on the New Haven Line, its replacement has long been recognized as a priority to maintain critical rail service on the nation's busiest commuter rail line. When it fails to close properly — as has happened in recent years — it can cause major disruptions to rail service in the Northeast Corridor.

Modernizing Construction Techniques

At the same time Connecticut invested in critical transportation projects that languished for a generation, the state also modernized the way the CTDOT delivers projects. For example, the I-84 bridge replacement in Southington utilized Accelerated Bridge Construction (ABC). With this technique, prefabricated new bridge superstructures replaced the existing units that were built in 1963 and were in poor condition. By employing ABC principles, the CTDOT virtually eliminated what would have been many months or even years of traffic disruptions and congestion on I-84 and local roads. Only one weekend closure of I-84 was required for the replacement and installation of two new 102-foot-long bridges weighing 2 million pounds each.

Leveraging Federal Funds

At the federal level, Governor Malloy has consistently fought for Connecticut to receive its fair share of transportation funding. He frequently engaged a variety of federal partners in both the executive and legislative branches of government, as well as his gubernatorial counterparts across the country, expounding on the seriousness of federal transportation funding overall and advocating for transformational state projects and important regional initiatives.

The fruits of these labors are evident in the multitude of transportation accomplishments throughout Connecticut, where many tens of millions of dollars in federal funding have been awarded and successfully leveraged into completed state projects.

The federal Transportation Investment Generating Economic Recovery (TIGER) grant program is of particular note. From 2011 to 2014, Connecticut received five TIGER grants totaling more than $53 million and culminating in projects like upgrading rail stations in Stamford, Waterbury and Hartford, improving municipal streetscapes and connectivity, and modernizing eastern Connecticut's freight rail network. In 2015 and 2016, Connecticut received two additional TIGER grants for projects in New Haven and Bridgeport, totaling $30 million. In addition to TIGER funding, Connecticut received $170 million on Federal Disaster Relief funding as well as more than $10 million in federal discretionary nationally competitive awards.

Shoring Up the State Transportation Fund (STF)

Even as the state made these critical investments in our transportation systems, Governor Malloy warned of the need for systemic revenue changes in order to viably maintain progress. When *Let'sGoCT!* Was unveiled in 2015, it went hand and hand with a strategy to ensure the long-term sustainability of the STF by adding more stable revenue sources. However, a combination of factors such as technological advancements, declining fuel consumption, increasing debt service, and falling oil prices have accelerated the need for additional funding in the STF.

From 1997 to 2000, Connecticut decreased the gas tax by 14 cents, which resulted in a cumulative loss of $4 billion in the STF. More recently, the proliferation of electric and hybrid-electric vehicles and greater fuel efficiency have resulted in lower fuel consumption and less gas tax collected. In 2015 the price of oil fell drastically and has yet to recover. This sharp and unexpected decrease in oil prices, accelerated and exacerbated the STF's decreasing revenue to the point where the state is today — in urgent need of new transportation funding strategies if Connecticut wants to continue to make progress.

Under the Malloy administration, the state expanded the revenues that are dedicated to transportation, committing 100 percent of the Petroleum Products Gross Receipts tax to the STF over the course of 2014 and 2015 and thereafter; and diverting a half-penny of the sales tax to the STF. Given this expansion of STF revenues, coupled with overall budget constraints in the General Fund, the pressure to pass a constitutional "lockbox" to protect transportation-related revenue from being swept from the STF and diverted to the General Fund increased.

A statutory lockbox passed during the 2015 Special Legislative Session with the help of Representative Tony Guerrera, making the STF a perpetual fund and restricting the spending of all sources of revenue dedicated to the STF solely for transportation projections. However, it was not until 2017 that the legislature approved a statewide referendum for a constitutional lockbox, to be included in the November 2018 ballot. This constitutional amendment will ensure vital infrastructure investment will continue to be made and the necessary revenue protected. Without this amendment to the Connecticut Constitution, future legislatures would have been able to simply vote to abolish the statutory lockbox or weaken it through additional legislation.

In addition to proposing the constitutional lockbox in 2015, Governor Malloy also convened the Transportation Finance Panel, a nonpartisan commission comprised of experts in transportation, finance, and economic development, and charged the Panel with determining the most prudent and cost-effective ways to sustainably fund Connecticut's transportation infrastructure for the long-term. The panel released their final report[29] on January 15, 2016 highlighting the urgency of the issue and a variety of detailed policy and funding recommendations critical for supporting the STF. Of particular note, the panel recommended increasing the gas tax and implementing all-electronic tolling. These proposals were included in Governor Malloy's 2018 legislative agenda.

To provide the next administration and incoming General Assembly with more information about the configuration of an electronic tolling system, Governor Malloy issued Executive Order No. 67[30] in July 2018 to conduct an environmental impact assessment.

Transportation Initiatives

Transit Oriented Development

Transportation is not just about trains, buses, and cars. It is essential for building vibrant communities that make Connecticut a more attractive place to live, visit, and do business. Transit Oriented Development (TOD) fosters that growth in local economies, strengthening cities and the state, as it prioritizes mixed-use development centered on high quality public transportation systems. More than $19 million in grants was awarded to municipalities across the state to encourage the growth of TOD projects, including in several towns located along the Hartford Line.

Of particular note, the City of Meriden completely transformed itself by embracing TOD. The new *CTrail* station spurred several TOD projects, including the construction of three mixed-use developments that have a total of 295 new residential units and 31,000 square feet of commercial space, a new Transit Center, a 273-space parking garage, a 14-acre town green, and the demolition of the Mills public housing project and the former Record Journal building. As of 2018, public and private investment in Meriden's TOD projects exceeded $150 million. One of the new developments, 24 Colony Street, was the first new construction in downtown Meriden in 30 years and is located just steps from the new Hartford Line train station.

Connecticut Port Authority

Connecticut has deep maritime roots, and with three deep water ports in New London, New Haven, and Bridgeport, the state needed a strategy to revitalize these important assets to attract investment, expand businesses, and create jobs. At the same time, Connecticut boasts a vast array of smaller harbors and marinas that required infrastructure investment to support recreational marine industries, which are an important economic driver for the state. The state is blessed with abundant natural marine assets, but lacked any coordinated development strategy and a body to oversee comprehensive utilization planning. To that end, in 2014, legislation creating the Connecticut Port Authority (CPA) as a quasi-public agency to develop, coordinate, support and market the state's ports, harbors and maritime economy was signed.

Since its inception, the CPA has worked hard to grow Connecticut's economy and create jobs by strategically investing in the state's three deep water ports and smaller harbors to enable each to maximize its own economic potential. The CPA has overseen tens of millions of dollars for dredging of ports and harbors, created the Small Harbor Improvement Projects Program (SHIPP) to provide funding and operational support for local municipalities and industries reliant on small harbors. The CPA continues to work with municipalities to reconnect rail freight service to ports and harbors, acquire additional properties to ensure their best maritime usage, and concentrate on revitalization of Connecticut's marine passenger industries — both ferries and passenger cruises.

The CPA also invested in key assets — rethinking how to maximize their utilization and profitability and investing in infrastructure upgrades. One such investment was $20 million for the State Pier in New London. In 2018, for the first time in decades, the CPA put the entire State Pier complex out to bid for private sector investment, noting its strategic regional advantages for future wind energy assembly opportunities. In August of 2018, the CPA also released the first-ever Connecticut Maritime Strategy, outlining a cohesive, statewide plan for Connecticut's maritime future.

Connecticut Airport Authority

In 2011, Governor Malloy led the passage of legislation creating the Connecticut Airport Authority (CAA) to develop, improve, and operate Bradley International Airport and the state's five general aviation airports (Danielson, Groton-New London, Hartford-Brainard, Waterbury-Oxford, and Windham). The goal of the CAA was to make the airports more attractive to new airlines, develop more routes, and support the state's overall economic development and growth strategy.

Bradley International Airport — the second largest airport in New England — marked its fifth consecutive year of year-over-year passenger growth in 2017 and was rated as the fifth best airport in the nation by Condé Nast Traveler's 2017 Readers' Choice Awards. The airport added a number of nonstop routes to several international and domestic major hubs, further extending opportunities for business connections.

U-Pass CT

Launched in 2017, the U-Pass CT[31] program is a service between the Connecticut Department of Transportation, UConn, and the Connecticut State Colleges and Universities system that provides students with the ability to ride all buses and trains within the state for free. The costs of the U-Pass CT program are included in students' university fees.

Transportation for the Future

Autonomous Vehicle Pilot Program

Autonomous vehicles are the likely future of transportation and have the potential to fundamentally transform the automotive industry, vehicle safety, motor vehicle ownership and usage, movement of freight, transportation infrastructure, and even redevelopment of urban centers. Governor Malloy pushed his administration to explore this burgeoning technology and take proactive steps to place Connecticut at the forefront of this innovative technology.

In 2016, the Connecticut Office of Policy and Management (OPM) to convened an inter-agency working group, to analyze current autonomous vehicle policies and regulations in other states, and to determine what policy, regulatory and legislative initiatives should be pursued in furtherance of testing fully autonomous vehicles in Connecticut.

In 2017, based on the work of this inter-agency working group, the state legislature to passed and Governor Malloy signed the first autonomous vehicle legislation in Connecticut. Public Act 17-69[32] authorized the state's first-ever pilot program for testing fully autonomous vehicles and created a legislative task force to continue studying the issue and make recommendations for the pilot program going forward. As a leader in this new industry, results of Connecticut's pilot program have the potential to directly inform and influence the future of transportation throughout the entirety of the United States.

More Work to Do

Despite the bold and sustained efforts to overhaul the state's transportation system over the last several years, decades of inaction and underfunding means far more work remains.

The Special Transportation Fund needs a new, reliable revenue source. While the state made important adjustments to the STF during the 2018 legislative session, those changes only addressed immediate, short-term concerns. Even with these adjustments, projections show the STF will begin running a balance deficit by Fiscal Year 2023 and a cumulative negative balance by Fiscal Year 2024. This will mean the halt of critical infrastructure projects statewide.

To ensure bridges don't collapse or close due to unsafe conditions, our highways remain open and operational, the state **must** explore additional sustainable revenue sources. To be clear, this is *just* to put the state's infrastructure in a state-of-good-repair. It is imperative to address major infrastructure projects across the state — the Hartford Viaduct, the Waterbury Mixmaster, I-95 widening. According to CTDOT estimates, it will cost $60 billion over the next 30 years, to maintain current levels of service across all modes of transportation. That is twice the current level of spending, without considering capacity improvements and reducing congestion. Connecticut will never be able to compete with surrounding states, and attract new employers who value transit options and congestion-free highways, until we have a system that works and works well.

The next administration should move forward with the tolling study and implement a long-term user-based funding stream. Tolling is a proven revenue option used by every other state on the eastern seaboard, and increasingly across the nation. Moreover, it is projected that 30 to 40 percent of all revenue raised by tolls would come from out-of-state drivers and trucks. This ensures out-of-state motorists pay their fair share for the use of Connecticut's surface infrastructure, rather than our residents continuing to foot the entire bill. This also means that Connecticut residents would only be responsible for 60 to 70 percent of the necessary revenue; no other funding option allows for this. Additionally, all-electronic tolling poses none of the safety and traffic congestion concerns that led Connecticut to eliminate all tolling in the 1980s. Moreover, contrary to the opposition's talking points, Connecticut would not be required to repay *any* federal funds if the state decides to implement tolling through the federal program. These are the facts.

Connecticut is running out of time and money to repair our surface infrastructure. As already stated above, our state does not have the necessary revenue to fix our ailing roads and bridges, let alone make critical structural improvements that would benefit our residents and our economy. The motor fuels tax is notoriously volatile and far too reliant on global variables outside of our control.

In parallel to solving the long-term STF funding issue, Connecticut drivers and transit users would significantly benefit from a more dynamic approach to transportation project delivery. By reviewing and streamlining its internal processes to ensure top performance and productivity, CTDOT can maximize the effectiveness of project delivery, develop a reserve of projects with complete final designs, make better use of the construction season, and transition to using innovative financing and early funding obligations. The state should also continue exploring innovations in contracting, leasing, and availability payment delivery. These improvements would have a tremendous impact on the efficiency, effectiveness, and performance of the state's transportation program enabling the best investments be made in a timely way with the optimum impact for state residents and businesses.

The next administration must maintain the momentum, and build on the progress, Connecticut has made in transportation over the past eight years. If we want a strong economy to compete with our neighboring states, to build vibrant communities and retain our younger citizens, we must invest in transportation. It is imperative that we fix and upgrade our surface transportation infrastructure and provide more robust transit options for both people and goods. Otherwise, we will simply fall further behind states that continue to make these necessary investments.

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[25] Let'sGoCT! website
[26] I-84 Mixmaster website
[27] I-84 Widening website
[28] I-84 Hartford website
[29] Transportation Finance Panel 2016 Final Report
[30] Executive Order No. 67: Directs State Agencies to Conduct a Comprehensive Assessment on Implementing a New Funding Plan for Connecticut's Transportation System.
[31] U-Pass CT website
[32] Public Act 17-69: An Act Concerning Autonomous Vehicles

State of Connecticut
Office of Governor Dannel P. Malloy

Tackling Climate Change with a Cleaner, Cheaper, More Reliable Energy Policy

"We must make a major transformation and move forward with an approach that provides our people and our businesses with cheaper, cleaner and more reliable power…It is the only viable and sustainable strategy for creating jobs, rebuilding our economy and protecting our environment."- Governor Dannel P. Malloy speaking at the Northeast Energy Efficiency Partnerships Annual Summit, June 14, 2012

Governor Malloy transformed Connecticut's energy policy to reflect the reality of climate change, and with his vision, Connecticut became a national leader in cutting greenhouse gas emissions and significantly growing the clean energy economy. Following Governor Malloy's mantra of "Cleaner, Cheaper, and More Reliable", the state has successfully diversified its green energy portfolio, while building significant cost protections for commercial, industrial, and residential consumers.

Progress during the Malloy administration:

- Greatly diversified the state's energy resources including increasing rooftop solar, fuel cells, offshore wind and anaerobic digestion by smartly deploying its procurement authority to harness the power of competition driving down costs on behalf of all electric rate payers.
- **Led the nation in efforts to reduce harmful greenhouse gas emissions**, including the doubling of Connecticut's renewable portfolio standard (RPS) from 20 percent by 2020 to 40 percent by 2030.
- Established the Department of Energy and Environmental Protection (DEEP) to align energy policy and regulation with environmental goals.
- **Created the first-in-the-nation CT Green Bank**, which helped more than 30,000 families and businesses lower the burden of energy costs, saving them more than $1 billion over the life of the projects.
- **Supported 38,000 Connecticut jobs** through combined investments in renewable energy and energy efficiency, with 34,000 of those jobs in the energy efficiency industry.

Climate Leadership

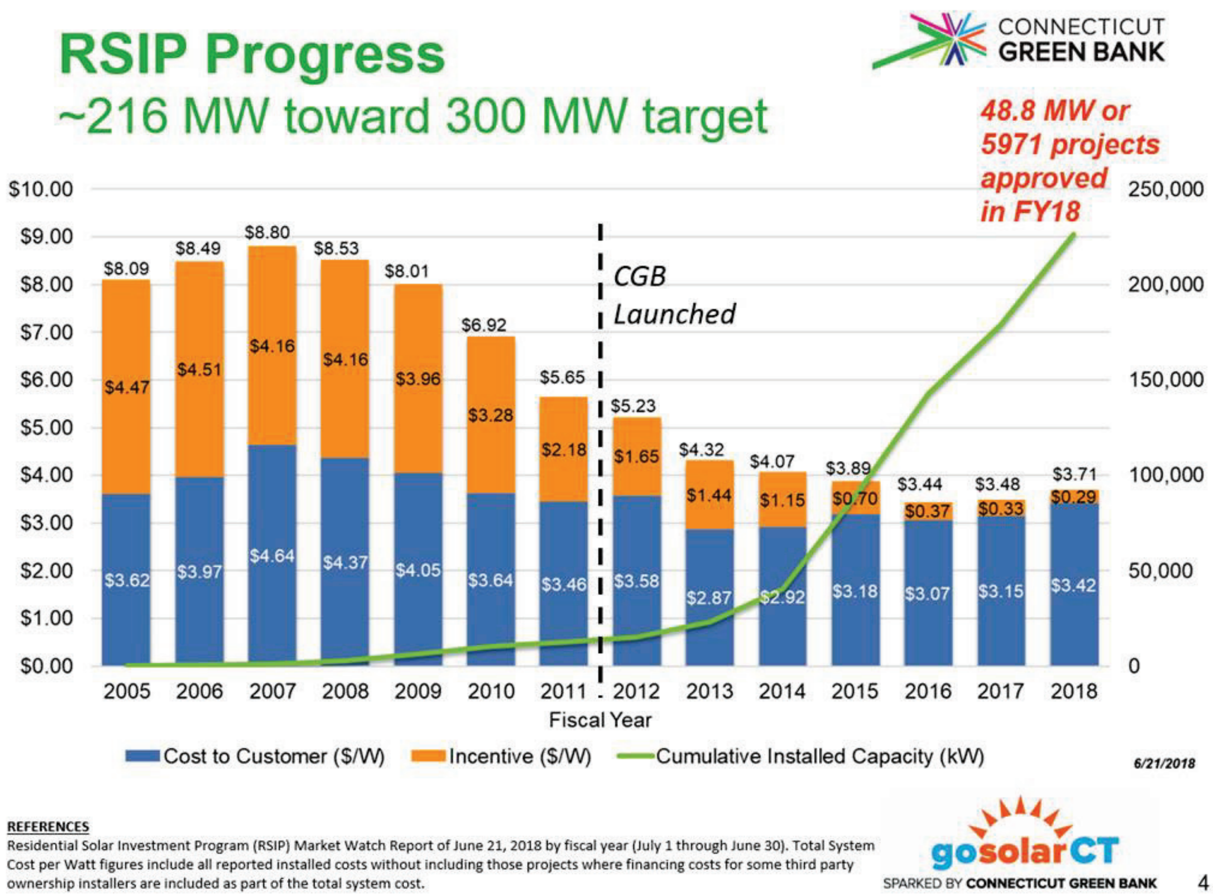
Connecticut's legacy of bold leadership on climate policy continued and set an example for surrounding states' efforts. In fact, Connecticut earned a reputation as a leader through several landmark legislative victories, such as establishing the most ambitious Renewable Portfolio Standard (RPS) in the northeast - 40 percent RPS by 2030, leveraging and expanding the state's procurement authority to cost-effectively develop sustainable and carbon-free sources in the best interest of ratepayers, and establishing the award-winning Connecticut Green Bank to leverage public and private funds to accelerate the growth of green energy in Connecticut all through a bipartisan effort thanks to collaboration with the Energy Committee leadership.

Furthermore, Connecticut led the Regional Greenhouse Gas Initiative (RGGI), a bi-partisan, cooperative effort by nine Northeastern and Mid-Atlantic states to utilize a market-based mechanism to reduce carbon dioxide emissions from power plants. This first in the nation cap and invest program provided Connecticut with more than $134 million in auction proceeds for investments in energy efficiency and renewable energy. Simultaneously, the administration worked closely with other RGGI states to pursue an additional 30 percent reduction in emissions between 2020 and 2030.

Cementing the connection between climate change and energy policy, Executive Order No. 46[33] established the Governor's Council on Climate Change (GC3) to examine the effectiveness of existing policies and regulations designed to reduce greenhouse gas emissions and to identify new strategies to meet the state's greenhouse gas emissions reduction target of 80 percent below 2001 levels by 2050. Upon thorough review of a variety of mitigation scenarios that drive down greenhouse gas emissions in the electric, building, and transportation sectors, the consensus-driven GC3 recommended adopting an economy-wide mid-term greenhouse gas emission reduction target of 45 percent below 2001 levels by 2030. This target was adopted by the General Assembly in 2018 and signed into law as Public Act 18-50[34], locking in Connecticut's commitment to combat climate change over the next decade.

Smart Investments in Renewables, Efficiency, Grid Reliability, & Clean Transportation

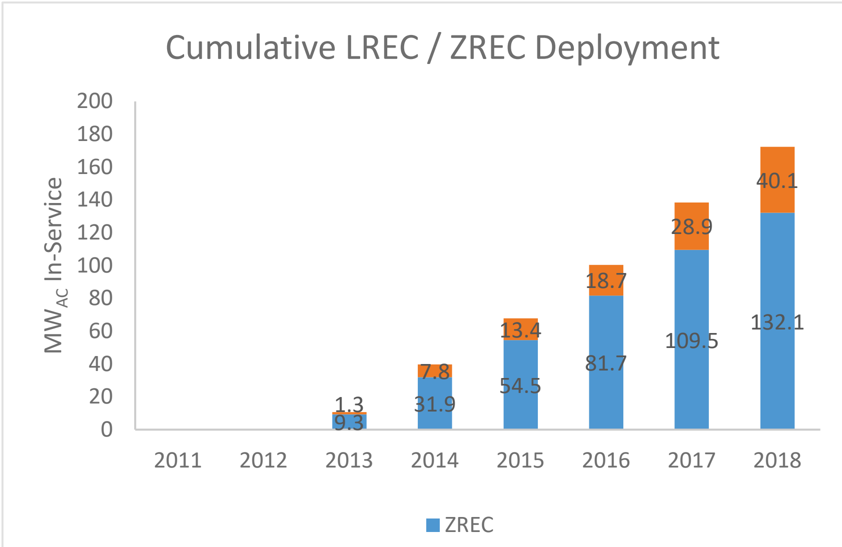
After many years of ad hoc efforts, the Malloy administration in collaboration with Senator Duff, Senator Fonfara and State Representative Reed established a comprehensive approach to deploy renewable energy and energy efficiency, improve grid reliability and encourage clean car adoption. With a multi-pronged approach to secure more cost-effective renewable energy and fuel diversity, Connecticut shifted from a subsidy-based policy to a competitive one to the benefit of ratepayers and residents. By employing an energy policy of cleaner, cheaper, and more reliable, the administration had a renewed focus on how to evaluate and deploy finite resources in an innovative way.



The net effect of the Connecticut Green Bank's Residential Solar Investment Program (RSIP) has been to not only lower energy costs for families and businesses, but to also utilize these resources in ways that generate substantial amounts of private investments that yielding significant returns.

The Innovation of the Connecticut Green Bank

One of the first examples of the policy shift was the establishment of the nation's first green bank to attract private investment to support the implementation of green energy with near unanimous bipartisan support of the General Assembly.[35] The Connecticut Green Bank, has helped more than 30,000 families and businesses lower their energy costs through green energy saving more than $1 billion over the life of the projects. By mobilizing more than $1.3 billion of investment at a 6-to-1 leverage ratio of private to public funds, the Green Bank has supported the deployment of nearly 250 megawatts of renewable energy, created nearly 16,000 jobs, generated nearly $50 million in tax revenues, and reduced emissions by more than 4.6 metric tons. Winner of the 2017 Harvard Kennedy School's Innovations in American Government Award, the Green Bank's impressive track record to attract private investment to support the implementation of green energy has catalyzed similar efforts across the country and is recognized as a crucial tool to combat climate change.



Over the course of the Malloy administration, Connecticut has significantly increased its deployment of Class I renewables.

Low & Zero Emissions Renewable Energy Credit Launched

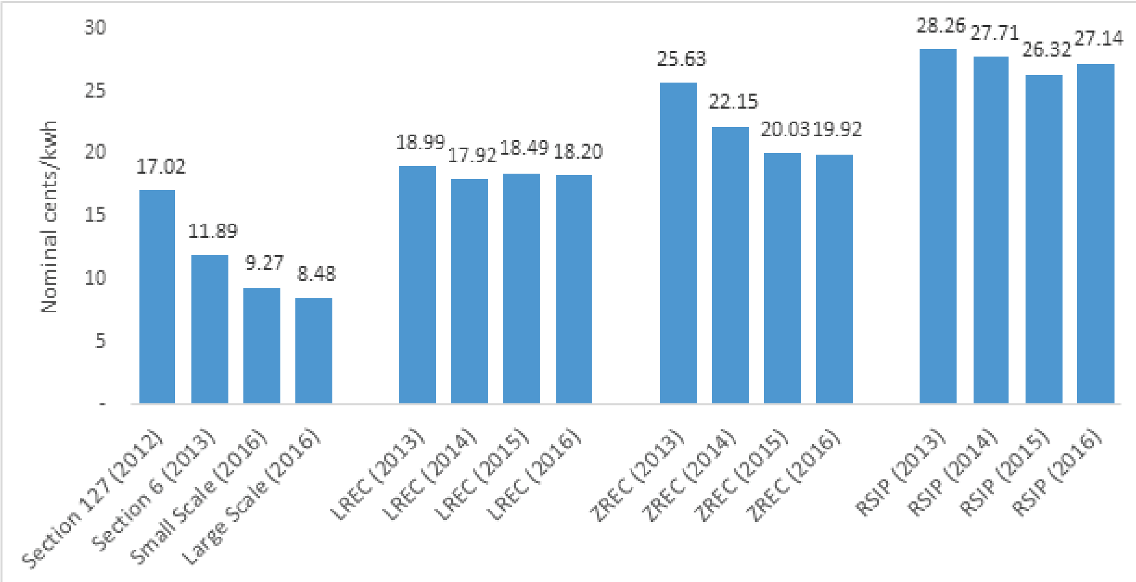
In 2012, the Low and Zero Emissions Renewable Energy Credit Program (LREC/ZREC) was launched. The program requires Eversource and The United Illuminating Company (UI) to procure Class I renewable energy credits (RECs) under 15-year contracts with owners or developers of renewable energy projects in Connecticut.[36] The LREC/ZREC initiative was innovative because it encouraged predictability and competition that drove down the price of contracts for new deployment year over year. As of August 2018, the program had deployed 170 megawatts of Class I renewables (mostly solar and fuel cells).

Procurement & Renewable Deployment, Declining Costs of Renewable Generation

As part of Connecticut's energy transformation, legislation was introduced to use the state's procurement authority to drive renewable energy and energy efficiency deployment due in part to the leadership of Senator Winfield, Senator Formica, State Representative Reed and State Representative Ackert.[37] This led to the development of more than 400 megawatts of small-scale renewable energy and energy efficiency resources, and more than 400 megawatts of large-scale renewable energy projects to serve Connecticut electric customers. As shown in the figure below, over the course of three renewable energy solicitations, the state saw bid prices for grid-scale projects drop by nearly half. In the most recent solicitation, the state selected more than 250 megawatts of additional projects, including Connecticut's first purchase of offshore wind, which will also bring significant economic development to the State Pier in New London.

Furthermore in 2018, the state launched a Shared Clean Energy Facility (SCEF) pilot program, with DEEP selecting more than 5 megawatts of solar. The program will also have a dedicated subscription target of low- and moderate-income consumers. The SCEF program will expand access to the benefits of renewable energy for renters who do not own their property, customers who do not have suitable rooftops or live in multi-unit dwellings, and to low-to-moderate income individuals who cannot afford the upfront costs of on-site generation.

Declining Cost of Clean Energy Programs, Behind the Meter and Grid Side (nominal dollars, 2012-2016)



Resiliency

Tropical Storm Irene in August 2011 and the October 2011 Nor'easter tested Connecticut's emergency resources in ways not seen since hurricane Gloria in 1986. Since then, Connecticut's utility infrastructure was built out significantly, while the manpower associated with the maintenance and repair of that infrastructure had decreased significantly. Both Tropical Storm Irene and the October Nor'easter left a record number of residents without electricity, communications, heat or reliable supplies of water and served as a wake-up call to Connecticut. As a result, Governor Malloy convened a Two-Storm Panel in September 2011. The panel presented Governor Malloy with their final report on January 9, 2012. Following the recommendations of the Governor's panel, the Public Utilities Regulation Authority (PURA) put in place significant operational changes:

- Authorized nearly half a billion dollars in investment for United Illuminating Company (UI) and The Connecticut Light and Power Company (CL&P), which was used to harden physical infrastructure, significantly improve grid and electric reliability, greatly expand tree trimming and vegetation management programs and reduce outages.
- Required greater communications and physical coordination between the utilities, towns, local officials, state agencies and their employees regarding make safe activities, removing trees and wires, identifying outages, providing more accurate restoration times and safely restoring power to customers.
- Created performance standards and metrics for PURA to better assess and evaluate how well the utilities plan for and respond to storm damage and outages and communicate with their customers.

Governor Malloy, joined by state and local officials, cut the ribbon at Wesleyan University in Middletown to commemorate the launch of the first microgrid project under the inaugural round of Connecticut's statewide microgrid program. (March 6, 2014)

The state also developed a first-in-the-nation statewide microgrid program to build local resiliency for electrical load in facilities such as schools, grocery stores and gas stations.[38] This nationally recognized program includes eight operational microgrids with two more under development in 2018. Seven additional microgrid applications were under review by DEEP with the anticipation that awards will be granted to qualified projects by the end of 2018. [For more information on resiliency see the Improving Resiliency and Disaster Relief chapter on page 197]

Energy Efficiency

Energy efficiency also became a focus for state facilities. Energy efficiency projects for state facilities that will save $6 million per year in energy costs. Connecticut state agencies also saved about $1 million in fiscal year 2018 in operating costs through the competitive purchase of electricity.

In addition, the award-winning Conservation and Load Management Plan (C&LM) jumpstarted residential and commercial investments in energy efficiency across the state. In 2017, the electric energy efficiency benefits in Connecticut were equivalent to two 45 megawatt power plants and saved residents, businesses, and municipalities $75 million. Homeowners, renters, local manufacturers and businesses, and municipalities will save $841 million over the lifetime of those 2017 energy efficiency investments. Similar savings have accrued from investments each year of this administration. These energy efficiency investments return 7 dollars into Connecticut's economy for each dollar invested in energy efficiency upgrades, and in 2017, generated a $1.4 billion increase to the state's economy.

Connecticut has achieved a perennial top-ten ranking by the American Council for an Energy Efficient Economy's State Energy Efficiency Scorecard. In September 2017, Connecticut's energy policies and energy-efficiency programs were ranked sixth in the nation by the 2017 Scorecard which noted that Connecticut earned its ranking due to its "leading the way in state government initiatives" and the state's ability to "explore and promote innovative financing mechanisms to leverage private capital and lower the upfront costs of energy-efficiency measures."

EVConnecticut

The transportation sector is one of the most significant producers of carbon emissions contributing to climate change. The deployment of electric vehicles helps drive down harmful carbon emissions, reduce pollutants that threaten our air quality and public health, and help motorists reduce the costs of owning and operating a car. To counteract this aspect of climate change, in 2013, Connecticut joined seven other states (CA, MD, MA, NY, OR, RI and VT) announced a groundbreaking initiative to put 3.3 million zero emission vehicles (ZEVs) on the roads by 2025.[39] Through the ZEV Memorandum of Understanding, participating states agreed to share research and coordination on an education and outreach campaign to highlight the benefits of electric and hydrogen fuel cell cars.

Among Connecticut's recent successes, the EVConnecticut program provided grants to build charging and alternative fueling stations making Connecticut a range-confident state. As of 2018, Connecticut had approximately 314 publicly available electric charging stations throughout the state. Expanding the number of available public charging stations decreases motorists' anxiety of running out of EV battery power, and in turn, helps drive EV sales up.

In addition, to help consumers make the transition to ZEVs, the Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR) program provided more than 2,700 rebates to Connecticut residents, businesses, and municipalities for the purchase of battery electric, fuel cell, and plug-in hybrid vehicles. Providing a rebate of up to $5,000, the program helps make the cost of purchasing or leasing an electric vehicle competitive with the price of a conventional car.

In 2015, Connecticut joined with twelve other North American and European governments, creating the International ZEV Alliance.[40] This alliance aims to further accelerate the global transition to ZEVs by requiring that all new passenger vehicles be ZEVS by 2050. This partnership, along with the many policy initiatives and public awareness campaigns undertaken over the last eight years, have made Connecticut a nationally recognized leader in zero emission vehicles and electric vehicles.

More Work to Do

Through successful integration of climate policy and energy planning, Connecticut is on track to achieve its mandatory target to reduce economy-wide GHG emissions 10 percent below 1990 levels by 2020. We must continue to follow this path if we hope to meet the statutory requirement of a 45-percent reduction in emissions from 2001 levels by 2030- with a focus on decarbonizing thermal energy, the electric grid, and our transportation system.

In the transportation sector, that means that consumers must have access to affordable zero-emission vehicles, and dealerships must continue to offer and promote these options. Building on the state's existing vehicle charging infrastructure will be crucial, and projects that bring public and private stakeholders like the Electric Vehicle Road Map will help existing charging vehicle locations ensuring additional locations will meet the needs of residents. We must also update our electric rate structures to encourage the deployment of more electric vehicles. Long-term investments in public transit and transit-oriented development can help foster a system with fewer single-passenger vehicle trips and more connected communities.

With increasing pressure on the electric grid to reduce carbon emissions, Connecticut will need to continue to increase investment in solar, wind, and other Class I renewables. Steps must also be taken to contain the costs to ratepayers. Public Act 18-50 provides a foundation for more sustainable investments in energy efficiency and renewable energy — full implementation of this legislation should be a priority for the next administration. Distributed renewables will be integrated at the household-level with new technologies such as home batteries and electric vehicle charging. PURA's grid modernization proceeding will address how these can be best integrated and optimized in the distribution grid which could include improved planning, better data collection, and new rate structures.

These renewable resources also increase fuel diversity and lessen the strain on natural gas-fired generation. New England regional grid continues to struggle with fuel supply during the coldest winter days, as gas is prioritized for home heating over electric demand. Improving home weatherization and expanding renewables (especially those that perform well on winter days) are two critical steps that Connecticut, and all New England states, can take to reduce the use of natural gas. Going forward, Connecticut and the whole region need innovative solutions for a more affordable, low-carbon and stable fuel system.

Moving away from fossil fuels for building heating and cooling will be challenging—about half of the states' homes are heated with delivered fuels. Incorporating higher blends of sustainable biofuels can help reduce fossil fuel demand, but in the long-term the state will need to electrify home heating and cooling with air and ground-source heat pumps. While these technologies are highly efficient and can be tailored for cold climates, the cost of equipment and installation are high. New financing models, customer incentives and educational and promotional work will be needed to achieve this transition on the large scale needed.

Energy conservation and load management will continue to be the bedrock of a low-cost, efficient and clean energy system. As energy-efficient equipment and lighting become more mainstream, the states' efforts must focus on the next set of innovative interventions, including greater use of energy management software and lighting controls, commercial/industrial processes, and deeper efficiency measures for households. Low-income households will need continued support in addressing barriers to weatherization. More broadly, consistent funding for energy efficiency and clean energy is crucial.

The next administration should redouble the state's commitment to energy efficiency and clean energy, and stop any sweep of energy and Regional Greenhouse Gas Initiative (RGGI) funds. Any budgetary diversions of the energy efficiency fund, the clean energy fund, or the RGGI allowance, like in the bipartisan Fiscal Year 18-19 budget sweeps, will result in a reduction of private investment in the state's economy, curtail progress on energy conservation and clean energy, decimate Connecticut's green tech industry, eliminate opportunities for families and businesses to lower the burden of energy costs, and jeopardize the state's ability to meet its climate goals.

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[33]Executive Order No. 46: Establishes the Governor's Council on Climate Change to Ensure that the State Achieves its Greenhouse Gas Emission Targets.
[34] Public Act 18-50: An Act Concerning Connecticut's Energy Future
[35] Public Act 11-80: An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future
[36] Public Act 11-80: An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future
[37] Public Act 15-107: An Act Concerning Affordable and Reliable Energy
[38] Public Act 12-148: An Act Enhancing Emergency Preparedness and Response
[39] About the multistate ZEV Task Force
[40] International ZEV Alliance website

State of Connecticut
Office of Governor Dannel P. Malloy

Agricultural Sustainability

"Connecticut continues to lead New England in the growth rate of farms over the past couple of years, where the agriculture industry contributes $3.5 billion to our economy and provides nearly 28,000 jobs in our state. I remain committed to the growth of this crucial industry and to the hard working families of Connecticut who work in it." — Governor Dannel P. Malloy announcing funding to support Connecticut farmers through the state's Farmland Preservation Program, April 2014

Prior to 2011, Connecticut did not have all the tools necessary to sustain and promote healthy growth in the agricultural sector. With leadership and vision and through the advocacy of Connecticut farmers, agriculture is not only thriving in Connecticut, but Connecticut leads New England in growth. Through the following initiatives, this administration has helped this industry flourish.

Progress during the Malloy administration:

- Created the Farmland Restoration Program, providing approximately $3.9 million in state grants to **complete more than $9.5 million in farm projects** and increase Connecticut's agricultural and base by more than 1,100 acres since 2011 with another 1,400 acres in the investment pipeline.
- **Protected 90 farms and 9,200 acres** since 2011 through the Farmland Preservation Program.
- Created the PLANT Grant program, assisting 232 farms recover from natural disasters.
- Strengthened the Connecticut Grown laws.
- Supported and signed legislation to support the farm brewery industry.
- Increased the number of farmers and farmers' markets qualified to accept WIC benefits as payment for produce and products — to ensure that our children and grandchildren have access to fresh, local food.

Preserving Farmland

Farmland Restoration Program

With prime farmland rapidly disappearing, the state sought to reverse this trend and return more farmland to production. Since its creation in 2011[41], the Farmland Restoration Program has encouraged farmers to invest $5.6 million in farm projects to increase Connecticut's agricultural land resource base in exchange for approximately $3.9 million in state grants. This program provides matching grants of up to $20,000 for farmland restoration activities that increase the state's farmland resource base, with a priority placed on prime and important farmland soils and human and livestock food production. Through the success of this program, the Connecticut Department of Agriculture (DoAg) put more than 1,100 acres of farmland back into production over seven years. With an additional 1,400 acres of farmland in the pipeline.

Ned Ellis (right), owner of Maple Leaf Farm in Hebron, takes Governor Malloy and Agriculture Commissioner Steven K. Reviczky on a walking tour of the 450-acre dairy farm and discuss the positive impact that the state's Farmland Preservation Program has had in helping the economic success and growth of the business, which is a member of The Farmer's Cow. (October 25, 2016)

PLANT Program

In 2013, Connecticut farmers were hit with catastrophic losses in production and property damage due to severe storms and flooding that damaged crops, buildings, and equipment not covered by the Federal Emergency Management Agency. In response to these catastrophic events, the Production Loss Needed Today (PLANT) Grant Program was created. A total of $5 million was designated to assist 232 farms.

To help small farms recover from weather-related losses, this assistance, among other things:

- Replanted lost crops and plant new/different crops in place of lost crops;
- Repaired damaged property and equipment;
- Purchased feed to supplement lost hay, corn, and other crops for livestock;
- Applied Fertilizer and other soil amendments; and
- Prevented disease and pest outbreak.

Farmland Preservation Program

Family-owned farms are disappearing as they struggle to make ends meet. Even though our communities rely on and celebrate the local availability of fresh farm products. To help preserve these working lands, the Connecticut DoAG acquires the development rights to agricultural properties through its Farmland Preservation Program, ensuring the land remains available only for agricultural use in perpetuity. The voluntary program provides farmers with a realistic alternative to selling their land for development.

Under Connecticut's long-standing Farmland Preservation Program, 25 percent of the farms preserved were saved under the Malloy administration. From 2011 to 2018, Connecticut DoAG invested more than $45 million in state funding and received reimbursements of $11 million from the United States Department of Agriculture and $5 million from towns/land trusts to protect 90 farms and 9,200 acres, with another 61 farms and 5,800 acres in the preservation process for 2019.

Other Investments to Farmers

- **Farm Transition Grants** — matching grants of up to $49,999 to help farms expand and diversify. Since 2011, DoAg has awarded 147 grants to producers, totaling $3,619,406
- **Farm Viability Grants** — matching grants of up to $49,999 to help municipalities and agricultural non-profits fund agricultural projects and promote local farmers' markets. Since 2011, DoAg has awarded 165 grants to nonprofits and municipalities, totaling $3,324,347
- **Farm Reinvestment Grant -** matching grants of up to $40,000 to help improve existing working farms through capital projects with a lifespan of ten years or more. Since 2011, DoAg has provided 51 grants totaling $1,582,937 in bonded funds.

Support for Connecticut Breweries

To capitalize on the popularity of craft breweries and agricultural tourism a manufacturer permit for farm breweries[42] was established. The permit allows for the manufacture, storage, bottling and wholesale distribution and sale of beer manufactured on a farm's premises. Additionally, the farm brewery permit allows tastings and free samples for on-and-off farm consumption, including at farmers' markets.

Strengthening Connecticut Grown Laws

Consumers want to be well informed of where their food is coming from. To promote consumer transparency and help consumers make better-informed purchasing decisions, the Connecticut Grown laws for consumers were strengthened to easily track Connecticut food back to the farm of origin. Public Act 18-73 requires anyone who sells a Connecticut-grown farm product through the Connecticut farm-to-school program to offer proof to the school buying the product produced in Connecticut.[43]

Encouraging Farmers Markets to Accept WIC and Senior Farmers' Market Nutrition Program

With the increased awareness of food deserts in cities bringing fresh produce and products to these communities was an imperative for the health of children in particular. Today, 102 farmers markets are certified to accept Women, Infants, and Children and Senior Farmers' Market Nutrition checks.

More Work to Do

During the last eight years, Connecticut farmers have benefitted from significant and necessary support that is helping to sustain this important industry. However, state support cannot slip in the coming years, if Connecticut's agriculture sector is to survive, sustain, and feed our communities and families.

First and foremost, it is essential that the Community Investment Act which supports the dairy industry, agriculture grant programs, farmland and open space preservation, affordable housing and tourism, continue to be funded. Furthermore, investment in agriculture growth areas such as farm tourism, craft farm brewery expansion, and Connecticut Grown product marketing and promotion should continue in order to help local farmers diversify and strengthen their incomes.

In order to help Connecticut farm breweries excel and meet customer demand, the legislature should revisit the archaic liquor law that bars any brewery from selling more than 9 liters of their product for off premise consumption. Eliminating that limit would put in-state breweries on par with breweries in other states, allowing them to compete in the New England region.

The redevelopment efforts and marketing improvements to strengthen the Hartford Regional Market, now under the direction of the Capital Region Development Authority must proceed to maximize the potential in this undervalued state agriculture asset.

Finally, we must continue to support, a stand-alone, cabinet-level Department of Agriculture not only to serve the agricultural community, but to carry out diverse regulatory authorities, including food safety and animal health.

[41] Public Act 11-1: An Act Promoting Economic Growth and Job Creation in the State
[42] Public Act 17-160: AA Establishing a Manufacturer Permit for Farm Breweries
[43] Public Act 18-73: AAC the Sale of "Connecticut Grown" Products and Authorizing Certain Aquaculture Site Designations for the Development of an Environmental Education Curriculum