Connecticut Comprehensive Energy Strategy

February 8, 2018
Energy and Technology Committee

Department of Energy and Environmental Protection

Energy Branch

- PURA
- Energy & Technology Policy

Environmental Quality Branch

- Air Management
- Materials Management and Compliance Assurance
- Water Protection and Land Use

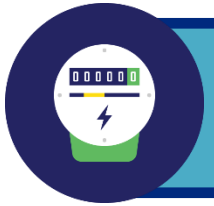
Environmental Conservation Branch

- Natural Resources
- Outdoor Recreation

Office of the Commissioner

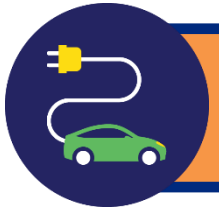
- Adjudications
- Legal Counsel
- Central Services

Bureau of Energy and Technology Policy



Office of Energy Supply & Infrastructure

Office of Energy Demand



Office of Climate Change and Innovation

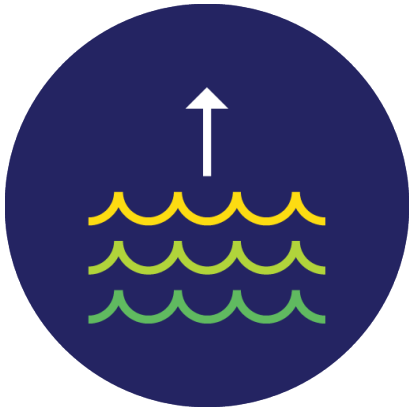
Legacy of Energy and Climate Leadership

- Procurement of ***over 800 MW of renewable energy*** and energy efficiency resources
- Establishment of the award-winning ***Connecticut Green Bank***
- Creation of the first-in-the-nation ***statewide microgrid program*** to build local resiliency
- Award-winning ***energy efficiency initiatives***
- The establishment of the ***Governor's Council on Climate Change***

Climate Leadership: 45% GHG Reduction by 2030

Connecticut is on track to achieve the requirement of 10% GHG emission reduction from 1990 levels by 2020. To meet the requirement of 80% reduction by 2050, ***an interim 2030 reduction target of 45% is needed to drive continuous progress*** in decarbonizing thermal energy, the electric grid, and transportation system. This was the target recommended by the Governor's Council on Climate Change in January, 2018.

Climate Change Planning and Resiliency



Connecticut is feeling the effects of climate change, from changes to Long Island Sound fisheries, to increases in severe weather events.

The Connecticut Institute for Resilience and Climate Adaptation (CIRCA) at the University of Connecticut recommends that the state plan for ***50 centimeters of sea level rise*** (SLR) by 2050.

A Blueprint for Action

Over ***90 percent*** of Connecticut's GHG emissions are related to energy usage.

The 2018 CES sets forth bold but achievable steps to meet GHG reduction goals, while containing costs to ratepayers.

The CES, along with the work of CIRCA and the GC3, form the foundation for two Governor's proposals this session, one focused on ***planning and resiliency***, and the other focused on ***Connecticut's energy future.***

Comprehensive Energy Strategies 1-4

1. Ensure sustainable and equitable ***funding for energy efficiency.***

2. Advance ***market transformation*** of the energy efficiency industry.

3. *Grow and sustain* ***renewable and zero-carbon generation*** in the state and region.

4. *Expand* ***deployment of all cost-effective distributed generation*** (“behind the meter”) in a sustainable manner.

Comprehensive Energy Strategies 5-8

5. Continue to improve ***grid reliability and resiliency*** through state and regional efforts.

6. Reduce transportation greenhouse gas emissions by accelerating the adoption of ***low- and zero-emission vehicles*** and strengthening alternative-fueling infrastructure.

7. Increase ***mobility, connectivity, and accessibility*** by advancing smart-growth, mixed-use transit-oriented development, and innovative transportation partnerships.

8. Modernize the grid.

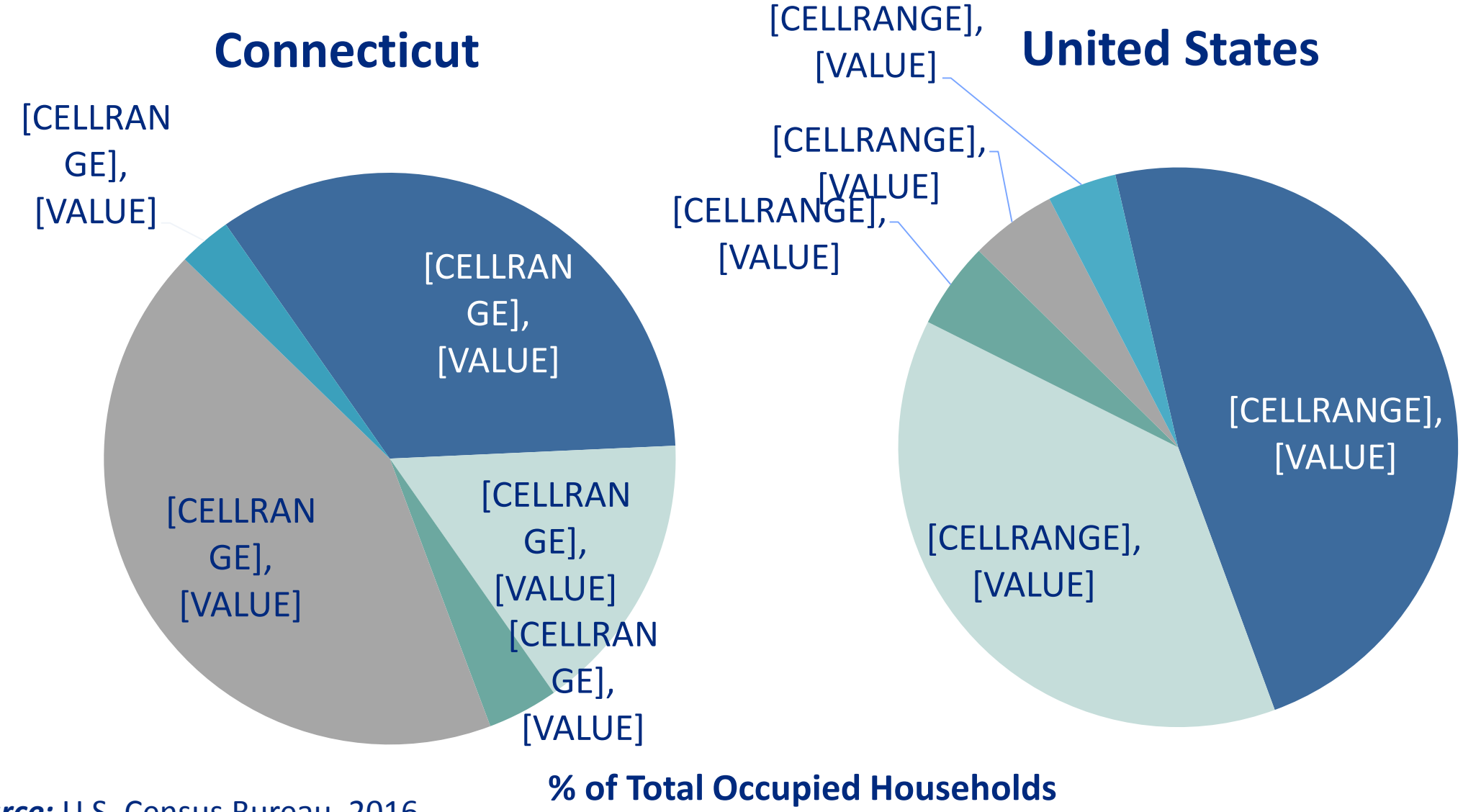
Ensure sustainable and equitable funding for energy efficiency

- ✓ Implement sustainable funding for energy efficiency
- ✓ Find equitable solutions for oil and propane conservation
- ✓ Reduce the energy burden of low-income households
- ✓ Address health and safety barriers to further unlock efficiency and create healthier homes
- ✓ Catalyze the competitiveness of Connecticut's businesses with increased energy productivity

Advance Market Transformation of the Energy Efficiency Industry

- ✓ Integrate energy efficiency with real estate market forces.
- ✓ Develop a sustainable workforce to meet industry demand
- ✓Standardize efficiency with energy performance codes, standards, and certifications
- ✓Transition to cleaner thermal fuels and technologies

Context: How We Currently Heat our Homes



Source: U.S. Census Bureau. 2016.

Grow and sustain renewable and zero-carbon generation

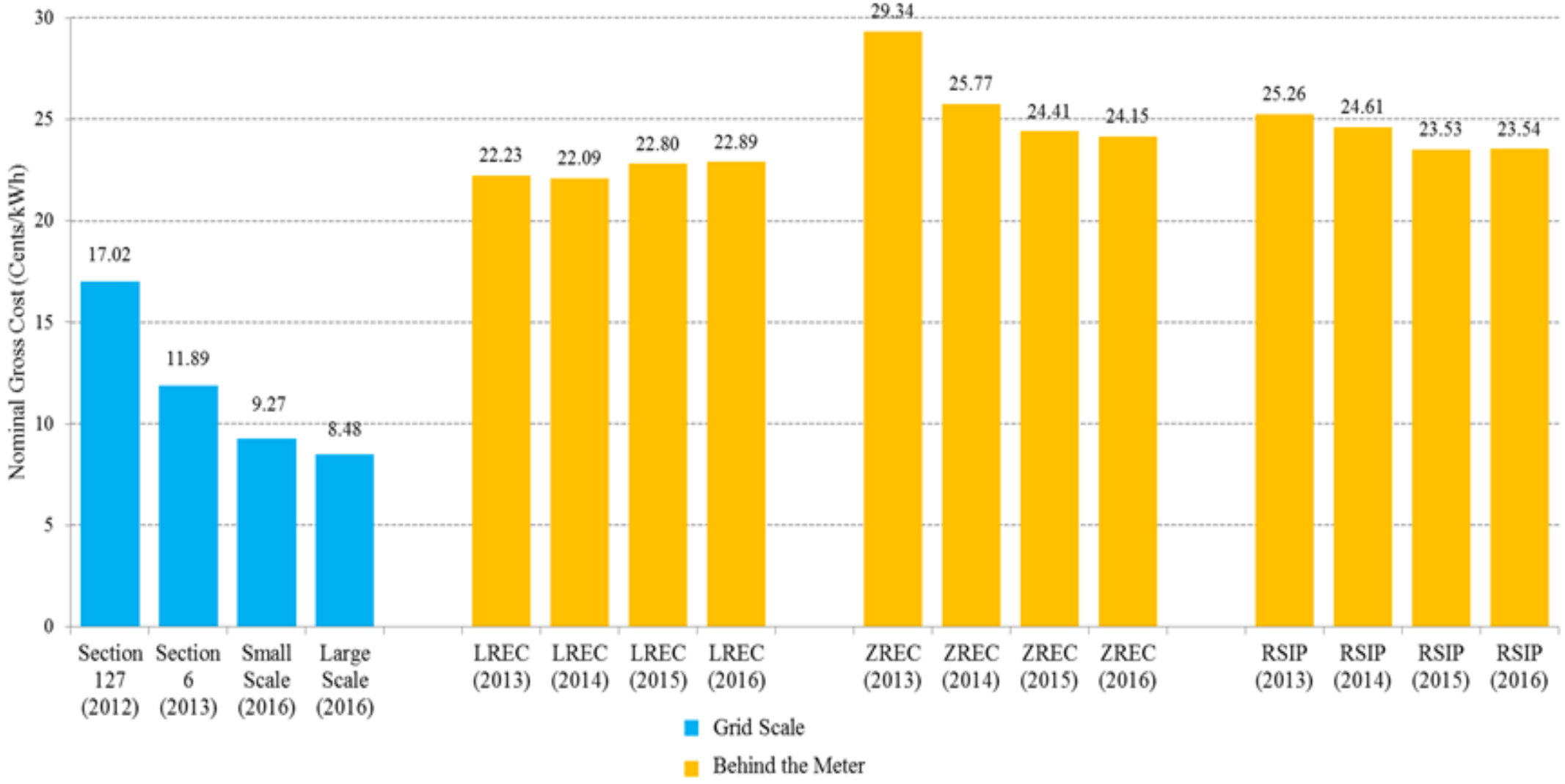
✓ Increase the Renewable Portfolio Standard to 40% by 2030

✓ Use existing procurement authority for regional nuclear and hydropower resources

✓ Continue procuring grid scale renewables based on needs determined in the Integrated Resources Plan in a cost-effective and environmentally-sustainable manner

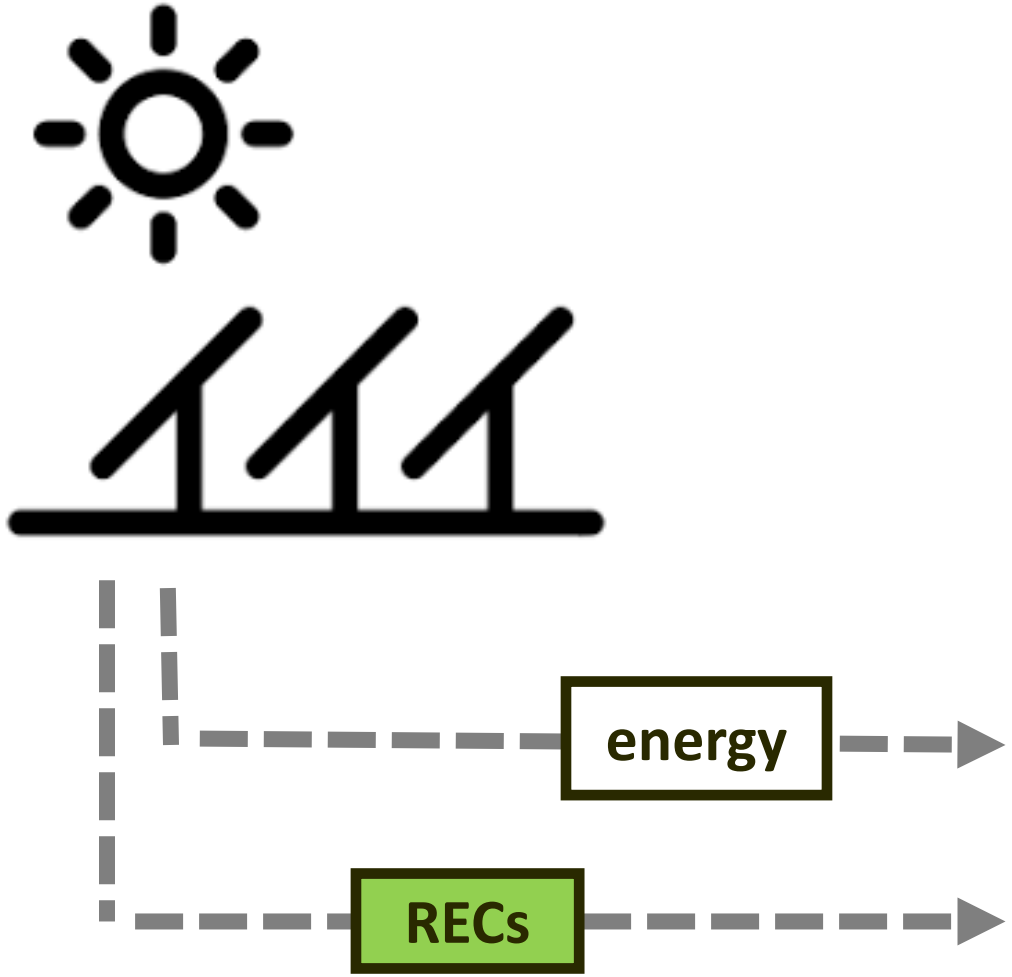
✓ Phase down biomass and landfill gas RECs in Connecticut's Class I RPS

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



** Average cost for RSIP was levelized over 20 years for Purchased Residential PV systems and not leased systems.*

Expand cost-effective distributed generation



Net Metering

SHREC

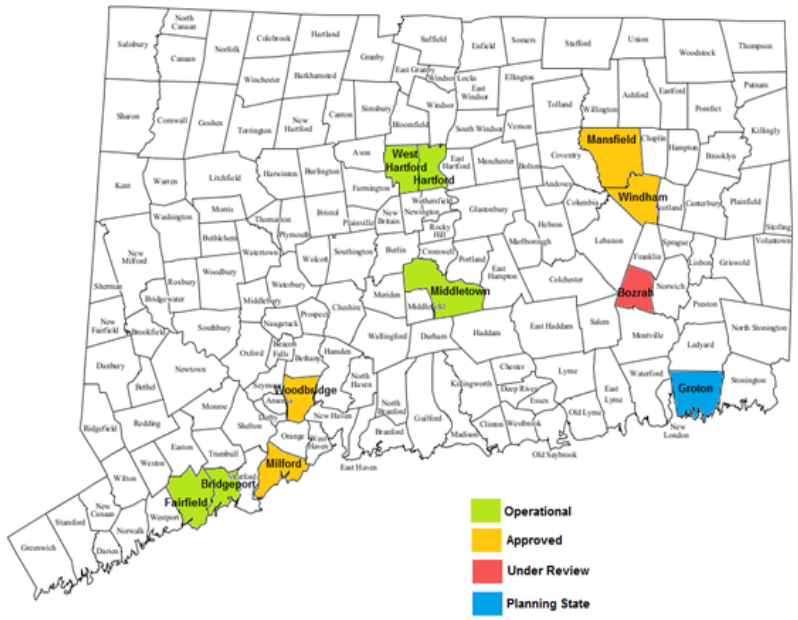
LREC/ZREC

Virtual Net Metering

Increase Access, Reduce Costs

- ✓ Grandfather existing distributed generation systems
- ✓ Determine total authorized utility spending for all distributed generation tariffs
- ✓ Designate consumer categories within the spending cap
- ✓ Hold semi-annual competitive solicitations for Low and Zero Emission Tariff categories
- ✓ Integrate a statewide shared clean energy program into the new LREC/ZREC auctions
- ✓ Enhance transparency of voluntary renewable energy products
- ✓ Establish renewable generation rates for residential customers

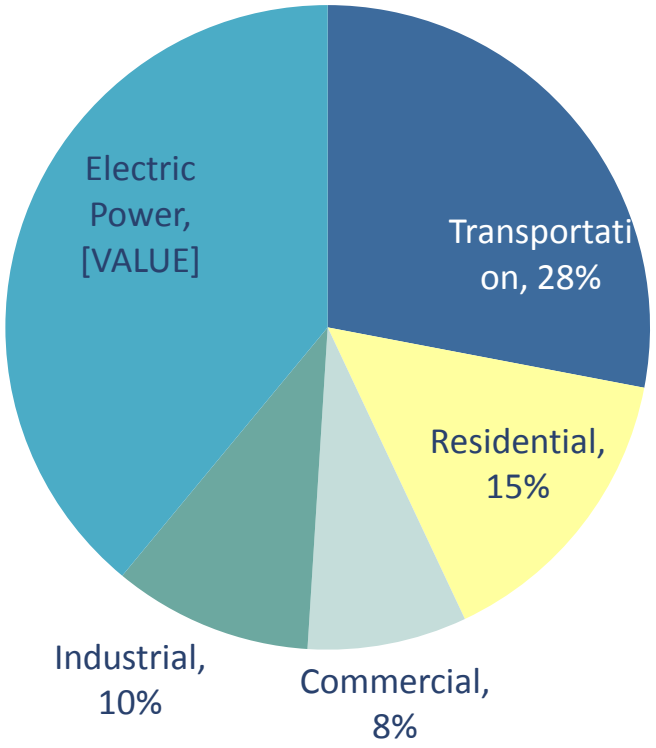
Improve Grid Reliability and Resiliency



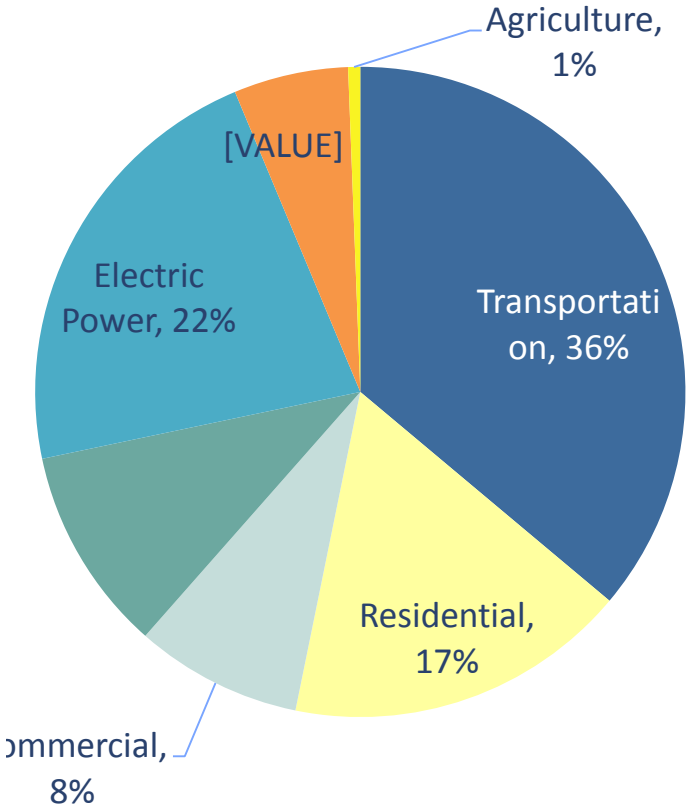
- ✓Support ISO NE improving regional winter natural gas generation fuel security and reliability
- ✓Continue to deploy community **microgrids** to support statewide resiliency goals in strategic locations and support the Energy Assurance Plan.
- ✓Ensure **coastal resiliency** of substations and other critical grid infrastructure to support DEEP's flood management goals.

Current Consumption and Emissions Trends

Energy Consumption by Sector



GHG Emissions by Sector

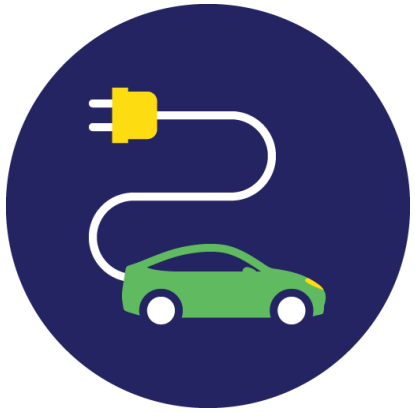


EVs needed for a 45% GHG reduction by 2030

	2020	2030	2050
45% below 2001 by 2030			
# of ZEVs	70,000	750,000	2,600,000
% of Fleet	3%	32%	95%

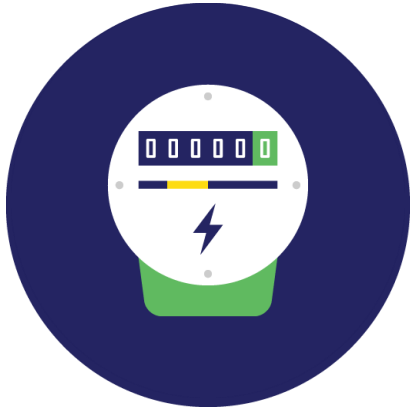
Note: numbers are approximate based on modeling assumptions

EVs, Infrastructure and Transportation Planning



- ✓ Develop an EV Roadmap, that includes a review of sustainable incentive funding models and, in collaboration with PURA, examines the appropriate regulatory framework for EV deployment in CT.
- ✓ Increase EV uptake through consumer education and new fleet purchasing models.
- ✓ Facilitate state and regional transportation planning that improves system efficiency and reduces vehicle miles traveled.

Modernize the Grid



- ✓ Initiate grid modernization proceedings
- ✓ Integrate efficiency, storage and renewables to manage peak demand
- ✓ Ensure interoperability of demand response communications between buildings and the grid
- ✓ Apply best practices from the federal Grid Modernization Lab Initiative

Conclusion – Legislative Priorities

"We have to lower carbon emissions everywhere. We have to once again make Connecticut a national leader in green energy."

-Governor Malloy, State of the State Address, Feb. 7, 2018

- 45% GHG Reduction by 2030
- 40% Class I RPS by 2030
- Science-based climate resiliency planning
- Cost effective distributed generation programs
- Commitment to Energy Efficiency and the CT Green Bank