Connecticut Department of Energy and Environmental Protection

2017 CES

The 2017 CES is guided by the goal of cheaper, cleaner, more reliable energy. Connecticut energy policy must:

- Align with and support the State's broader environmental policies to meet clean air, clean water, land conservation and development, and waste reduction goals;
- Put the State on a clear path to meet the Global Warming Solutions Act to reduce GHG emissions 10 percent below 1990 levels by 2020 and 80 percent below 2001 levels by 2050;
- Focus on grid modernization, strategic electrification, increasing efficiency, and improving reliability and security;
- Increase energy affordability and economic security to help strengthen the State's economy now and into the future;
- Maintain equitable access to the benefits of clean and efficient energy generation and transportation options.

2017 CES Chapters

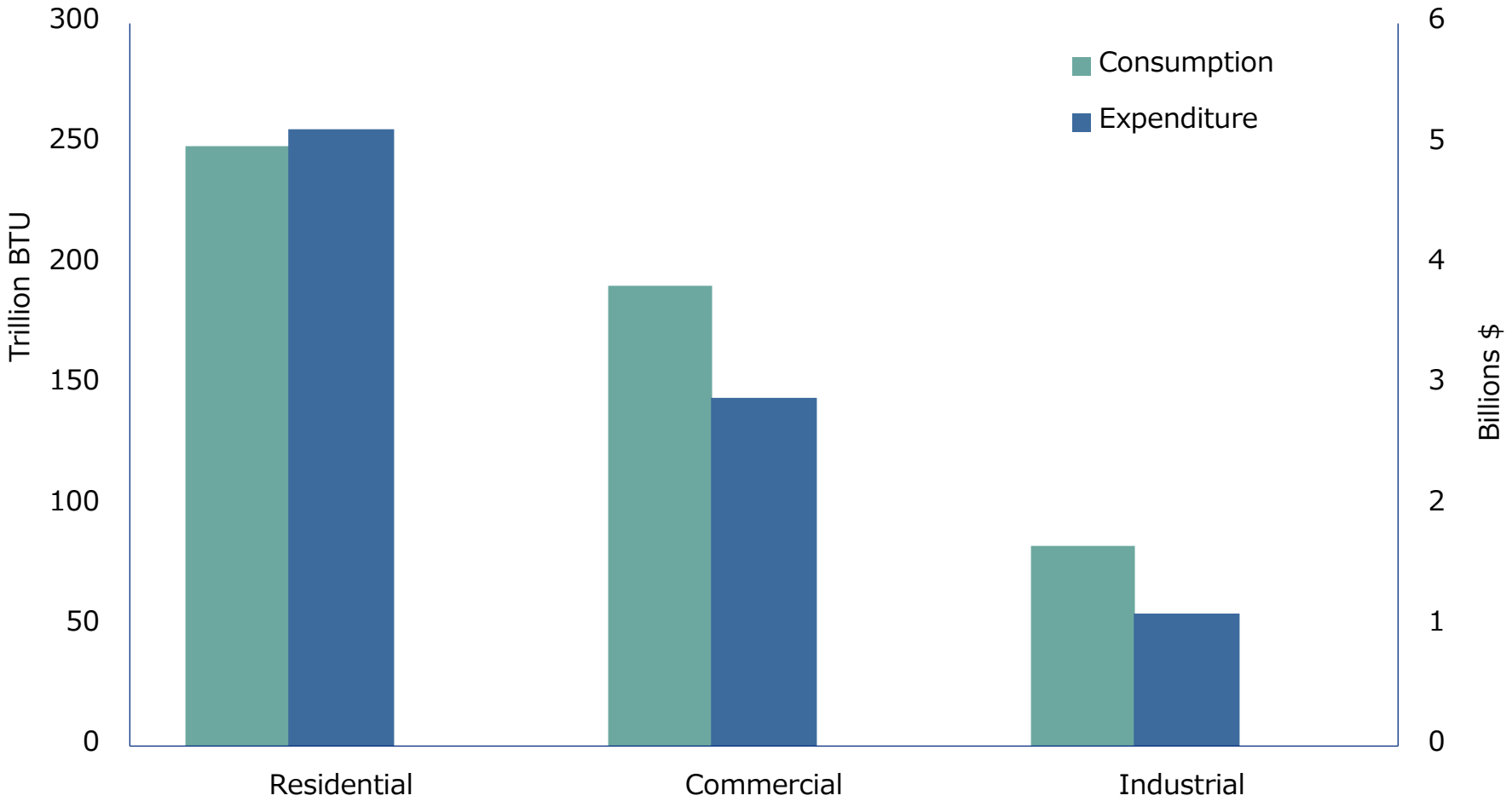
Electric Power

Buildings

Transportation

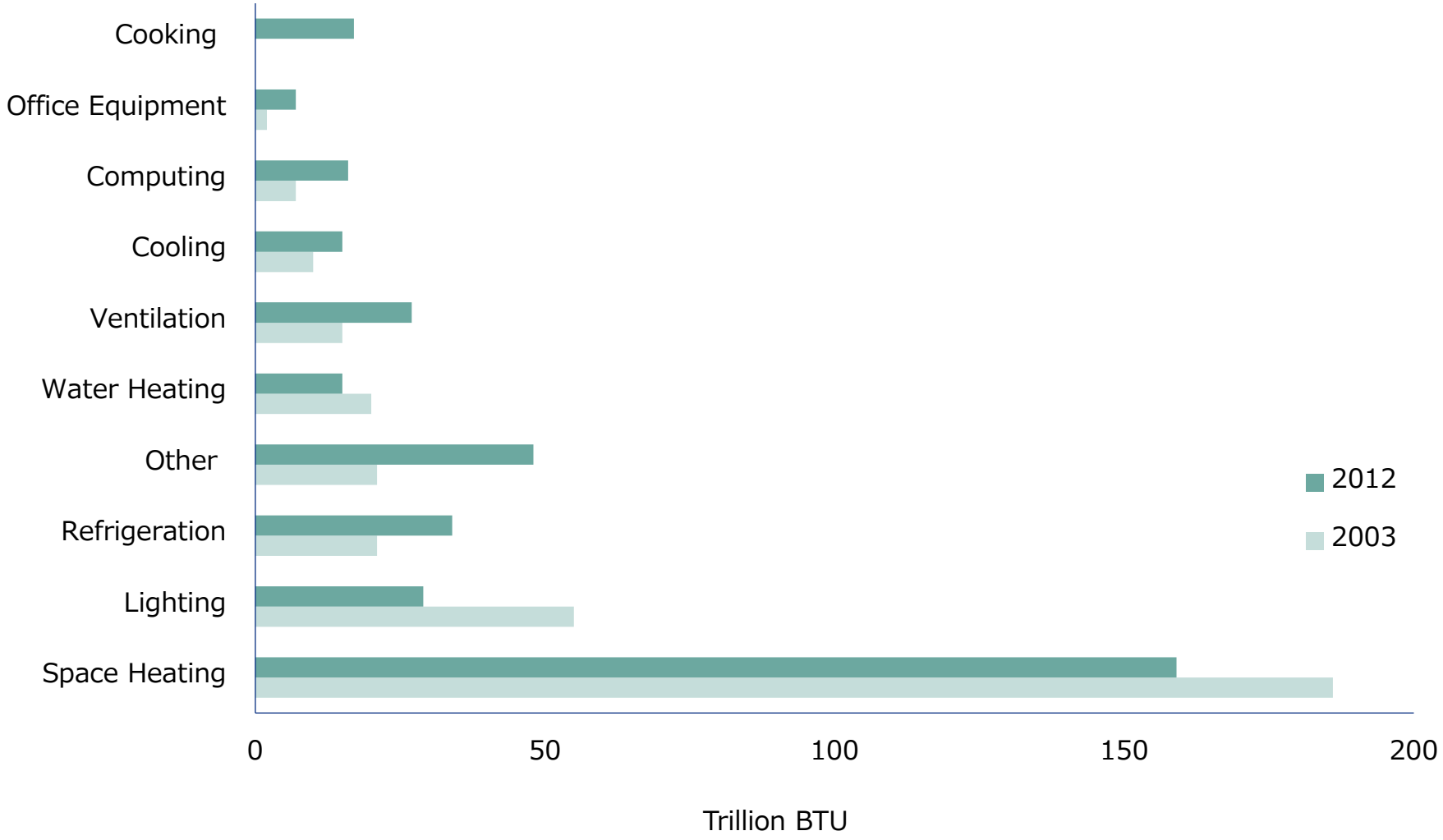
CES Buildings Sector Chapter

Current State: CT Consumption & Expenditures



Source: United States Energy Information Administration, 2017 [2014 data]

Context: How We Currently Use Energy



Source: United States Energy Information Administration

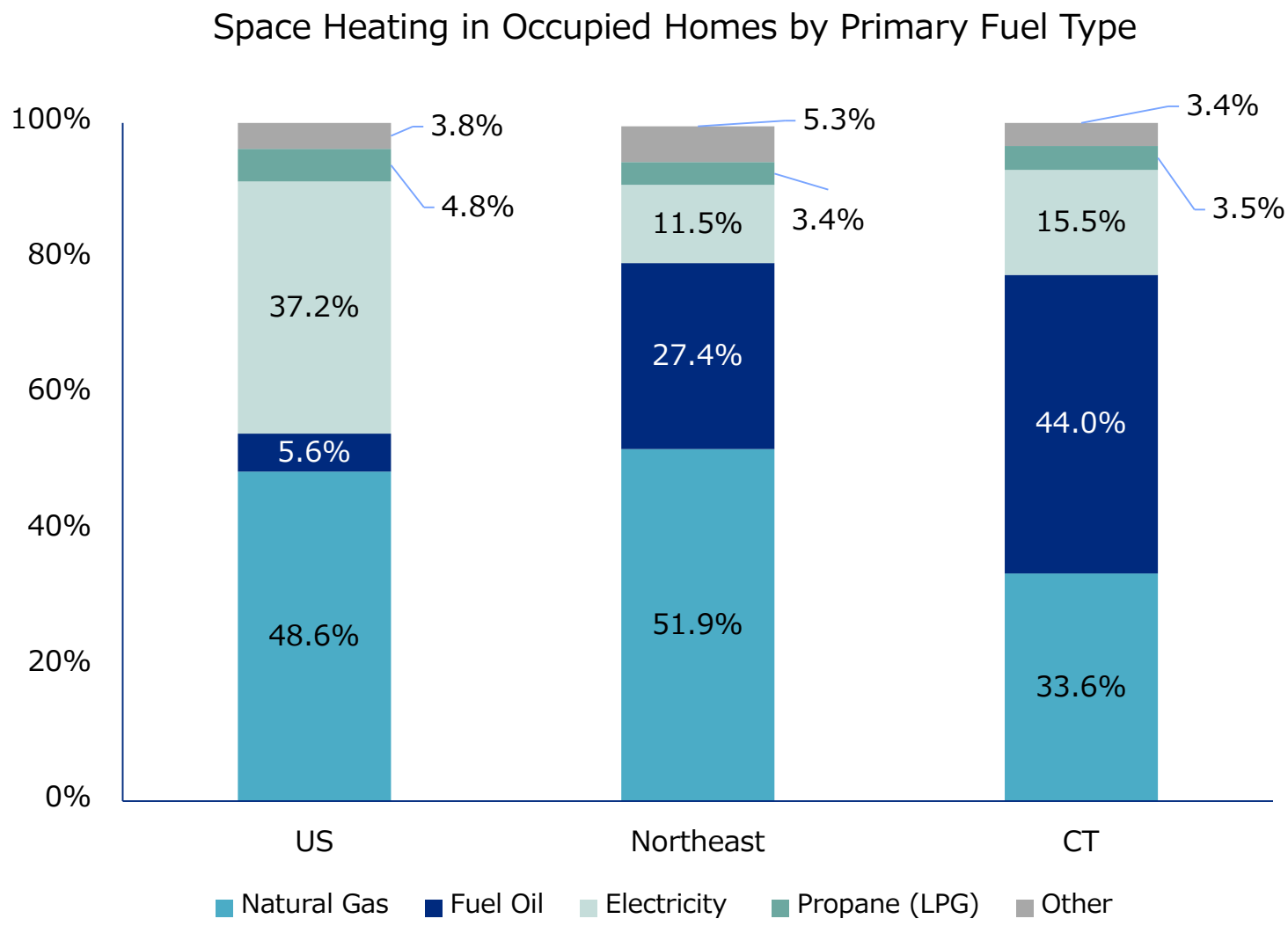
Buildings Sector Goals & Strategies

Goal 1: Prioritize energy savings as a financial and energy resource

Goal 2: Improve performance and productivity of buildings and industrial processes

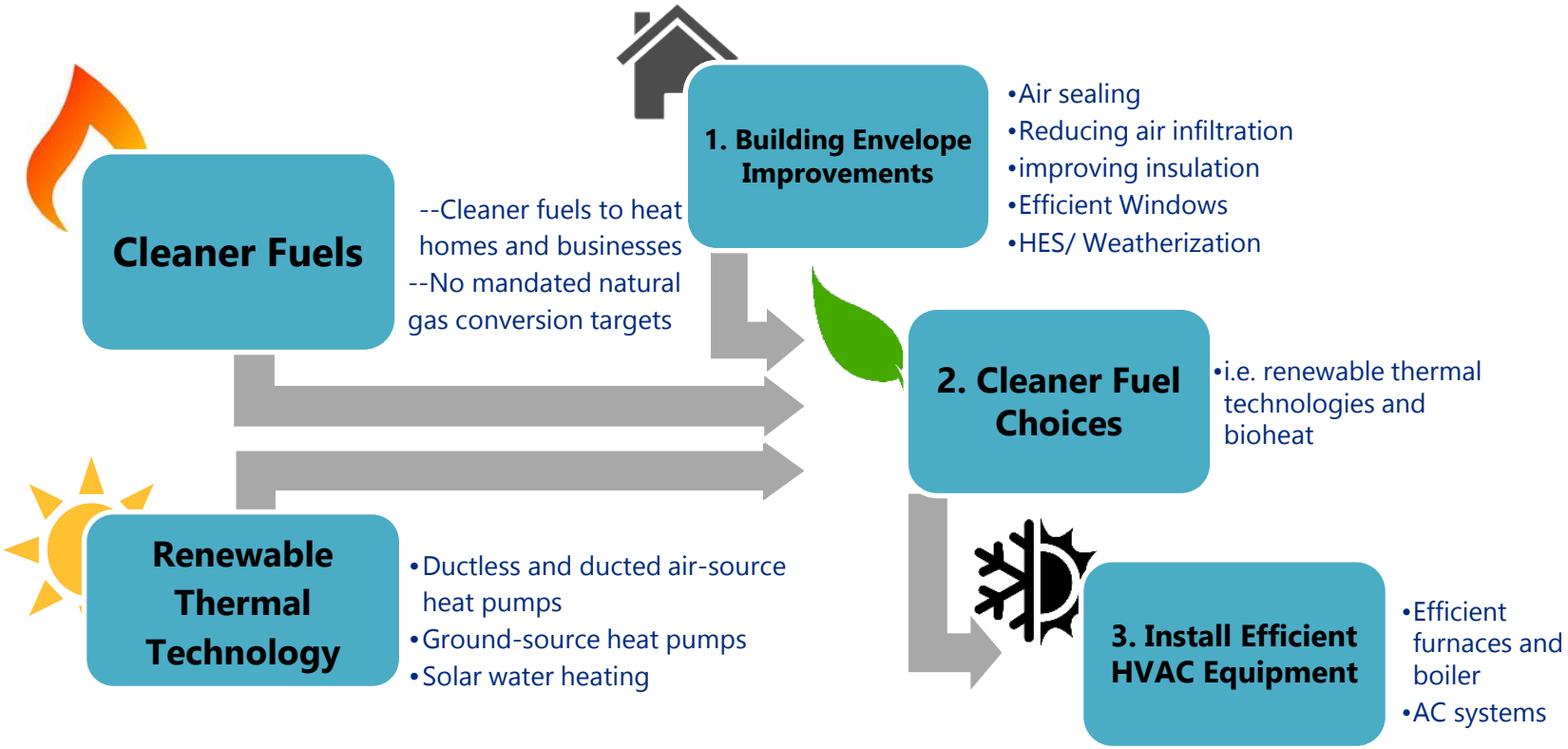
Goal 3: Reduce peak demand

Buildings Sector Context for Goals & Strategies



Goal 2: Improve Performance And Productivity of buildings and industrial processes

B.2.2 Encourage cleaner and more cost-effective thermal fuel choice to transition buildings from fossil fuels

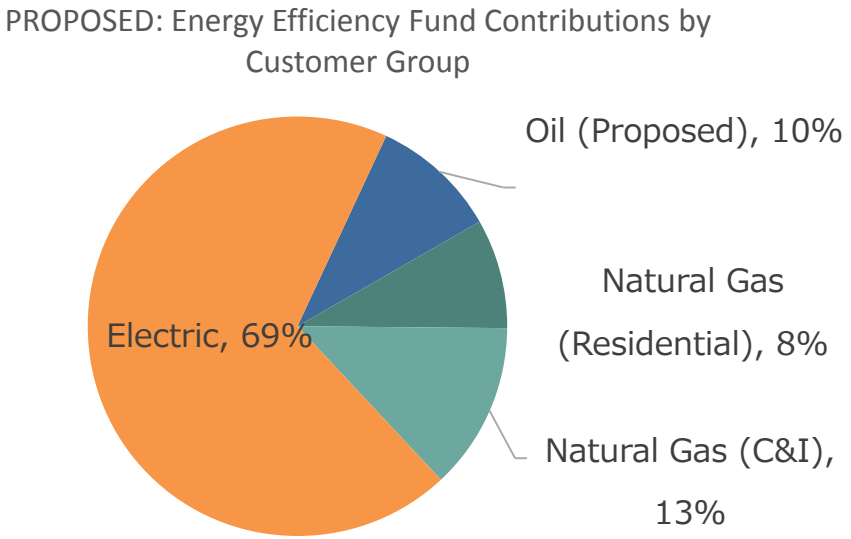


Source: DEEP Analysis

Goal 1: Prioritize Energy Savings as a financial and energy resource

B.1.7 Ensure equitable efficiency investment across fuel types through equitable conservation charges

- Achieve equity on BTU equivalent basis between electricity, natural gas and oil customers
- Estimated annual cost per household: $35-$45, and even lower after counting energy efficiency savings
- Estimated efficiency gains: $51.7M
- Oil customers' participation rates are disproportionate to their contributions
- All cost-effective fossil fuel consumption reductions are necessary to meet Connecticut's climate goals
- Improves future funding sustainability for continuous improvement in energy efficiency measures
- The proposed conservation charge would support investment in oil efficiency measures



Goal 3: Continue to Prioritize Grid Load Management to Reduce Peak Demand

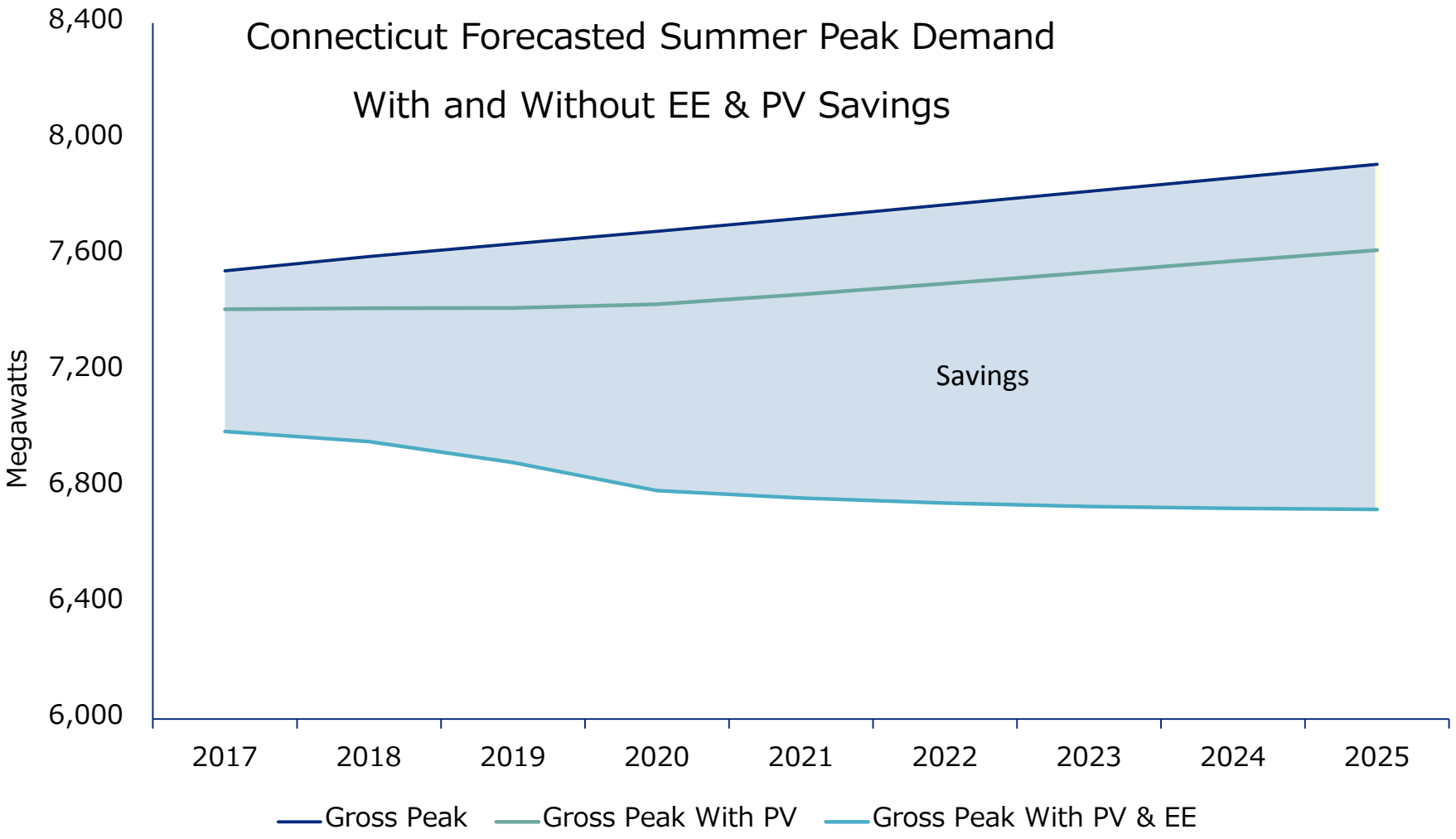
3.2 Increase and standardize two-way advanced meter communication

- Phase in deployment of advanced meters
- Promote use of smart grid standards to protect ratepayers and infrastructure

3.3 Optimize economic signals and incentives for demand response

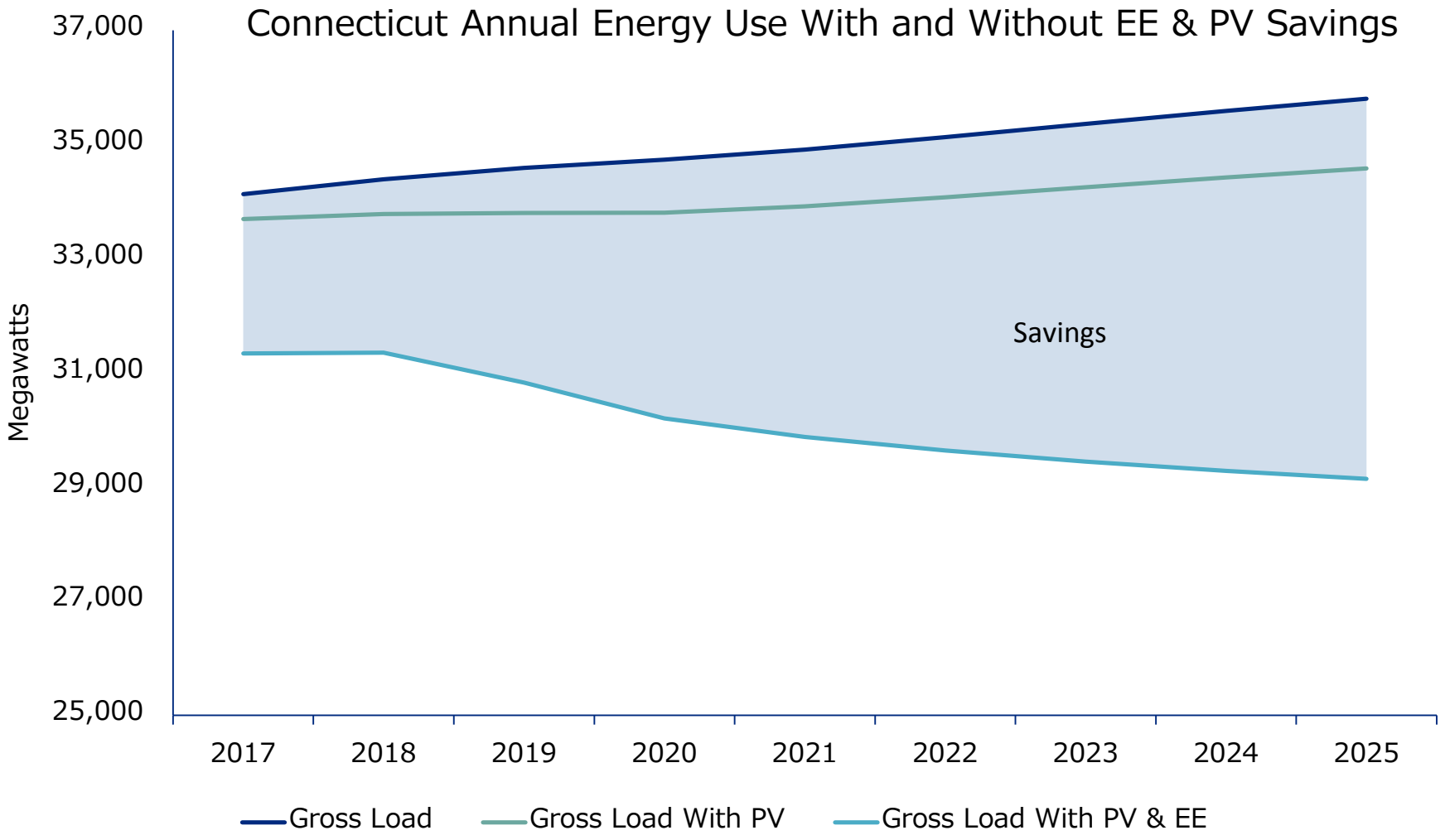
- Promote dynamic Time of Use rates and Peak Time incentives
- Assess real time DR pilots and their scalability
- Promote onsite generation
- Evaluate and begin preparing for energy storage

Summer Peak Demand Projections



Source: ISO New England, 2017

Overall Demand Projections



Source: ISO New England, 2017

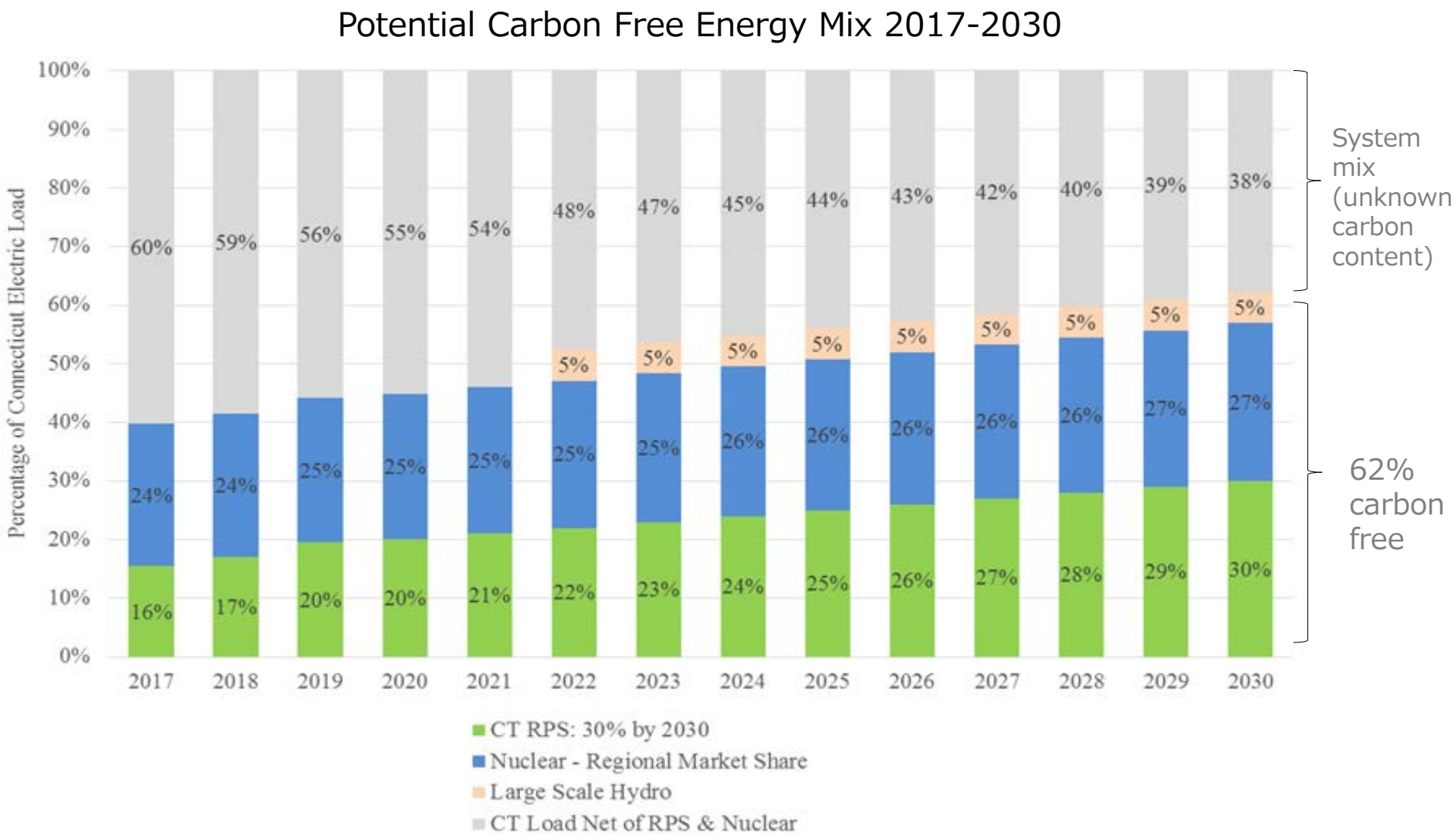
CES Electric Power Sector Chapter

Electric Power Sector Goals and Strategies

Goal 1: Align renewables programs with Renewable Portfolio Standard (RPS) and Global Warming Solutions Act (GWSA).

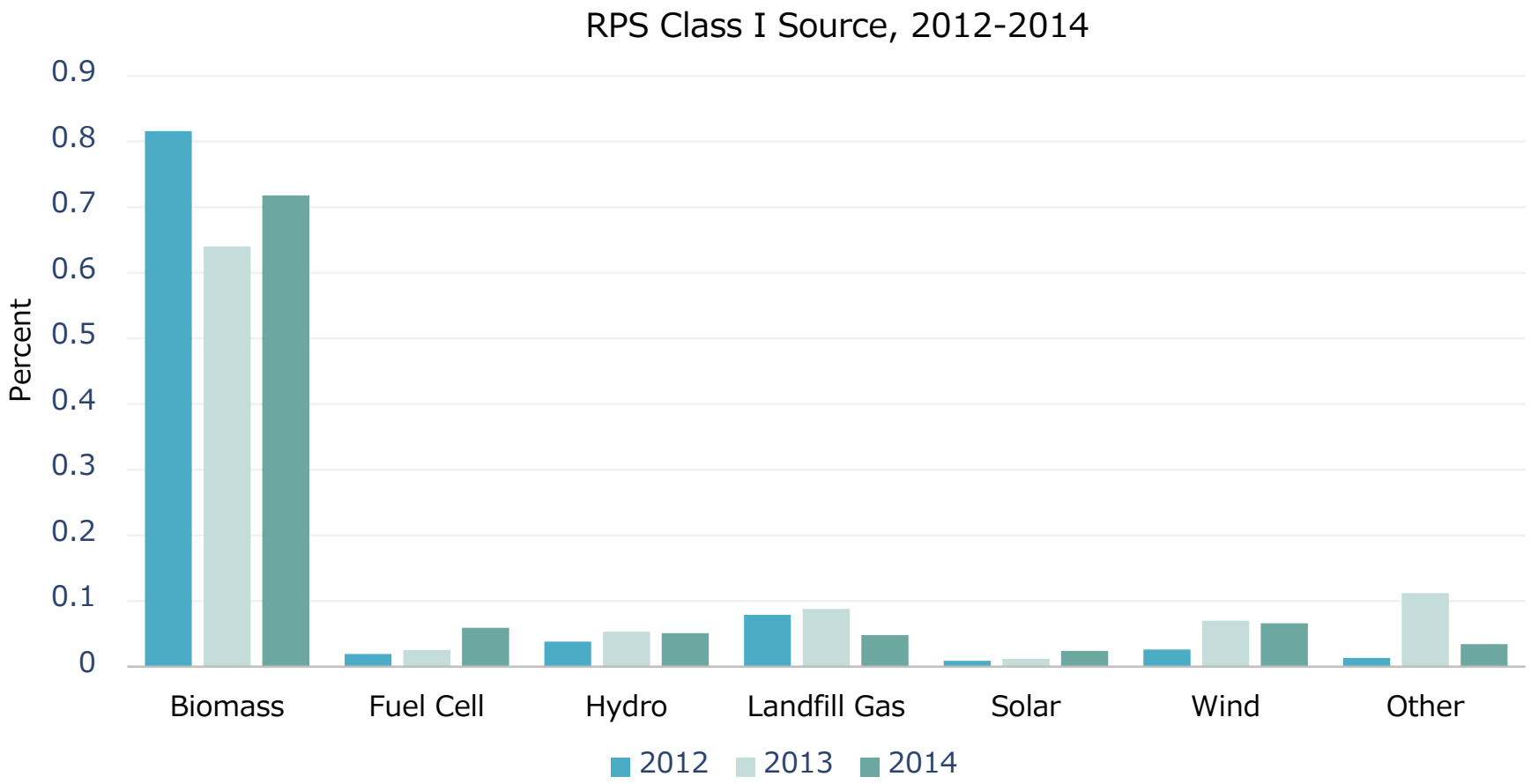
Goal 2: Continue to support regional and state reliability/resiliency.

E.1.1 Expand RPS to 30% by 2030 to Move Towards More than 50% Zero-Carbon by 2030



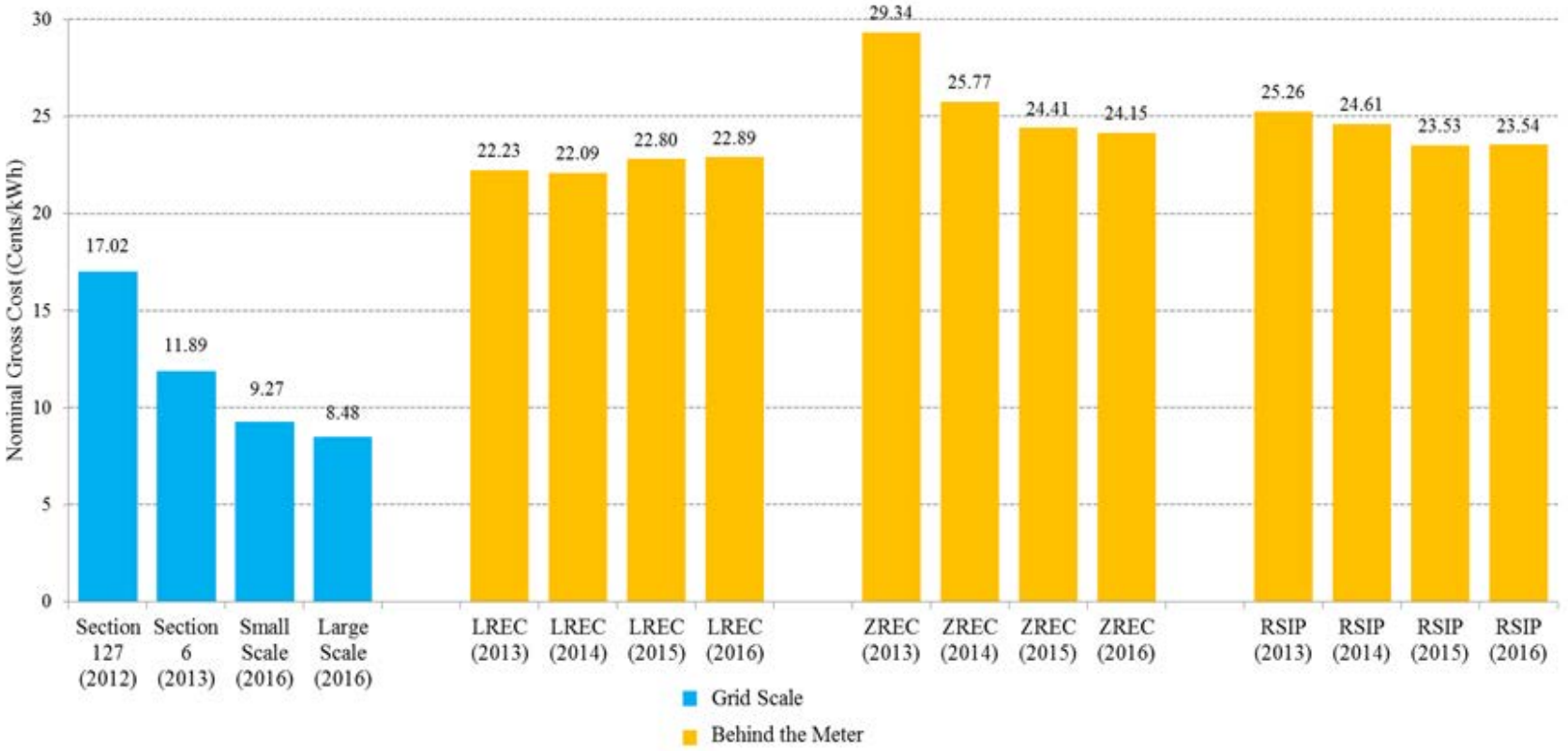
E.1.2. Phase Down Biomass in Class I

Phase down biomass and landfill methane gas eligibility as a Class I resource to increase the share of other Class I resources such as solar, wind, fuel cells, etc.



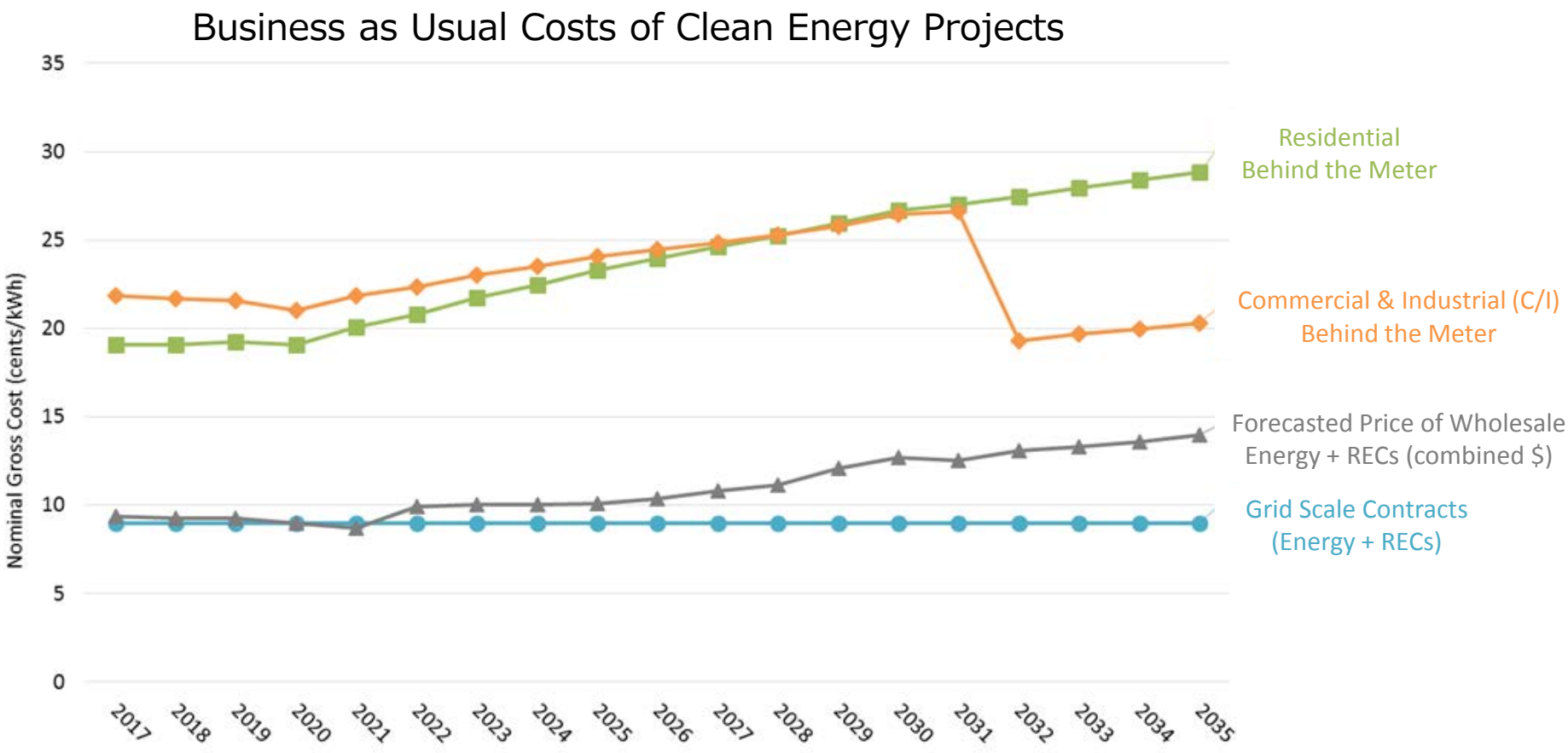
E.1.3 Achieve a sustainable balance between behind-the meter and grid-scale

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



- The Grid Scale incudes the levelized cost of grid scale projects selected in DEEP procurements and programs.
- The LREC/ZREC includes the levelized 20 year average net metering rate plus the REC contract.
- The RSIP includes the levelized 20 year average net metering rate plus the RSIP subsidy (does not include leased systems).

E.1.3 Achieve a sustainable balance between behind-the meter and grid-scale



- Each line represents a hypothetical project based on projected annual costs.
- "Grid Scale Contracts" is the average price of energy + RECs grid scale contracts selected in recent DEEP procurements.
- "Residential Behind the Meter" and "C/I Behind the Meter" is the projected electric rates (net metering) and any eligible state subsidies. The Residential includes the 20 year average cost of the subsidy and C/I includes a 15 year REC contract.

E.1.4 Increase transparency and certainty in the cost structure for net energy billing

Context – Current net energy billing credit:

- Can vary considerably for the same energy product based on the customer and utility service territory; and
- Can change over time when the utility rates change, which affects the cost-effectiveness of a system from the customer's perspective
- As rates increase and cost of renewables go down, all ratepayers pay more

Recommendation

- Restructure the net metering financial structure to provide a consistent market signal for continuous RE growth.
- Electric Distribution Companies deliver fixed payment for energy and RECs for set term.
- BTM resources compensated based on:
  - Competitive reverse auction for large BTM
  - Rate established by PURA for small BTM, including adders for solar + storage and/or solar in area with distribution system need

DEEP has heard feedback on this proposal and is evaluating alternatives to achieve the same policy goal

- DEEP recommended a 0.25% cap for BTM resources
- DEEP is considering an increase in the proposed 0.25% BTM cap if accompanied by net metering restructuring (E.1.4) to limit rate impact
  - The structure should drive down costs for all ratepayers through competition, but also allow purchases to increase if the costs to all ratepayers decline
  - DEEP welcomes specific recommendations on how to best achieve this balance

E.2.1 Support ISO-NE with Winter Reliability

- The renewable growth and diversification of resources recommended in the CES combined with existing procurement authority is a central piece to addressing winter reliability;
- DEEP expects Integrated Resource Plan will include a procurement strategy to most effectively meet policy goals
- Winter reliability due to insufficient gas infrastructure to meet electric generation remains a significant concern;
- ISO-NE engaging in a study and will begin stakeholder discussions of appropriate solution, if any;
- DEEP will participate in the ISO-NE process where it will advocate for a solution consistent with state short and long-term policies.

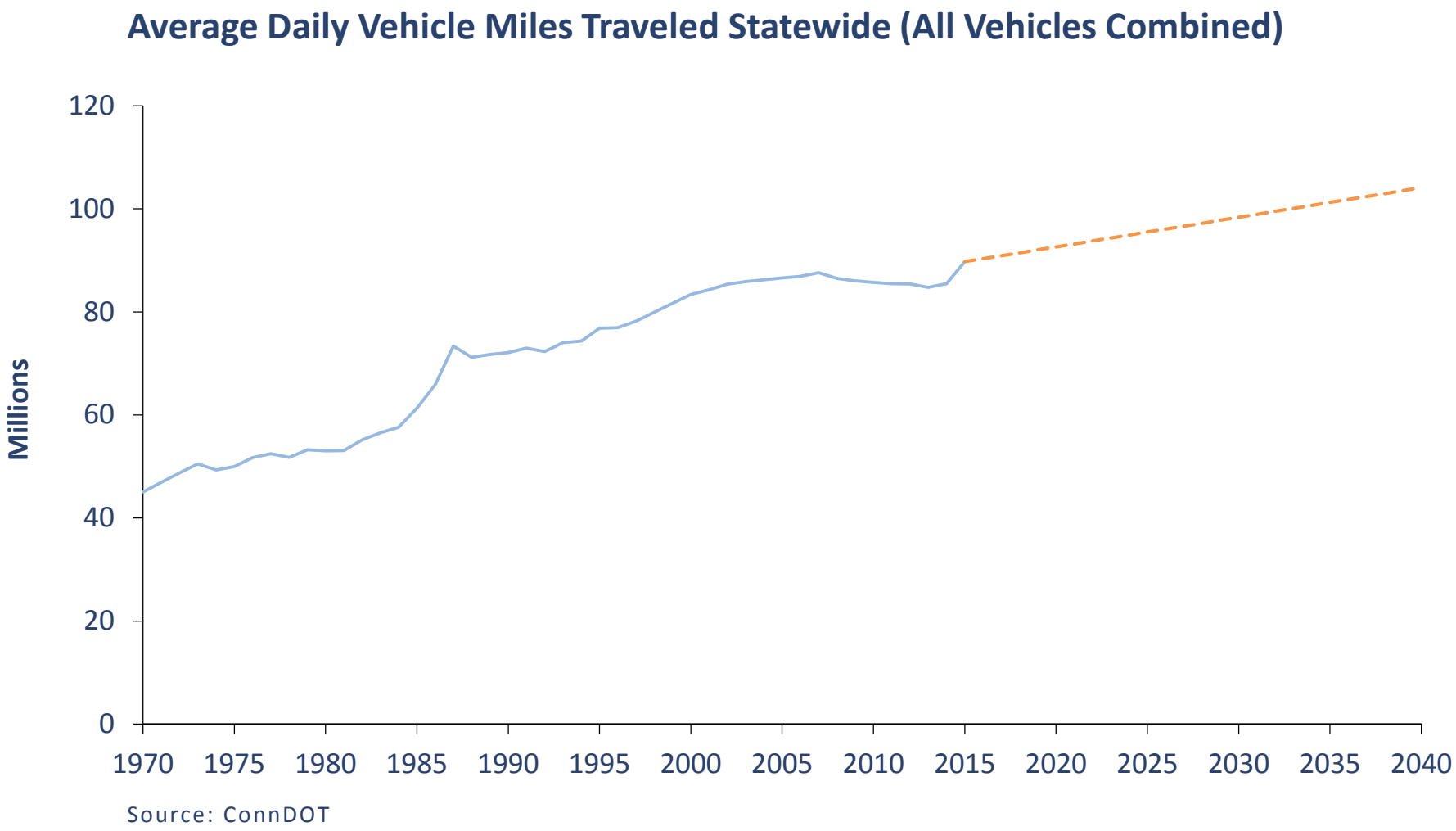
CES Transportation Sector Chapter

Transportation Sector Key Components

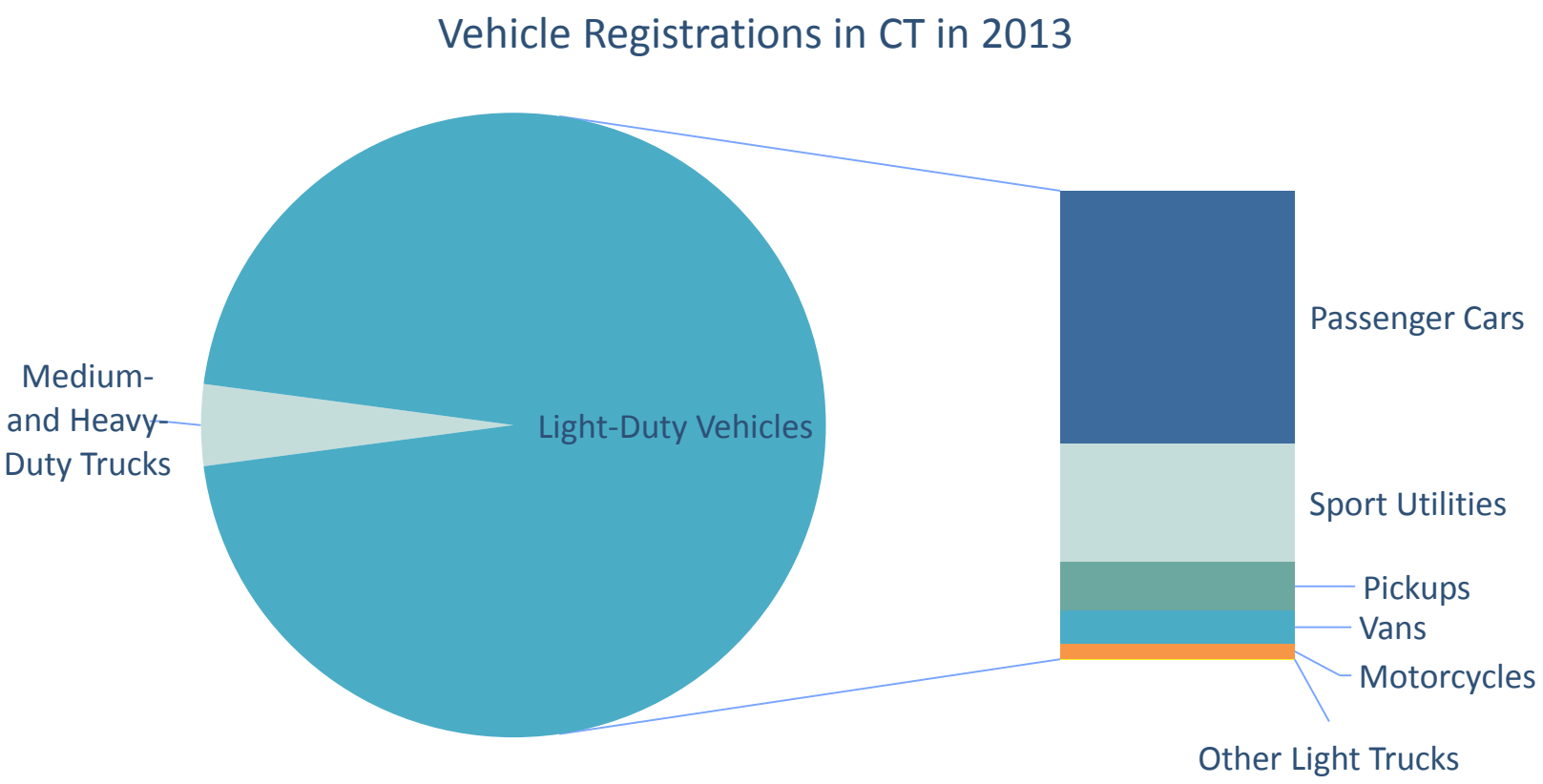
3 Primary Ways to Reduce Transportation Emissions & Energy Use

1. Encourage use of low-carbon fuel
2. Increase vehicle fuel efficiency
3. Reduce the number vehicle miles traveled

Transportation Context



Transportation Context



In 2013, Connecticut had about 1.47 million passenger cars and 1.17 million light trucks (vans, pickups and sport utility vehicles) on its roads, and about 120,000 buses, tractor-trailers, and other medium- and heavy-duty vehicles.

Source: Atlas Public Policy and The Cadmus Group, Inc., Moving Forward with Green Energy: Market Potential Assessment for Alternative Fuel Vehicles in Connecticut, p. 16, September 2016.

T.1.1. Develop an Electric Vehicle Roadmap to accelerate the adoption of low and zero-emissions vehicles and strengthen alternative fueling infrastructure.

T.1.2. Advocate for the implementation of federal vehicle fuel economy standards and maintaining LEV, ZEV, and GHG programs.

T.1.3. Educate and engage citizens and employers on the benefits of clean and efficient transportation options.

GC3 Hypothetical Scenario: EV Deployment

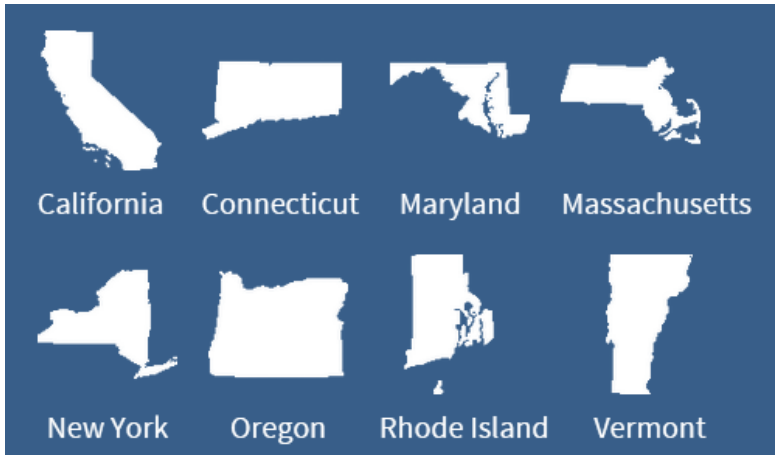
	2020	2030	2050
Reduce GHG emissions 35% below 2001 by 2030			
# of ZEVs	35,000	450,000	2,600,000
% of Fleet	1%	18%	92%
Reduce GHG 45% below 2001 by 2030			
# of ZEVs	70,000	750,000	2,600,000
% of Fleet	3%	32%	95%
Reduce GHG 55% below 2001 by 2030			
# of ZEVs	113,000	1,000,000	2,700,000
% of Fleet	5%	43%	96%

Note: numbers are approximate based on modeling assumptions

Committed to Implementing the ZEV Program

On October 24, 2013, Governor Malloy joined a multi-state MOU committing to:

- Coordinated action to ensure the successful implementation of the Zero Emission Vehicle (ZEV) program in each state of the 8 signatory states
- Put a combined 3.3 million ZEVs on the states' roadways by 2025
- Pursue joint action to identify and overcome barriers to widespread ZEV adoption



ZEVs include pure battery-electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and hydrogen fuel cell electric vehicles (FCEVs).

Connecticut's share of this commitment is approximately 150,000 ZEVs

- This target is intended to articulate the underlying regulatory requirement and it is important to note:
  - The underlying ZEV program is credit based, and
  - Actual ZEV numbers will vary based on OEM compliance strategies and technological developments such as increased range of BEVs and PHEVs and early introduction of FCEVs

EV Roadmap Considerations

- Evaluate the appropriate role and potential opportunity for utility companies and gasoline vehicle fueling stations to deploy electric charging stations, including ownership and other models.
- Evaluate appropriate time of use rate structures and demand charges.
- As appropriate, expand EV infrastructure including access for suburban and urban areas, single and multi-unit dwellings, business and recreational facilities.
- Pursue sustainable funding for CHEAPR program until the market matures.
- Investigate strategic approaches to address equity and access to EV technologies for low to moderate income residents .
- Review targeted approaches to medium- and heavy-duty vehicle electrification.
- Develop a Lead by Example (LBE) program that accelerates the adoption of EV/Hydrogen vehicles for the state fleet.
- Evaluate and identify potential opportunities to submit proposals to VW's Electrify America's investment Cycle 2 (Q3 2019—Q4 2021 $300 million).

EV Roadmap Process

- DEEP to initiate the Roadmap process in 2018
- DEEP intends to include all stakeholders
- Opportunities for stakeholder input
  - Questions to consider?
  - Initiatives and planning processes underway?
  - Comprehensive strategies in other jurisdictions to take note of?

T.2.1 Implement Let's Go CT! initiatives and its long-term vision to create a best-in-class transportation system.

T.2.2 Improve connectivity and accessibility to public transit

T.3.1 Embrace technological advances, shared mobility services, and transportation demand partnerships that improve mobility and access to clean modes of transportation.

T. 3.2 Participate in regional partnerships and initiatives to advance a clean and efficient transportation system.

Shared-use mobility is defined as mobility services that are shared among users including:

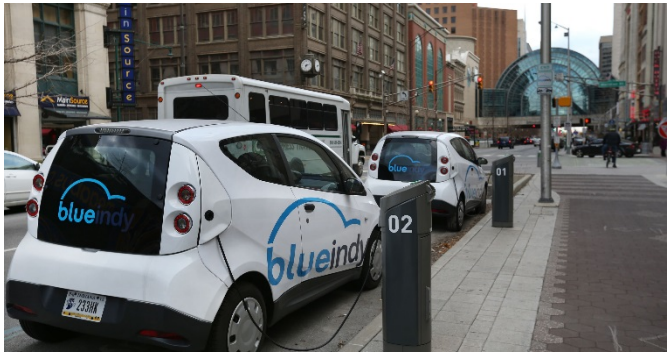
- Traditional public transportation services, such as buses and trains;
- Vanpools, carpools, shuttles, TNCs;
- Carsharing, bikesharing, scooter sharing in all its forms; and
- Flexible goods movement

Definitions | **What is shared-use mobility?**

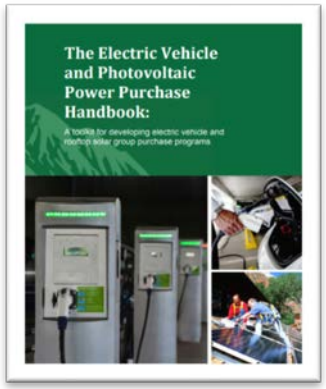
Pilot Innovative Models

Car-sharing, bike-sharing, and ride-hailing services provide people with an alternative to individual car ownership.

New Haven partnership with Smart Mobility to launch a **public bike-share program**



In 2015, through a partnership between the City of Indianapolis, Indianapolis Power and Light, and the Bolloré Group, **the largest electric car-sharing service** in the United States was launched and has proven to be a model to replicate (LA is launching a similar program).



Solarize model adapted to EV, solar PV, and battery storage deployment.

2017 CES Schedule

DEEP issued a draft of the Strategy for public comment on July 26, 2017

Held six Public Hearings around the state

Held two technical meetings

Comments are due Monday, September 25, 2017

DEEP expects to issue a final draft later this fall