# MEETING AGENDA

GHG Emissions Outlook
- Climate change related findings of the IPCC report
- 2018 CT Greenhouse Gas Emissions Inventory
- GreenerGov CT proposed actions

Data Collection and Reporting Update

Next Steps
- Nominate your peers for a 2021 GreenerGov CT Award. The nomination process will close on October 8, 2021 at 4pm.
- Complete FY21 BillCAPture uploads for your agency's FY21 water, fuel, and municipal electricity bills.
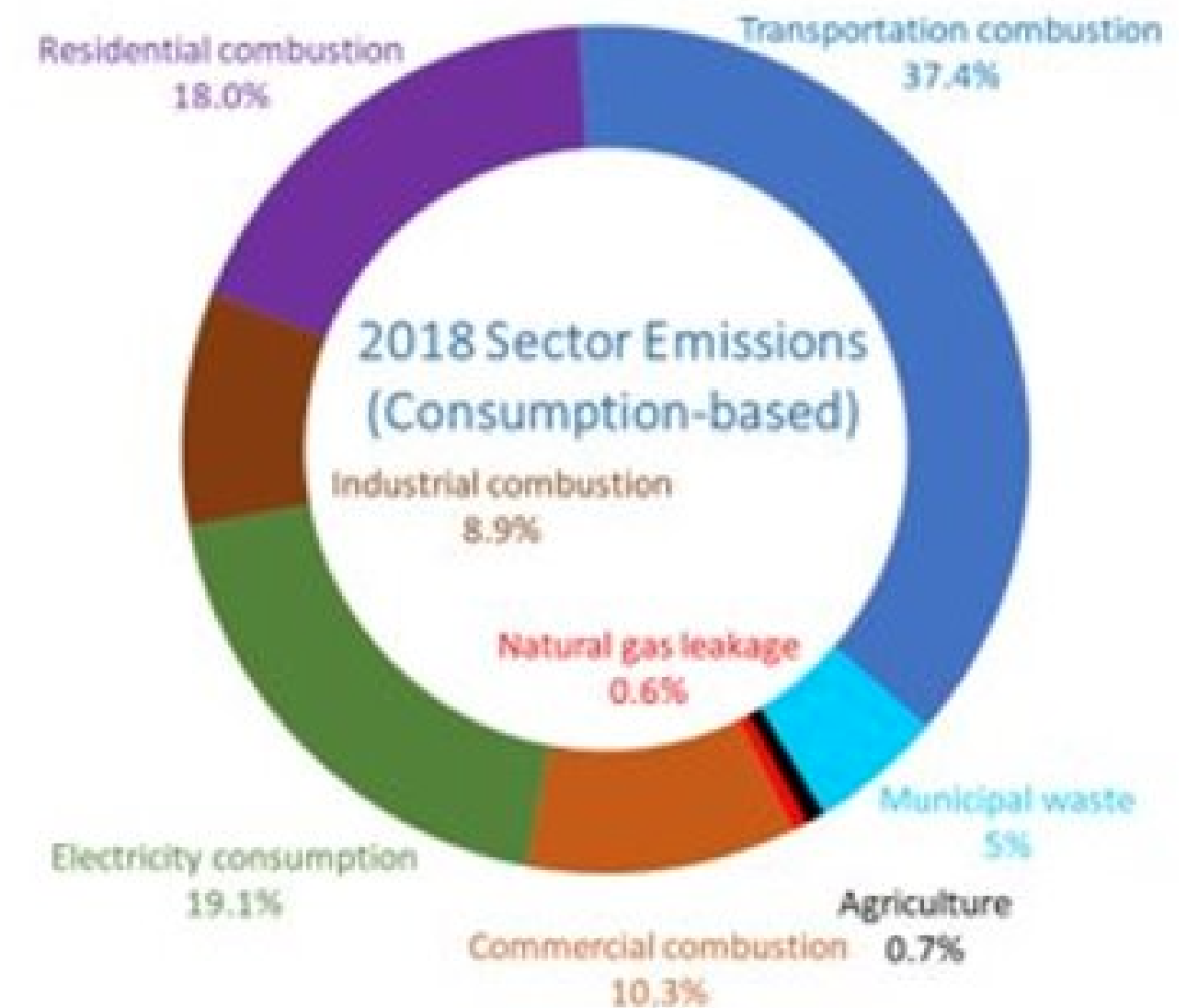
GHG EMISSIONS OUTLOOK
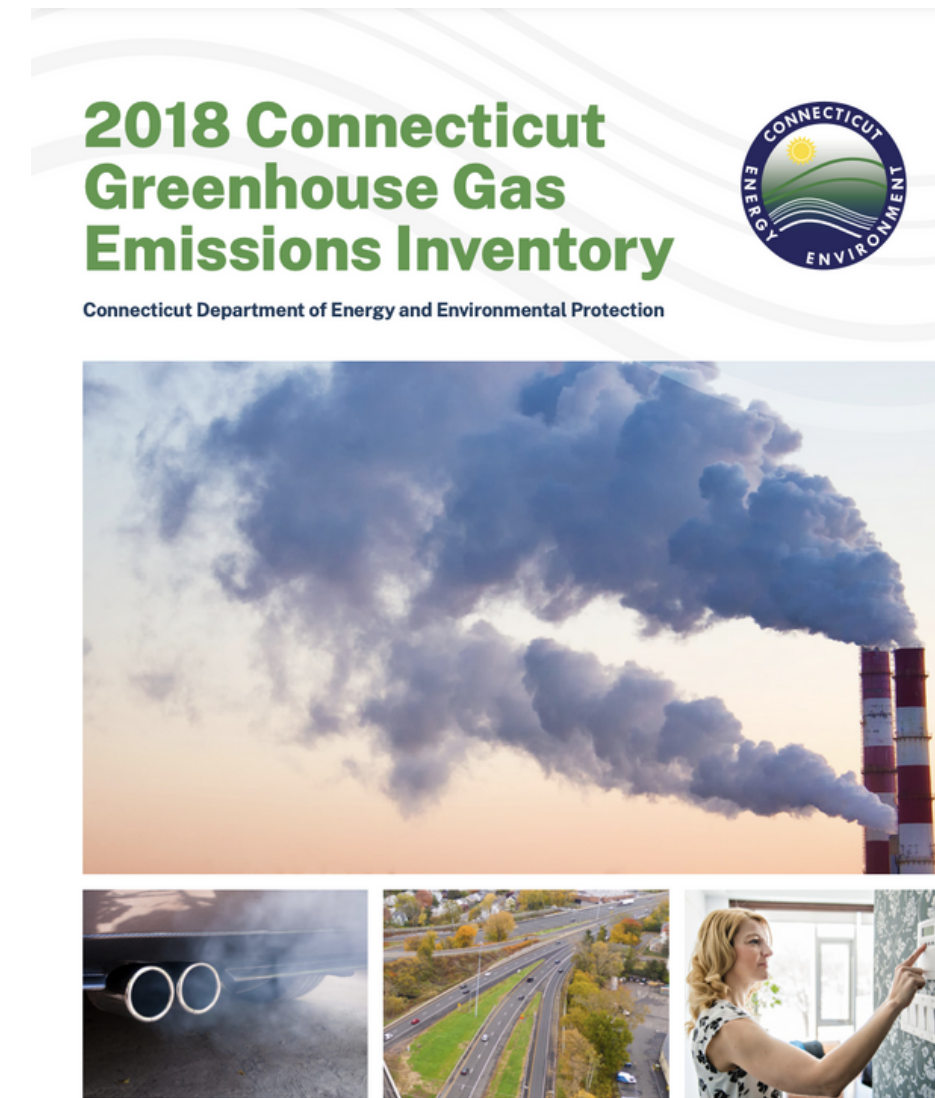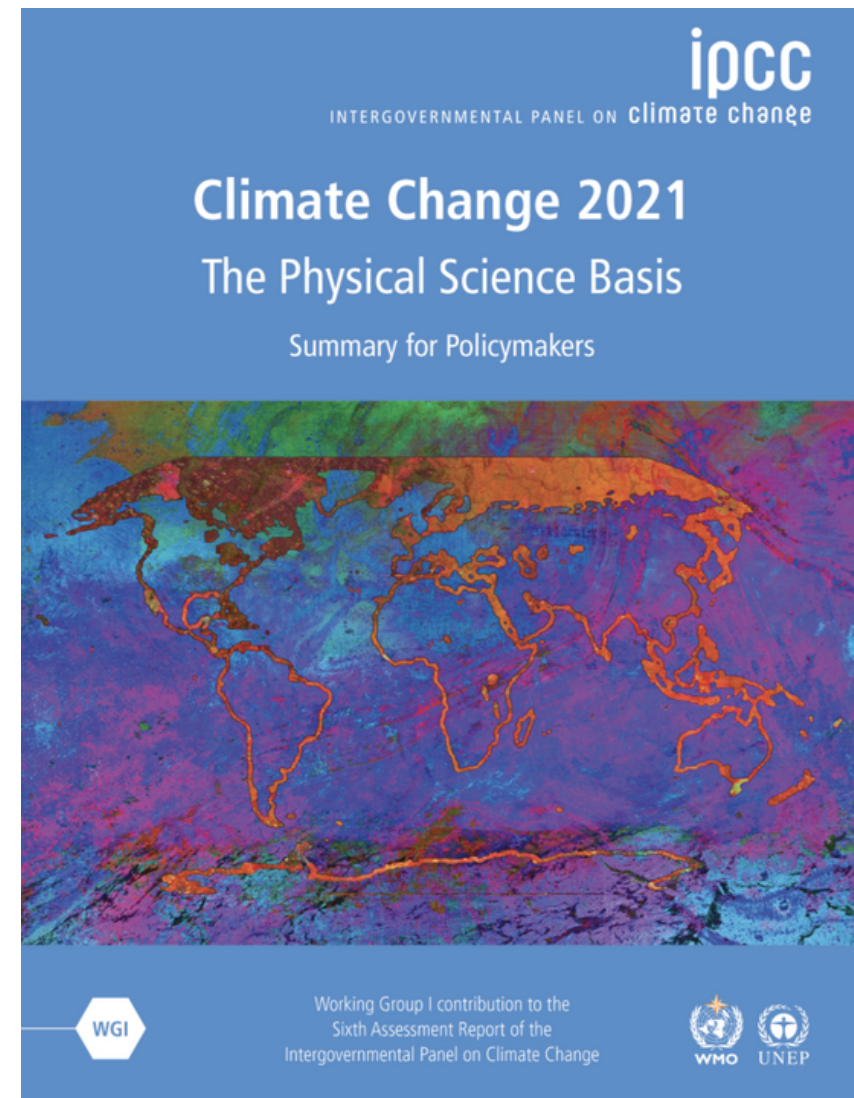
IPCC ASSESSMENT REPORT

- Human-induced climate change is already affecting many weather and climate extremes across the globe
- Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO_2 and other GHG emissions occur over the next several decades
- With further global warming, every region is projected to increasingly experience concurrent and multiple changes
- Preventative action must limit cumulative CO_2 emissions, reaching at least net zero CO_2 emissions, along with strong reductions in other greenhouse gas emissions

2018 CONNECTICUT GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY

- Analysis indicates that the state is not on track to meet statutory emissions reduction targets for 2020 and 2030

- Economy-wide emissions were 42.2 million metric tons (MMT) of carbon-dioxide equivalent (CO2e) in 2018

- This is a decrease of 7.3% since 1990 and 17.8% since 2001, although a slight increase over 2017 emissions

2018 Sector Emissions (Consumption-based)

- Transportation combustion 37.4%
- Residential combustion 18.0%
- Industrial combustion 8.9%
- Natural gas leakage 0.6%
- Municipal waste 5%
- Agriculture 0.7%
- Commercial combustion 10.3%
- Electricity consumption 19.1%

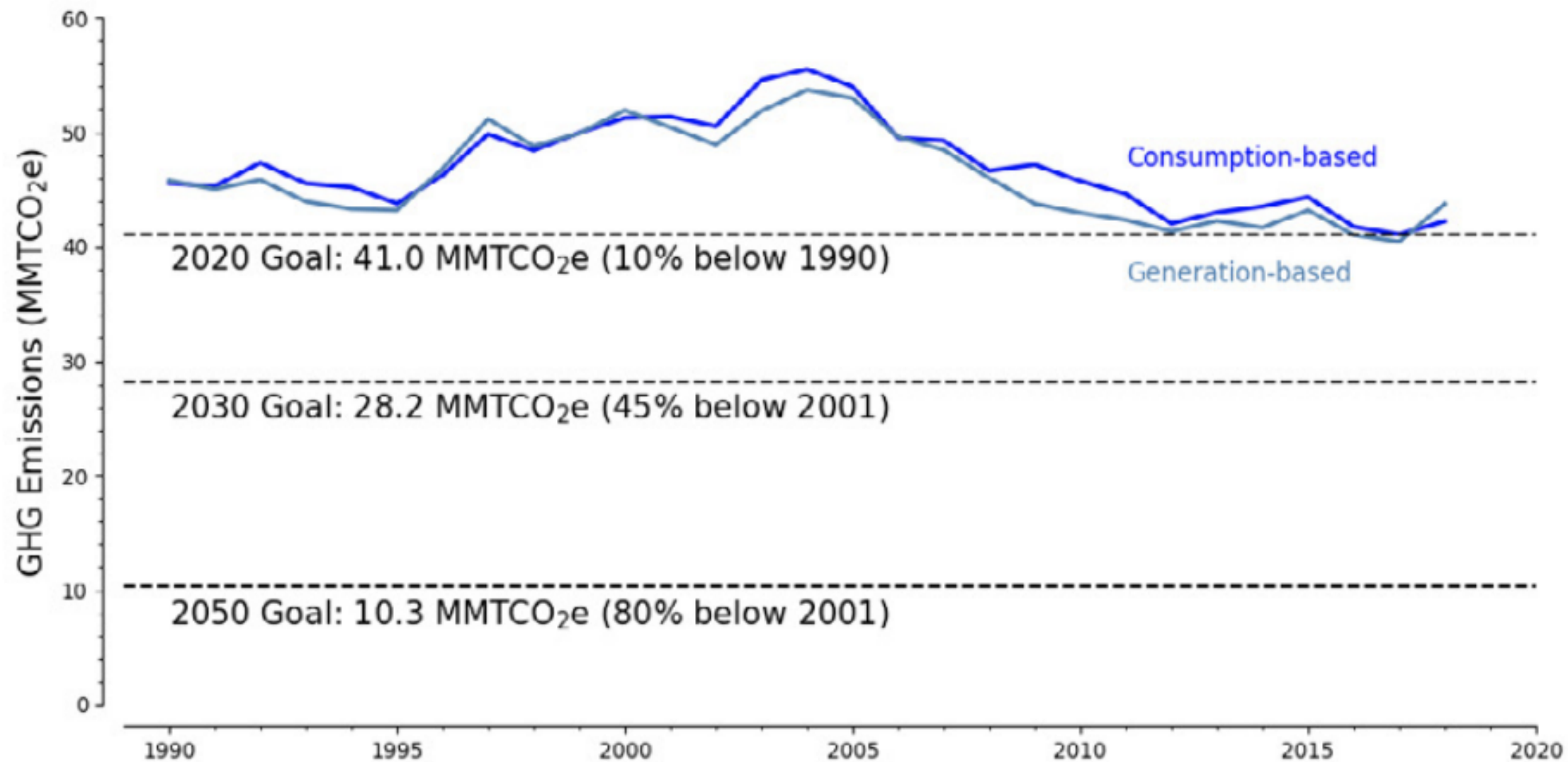## Connecticut Greenhouse Gas Emissions From 1990–2018

Fig. 1. Total economy-wide GHG emissions from Connecticut, 1990–2018.

The figure reflects economy-wide results based on both consumption-based accounting for the electric sector (dark blue) and a generation based calculation (light blue).

Also shown are the state's statutory emissions-reduction goals for 2020, 2030, and 2050.

The 2020 goal was met in 2017, however, emissions in 2018 were higher due primarily to increases in residential and commercial fossil fuel consumption.

Connecticut Greenhouse Gas Emissions From 1990–2018, and Beyond

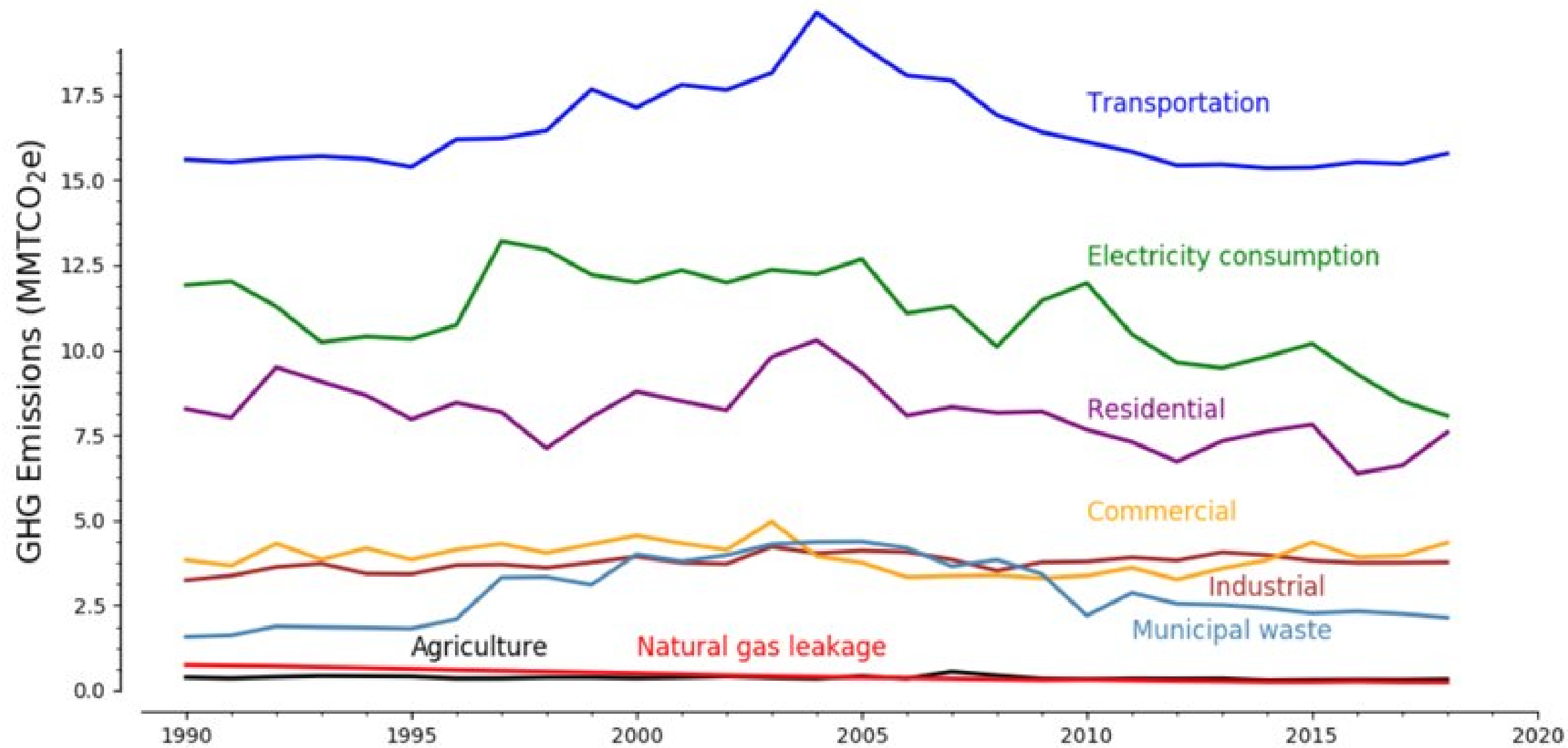# 2018 CONNECTICUT GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY

Fig. 2. GHG emissions for CT broken down by economic sector. Transportation, by nearly a factor of two, is the largest emitter followed by electric power and residential consumption of fossil fuel.

While emissions from electric consumption and landfill waste fell in 2018, emissions from most other parts of the economy increased with the residential sector experiencing the largest growth.

Connecticut Greenhouse Gas Emissions From 1990–2018, and Beyond

2018 CONNECTICUT GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY
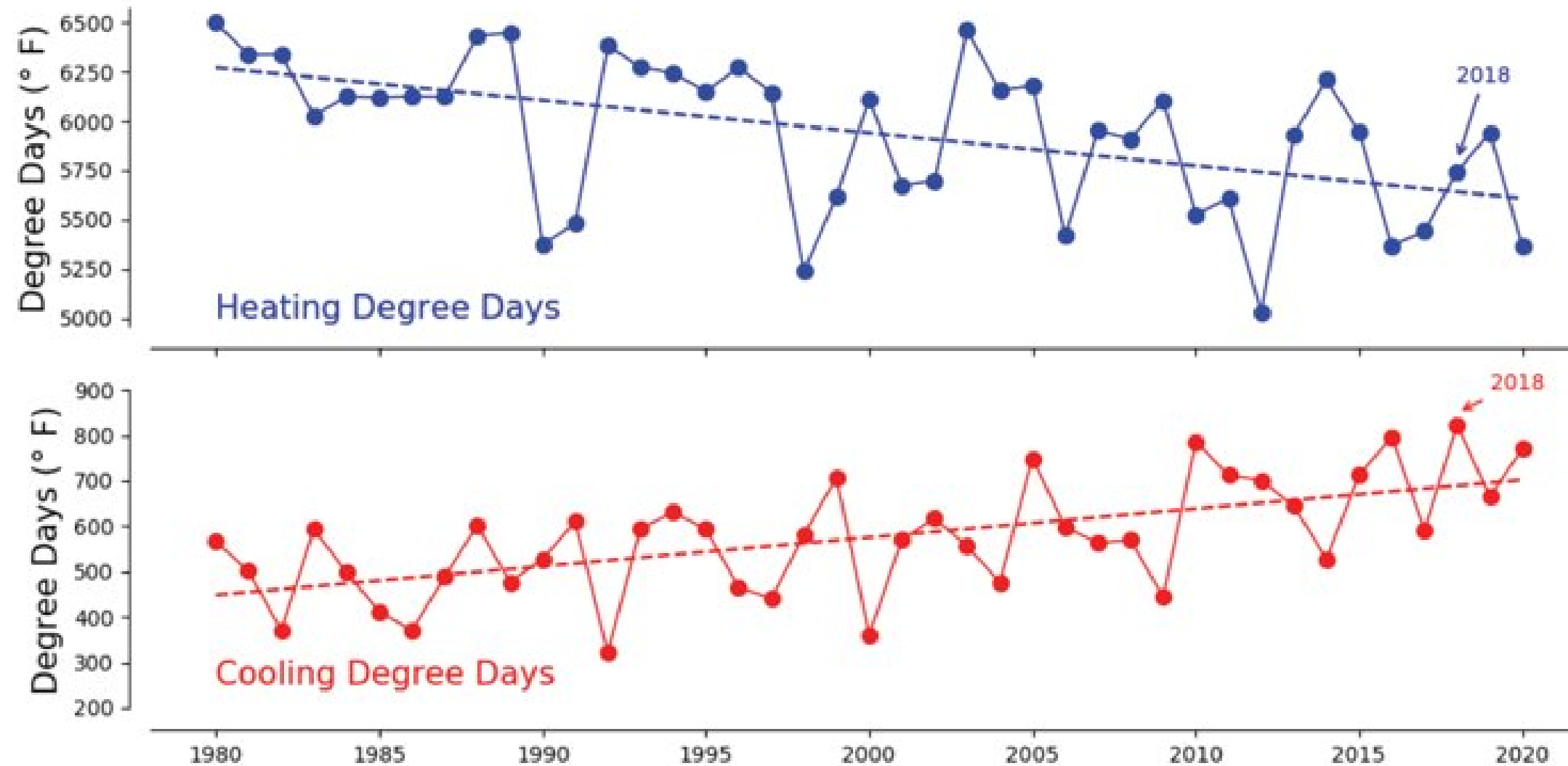

Annual CT Heating and Cooling Demand

Fig. 5. Heating degree days (blue) and cooling degree days (red), 1990–2020. In 2018, both heating and cooling degree days were higher than in the previous year, leading to more fossil fuel demand.
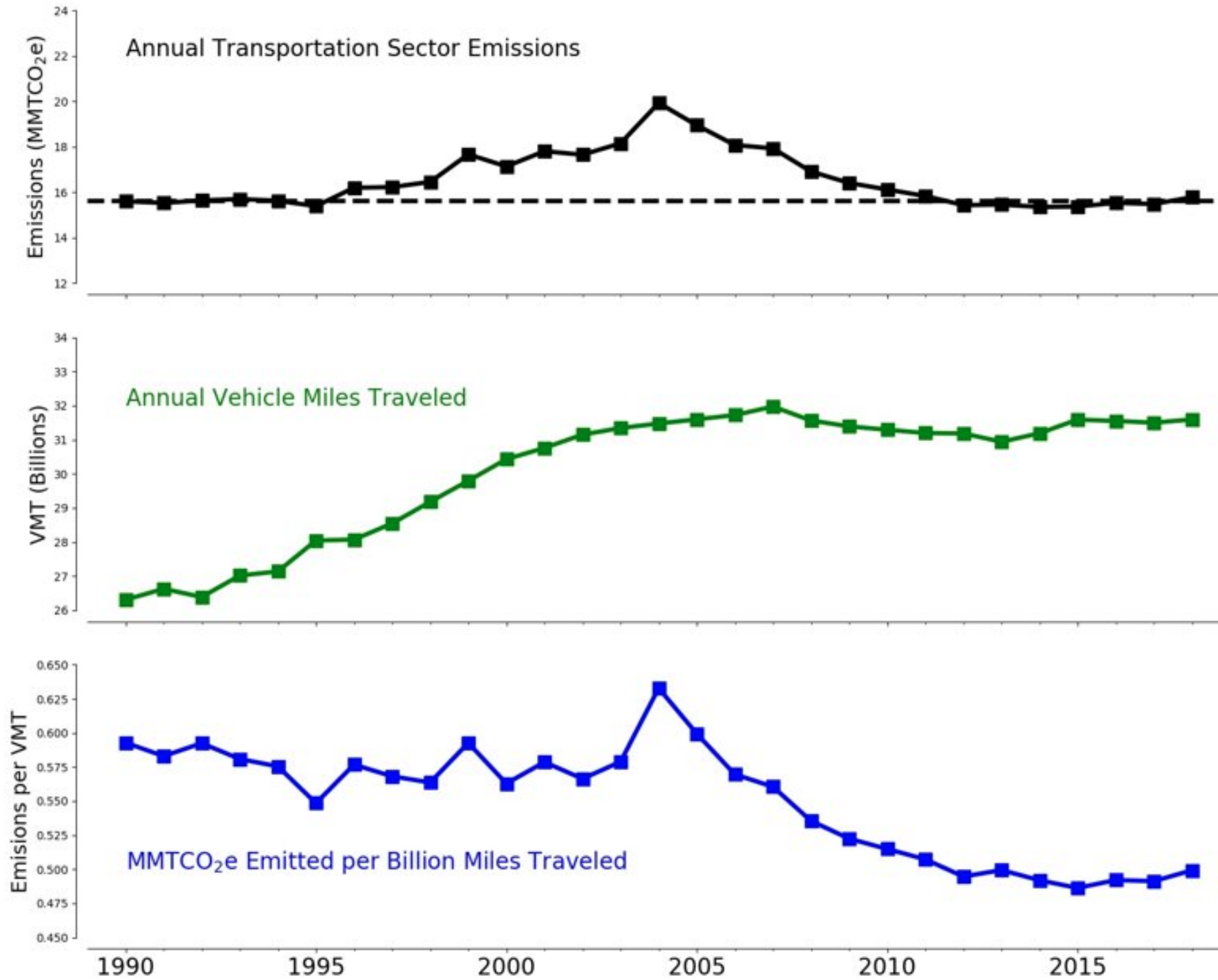
Note that as Connecticut's climate changes, heating degree days are declining at approximately 16 Degree Days Fahrenheit per year since 1980, and cooling degree days are increasing on average of 6 Degree Days Fahrenheit annually since 1980.

Source: NOAA National Centers for Environmental information, Climate at a Glance.

2018 CONNECTICUT GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY

Top: Total transportation sector GHG emissions from 1990–2018 The horizontal dashed line depicts 1990 emissions.

Middle: annual vehicle miles traveled from 1990 - 2018.

Bottom: GHG emissions per vehicle mile traveled in CT from 1990–2018 Despite progress in increasing fuel economy, the improvements in emissions per VMT are offset by the increase in total vehicular travel on Connecticut roads and highways and 2018 emissions slightly exceed 1990 levels.

Source: CT DOT

Impact of Vehicle Travel on GHG Emissions

GREENERGOV CT PROPOSED ACTIONS

THE EO 1 TARGETS

GHG

32.5% reduction
in GHG emissions below FY2019 levels by 2030

WATER

10% reduction
in water consumption by 2030 from a FY2020 baseline

WASTE

25% reduction
in waste disposal by 2030 from a FY2020 baseline

EO1 Sec. 3a states:
the SCSS shall "establish specific subordinate goals and targets to meet the overall goals"

ANALYSIS GOALS

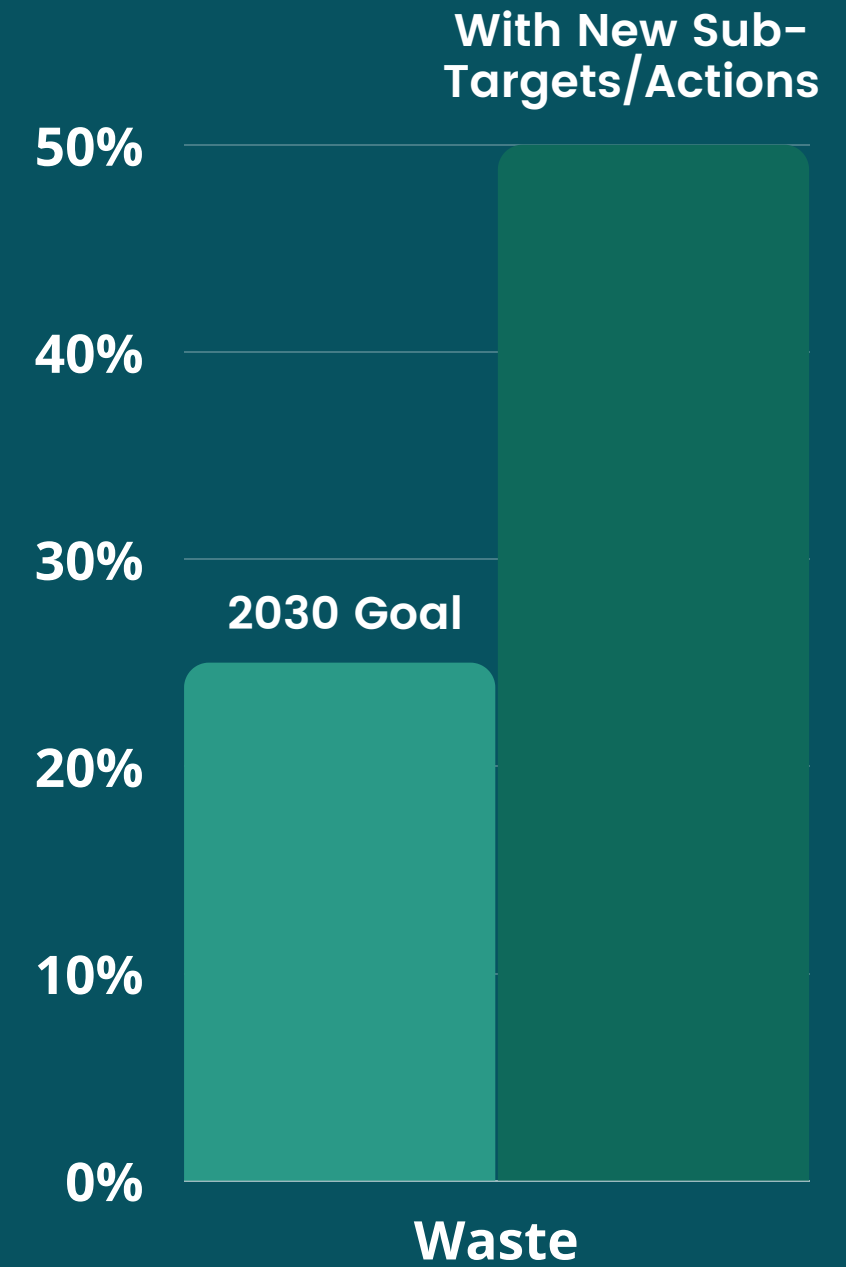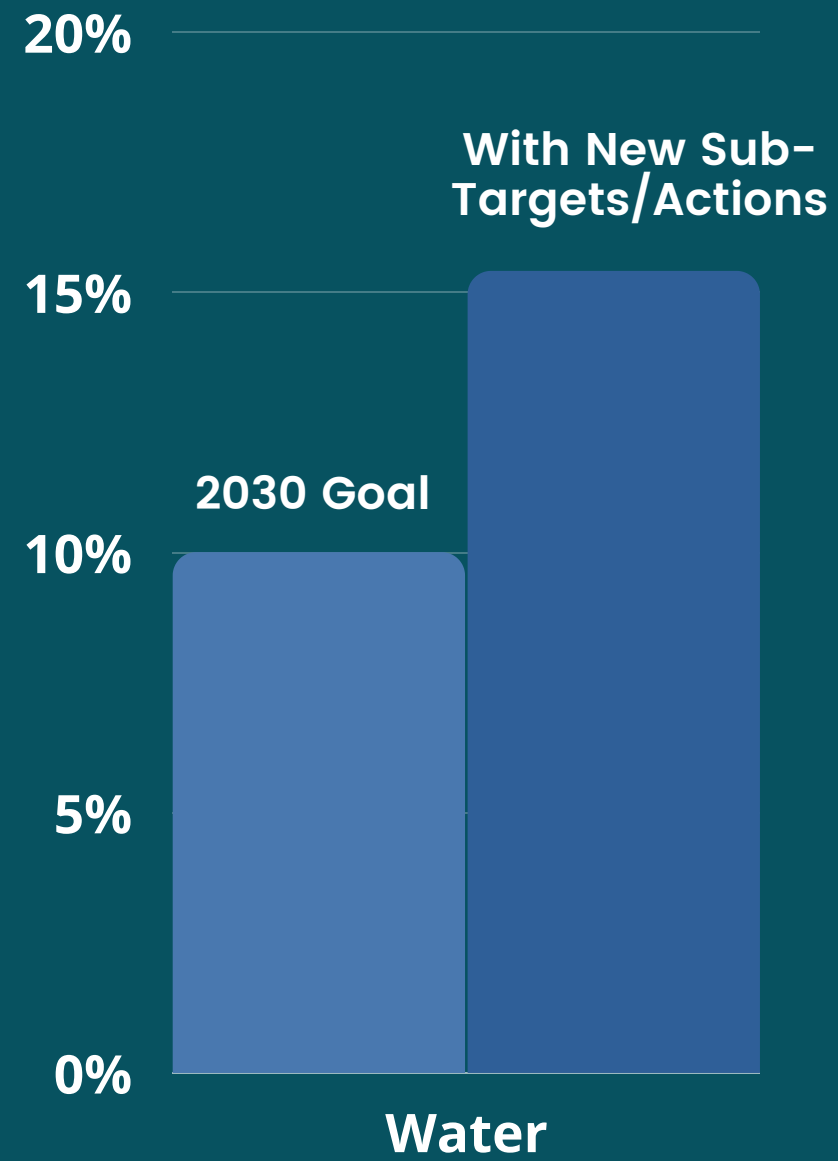**Key Research Goals**

1. Based on the strategies identified by the project teams and expected external policies, what deployment will get us to our goals in 2030?
2. What will the associated costs be?
3. What interim or annualized actions and milestones should the state plan for to ensure 2030 goal achievement?

Research Methods Overview

- The models draw on assumptions and estimates from (1) statewide emissions data, (2) internal policy modeling, (3) projection modeling drawn from experts on state vehicle/buildings trends, and (4) ex ante savings estimates from project consultants.

NEW SUB-TARGETS + ACTIONS

GHG chart:
- 50%, 40%, 30%, 20%, 10%, 0%
- 2030 Goal
- With New Sub-Targets/Actions
- GHG

Water chart:
- 20%, 15%, 10%, 5%, 0%
- 2030 Goal
- With New Sub-Targets/Actions
- Water

Waste chart:
- 50%, 40%, 30%, 20%, 10%, 0%
- 2030 Goal
- With New Sub-Targets/Actions
- Waste
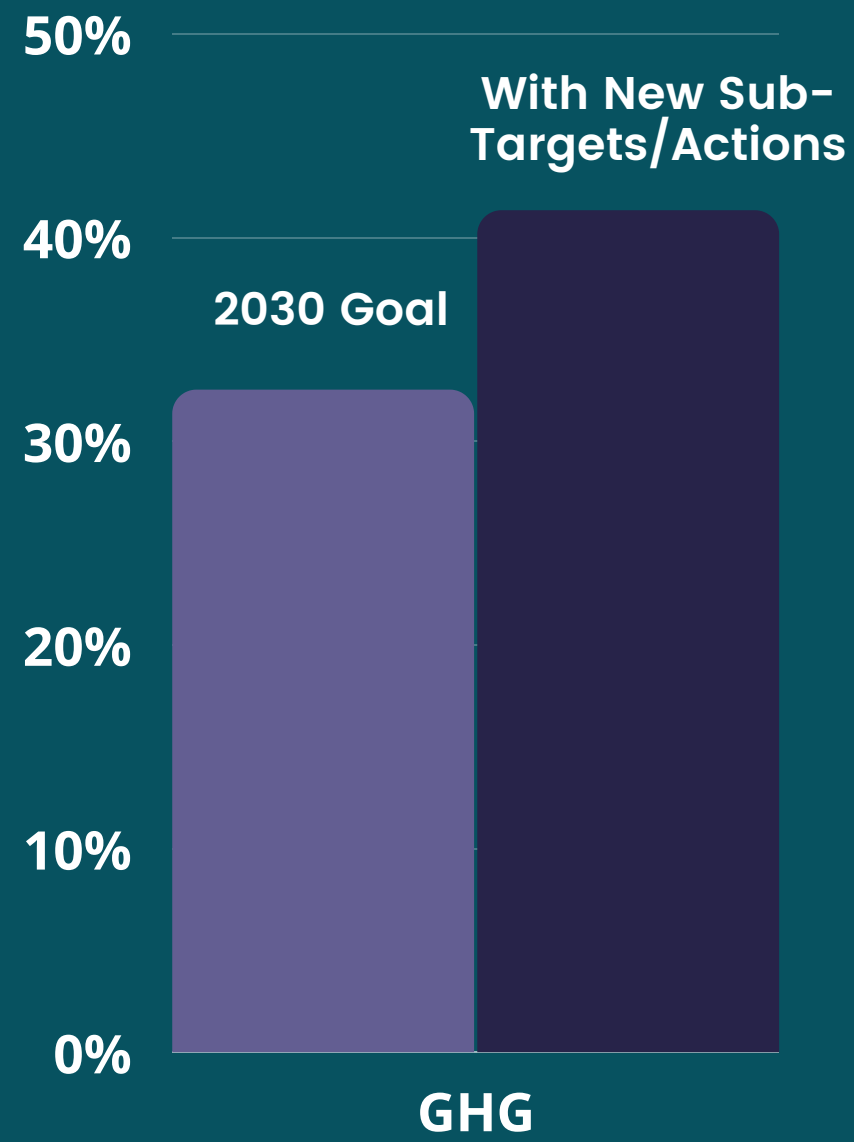
GHG MODEL METHODOLOGY

Renewable Portfolio Standard or "RPS" Built-in External Trend

Models the effects of the Renewable Portfolio Standard on state government electricity emissions by calculating a 3.34% annual marginal improvement in electric grid carbon intensity using an average of statewide electricity emission factors over the last decade.

Zero Emission Vehicle Strategy or "ZEV" Sectoral Strategy

Uses a light-duty fleet size of 3,500 DAS-owned vehicles leased out to agencies, and a consistent annual increase in the ZEV share of new vehicle purchases such that 100% of new vehicles are ZEVs by 2030.

Asset Liquidation Strategy or "AL" Sectoral Strategy

Creates a conservative interpretation of anticipatory OPM State Asset Management plans, GreenerGov CT used a 0.88% divestment in state building square footage by 2022 compared to the FY19 square footage baseline and a 2.01% divestment in overall state building square footage by 2028.

Energy Efficiency Strategy or "EE" Sectoral Strategy

Using the estimated cost per MTCO2e offset, calculates both the required funding and level of savings needed to deliver a 1% annual reduction in building-sector GHG emissions through energy efficiency.

Renewable Energy (Credit) Deployment Strategy or "RECS" Sectoral Strategy

Assumes the state continues to deploy current aggregate pilot program installations of approximately 10,000 kWdc of new solar capacity per year.

SIX PROPOSED GHG SUB-TARGETS

By 2030, ensure 100% of all new light-duty vehicles (with viable ZEV alternatives) are ZEVs with adequate funding* for charging infrastructure

By 2030, purchase and use 100 percent clean, zero-carbon electricity

By June 1, 2024, divest 1% of state building square footage by FY22 and an additional 2% divestment of state building square footage by FY28, compared to a FY19 inventory baseline.
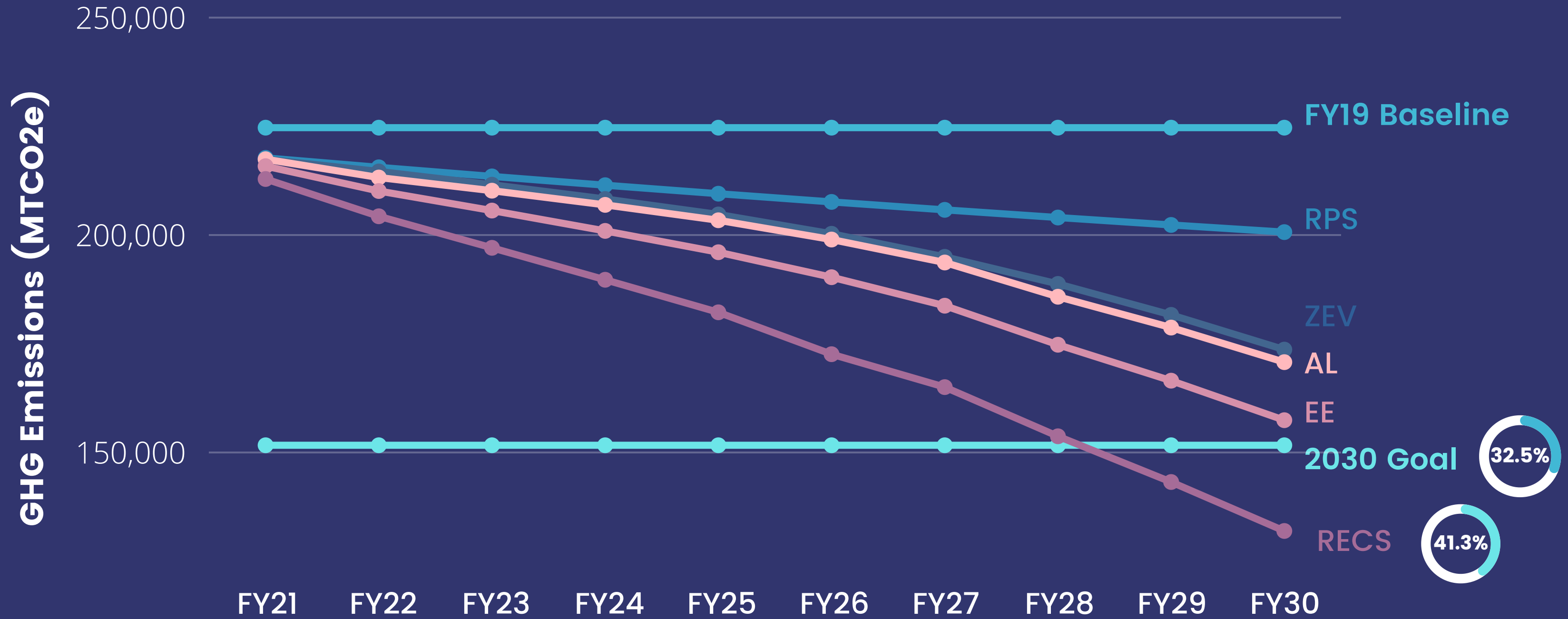
By 2023, assess options and prepare a plan and timeline for transitioning building fossil fuel thermal loads to efficient renewable thermal technologies

Beginning in FY22, building greenhouse gas emissions of state agencies will be reduced by a minimum of 1% annually from the previous year through energy efficiency and decarbonization upgrades at state buildings.

Projected GHG Emission Reductions
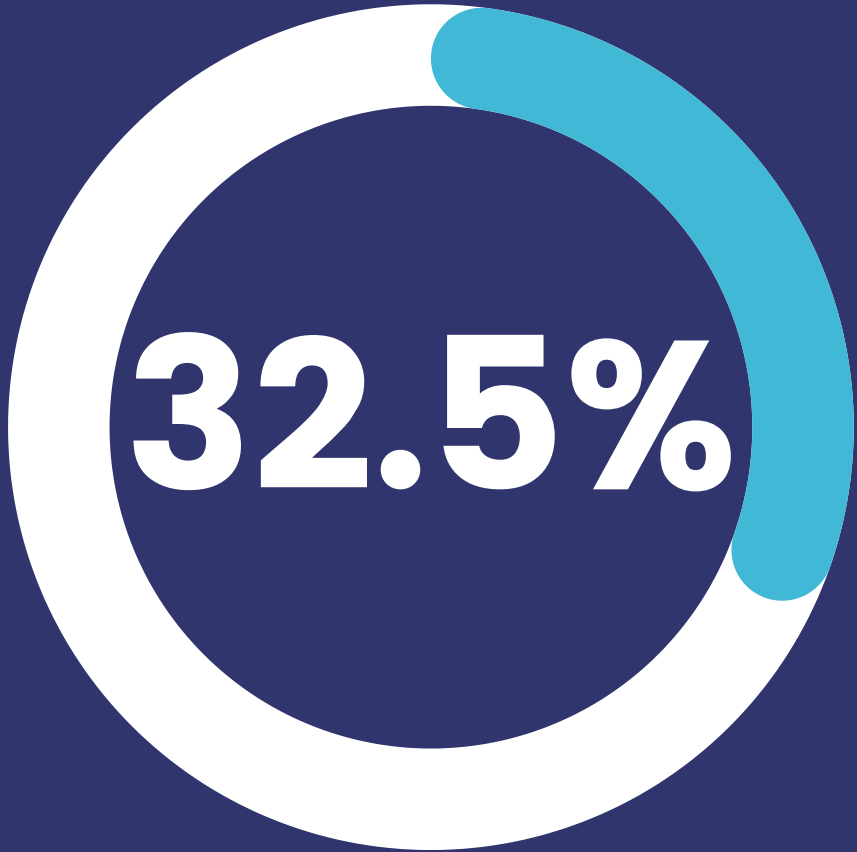
GHG Emissions (MTCO2e)

| | FY21 | FY22 | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |

- FY19 Baseline
- RPS
- ZEV
- AL
- EE
- 2030 Goal — 32.5%
- RECS — 41.3%

250,000
200,000
150,000

2030 Goal

Anticipated Achievement

with proposed sub-targets/interim actions

32.5%

41.3%

reduction in GHG emissions below FY19 baseline
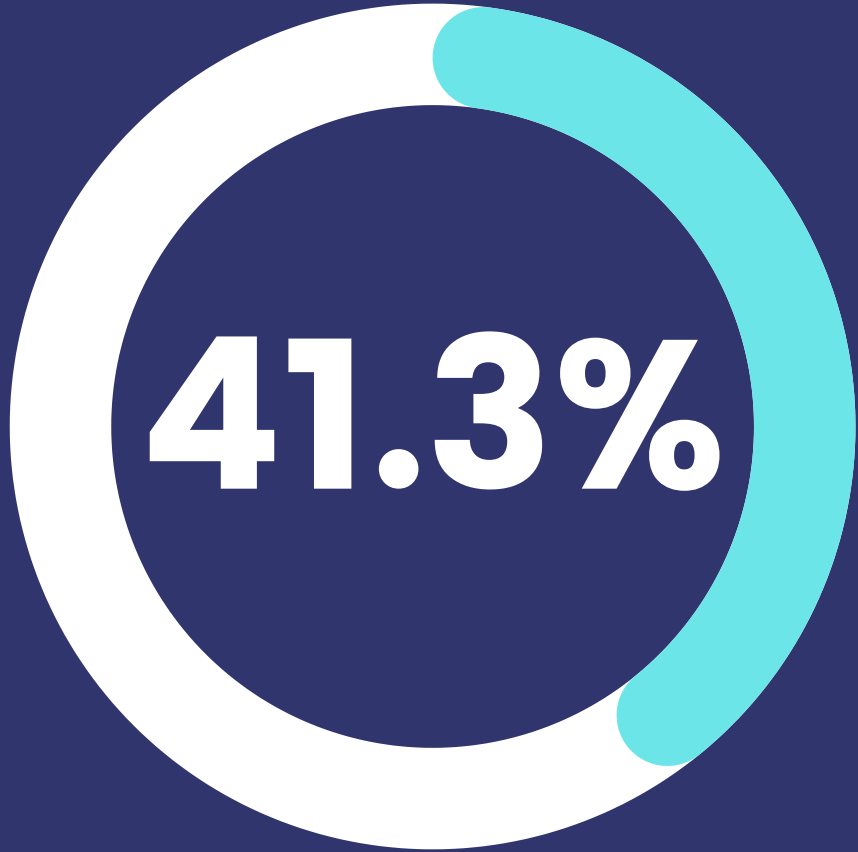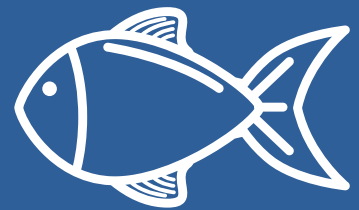
reduction in GHG emissions below FY19 baseline

Trend/Strategy	Anticipated GHG Emission Reduction as a percent change from FY19 Baseline	Upfront Cost Total Expenditure	Savings Incentives/ Savings	Net Cost Expenditures minus savings
RPS" Built-in Trend	10.70%	N/A	N/A	N/A
"ZEV" Sectoral Strategy	12.03%	$28,169,400	$4,966,125	$23,203,275
"AL" Sectoral Strategy	1.29%	$0	$6,347,385	-$6,347,385
"EE" Sectoral Strategy	5.94%	$104,922,456	$69,605,164	$35,317,292
"RECS" Sectoral Strategy	11.35%	$0	$220,113	-$220,113
Total	41.31%	$133,091,856	$81,138,787.00	$51,953,069

TWO PROPOSED WATER SUB-TARGETS

Beginning in 2021, commit to annually implementing EPA's Annual Fix-a-Leak-Week Program to encourage state agencies to repair water system leaks
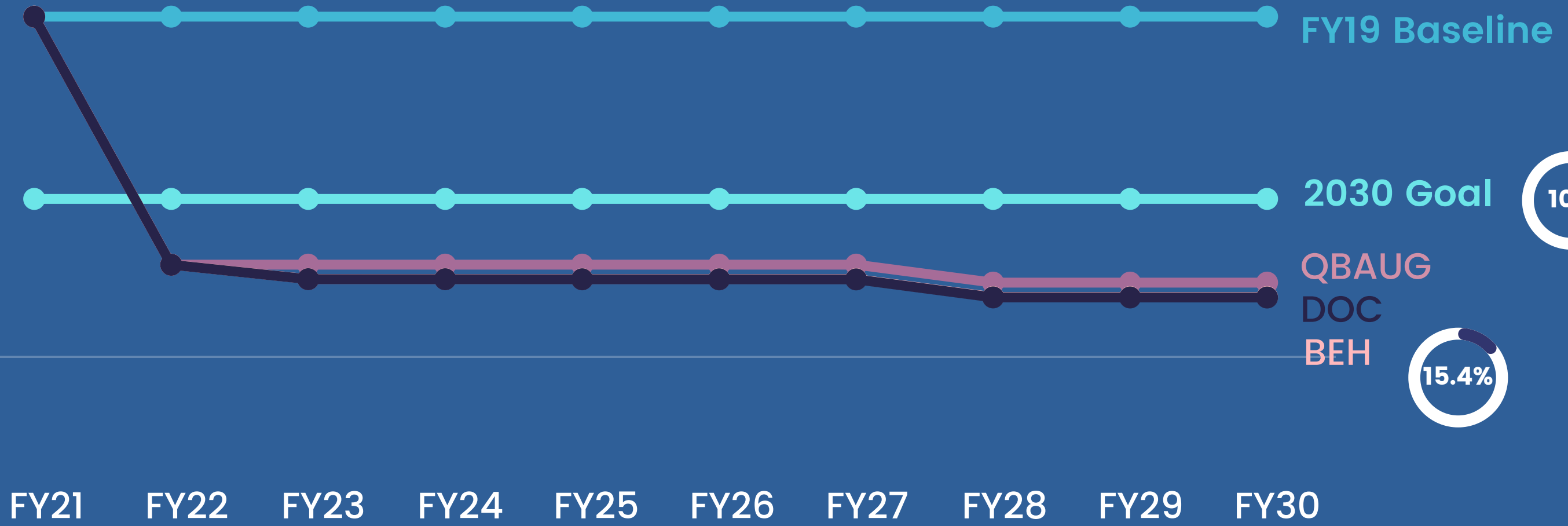
By 2024, the state will complete the Quinebaug Fish Hatchery Project and DOC water-saving retrofits to reduce over 15% of state building water consumption from a FY19 baseline

Projected Water Consumption Reduction

| Trend/Strategy	Anticipated Water Reduction as a percent change from FY19 Baseline	Upfront Cost Total Expenditure	Savings Incentives Savings	Net Cost Expenditures minus savings
"QBAUG" Sectoral Strategy	12.84%	$1,630,504	$1,319,813	$ 310,691
"AL" Sectoral Strategy	1.75%	$0	$316,549	$(316,549)
"DOC" Sectoral Strategy	0.79%	$3,930,045	$7,225,714	$(3,295,669)
"BEH" Sectoral Strategy	0.03%	$0	$4,342	$(4,342)
Total	15.41%	**$5,560,549**	$8,224,636	$(3,305,869)

2030 Goal

10%

reduction in water consumption below FY20 baseline

Anticipated Achievement

with proposed sub-targets/interim actions

15.4%
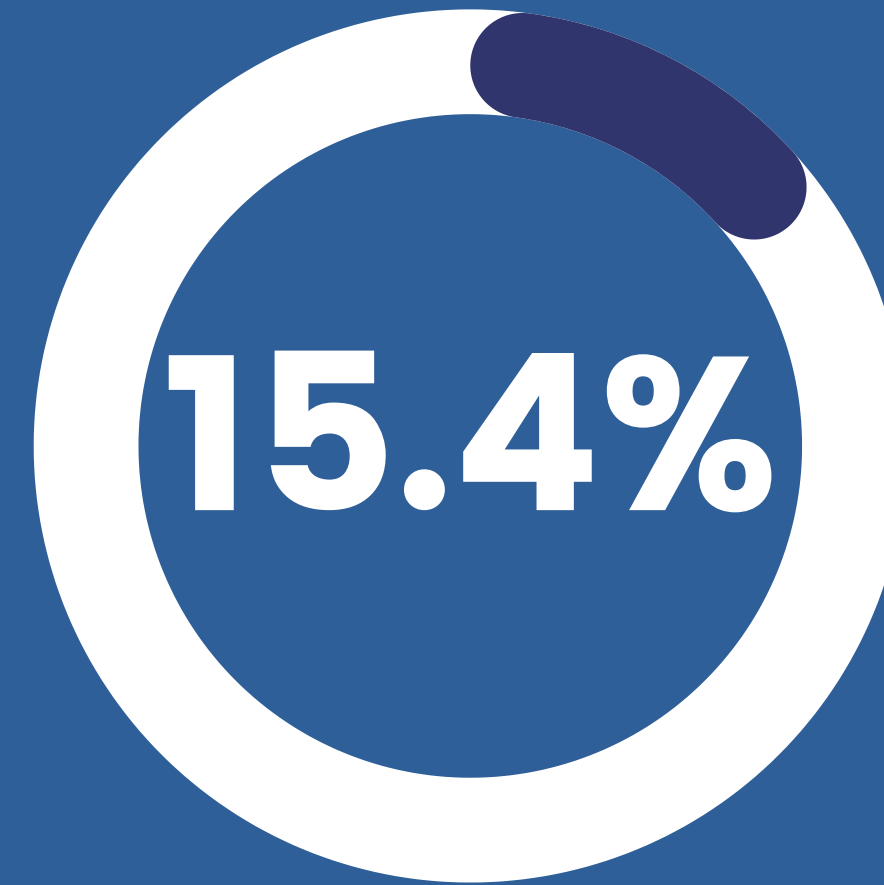
Anticipated reduction in water consumption below FY20 baseline

THREE WASTE SECTOR SUB-TARGETS

By 2023, the state will revise all waste disposal contracts to require standardized monthly contamination audits and container fullness estimates

By 2023, outfit all executive branch agencies with organics diversion programs and contract with their waste hauler or a third party for organics recycling, prioritizing facilities with onsite cafeterias and/or food preparation

By 2024, adopt a directive to implement a statewide Green Purchasing Policy and Environmentally Preferable Purchasing (EPP) requirements will be implemented at all executive branch agencies. Beginning in 2023, all state employees will be required annually to sign off that they have read and understand the EPP policy

GOAL PROGRESS

2030 Goal

25%

Reduction in waste disposal
below FY20 baseline

**Anticipated Achievement with
proposed sub-targets/
interim actions**

50%

Anticipated reduction in waste
disposal below FY21 baseline

ANALYSIS FINDINGS

- The sectoral strategy analyses show that it's feasible to exceed 2030 targets but that further goal-setting is needed

- By setting and achieving 10 Sub-Targets/Actions we can ensure EO 1 target achievement
  - 5 GHG-sector Sub-Targets/Actions
  - 2 Water Sector Sub-Targets/Actions
  - 3 Waste Sector Sub-Targets/Actions

TIMELINE OF PROPOSED SUB-TARGETS AND ACTIONS

By the end of

FY21
- Commit to annually implementing EPA's Fix-a-Leak-Week Program ✓

FY22
- Begin reducing building GHG emissions by 1% annually from the previous year through energy retrofits
- Develop plan for decarbonizing building fossil fuel thermal loads

FY23
- Revise and standardize waste disposal contracts
- Outfit all executive branch agencies with an organics diversion program
- Implement a statewide Green Purchasing Policy and Environmentally Preferable Purchasing (EPP) requirements

By the end of

FY24
- Divest 1% of in state building square footage from FY19 baseline
- Complete Quinebaug Fish Hatchery Project and DOC water-saving retrofits

FY25
- Commit solely to zero carbon/electric HVAC replacements

FY28
- Divest an additional 2% in state building square footage

FY30
- 100% of newly-leased vehicles are ZEVs
- Purchase and use 100% percent clean, zero-carbon electricity

DISCUSSION QUESTIONS

- Do you generally support these targets?

- Are there target areas missing?

Email rose.croog@ct.gov with additional comments/questions

DATA COLLECTION & REPORTING UPDATE

Data Collection

- Your EnergyCAP liaison will be in touch with SSOs regarding FY21 data collection next steps
- Reach out to leadbyexample@ct.gov if you have more general data collection questions

FY21 Reporting Timeline

The FY21 Sustainability Performance Plan (SPP) reporting process will be starting earlier than last year.

- **Oct 1** - Utility use and cost data pulled from EnergyCAP
- **Oct 20** - SSOs receive SPP survey via SurveyMonkey
- **Nov 24** - SPP survey due from SSOs

SSOs will receive formatted SPP report in early December with final approval by the end of December 2021.

Returning to the Office Greener

In the July SSO meeting, **eleven actions** were presented as possible strategies for a more sustainable return to the office, and agencies were asked to **pick three actions**.

1. Identify agency vehicles which could be transitioned to electric models.

2. Have a No-Cost Retro Commissioning scoping study.

3. Sign up a building to participate in Eversource's Strategic Energy Management program.

4. Have a free building energy audit performed.

5. Perform a water audit.

6. Check for water leaks.

7. Assess the feasibility of hosting solar on your buildings or property.

8. Optimize your dumpster size and pickup schedule.

9. Start an organics diversion/collection program.

10. Tune up recycling practices.

11. Make a Green Team.

Returning to the Office Greener - Next Steps

1 **Reporting on the return to the office.** The FY21 Sustainability Performance Plan will include questions about the sustainability practices at your agency during its return to the office. Review the list of suggested actions now if you have not already and make a plan for what your agency can do to be more sustainable during the return to the office.

2 **Reach out to staff at your agency.** We encourage SSOs to share the importance of a green office with their staff to let your agency staff know about your Sustainability Performance Plan and learn about sustainability progress at state government.

Nomination Categories

**AGENCY
CHANGE MAKER**

Recognizes individuals striving to transform their state agency to generate significant and measurable improvements in environmental, energy, and water conservation, or waste management benefits.
Eligible winners: up to two individual State Entity employees.

**MOST IMPACTFUL
PROJECT**

Recognizes state projects that generated significant and measurable improvements in environmental, energy, and water conservation, or waste management benefits.
Eligible winners: up to four state entity individuals or groups responsible for implementing projects.

INNOVATION AWARD

Special distinction recognizing exceptional public sector sustainability innovation.

Eligible winners: up to two individual employees of a state entity.,

Eligibiilty and Selection

WHO IS ELIGIBLE?

Eligible State Entities include state agencies, authorities, public colleges and universities, and/or their individual departments or facilities.

Eligibility is specified under each of the four nomination categories described below.

HOW TO MAKE A NOMINATION

Applying for a GreenerGov CT Award will be simple with our online survey. Anybody is welcome to nominate an eligible applicant.

SELECTION PROCESS

Nominations will be reviewed by the GreenerGov Award Selection Committee and winners will be notified of award receipt 2 weeks prior to the virtual Awards Ceremony.

NEXT STEPS

1.) Nominate your peers for a 2021 GreenerGov CT Award. The nomination process will close on **October 8, 2021 at 4pm**.

2.) Complete FY21 BillCAPture uploads for your agency's FY21 water, fuel, and municipal electricity bills. **Your EnergyCAP liaison will confirm if uploads are needed.**

greenergovCT

A Lead by Example Initiative

2018 CONNECTICUT GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY
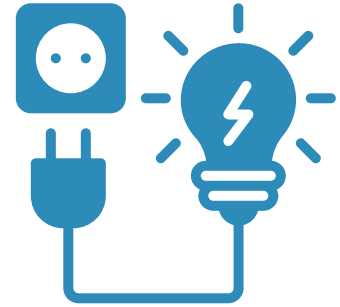
Electric Sector emissions continue to decline thanks to phaseout of dirtier fuels and increased procurement of clean and renewable energy. Other top emitting sectors, however, showing increases in recent years.

In 2018 as in previous years, the transportation, electricity, and residential sectors accounted for nearly three-fourths of Connecticut's GHG emissions.

Transportation-sector emissions in particular remained stubbornly high, despite significant historical improvements in fuel economy. In contrast with the electricity sector, transportation emissions have risen since 1990.

Initiatives in these and other sectors must be substantially accelerated for Connecticut to meet its 2030 and 2050 GHG goals.