Connecticut Department of Energy and Environmental Protection

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Governor's Council on Climate Change

June 16, 2016
2:30 — 4:30 p.m.

Connecticut Department of Energy and Environmental Protection

Agenda

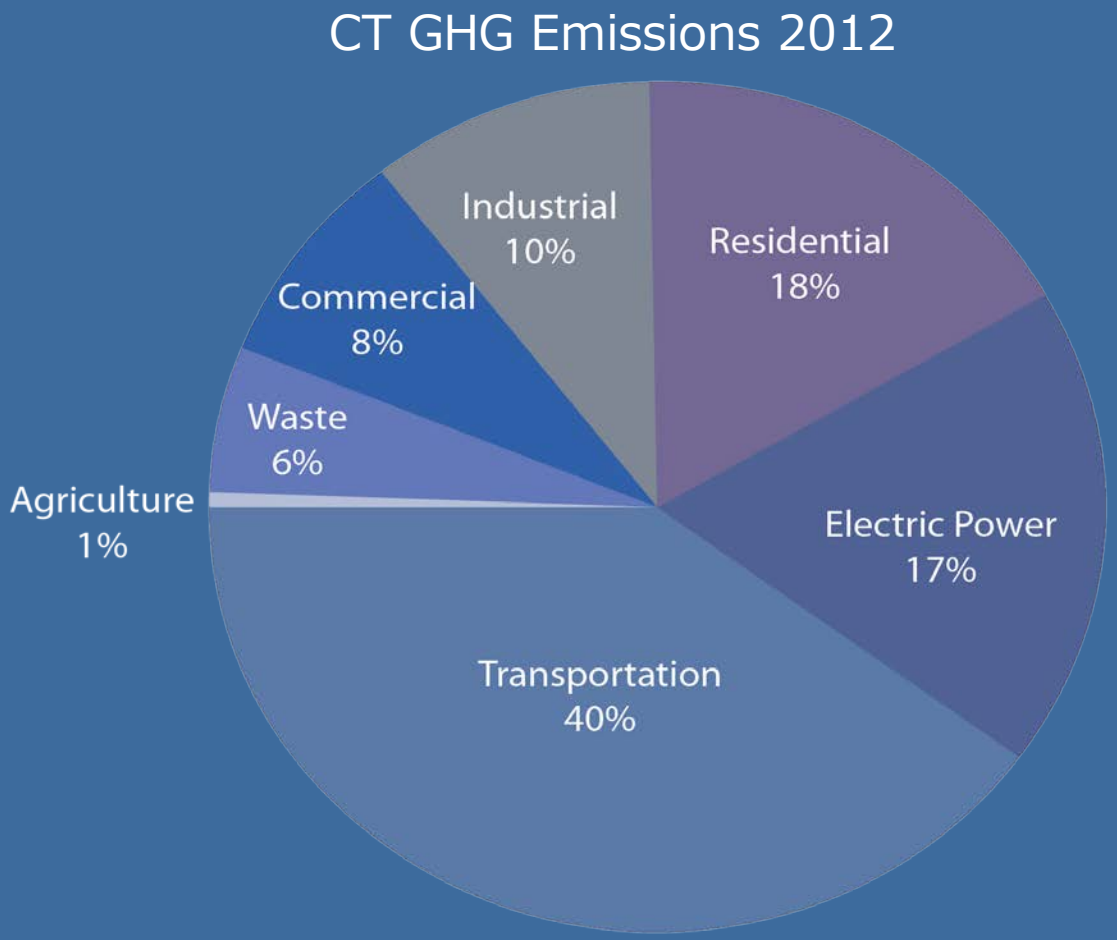
2:30	Welcome from UConn School of Law *Dean Timothy Fisher*
2:35	Welcome and review meeting agenda and objectives *DEEP Commissioner Klee*
2:40	Review and discuss key questions that inform scenarios and sensitivity analysis for modeling in LEAP *Paul Miller and Jason Rudokas, NESCAUM*
3:50	Mid-term target setting process and meeting schedule through summer and fall *DEEP Commissioner Klee*
4:00	Public Comments

Review and discuss key questions that inform scenarios and sensitivity analysis for modeling in LEAP

Paul Miller and Jason Rudokas, NESCAUM

Connecticut Department of Energy and Environmental Protection

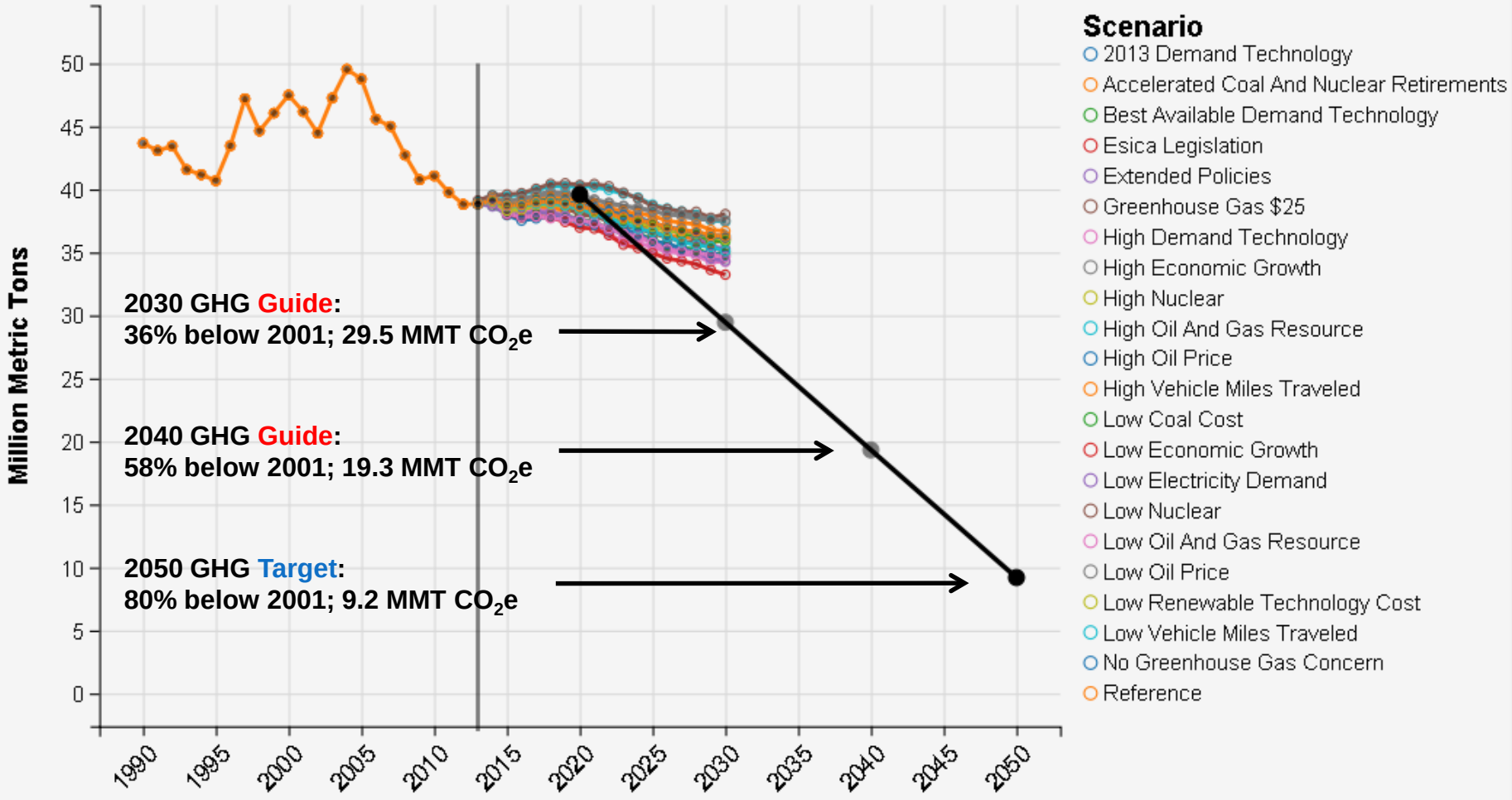
Where to Focus When Thinking About Scenarios



Terminology for GHG Scenario Planning Exercise

- Reference Case – Projected GHG emissions based on the Annual Energy Outlook Business as Usual
- Scenario – A group of technologies and measures that aims to achieve 80% GHG reduction relative to 2001
- Sensitivity – A variation of a scenario under different economic or energy system assumptions

Connecticut Annual Energy Outlook Reference Case With Bounding Sensitivities



Key Transitions Critical in All Scenarios

1. Efficiency and conservation across all energy use sectors (includes VMT, building energy use, vehicle efficiency, etc.)
2. Fuel switching in transportation/buildings (e.g., electrify)
3. Decarbonize electricity
4. Decarbonize fuels (gas/liquids)

Source: E3, California PATHWAYS, 2015

Some key questions for discussion

1. What technologies and measures should we use to balance intermittent renewables (near-term and long-term)?

2. What is the future role of nuclear power?

3. How should we prioritize among technologies and measures for residential/commercial buildings?

4. What is the best end-use for supply-limited advanced biofuels?

What technologies and measures should we use to balance intermittent renewables (near-term and long-term)?

- Storage technologies and demand response
  - Storage Batteries
  - Fuel Cells (hydrogen from off-peak renewables)
  - Fly Wheels (mechanical batteries)
  - Demand management
- Geographical diversity of renewable generation sources (transmission line expansions?)
- Imported hydro
- Natural gas combined cycle

What is the future role of nuclear power?

Nuclear power in ISO - NE

- Seabrook, N.H. Seabrook 1,295 mw (License expiration date 3/15/2030)
- Plymouth, Mass. Pilgrim 680 mw (Announced retirement for June 1, 2019)
- Waterford, Conn. Millstone Point 2 884 mw (License expiration date 7/31/2035)
- Waterford, Conn. Millstone Point 3 1,227 mw (License expiration date 11/25/2045)

- Assume nuclear plants retire at license expiration?
- Analyze scenario in which nuclear plants retire earlier?
- Analyze scenario in which nuclear plants licenses are extended?
- Analyze scenario in which new nuclear plants are commissioned?

How should we prioritize among technologies and measures for residential/commercial buildings?

- Renewable thermal technology choices:
  - ☑ Ground and/or air heat pumps
  - ☑ Solar thermal
  - ☑ Electrification of space heating
  - ☑ Biomass thermal
  - ☑ Advanced biodiesel

- Sector interactions (e.g., electrification of space heating shifts emissions to electricity sector)

What is the best end-use for supply-limited advanced biofuels?

- Potential applications
  - Thermal loads in buildings
  - Non-electrifiable heavy-duty transportation
  - Planes
- Trends in advanced biofuel availability are driven at the national and international scale

Mid-term target setting process and meeting schedule through summer and fall

July – October GC3, ADM Working Group, & Stakeholder Engagement Schedule

ADM Working Group
July 26, 2016
1:30 – 3:30 PM

Stakeholder Engagement
July 26, 2016
5:30 – 7:30 PM

GC3
September 8, 2016
1:00 – 3:00 PM

Stakeholder Engagement
October Date TBD

GC3
October 19, 2016
1:30 – 3:30 PM

Meeting Objectives & Timeline

ADM Working Group

July 26, 2016

- Review 2013 CT statewide GHG emissions inventory
- Review and discuss draft initial scenario modeling results
- Discuss mid-term target(s) for recommendation for full GC3 to consider

GC3

September 8, 2016

- Finalize mid-term target(s)
- Review final modeling results
  Finalize measures and strategies to conduct economic analysis modeling (REMI)

GC3

October 19, 2016

- Review economic modeling results and finalize climate reduction scenario (bundle of technologies and measures that result in mid-term and 2050 reduction goals)
- Begin discussion of policies and measures to investigate.

GC3

November and/or December 2016?

- Review and discuss policies and measures likely to actualize recommended reduction scenario and achievement of emission reduction targets.

December 2016 – February 2017 DEEP to draft Climate Strategy (Report)

February – March 2017 GC3 to review draft Climate Strategy

*Note: stakeholder engagement opportunities for additional input will be embedded throughout this timeline

Public Comments