



Connecticut Department of Energy and Environmental Protection



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

AGENDA



Review working groups, charges, and deliverables



Schedule and structure of meetings through 2015



GC3 outreach tools



Consistent state GHG accounting in a regional electricity market



NESCAUM scope of work



Public Comments



GC3 WORKING GROUPS

FOCUS AREAS

Governor's Council on Climate Change(GC3)

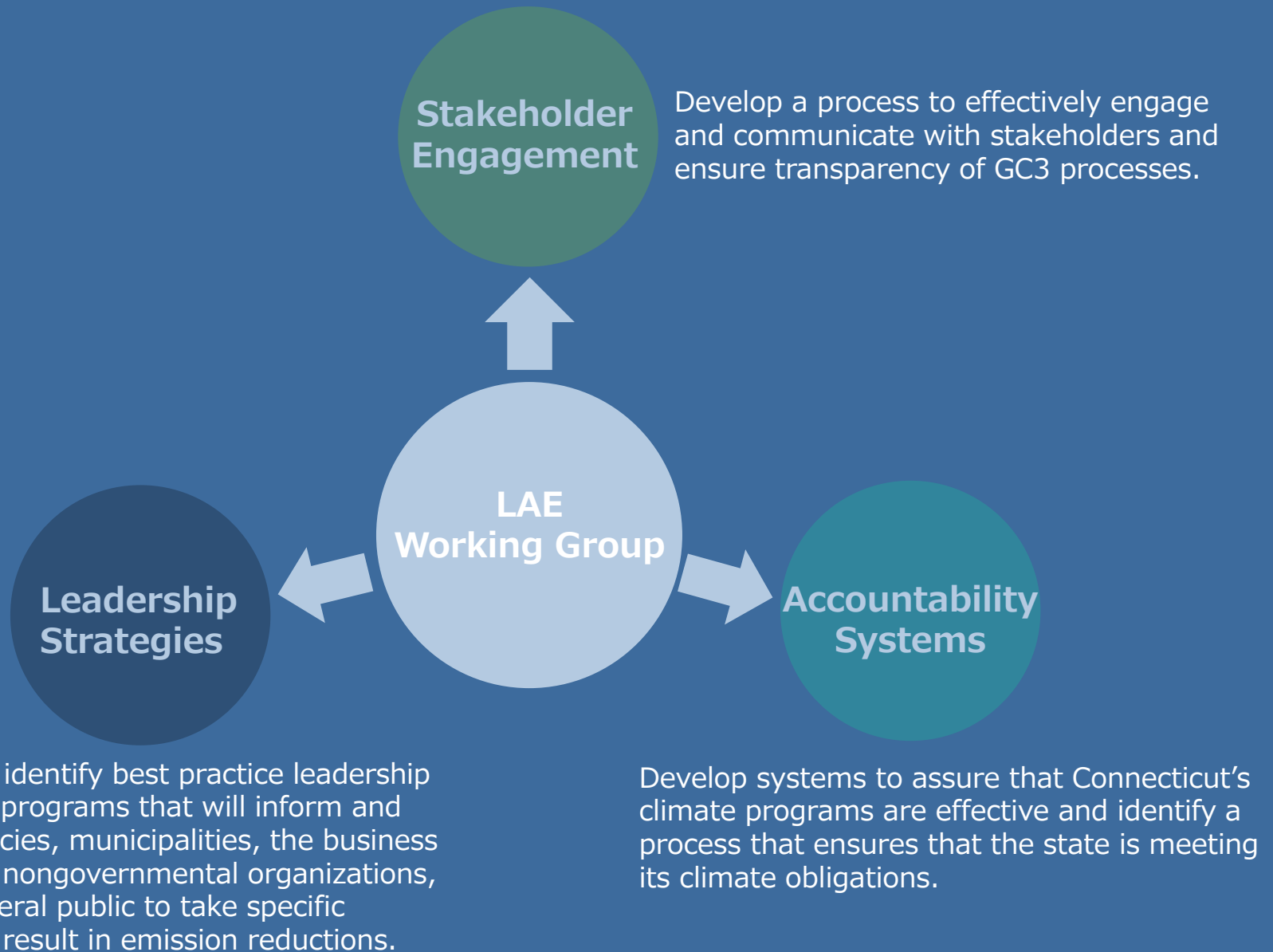
Analysis, Data, and Metrics Working Group

James O'Donnell (CIRCA, WG Co-Chair)
Robert Klee (DEEP, WG Co-Chair)
Art House (PURA)
James Redeker (DOT)
Catherine Smith (DECD)
John Humphries (CT Roundtable)
Lynn Stoddard (ISE at ECSU)
Don Strait (CEF)

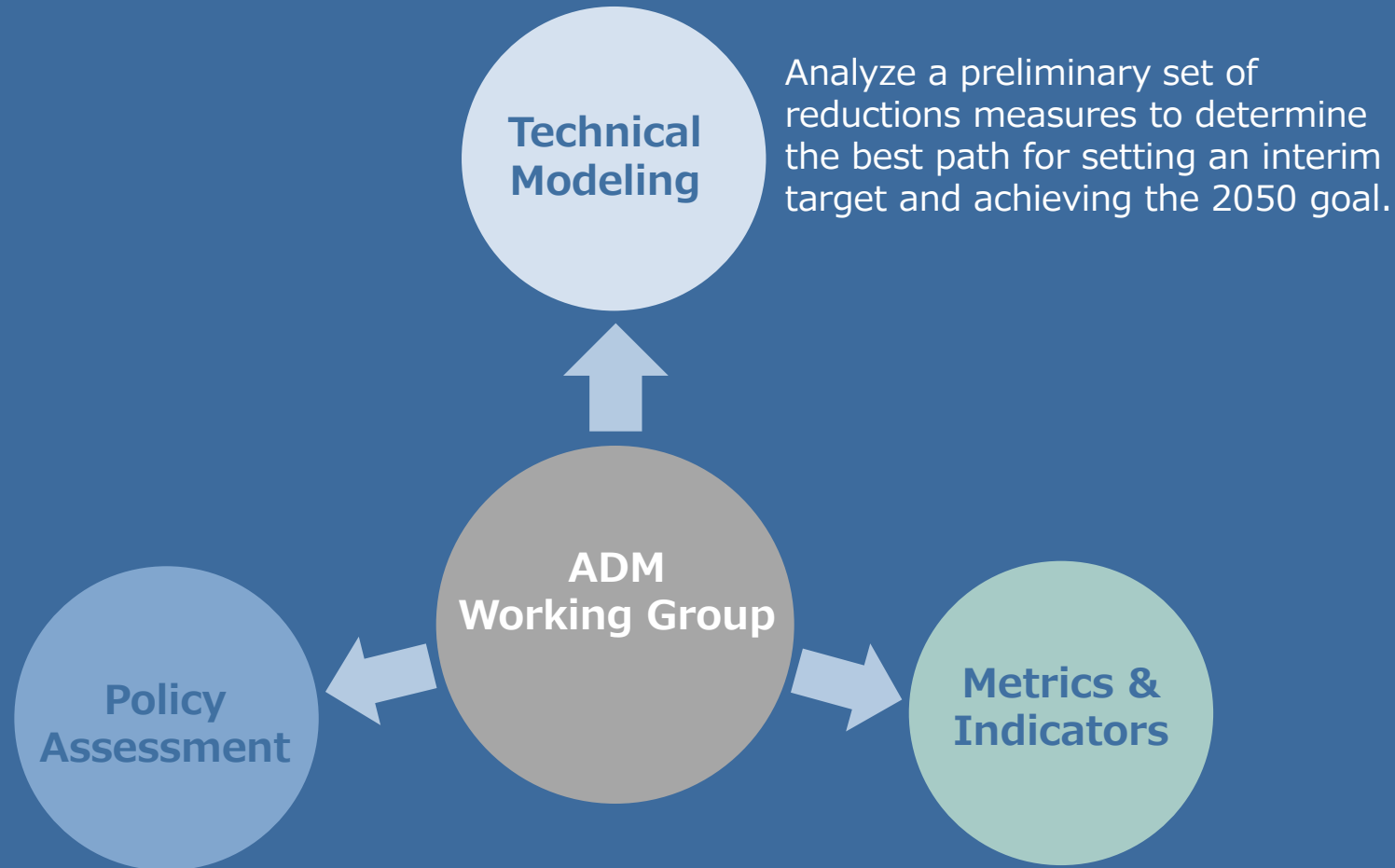
Leadership, Accountability, and Engagement Working Group

Melody Currey (DAS),
Bryan Garcia (CT Green Bank, WG, Co-Chair)
John Humphries (CT Roundtable on Climate & Jobs)
Scott Jackson (OPM, WG Co-Chair)
Evonne Klein (DOH)
Lynn Stoddard (ISE at ECSU)
Don Strait (CFE)
Katherine Wade (DOI)
David Robinson (The Hartford)

LEADERSHIP, ACCOUNTABILITY, ENGAGEMENT



ANALYSIS, DATA, METRICS



Analyze a preliminary set of reductions measures to determine the best path for setting an interim target and achieving the 2050 goal.

Technical Modeling

ADM Working Group

Policy Assessment

Metrics & Indicators

Taking a sector based approach, assess state and national policy measures that lead to significant greenhouse gas reductions.

Explore, assess, and identify additional metrics and indicators by which we can measure success in reducing statewide greenhouse gas emissions.

What are the pros and cons of achieving reductions sooner rather than later?

What assumptions should be used to determine the state's base case scenarios?

**How far do strategies "on the books" and "on the way" for Connecticut and adopted federally for emissions reductions get us?
How big is the remaining gap?**

Is further analysis needed? If so, by who? And how should it be funded?

Which reduction measures have proven successful elsewhere?

What are the primary wedges and/or measures that have the greatest GHG reduction potential?

Should the Council set multiple interim targets?

How should the GHG accounting methodology address the regional nature of electricity market?

What metrics and indicators should be used to measure success? E.g. CO₂e/GDP, CO₂e/per person, sector specific: CO₂e/VMT, CO₂e/electricity consumption?

DELIVERABLES

Update the Council on working group findings and solicit additional feedback at GC3 meetings in September and November.

Assemble working group findings and recommendations to be included as part of the GC3 Exploratory Report.

Present working group recommendations to the Council



SCHEDULE & STRUCTURE

MEETINGS

2015

August

September

October

November

December

GC3 Meetings

September 29

November 13

December 16

ADM WG Meetings

September 16th
3-5 p.m.

October 14th
2:30-4:30 p.m.

December 3rd
1-3 p.m.

LAE WG Meetings

August 28

October 12-16

December 7-11

LAE Stakeholder Workshop

November 16-20

Interactive workshop to illicit stakeholder and LAE working group ideas that will inform and guide the final recommendations proposed to the GC3

Webinars

on-going

- ❖ Presentations from invited guests
- ❖ Participation by GC3 member and staff persons optional
- ❖ Public participation encouraged through targeted outreach



Opportunities to solicit additional recommendations:



WEBINARS



GC3 OUTREACH TOOLS

1

GHG Executive Summary Progress Report (2015)

GC3 fact sheet

2

3

GC3 talking points

Prepared Slides

4

GOVERNOR'S COUNCIL ON CLIMATE CHANGE (GC3)

Executive Order

On Earth Day 2015, Governor Malloy issued an executive order to establish a new Governor's Council on Climate Change (GC3) to examine the efficacy of existing policies and regulations designed to reduce greenhouse gas emissions and identify new strategies to meet emission reduction targets.

Members

The Council consists of fifteen individuals appointed by the Governor. Eight from state agencies, two from and five individuals who represent the business community, non-governmental organizations, or local government. Members shall serve two-year terms.

Council Objectives

Monitor Connecticut's greenhouse gas emissions levels, establish interim target(s) to ensure the state meet its 2050 reduction target of 80% below 2001, and recommend policies, regulations, and legislative action that will assist the state to meets its targets.

Council Principles

Commitment to Analysis – use technical expertise and analytical rigor to inform the GC3’s policy deliberations and recommendations;

Commitment to Leadership – cultivate climate leadership in state government, in the business community, in non-governmental organizations, and in municipal government;

Commitment to Accountability – assure the effectiveness of climate programs by monitoring progress, proposing course corrections as needed, engaging stakeholders, and making the GC3’s deliberations transparent.

Working Groups

From August –December 2015 the Council has separated into the following two working groups:

- ❖ Leadership, Accountability, and Engagement
- ❖ Analysis, Data, and Metrics

The working groups will provide recommendations to the full Council to incorporate into an Exploratory Report to be delivered to the Office of Policy and Management and the Governor by December 31, 2015.

2016

The GC3 will develop a Climate Strategy for Connecticut that will include an updated GHG inventory, an analysis of GHG emission reduction measures and their economic implications, and recommendations on how state agencies, businesses, municipalities, and non-profits can integrate climate change objectives into their current and future planning efforts.



CONSISTENT STATE GHG
ACCOUNTING IN A REGIONAL
ELECTRICITY MARKET

Consumption Based Inventory

The consumption-based inventory includes estimates of the emissions associated with the full life cycle of materials and services consumed in the state, regardless of where the product or electricity was produced.



In-state Based Inventory

The in-state inventory focuses on direct emissions generated within the boundary of the state. E.g. emissions from electricity generated at power plants within the state of CT.

Note: this approach does not take into account the regional aspects of the electricity market.



Why is consistency important?

Avoid double-counting or under-counting emissions and emission reductions

Receive full credit for programs that reduce electricity generation or make generation cleaner

Account for flow of electricity across state borders in the regional power pool

Why is this important now?

NE states
updating climate
action plans
(RPS, EE, etc.)

NEG-ECP
developing a
guide-post for
2030 GHGs

Electricity
imports and
exports in the
context of the
Clean Power
Plan

States including
RE and EE in
SIPs

Planning for the
electrification of
the
transportation
sector in
Northeast



SCOPE OF WORK

Three Phased Approach

Phase 1 through December 2015

- Model levels of technology deployment / fuel switching needed for achieving preliminary GHG reductions by target years
- Present results to GC3 in January 2016

Phase 2 through June 2016

- Analyze potential policies and strategies to achieve needed levels of technology deployment
- Develop package(s) of strategies as possible scenarios
- DECD to analyze macro-economics of scenarios

Phase 3 through December 2016

- Revise results based on GC3 and stakeholder feedback

Phase 1 – through December 2015

Model examples of technology deployment needed to achieve future GHG targets

- Establish reference case projection with assumptions
- Select GHG measures for CT's major sectors based on CT-relevant priorities
- Build up CT-specific LEAP system with GHG measures and levels of deployment options
- Use 2030, 2040, and 2050 for GHG targets
- “Mix and match” in LEAP the GHG measures and deployment levels relative to targets

Present results to GC3 in January 2016

Phase 2 – through June 2016

- Analyze chosen policies and scenarios for achieving needed levels of deployment
- From analysis results, identify scenario packages for achieving future GHG targets
- CT DECD to analyze macro-economic benefits of identified scenarios using REMI

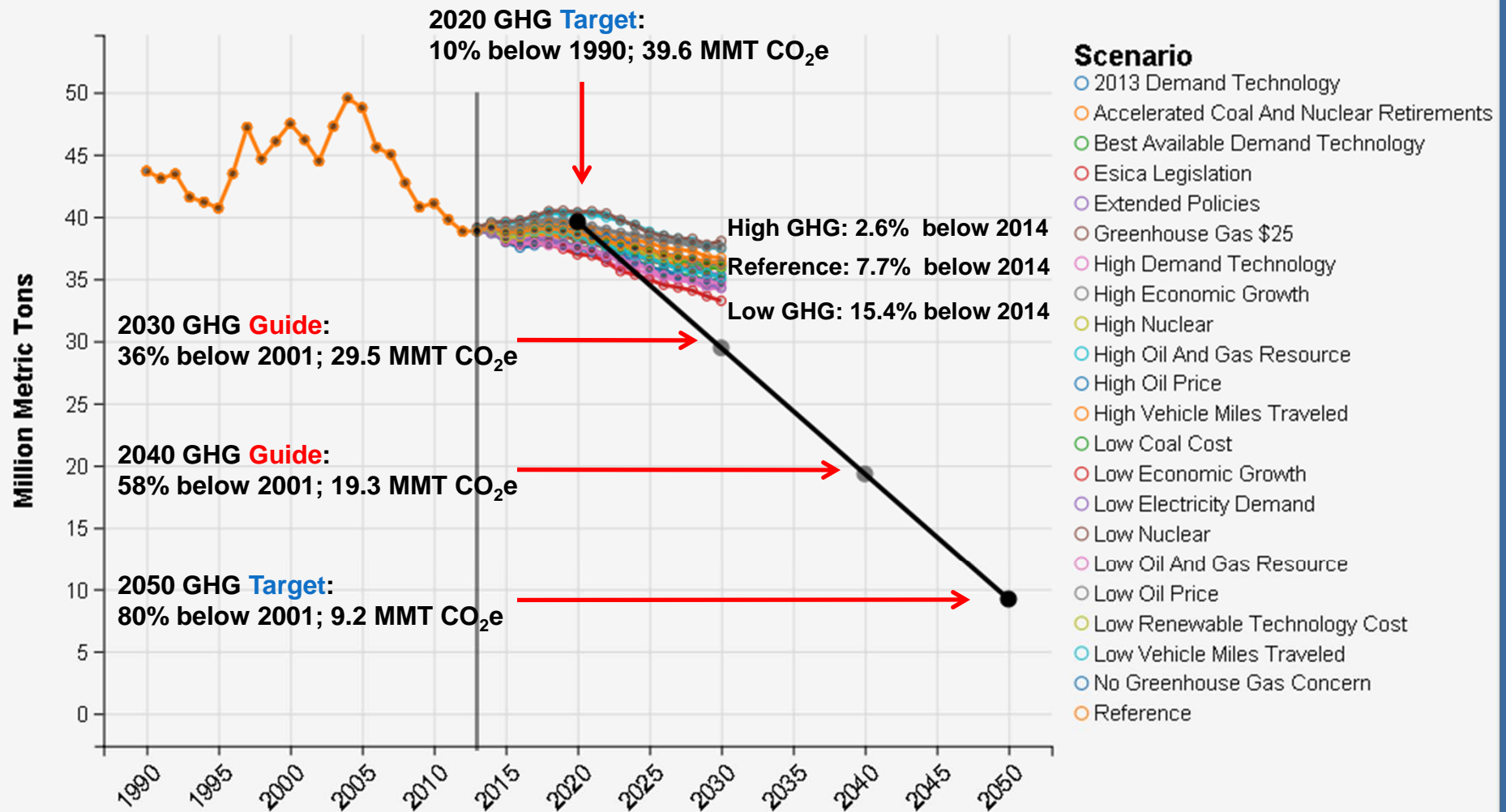
Phase 3 – through December 2016

- Present scenario results to GC3 in July 2016
- Update analysis based on feedback
- Present 2nd draft to stakeholders
- Update based on stakeholder input

Launching Phase 1

*Inputs and Assumptions for
Determining Reference Case Projection*

Connecticut: Annual Energy Outlook reference case with bounding scenarios

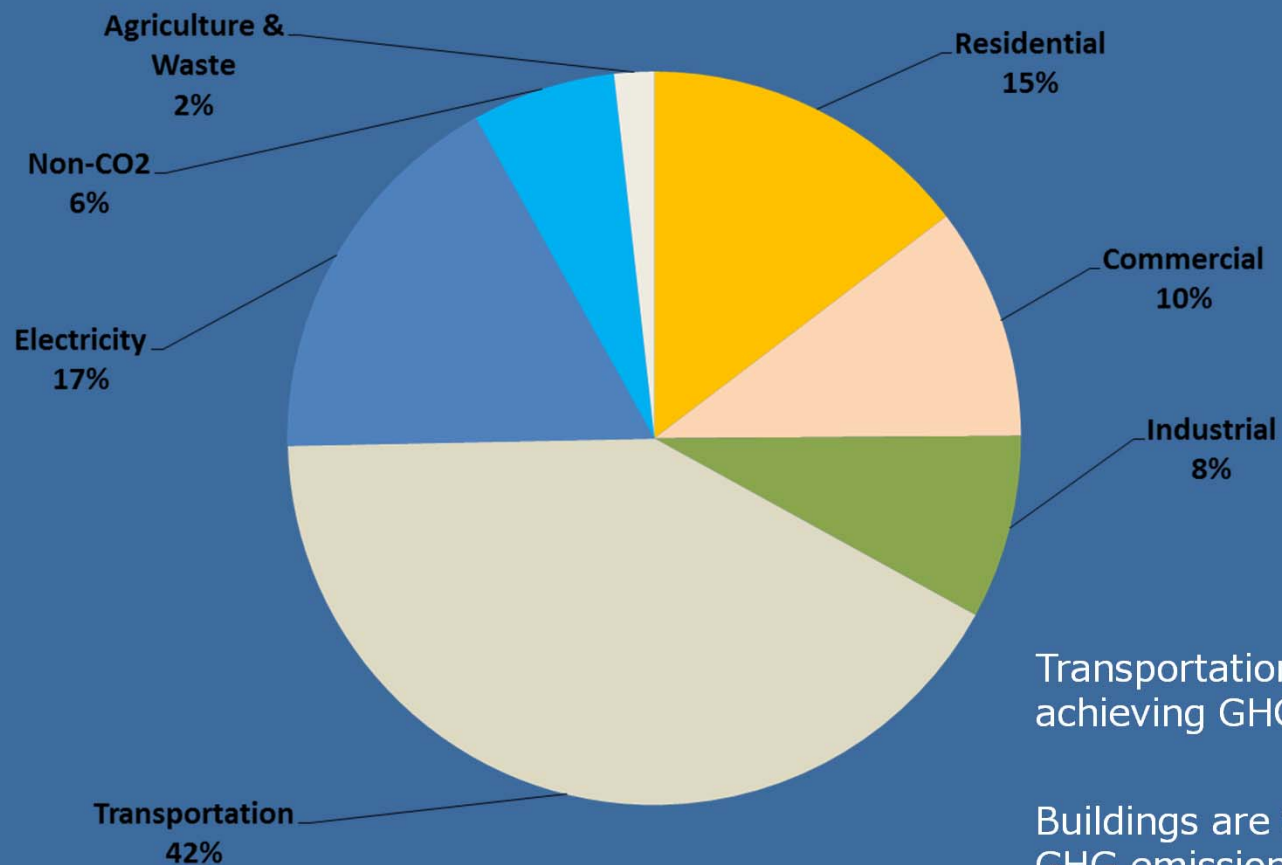


Key Questions

1. How does in-state generation and/or in-state consumption impact the 2001 baseline?
2. For future projection, what do we assume about nuclear retirements?
3. For future projection, what do we assume about new gas plants?
4. Should federally proposed initiatives be included in the established baseline? (E.g. EPA's proposed heavy-duty vehicle GHG limits)

*Setting priorities for
determining
GHG measures to evaluate*

Connecticut: Where the Emissions Are: *Reference Case CO₂e Emissions by Sector (2030)*



Transportation scenarios are critical for achieving GHG goals.

Buildings are the next largest source of GHG emissions

Waste management scenarios are cost effective, but will not drive significant changes in GHG emissions

*Identifying Biggest
Potential
Reduction Measures*

Resources for identifying GHG Measures

- Comprehensive Energy Strategy for Connecticut, (2013)
- CT DEEP: Taking Action on Climate Change Progress Report, (2014)
- Massachusetts Clean Energy and Climate Plan for 2020, (2010)
- Rhode Island State Energy Plan, (2015)
- New York State Energy Plan, (2015)
- Maryland Greenhouse Gas Reduction Act Plan, (2013; 2015 progress report)
- DOE: SunShot Vision Study, (2012)
- *First Update to the Climate Change Scoping Plan; Pursuant to AB 32*, (2014)
- Summary of the California State Agencies' PATHWAYS Project (2015)
- Pathways to Deep Decarbonization (2014)
- AEE¹: Advanced Energy Technologies for Greenhouse Gas Reduction

¹Advanced Energy Economy (AEE)

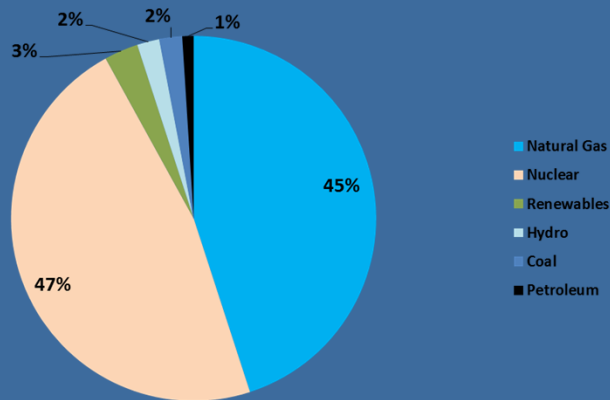
Example GHG Measures

- Transportation (42% of 2030 CT GHG Inventory)
 - *ZEVs, VMT & land use planning, fuel cells...*
- Residential/Commercial (25% of 2030)
 - *Efficient HVAC, building envelopes, CHP, heat pumps...*
- Electricity (17% of 2030)
 - *Accelerated wind and solar deployment, energy storage, clean demand response...*
- Industry (8% of 2030)
 - *CHP, process efficiency improvements...*

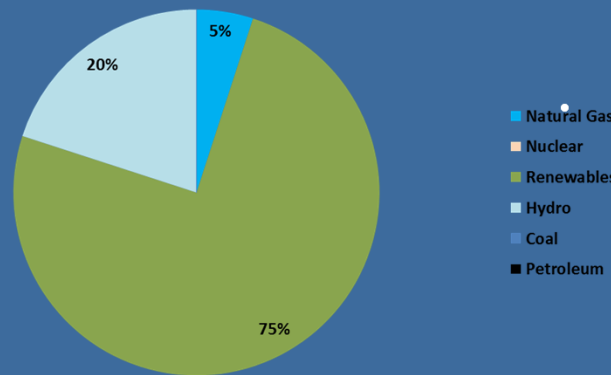
Conceptual Modeling Approach

Hypothetical Example for 2050: 80% Renewable Electricity, 90% Electrified Buildings

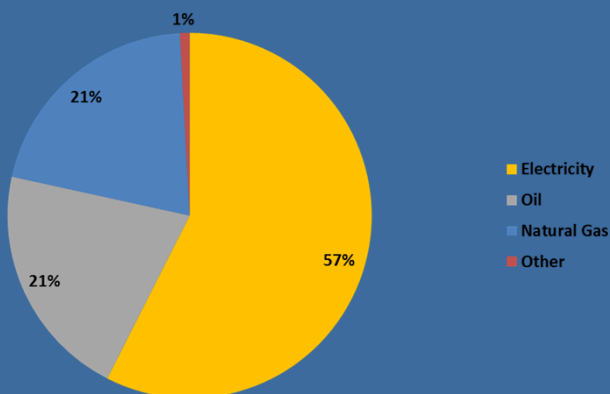
2012 Electricity Grid



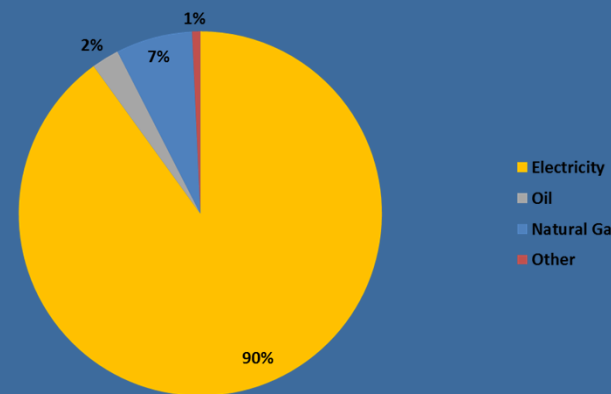
2050 Electricity Grid



2012 Buildings Energy Consumption



2050 Buildings Energy Consumption



- To examine targets for various years we will examine a range penetration rates for key strategies

For this example key strategies could include:

- Energy Efficiency
- Weatherization
- Roof-top Solar Photo-Voltaic
- Geothermal
- Solar Thermal
- Natural Gas Efficiency
- Utility Solar Photo-Voltaic
- Wind
- Increased Behind the Meter Generation

*LEAP Framework and Selected
GHG Measures/Scenarios*

Long-range Energy Alternatives Planning (LEAP)

- Bottom up technology detail covering all end-uses and supply options
- Multi-state modeling capability
- Stock-turnover modeling in the transportation sector
- Optimization for electric sector build-outs
- Emissions accounting for GHGs and criteria pollutants
- Outputs for cost-benefit and macroeconomic impact analysis

NEXT STEPS

Review and select a preliminary set of measures with potential to achieve GHG targets

Review parallel assessment strategies (Materials Management Assessment, Land and Forest Conservation strategies)

Review CT LEAP system build out

Review additional metrics/indicators for measuring success



Public Comments

2-3 minute comments related to
the content presented today.