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## **Governor's Council on Climate Change (GC3) MEETING MINUTES**

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**Meeting Date:** October 19, 2017  
**Meeting Time:** 1:00 — 3:00 p.m.  
**Meeting Location:** CT DEEP,  
Gina McCarthy Auditorium,  
79 Elm Street, 5th Floor, Hartford

**ATTENDANCE**

<b>Council Member</b>	<b>Title</b>	<b>Organization</b>	<b>Present</b>
Patrick Brown	Chief Technology Architect	The Hartford	Y
Claire Coleman	Climate and Energy Attorney	Connecticut Fund for the Environment	Y
Melody Currey	Commissioner	Department of Administrative Services	N
Katie Dykes	Chairperson	Public Utilities Regulatory Authority	N
T.J. Hanson	Product Director	Thule, Inc.	N
John Humphries	Organizer	CT Round Table for Climate & Jobs	Y
Rob Klee (chair)	Commissioner	Department of Energy & Environmental Protection	Y
David Kooris	Director of Rebuild by De-sign and National Disaster Resilience	Department of Housing	Y
Bryan Garcia	President and Chief Executive Officer	Connecticut Green Bank	Y
Tom Maziarz on behalf of Commissioner James Redeker	Bureau Chief, Bureau of Policy and Planning	Department of Transportation	Y
James O'Donnell	Executive Director	Connecticut Institute for Resilience and Climate Adaptation	Y
Catherine Smith	Commissioner	Department of Economic & Community Development	Y (phone)
Lynn Stoddard	Director	Institute for Sustainable Energy	Y
Michael Sullivan	Acting Undersecretary for Comprehensive Planning and Intergovernmental Policy	Office of Policy and Management	Y
Katharine Wade	Commissioner	Connecticut Department of Insurance	N

<b>Associated Staff</b>	<b>Title</b>	<b>Organization</b>	<b>Present</b>
Tracy Babbidge	Chief	Bureau of Energy & Technology Policy, DEEP	N
Keri Enright-Kato	Director	DEEP Office of Climate Change, Technology & Research	Y
Jeff Howard	Environmental Analyst	DEEP Office of Climate Change, Technology & Research	Y
Stanley McMillen	Consultant		Y
Paul Miller	Deputy Director & Chief Scientist	Northeast States for Coordinated Air Use Management	Y
Jason Rudokas	Policy Analyst	Northeast States for Coordinated Air Use Management	Y
Mary Sotos	Deputy Commissioner	Bureau of Energy & Technology Policy, DEEP	Y

## AGENDA & NOTES

### Welcome and Announcements

*Rob Klee*

- New members to the GC3
  - Garrett Eucalitto has left OPM. Mike Sullivan, Acting Undersecretary for Comprehensive Planning and Intergovernmental Policy at OPM, has been designated as his replacement to the Council.
  - Don Strait has retired from CFE. Claire Coleman, Climate & Energy Attorney at CFE, has been designated as his replacement.
- Three students from the Yale Environmental Law Clinic will be working with DEEP to research policy options over the next few months.

### Overview of mitigation scenarios and electric sector assumptions

*Jason Rudokas, NESCAUM*

- Overview of mitigation scenarios
- Review electric-sector assumptions and inputs. Scenarios were based on materials sent out to GC3 members in September.
- 30% renewables by 2030, 62% carbon free
- 34% renewables by 2030, 66% carbon free
- 40% renewables by 2030, 71% carbon free
- 50% renewables by 2030, 81% carbon free

### Review and discuss REMI analysis of buildings, transportation and electric sector scenarios, and fully combined scenarios for 35% and 55% midterm target

*Stan McMillen*

- Review and discussion of combined sector results. REMI results from each individual sector are in the appendix.
- For the 35% case, on average each year over the period 2020-2030, the state budget is in deficit by \$15 million in current dollar terms. In comparison, for the 55% case, the budget is in surplus by \$15 million; and, for the 55+% case, it is in deficit by \$15 million. These average annual amounts are very small proportions of the overall budget.
- Economic and fiscal results are small fractions of the state economy and of the budget in each sector, considered individually and combined. But they are not insignificant.
- A key take-away from the REMI analysis is that the economic differences between the scenarios is quite small. GC3 discussions should focus on the feasibility of achieving the targets and the necessary technology penetration rates.

*Discussion:*

- Job growth for each scenario is positive and helps make the case for action. It is important to note that the majority of job growth occurs in the building sector (energy efficiency and heat pump deployment).

- Although the job numbers represent small proportions of state employment overall, they probably are significantly larger than projected change in employment that would otherwise occur; so it would be helpful to show that comparison.
- The 55% scenarios provide more significant job growth primarily because action would occur sooner under these scenarios.
- Investment in heat pumps exceeds customer fuel cost savings and thus it is unlikely customers would purchase this technology without a financial incentive. Developing a near-term policy solution here is critical to deploy heat pump technologies at the rate that is needed to meet any proposed 2030 GHG reduction targets.
- GC3 should consider what the state could do to get additional job/economic advantage. For instance, building capacity for manufacturing heat pumps and solar PV in CT. However, this type of strategy could be difficult because manufacturing capacity elsewhere is already mature.

**Review and discuss feasibility of technology penetration rates by sector for 35%, 45%, 55%, and 55% +Aggressive renewables scenarios**

*Jason Rudokas, NESCAUM*

- Review updated energy efficiency inputs.
- Residential and commercial renewable thermal penetration rates for each case.
- ZEV penetration rates for each case.
- Heavy duty vehicle and rail electrification.
- VMT reduction scenarios.
- For all of the above, see basic figures in slides and details in appendix of slide presentation.

*Discussion:*

- It would be helpful to see current penetration percentages for comparison.
- The sensitivity analysis (55% case + aggressive 2030 zero-carbon renewables) provides a sense of how an aggressive early deployment of zero carbon electric generation could provide more flexibility in deploying heat pumps and EVs — about 20% leeway.
- Regarding Appendix slide for 45% reduction target (slide 32): It would be helpful to discuss the level and nature of intervention needed to achieve these heat pump and EV penetration rates. It also would be good to consider that the aggressive zero-carbon renewable energy scenario would require energy storage at scale.

**Discuss mid-term GHG reduction target considerations**

*Discussion facilitated by Rob Klee, Chair*

*Equity curve considerations presented by John Humphries*

- The charts (slides 20 and 21) are based on emissions data for 2012. "Equity" here means generational equity.
- Both lines produce the same overall GHG reduction by 2050; but the equity curve makes steeper absolute cuts in the early years. The straight-line reduction would mean larger and

larger percentage reductions from year to year, which could be progressively more difficult in the years leading up to 2050. In contrast, the equity curve would make percentage contributions uniform from year to year.

- Equity also has an important GHG emissions benefit: it creates reductions earlier, which would mean the overall warming produced by CT emissions by 2050 would be lower.

#### *Mid-term target context and comparisons, Keri Enright-Kato*

- Review of proposed mid-term targets based on a linear reduction line.
- Review of mid-term targets in peer states (slide 24). California is legislatively required to achieve a 40% reduction by 2030. New York, through executive order, is committed to a 40% reduction by 2030. Rhode Island is legislatively required to achieve a 45% reduction by 2035.
- Comparison of peer-state mid-term targets: the only way to mathematically compare state midterm targets is using a compound annual growth rate (CAGR) from 2014 to 2030. Using each state's CAGR, CT's 35 -45% target range is comparable to other states targets.
- Looking at each states linear reduction, all fall either on the line or slightly above or below (slides 25-27)

#### *Discussion*

- Should GC3 consider NEG-ECP's model for a mid-term target — a target range, rather than a single specific target? Should we develop a target that is within a range we know can be met? Or should it be purely aspirational?
- Equity of mitigation costs should also be considered. It may cost consumers more to achieve reductions today as compared to a future when the costs of technologies decrease resulting in lower costs to consumers in future years.
- Economic impacts, the equity issue, and the implied differences in risk push toward a target more aggressive than 35% for 2030.
- The basis of 2050 goal established in state law was based on climate science at the global level (global emission reductions equal to 80% below 1990 levels). Thus, should the basis of a 2030 target should be what's necessary or what's "realistic?"
- Important to take co-benefits into account. Interventions to meet 2030 target(s) will have co-benefits, and these co-benefits can help us design interventions to meet the target.
- CT's 2030 target(s) will set an example for other states, and GC3 needs to be mindful of the message the target will send. Important for CT to send strong signal, and REMI outputs show viability of a strong target. The results of the economic analysis support GC3 setting a strong, aspirational goal for 2030.
- Despite the sense of optimism and aggressiveness, we need to be mindful of what's feasible given state's current political and economic climate. More specifically, limitations such as the legislature's sweeping of energy efficiency and RGGI funds to balance the budget. Additional sweeps would certainly undermine the state's ability to meet any of these goals.
- It would be helpful to look more closely at 45% scenario with more aggressive zero-carbon electric generation, including resulting change in REMI outputs.

- It's important to bring all members into the conversation before making a decision, and the additional analysis of 45% with aggressive zero-carbon electric generation would be helpful for that conversation.
- As a next step, DEEP will develop and send out a survey to GC3 members to help determine consensus on a mid-term target.

### **Public comments**

*David Sutherland, Nature Conservancy*

- Great discussion today. Very valuable. Please heed Stoddard's advice to do what's necessary, not what's "feasible." This council should be aggressive. Its role should be understood as identifying the political and economic implications of doing what's necessary.

*Mark Scully, People's Action for Clean Energy*

- Yes, fantastic discussion. Take bold action, set high interim target. Early action will be less expensive and more beneficial than late action. Aggressive goal will make it easier to lead.

*Ann Hulick, Clean Water Action*

- Thanks for the work the council has done. Need to underscore what Stoddard has said. Remember that this is a moral issue, because climate change is #1 public health issue of our time. Equity issue also concerns disproportionate impacts experienced by vulnerable communities.

*Henry Link* – Want to second Hulick's remark about climate change's implications for public health.

*Joe Scully, Motor Transport Association of CT*

- There is no readily available way to electrify heavy-duty commercial trucks; and when it comes, it will be expensive. *Miller responds:* modeling includes biofuels, and a key question is which sector should be targeted for this limited resource.

**NOTE:** Slides are available on GC3 web page: [www.ct.gov/deep/gc3](http://www.ct.gov/deep/gc3)