Advancing the Clean Energy Future

Acadia Center

21 Oak Street, Suite 202
Hartford, CT 06106-8015
860.246.7121
www.acadiacenter.org

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Via E-mail

Governor's Council on Climate Change

RE: *Energy Efficiency Modeling Concerns*

Dear Council Members:

With the upcoming Governor's Council on Climate Change (GC3 or Council) meeting focused on policy scenarios that will help Connecticut meet its greenhouse gas (GHG) emissions requirements, Acadia Center wanted to express serious concerns regarding the energy efficiency modeling presented to date. Our primary concerns are:

- Lack of transparency in energy efficiency savings projections;
- Unrealistic energy efficiency measure life assumptions; and
- Inconsistent modeling of current energy efficiency trends.

These concerns are detailed below. Given this critical juncture in the GC3's process—with interim targets possibly on the table—it is imperative for the modeling to have a solid foundation on which to build the final Council recommendations.

Connecticut's Commitment to Climate Leadership

Momentum is building for climate action, and a confluence of national and international events are pushing Connecticut to lead. The state's mandatory 2020 GHG emissions cap is also nearing and Governor Malloy recently committed the state to the U.S. Climate Alliance. These developments underscore the need for the GC3 to undertake sound GHG emissions modeling.

It is widely recognized that energy efficiency (EE) is the most cost-effective option for reducing GHG emissions, and it creates jobs, boosts the economy, and saves ratepayers money. The core EE inputs must be accurate in the GC3's reference model, or it will be impossible to design effective future scenarios that capture the maximum energy and GHG emissions savings. Lost EE savings would translate to higher costs for ratepayers, who will end up paying more to reach the same emissions goals.

Acadia Center recently completed comprehensive energy sector modeling with the same model NESCAUM is using for the GC3 analysis, LEAP.[1] The results are described in our recent report, EnergyVision 2030,[2] and demonstrate that if states commit to relatively modest increases in clean energy technologies, a 45% reduction in GHG emissions from 1990 levels is feasible. Meeting this target will put Connecticut on the path to reach its 2050 emissions mandate while delivering significant consumer and economic benefits to the state. EnergyVision 2030 shows that annual

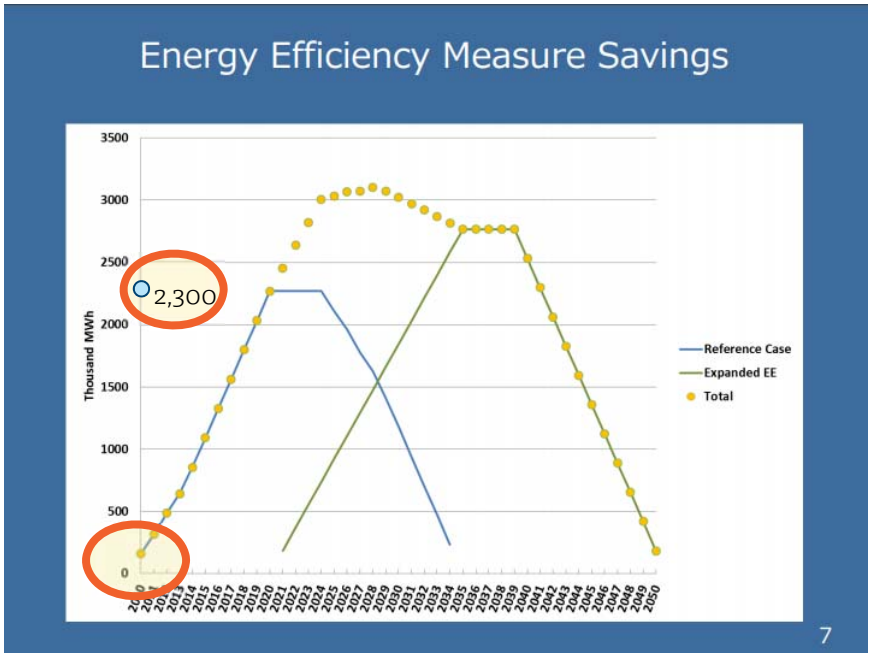
[1] Long-range Energy Alternatives Planning system. *See:* https://www.energycommunity.org/Default.asp
[2] *See:* http://2030.acadiacenter.org/

incremental electric efficiency savings of 2.5%—less than what other New England states are already achieving—would put us on this low-emissions path, if coupled with other clean energy measures. Building on this modeling experience, the following are some insights and concerns that, if addressed, would add clarity and accuracy to the GC3's modeling efforts.

Transparent Energy Efficiency Savings Projections Needed

First, in the EE modeling NESCAUM presented in April 2017, new EE tapers off in 2021 and drops to zero in 2035 in the reference scenario (see Figure 1 below). While it has never been explicitly stated, there must be some energy efficiency savings already included in the reference scenario consumption data, since the model appears to set EE savings at zero in 2010 when there was plenty of existing EE delivering savings at that time. In fact, Connecticut saved approximately 2,300 GWh of electricity in 2010 due to efficiency investments made in preceding years (see added chart notation on Figure 1 below indicating where that savings amount would have appeared if accurately noted). For transparency, the modeling results should clearly state exactly what data is being displayed. For example, in this chart it is unclear if the data are all cumulative savings, some portion of cumulative savings, or incremental savings for a given year. For added clarity, it would also be helpful to use the most commonly recognized metrics in the final data. For EE savings, this would be both incremental and cumulative savings for every year, in both megawatt hours (MWh) and percent of consumption.

Figure 1: Slide 7 of the April 13, 2017 GC3 meeting presentation.[3]



[3] *See:* http://www.ct.gov/deep/lib/deep/climatechange/gc3/gc3_4_13_17/gc3_meeting_4_13_2017.pdf. Red bubble notations added by Acadia Center.

If the chart in Figure 1 does reflect the reference scenario model and EE drops to zero in 2035, it raises further questions about the baseline policy assumptions being used in the modeling. It is very unlikely that EE will drop to zero in any year, given that Connecticut has a guaranteed minimum level of efficiency spending in statute, as well as a statutory mandate to capture all EE that is less expensive than supply. A reference scenario does not typically include changes to statute; however, to achieve the results presented for the reference case in Figure 1, it appears that statutory changes are assumed.

Correct Unrealistic Measure Life Assumptions

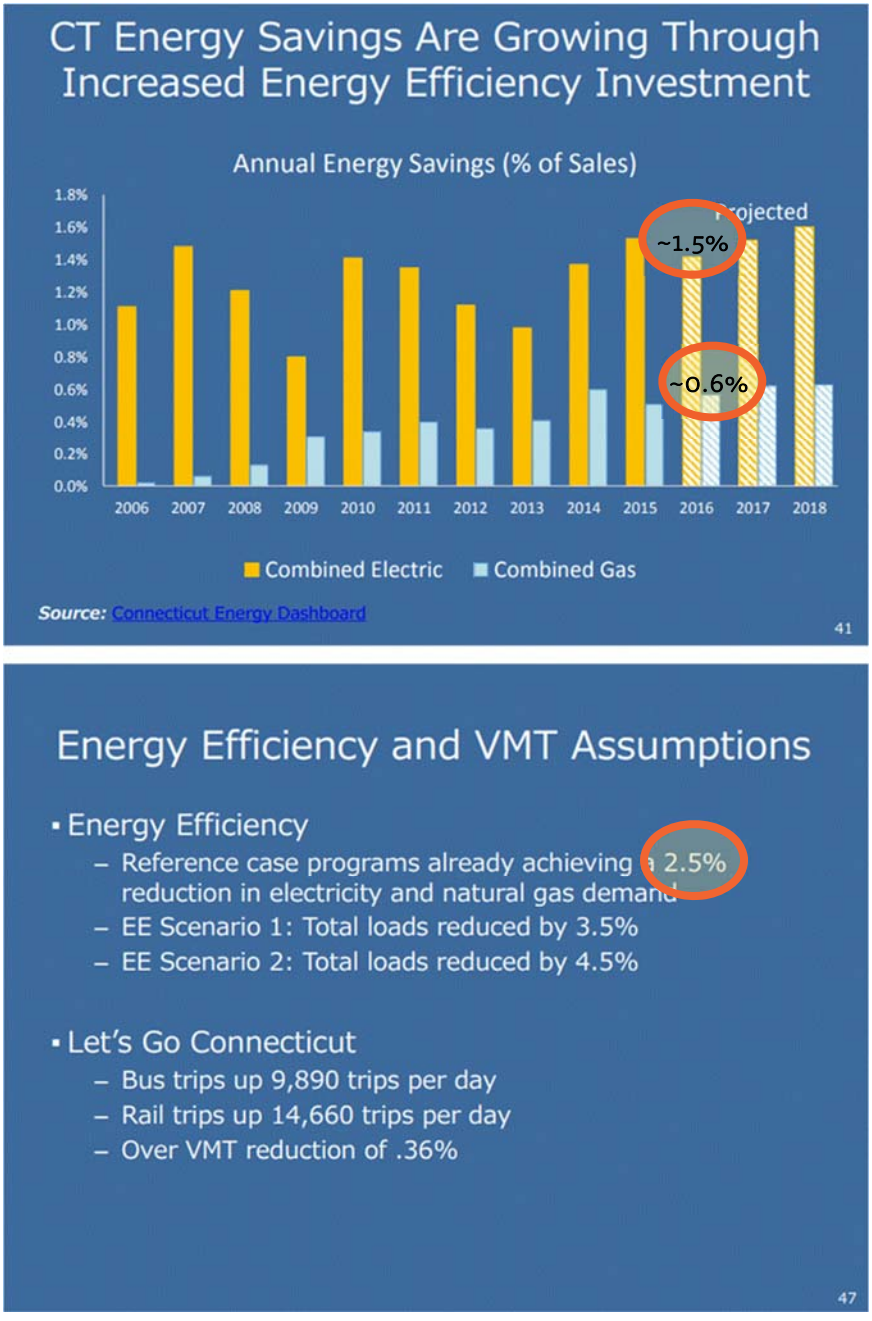
The drop in future EE savings raises additional questions about how efficiency measure life is being modeled. When Acadia Center modeled the Rhode Island State Energy Plan baseline,[4] we used a methodology—approved by the RI Office of Energy Resources and a stakeholder advisory group—whereby at the end of the EE measure life, only half of the EE savings was lost. Half of the savings remained because it would be unlikely that the old, inefficient technology that was originally replaced would still be available 15 years later. For example, if an LED light burns out 15 years from now, it is unlikely, or even impossible, that it would be replaced with an incandescent bulb. Because the EE savings in the draft GC3 model returns to zero in 2035 (the same level as in 2010), it seems as if all savings is lost after a measure retires. The assumptions on measure life have not been shared, so it is not possible to know for sure if this is the case. However, NESCAUM should be more transparent in their methods to ensure the GC3 and external stakeholders best understand and can provide input into the modeling. Notably, while this distinction on measure life is not that important in regulatory cost-benefit tests for efficiency programs because the benefits 15 or more years out are very low due to discount rates, it is significant for emissions modeling.

Inconsistent Modeling of Current Energy Efficiency Trends

Finally, there is inconsistency between some of the numbers used in the model and the observed EE trends in the state. For example, discussions around slide 7 (Figure 1) at the April 13, 2017 presentation indicated that the model extended current 2% annual EE (incremental) savings levels in the expanded EE scenario, but that is an error—current savings are only about 1.6%, as shown on slide 41 of the October 19th, 2016 presentation (Figure 2, below, top image). Slide 47 of the October 19th presentation also refers to "Reference case programs already achieving a 2.5% reduction in electricity and natural gas demand" (Figure 2, below, bottom image). As with Figure 1, it is not clear what the 2.5% means (incremental or total savings, and with respect to what) and how it aligns with what is currently happening (i.e., 1.6% savings). It seems possible that the 2.5% value is rounded up from the sum of the 2015 electric and gas savings on Slide 41 (Figure 2, below, top image); however, adding the savings from these two independent programs for different fuels would not be correct—saving 2% on a pound of apples and 1% on a pound of oranges does not equate to saving 3% on either or both. The basis for the proposed scenario savings of 3.5% and 4.5% also shown on Slide 47 (Figure 2, below, bottom image) are even less clear. The language, "total loads reduced" suggests they are cumulative savings, but the numbers are far too low for that to represent any substantive change in efficiency levels.

[4] *See:* http://www.energy.ri.gov/documents/energyplan/ENE_RISEP_Business_As_Usual_Forecast.pdf.

Figure 2. Slides 41 (top) and 47 (bottom) from the October 19, 2016 GC3 meeting presentation.[5]



[5] *See:* http://www.ct.gov/deep/lib/deep/climatechange/gc3/gc3_10_19_2016.pdf. Red bubble notations added by Acadia Center.

We urge the GC3 to ensure that all energy efficiency inputs into the scenario modeling are transparent, representative of current trends, and accurate. The reference case, in particular, must be carefully scrutinized as the basis for all the policy scenarios. Energy efficiency, as the least-cost option for reducing emissions, must be maximized to guarantee the lowest cost climate solutions for the citizens of Connecticut.

Thank you for your attention to this matter. We look forward to engaging with you further in developing the GC3 modeling and recommendations. If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

Emily A. Lewis O'Brien
Policy Analyst
elewis@acadiacenter.org
860.246.7121 x207