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I am writing because the Massachusetts Energy Efficiency Incentive program for existing buildings is broken and dysfunctional. Specifically, the program's treatment of mechanical and HVAC control systems in existing building, which I specialize in making them sustainable and efficient while improving comfort and occupant productivity. I work as a subcontractor to Project Expeditor's and TA vendors. My clients are C & I buildings and campuses of all sizes from small 20,000 SQFT spec office to major universities, and municipal (government buildings and public schools). Over the last year and one half the utility reviewers of incentive applications have been turning down or providing very small incentives for projects that in the past qualified for bigger incentives and the projects are not being built. After a meeting with the Eversource incentive review team on October 16, 2017, my suspicion was confirmed. It was not the quality of the application and engineer but changes in the program design. The old program considered the baseline to be existing conditions in the existing building. The new program assumes that the baseline to be a code compliant as outlined in IECC-2015 Chapter 5 Existing Buildings. After this change there are little to no potential economic feasible savings available or the incremental cost that will not pass the BCR and project not financed. The owner is responsible to repair or update old equipment of HVAC controls prior to qualifying for incentives. An urgent correction to the program is needed to incentivize existing owners of existing facilities to reduce energy consumption and reduce greenhouse gas emissions of the Commonwealth. To put it simply non-lighting energy efficiency projects in existing building are not being built using the incentive programs.

I have looked up the definition of Incentive **"Inducement or supplemental reward that serves as a motivational device for a desired action or behavior"**. The EPA defines **"the term "customer energy efficiency incentive" refers to an offering from an efficiency program administrator intended to encourage or motivate customers to reduce the total amount of energy they consume for a given level**

**of energy service provided, without compromising the quality or level of service. Resulting energy efficiency actions could be investments in energy-efficient technologies and practices and/or changes in customer behavior. The terms “motivate,” “encourage,” and “incent” may be used interchangeably.”** in the 2010 National Action Plan for Energy efficiency. The current program is not achieving its goals and the PA are begging us for natural gas savings because they cannot make their goals. We cannot help. Only lighting projects are proceeding.

The owners have been paying system benefits charges for upwards of 40 years. Recently the charge has increased significantly. It is their money they should have access to use it for energy improvements. Otherwise return it to them since they are not receiving any benefit.

My experience is owners, especially municipalities do not have the funds for this work and that is why their buildings are not energy efficient and have comfort issues. Private owners do not think in 5 to 10-year time frames and put off maintenance and repair as long as possible. They want to be green but cannot afford to proceed. In the past the incentives bridged that gap. Today the only those projects receiving Green Communities projects are proceeding. Green Communities uses existing conditions as the baseline. Ninety percent (90%) of my private owner projects have fallen through due to a lack of incentive funding. It is easier for the owners to pay the utility bills every year (operating budget) versus making the large capital investment and borrowing. I have shut down this business unless there is a funding source identified by the owner and a commitment to be green. I do no private work anymore that a referred by the PAs. Cannot close the projects. Currently we are developing a pilot project with DECAMM E-Team for District courts that is using CoFFEE grants, state capital, and operating funds. I have told them that the project will not qualify for any significant PA incentives, but we will find an incentive to satisfy Chapter 25A requirements as a Utility Project Expeditor.

In the spring of 2016 I submitted custom application for an all-electric small C & I 75,000 sqft. spec. office building built in 1984 for a Direct Installer. The building benchmarked as a poor performing building and had significant comfort issues due to old VAV boxes and new RTUs that required going on the roof to adjust schedules and operating set points. The comfort issue was the office building was too cold during the swing seasons and summer because there the reheat coils are not big enough to overcoming the over cooling at 55°F discharge air temperature and the fluorescent lighting had been upgraded from original T-12 to T-8 technologies. Normally the small C & I project received 70 to 80 % incentives for converting the electric mechanical or pneumatic VAV boxes to DDC and integrating the RTUs under an EMS supervisory controller that controlled the whole building. The PA would not even review my eQuest model because the Hours Out of Range (eQuest BEPU/BEPS reports) were too high. Most of these hours accrued during the swing season and summer. High hours out of range values suggests that space conditioning loads may not be adequately met in the model. Simply put the existing building is un-comfortable. But, the real problem is over cooling the actual problem. I have no idea how I can calibrate a model of an existing building that is un-comfortable and change the operating conditions to meet this requirement. This requirement was not communicated to the vendors until June 2017 and published on Mass Saves until August 2017. Holding a client's incentives hostage to a set of guidelines that are not published or even communicated to the TA vendors performing the work is unconscionable and criminal. The Hourly Simulation Guidelines are great for new building incentive

review but very difficult to follow for existing buildings. My energy model indicated that 300,000 kWh per year would be saved. The PA offered a \$14,400 prescriptive incentive on a \$200,000 project, this just does not incentivize building owners. Then telling the engineer that the potential savings are 25% of the calculated (75,000 kWh per year) based on the EMS Express Tool is insulting. We told the client that the schedules did not match the operation of the building. He corrected, and we saved 100,000 kWh in 5 months without touching anything else. The express tool is based on industry averages and does not account for individual building conditions. It is a very poor indicator of individual buildings potential. Benchmarking and engineering calculations are the only way a custom application should be evaluated.

When a PA Direct Install contractor is involved the customer expects a turnkey proposal. They usually have already completed lighting projects with the contractors with no project development cost. Lighting projects can be developed under that format because of the high closure rate and simple engineering. They expect the same on HVAC projects. I only get paid if the project is built. In the past I have been able to put together very simple documentation/eQuest models and the projects obtained 70% or greater commitment letters and the project has been built. The few times in the past when I have mentioned that a TA study co-financed by the PA the conversation has ended. End of led. If I generate an eQuest Model based on the Hourly Simulation Guidelines the project development cost become too large to justify the risk of the project not going forward. To access the 10's of thousands of these buildings the program will have to be changed.

The Pay for Performance program is completely impossible to participate in except for the simplest small projects usually resulting in incentives of less than \$500 that easily comply with Option A of IPMVP-2012. We make these applications to comply with Chapter 25A for the municipalities. The municipality collects the money one year to 18 months after the project is completed. Trying to sell a project based on the principal of receiving check 2 to 3 years after it starts just does not work. With the elimination of Option "C" Whole Bill Analysis the level of effort required to collect the data for the application can easily exceed the cost of the project. With National Grid they require one years of baseline data delaying the project by that timeline. Since most existing sites do not have sub metering or effective trend logging we must install meters, data loggers, or pay the control system maintenance contractor to setup the trend logs. The owners will not pay for this work and we cannot proceed with a poor closure rate. It is obvious that someone do not fully understand IPMVP-2012 and have developed egregious requirements or do not understand statistics. IPMVP does not require exact answers but has a complete set of statically criteria that meet the Acceptable Uncertainty of the finding. Recently I have an existing building commissioning project at a public elementary school funded by Green Communities. When I contacted the PA how to apply for gas savings under the P4P program and use the Utility Meter for data collection. The PA told me to install two utility grade gas meters (one each boiler) and develop a baseline by collecting one year of data. Then complete the project. Collect another years' worth of data and perform a weather adjustment. The school uses about 30,000 therms per year and has the potential of saving 7,500 therms. The Green Communities Grants need to be completed 7 - months after award. The PA informed us that the utility meter cannot be is because the school uses a small

amount of the natural gas for DHW and cooking and therefore does not comply with option B under the IPMVP -2012. These quantities of natural gas are minimal and the same from year to year (static factor). The following is a spreadsheet of the natural gas bills from an elementary school were the heating boilers and the DHW/cooking gas are on separate utility meters:

Annual Therms Heating Boilers	FY 2015	FY 2016	FY2017
July	0	0	0
August	0	110	0
September	0	0	0
October	121	0	0
November	2,409	2,552	2,750
December	6,450	6,610	9,767
January	9,828	8,047	14,142
February	15,730	11,237	13,061
March	15,380	11,129	12,601
April	11,290	8,085	12,573
May	3,855	5,981	2,589
June	28	1,676	1,740
<b>Total</b>	<b>65,091</b>	<b>55,427</b>	<b>69,223</b>

**Average Therms 63,247**

Annual Therms DHW & Kitchen	FY 2015	FY 2016	FY2017
July	100	36	90
August	62	57	55
September	130	107	71
October	118	108	114
November	118	123	129
December	153	123	134
January	119	121	116
February	105	110	119
March	132	100	106
April	110	130	125
May	108	103	107
June	103	124	127
<b>Total</b>	<b>1,358</b>	<b>1,242</b>	<b>1,293</b>

**Average Therms 1,298**  
**Percent of Heating 2.1%**  
**Building SQFT 94,020**  
  
**Btu/SQFT 68,650**

The September and June bills can be used to establish the monthly magnitude of consumption because most schools do not turn the heat on until Oct. This year some school have not turned the heat on until November. The reason for the two meters was because the DHW tap off the gas main was between the boilers. There is no reason the utility meter cannot be used since the project boundary is the whole building and the static factors can be accounted for. This project also meets B-1.2 Acceptable Uncertainty “savings are deemed to be statistically valid if they are large relative to the statistical variations (gas for DHW and cooking). Specifically, the savings need to be larger than twice the standard error of the baseline value.” What was requested was economically impractical, expensive with no funding source, and therefore we did not pursue this avenue of funding the project.

The only P4P project I have successfully applied for are schedule changes of constant volume system with true power moto kW readings and one reset control savings where the school had years of trend data. I had to submit excel spreadsheets with over 1 million lines of data and calculation to comply.

In 2015 I worked with a Direct Install Contractor to replace a RTU for the City of Woburn Police Station. We used a Green Communities Grant to finance the project. As a Direct Installer to complete the work without public bidding the project must obtain a Utility Incentive. The City was motivated to install the highest efficiency equipment possible. They have a standard of using Trane equipment for maintenance purposes. We priced a code legal unit and a Tier 1 product. Trane does not have a Tier 2 product. The project cost varied by \$2,600. The grant supported the Tier 1 RTU. We had two quandaries after the project. We are still not sure an Upstream incentive was paid and if the City received any benefit from the incentive. The next year we helped budget a project at one of the elementary school to replace the RTUs that have exceeded their useful service lives and are failing in service. We asked Trane to give the city a budget for Tier 1 replacements. When I asked Trane if the budget included the Upstream incentives or not they were perturbed and angry we would ask a question like that. But the school has very tight capital budgets and the incentive maybe the difference between yes and no. The project has not been approved as of now. When working with a private owner that \$2,600 difference would kill the high efficiency RTU since most owners only consider first cost.

I no longer do Technical Assistance work. The requirements imposed on our work and the review process are so onerous that it more than doubles the cost of the study. Just to fill the application for a study, requires us to perform an ASHRAE Level # 1 plus study, provide calculations, and write a report. This is a \$2,000 to \$3,000 cost with the hope that the project is funded. The Utilities rack us through the coals over our accuracy of this preliminary results and ask to look at scope the owner is not interested in, and question our assumption. These are reasons we are doing the study and those questions will be answered in the study. It is just not worth the effort to deal with the PAs. Life is too short for this aggravation. Also, the resulting level 3 studies are significantly cheaper without the incentive.

The utilities keep on breaking out pilot programs such as Small CI Variable Speed Drives with enhanced incentives and quick approval, and now small co-generation (35 kW). I wasted our time on the VSD program trying to develop projects that took too long to be approved and the enhanced incentives never came through. All the projects I was involved with never materialized. I went to the small co-generation presentation two weeks ago for a DI contractor. In the end they could not tell us how much

the incentive would be on the \$150,000 to \$200,000 projects and told us to open our client base to Tecogen for a finder's fee instead of our mark-up as Direct Installer. If we added the Direct Installer approved mark up the project costs it would not pass the BCR.

In the past we installed many boilers using the Prescriptive GasNetworks program. The incentive use to cover the incremental project cost of condensing technology verses standard technology. The incentive has not been adjusted in over ten (10) years. Today it only covers 10 to 15 % of the project cost. The cost of materials and installation have almost doubled. The same can be said for Prescriptive Energy Management Systems. \$300 per point just does not drive the project. These programs need to be reviewed and incentives adjusted for inflation.

While I do not do many lighting projects the PAs are heavily incentivizing Comprehensive Lighting Controls. These controls are multi-functional including scheduling and daylight harvesting. I have surveyed 10 plus schools and the new school in my home town has installed these expensive systems. This technology is not ready for prime time. I have not run into a system that worked or the operators could understand how to program and operate. The systems result little to no savings compared to simple occupancy sensor especially with LED lighting installed. Our middle school has both the Lighting Controls and occupancy sensor. I estimate that the Lighting Control system will save \$5,000 to \$10,000 per year in a 165,000 sqft. middle school above the savings with occupancy sensors and LED lighting. The engineer of record insisted that we install the system even though we instructed him not to chase LEEDS points at an estimated cost of \$300,000. The school did not have the maintenance budget or the qualified staff to maintain it. Later I found out that National Grid was paying an incentive to the Engineer of Record to design the system. He had included that incentive in his revenue stream. There was no way he was giving up that revenue. Today the town is paying debt service on a lighting control system that barely functions, has a simple payback longer than the time frame of the financing because of misguided incentive programs. The other day I surveyed a public school with T-12 lighting. I asked the school district electrician why they had T-12 lamps and where they purchased replacement lamps. They go to Home Depot which is simpler than upgrading. Obviously, this is a baseline for some people.

Sincerely,

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