



**TOWN OF ROCKY HILL
FACILITIES COMMITTEE MEETING MINUTES**

In order to comply with Connecticut General Statutes regarding minutes of meetings, the following will be used to record information during all public meetings that take place. An original must be submitted to the Town Clerk of Rocky Hill within 24 hours of the meeting being adjourned. Motions should be complete, showing the maker and second of the motion as well as how each member voted. Unanimous votes may be listed as unanimous.

NAME OF PUBLIC BOARD OR COMMISSION	Board of Education Facilities Committee
DATE MEETING AGENDA POSTED	September 4, 2008
LOCATION	Rocky Hill Town Hall Council Chambers
DATE OF MEETING	September 10, 2008
TIME MEETING STARTED	4:06 p.m.
PERSON PREPARING MEETING MINUTES	Jo-Anne Booth
VERBATIM NOTES TAKEN	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
AUDIO, VIDEO OR LIVE TRANSMISSION OF MEETING	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

MEMBERS PRESENT AT MEETING

1. Charles Wisnioski, Chairman	2. Nadine Bell
3. Also present: Superintendent Dr. Jeffrey Villar	4. William MacDonald (Chairman of Board of Education)
5. Town Manager Barbara Gilbert	6. Councilor Larrye deBear (left at 5:05 p.m.)
7. Councilor Phil Sylvestro	8. Councilor Frank Szeps (left at 5:06 p.m.)
9. Catherine Vargas (Board of Education)	10. Ken Biega (O & G Industries, Inc.)
11. Bill Leahy (Director of the Institute for Sustainable Energy at Eastern Connecticut State University)	12. Rich Cooke (Director of Facilities)

NUMBER REQUIRED FOR QUORUM 2 QUORUM PRESENT Yes No

TEXT MOTIONS AND RESULTS VOTES

1st MOTION Passed Failed Tabled

(No motions were made during this meeting.)

LINK TO WORKING NOTES (will be attached if available)

TIME MEETING ADJOURNED: 5:40 p.m.

TIME DELIVERED TO TOWN CLERK: _____.

Town of Rocky Hill
Board of Education
Facilities Committee Meeting Working Notes
September 10, 2008

A Facilities Committee meeting of the Rocky Hill Board of Education was held on Wednesday, September 10, 2008 in the Council Chambers of the Rocky Hill Town Hall.

Present were: Committee Chairman Charles Wisnioski and Committee Member/Board Secretary Nadine Bell. Also present were: Superintendent Dr. Jeffrey Villar, William MacDonald (Chairman of Board of Education), Catherine Vargas (Board of Education), Town Manager Barbara Gilbert, Councilor Larrye deBear (Left at 5:05 p.m.), Councilor Phil Sylvestro, Councilor Frank Szeps (Left at 5:06 p.m.), Rich Cooke (Director of Facilities), Ken Biega (O & G Industries, Inc.) and Bill Leahy (The Institute for Sustainable Energy at Eastern CT State University).

Those absent: Maria Mennella (Board of Education Facilities Committee).

1. **Discussion of School Construction Project**
2. **Discussion of Energy Efficiency with Bill Leahy from Eastern CT State University**

Bill Leahy said he was with Eastern CT State University and that one of his responsibilities at the Institute for Sustainable Energy is to provide outreach to communities on legislation that was passed in 2007. This requires that new buildings be built to LEED Silver or the equivalent standards if they are funded after January 1, 2009. He was involved in this process in a couple of different ways. One of these ways is that he was involved in working with the Energy Committee, the Environment Committee and the Education Committee to craft the legislation. After they were done with this, they had to write the legislation to enforce this. These Regulations are in review now and they should probably be formalized within the next month. Along with this, there is the design manual which spells out how to comply. He told everyone that he was going to do a PowerPoint presentation at this meeting today. This has been used quite frequently and he has talked so far this year to forty school systems that are in the process of planning schools and school projects. He has also been working with Rich Cooke because he is developing a course for school maintenance personnel on how to maintain these schools and the existing schools once they are built. There are a group of people from this town along with some of the surrounding towns and a group of towns in Fairfield County who are going through this pilot program now. He explained that he and Rich Cooke are also doing some benchmarking which he would talk about later in this meeting.

At this point, Bill Leahy said he would give the PowerPoint presentation (A copy of this is attached to these Working Notes). Before this was done, he confirmed what this town is in the process of doing. Chairman Charles Wisnioski said this town has a referendum proposal to build a new K-5 building as well as the "Build as New" renovation of two other K-5 elementary structures. Bill Leahy said this was the educational specification that he saw.

Bill Leahy started his PowerPoint presentation. He referred to the modification of CT General Statute 16a-38k. This Statute directs how buildings are built and it enhances the

building code for a specific group of buildings. Two years ago, this Statute was changed and all future state buildings have to be built to these standards. This was amended again in 2007 to include projects that the state gave significant money towards. There are a set of thresholds. For new schools of \$5,000,000, the state will contribute \$2,000,000 of the construction cost or more. If there is a renovation then as long as the state is giving \$2,000,000 towards it, it can be a renovation of \$2,000,000. He explained the reason for these Statutes and he referred the members of this Committee to the blue report that he gave them. He also explained that part of the reason the Institute for Sustainable Energy was formed in 2001 was that the Board of Trustees of the State University system and the Legislature saw that there was a need to have an unbiased source of information to deal with how laws and policies could be formed that would really help the citizens of this state.

Bill Leahy said they looked at over 350 of the 1,026 schools in Connecticut for the study and they also looked at all of the schools based on the databases that the Department of Education has. Some of the things found were that 90% of the schools in this state are over 30 years old, which is old for technology and especially for technology with regards to combustion, insulation, control, lighting and insulation. A more significant item they uncovered when looking further at the data was that 70% of the schools in this state were built during 1950 to 1978 which was the Golden Age of bad schools. This was a time when the baby boomers put a lot of pressure on municipalities to get schools up quickly when there wasn't a lot of extra money to work with. A huge number of schools were built that were predominately single story and had the following things: glass wall construction; minimal insulation, if any; no vapor barriers in the wall; large glass areas that exposed size no matter what direction they were facing in; inefficient heating systems with very inadequate ventilation; very poor controls; inadequate use of natural light; and many of these schools, if not all, are facing problems of indoor air quality. If a school is built on slab with no insulation then this is a great place for mold being creating, especially in the summertime.

There is software that is available through the EPA which is called Portfolio Manager which was developed by the federal government to assist real estate companies that are managing large numbers of buildings. This is a way of benchmarking the buildings so that it can be identified as to which buildings are more or less efficient than other ones. This allows all of the schools to be looked at and compared side by side so it can be determined which schools are efficient and which aren't. This also allows people to compare their schools to other schools within the country so that it can be seen if the schools within people's communities are efficient or inefficient. Of the 350 schools that were looked at in this study and benchmarked through Portfolio Manager and EPA, the average score was 26. The score is based on a 1 to 100 score level. If a school receives a score of 50 then it means it is average. This is on a database of tens of thousands of schools. If a school receives a score of 75, then EPA will give a bronze plaque to it which states it is an ENERGY STAR. There really is a problem in this state with the schools.

This data was provided to the Legislature in a Special Session in the summer of 2007 and it reacted to it by saying that it is time to start to raise the standards. Communities got a "pot" of money to build the schools and the mode of operation was usually to take this money and build as much as they could or to fix the school as best as they could but they might not have focused on indoor air quality or energy which are two items that will drive the operating budgets going forward. An average school lasts approximately 50 years in this state and the first cost of making a building healthy or efficient is money well spent when people will have to live with

this school for 40 or 50 years with students in it. It is important to look at life-cycle costs, as well as first costs, for any building project that is done on a state level or municipal level.

Bill Leahy said a high performance school has three main characteristics and they like to throw a fourth one in also. One of these characteristics is that any good municipal building or state building needs to be a productive environment and it has to do what it is supposed to do. A school has to be a good learning environment which means it has to be built in a way that the learning process works very well. The second characteristic is that it needs to be healthy for its occupants and it shouldn't cause people ill health effects as a result of the way it is operated or built. The third characteristic is that it needs to be a cost effective investment for the community. The fourth characteristic is these schools want to be used as learning laboratories for technology that is out in the marketplace and available for people to use. An example of this is putting solar panels on schools and as a result people will consider this for their homes and for their businesses. The schools and the state buildings as learning laboratories is an important concept.

Poor indoor air quality makes people, students and teachers sick. This increases absenteeism and it impacts how well they learn when they are in class. This decreases student performance. With regards to performance testing, people go "through some incredible gymnastics" to improve their scores 2% to 3% to 4% from one year to the next. New programs and tutors, etc. are added in order to do this. Improving the health of a school so that absenteeism is reduced for students and teachers is a way of improving performance of the student body. A student who misses class is almost never able to make up with they miss by not being there. If someone is chronically ill because they are having respiratory distress due to environmental conditions in the building then this will affect their performance. As an individual they suffer and as a school system it suffers because it affects the scores and the ability to have delivered what is supposed to be delivered.

Bill Leahy showed everyone a slide of what a typical classroom looks like in a typical 1960 school. He showed what the problems are. He explained that there are conditions in areas there that can't be seen behind materials. He grew up in a school in Milford, CT that had been built in 1952 and there was a time when the schools were tried to be buttoned up because of the energy crisis in the 1980s. Some of the glass walls were taken out and studded walls were put against the glass. Insulation was then put in the walls and this was sheetrocked over. He noticed a couple of years ago that all of this was being ripped down because when the sheetrock was pulled off, the fiberglass was not yellow anymore but it was black. Also, most of the buildings that were built in this time period had flat roofs. If the roof is leaking for awhile, drips come through the roof but they don't necessarily fall straight down. This is another source of mold and other things that can impact the building and the people in it.

Bill Leahy then showed a slide of a new classroom. If this isn't designed properly though, there can be the same problems in this room as there are in the older ones. He referred to the carpeting and he said if there are certain compounds that are in new carpeting that are not specified to be in it then this has an impact on people with respiratory distress. The same thing is true for glues that are used in lowest bid furniture that might be selected. A very common finding in modular furniture is formaldehyde in glue which can also affect students in the class over time. Cleaning solvents that are being used as the school is in session can also affect students. If the labels on these state for them not to be used in small confined areas with poor ventilation then it probably means there is something in there that people shouldn't be breathing. The selecting of cleaners and cleaning solvents in the school has an impact as well as the adhesives, paint, painting supplies and thinners that are used in construction. Non-VOC (Volatile Organic Compounds)

paints and carpeting can be bought and that is what should be looked for. Furniture that does not have formaldehydes in it, non-toxic paints and non-toxic adhesives should also be looked for. The biggest thing is adequate ventilation. He told everyone when they are specifying the schools that according to the Statutes it states that there must be an indoor air quality plan. The plan is that these problems have been eliminated so as a result these conditions don't exist in the schools.

Bill Leahy referred to a productive environment. He spoke about lighting with natural light. Full spectrum lighting allows people to see detail that they normally can't see under artificial light especially if they have some reading issues. He gave an example of a student who is sitting in class learning to add, working with a pencil, etc. under old fluorescent lights with bad reflectors on them and there is a real issue with regards to how this impacts their ability to learn or read. Since 1999, scientific studies have been done in six different states to see that this is indeed a fact. These studies were done initially for the California Board of Education and Energy Commission. It was found that students who were in rooms with full spectrum natural lighting are able to read faster and retain more than if they are in rooms that are just fluorescently lit. This is going to be a chore for the Architects with regards to how the light gets in the room. There are a lot of new innovations available such as light shelves that allow windows to be shaded but bounce the light up onto the ceiling so that the room is illuminated. There are also things called light shafts that allow light to be brought in from the top and dropped down into the classroom. He showed a slide of a classroom in California that had a light shaft which is basically a skylight that has florescent dimmable lamps inside it. He explained some more about this. By installing this technology, this particular school in California was able to reduce their lighting costs by 80%. The use of natural light is something that certainly needs to be considered.

Bill Leahy said the question always comes up as to if this is going to cost a lot of money. The reality is that it shouldn't cost a lot of money if a good job is done developing the specification ahead of time like Rocky Hill has done. If a school is being built and the building is partly designed and then it is decided all of a sudden to make it green or if the design documents have already been gotten into then more money will have to be paid because things will be changed. If at the very onset though, a good integrated design process is used with all of the options being considered that should be considered from the start and they are put in the educational specification then the Architect and the builder will design to this. The town will then get the building for a price that is very reasonable. In New Jersey, this law was passed five years ago and all schools have been built to LEED Silver. In the initial years, there was a 3% to 5% added cost by requiring the building to be built green. Today, it is 0% to 2% with the 2% being primarily how much time is being spent on the front end in design because the building is required to be modeled and people are trying things to find out what the best combination of technologies are to get the best building. At the beginning, it is going to cost a little more in the design end but in the long run this money will be gotten back in two to three years. He referred to an article that he had looked at and he said there are 20% to 50% actual savings that people are getting. Three years ago, New Haven decided that it was going to do something with all 47 of their schools. They tore down four of these schools because there was no redeeming value at all in those buildings. Some of the others they rebuilt and he spoke about one of the schools that they did this to. He explained that there is very fast payback and the key is to use life-cycle costs. A decision is going to be made as to what this is going to cost to do, when money will be gotten back, how long the building is going to be used and if this is a good investment for the

community. If this is used as the guideline, then it will be found that there will be a good building that people will be happy with.

Bill Leahy gave a quick guideline for life-cycle costs and showed a slide with a picture of two light bulbs. One of these lasts 1,000 hours and costs \$.50 and the other one lasts 10,000 hours and costs approximately \$2.00 with the ENERGY STAR and Connecticut Energy Efficiency Fund subsidy. The light bulb that lasts 1,000 hours is 60 watts and the one that lasts 10,000 hours is 14 watts. For the life-cycle cost, over the life of one \$2.00 light bulb, \$60 will be saved. This kind of math needs to be used when people are trying to decide if they want to use geothermal or a boiler that uses oil or if T5 lighting wants to be used with dimmable control or if T8 lighting with standard switches want to be used. These are all decisions that are going to be made going forward and it has to be thought of as to what the long term cost of this will be and not the first cost only.

Bill Leahy said when a green school is built that instead of it costing \$30,000,000 maybe it will cost \$32,000,000 or \$33,000,000 but over the life of the school, tens of millions of dollars will be saved. This money will be given back to the community over the time that the school is probably going to be bonded. This is one of the things that wants to be used as a factor for making decisions.

Bill Leahy went over a study that was done in Washington by Greg Kats with regards to financial benefits of green schools. Greg Kats tried to figure out if every dollar is gotten back or not for every dollar that is spent on greening the school. Energy is the “no-brainer”. For every three dollars that is spent per square foot to make the building green, nine dollars is gotten back over the life of the measures that are being installed. This would be fifteen years for a light fixture and twenty-five years for a boiler. There is money being paid now for emission reductions. There are water and wastewater sewer bills. By using some of the new technology, there is water to be saved. For health costs, there would be a significant reduction if it was to be figured out on what the impact would be on health insurance. There is a great study in Greg Kats’ book where there were two 1960 vintage schools in South Carolina that were poorly built. A new school was decided to be built to replace the two older schools. This was built using the LEED Silver Standard. The test scores for the children in this building took a leap from those in the two vintage schools and leveled out at a much higher level. Teachers and students were happier and the new building was a nicer building to be in as well as a healthier building. It was a very efficient building from an energy viewpoint. This is something to consider. He referred to the money being spent on educational programs to gain two, three or four extra points when standard testing is being done and he said that nothing wants to be given away when a building is being built that could come out of building a better building.

Bill Leahy referred to the twelve required points that Connecticut has at this time. There are seven required points if just standard LEED Silver is done. Connecticut already had some things on the books that were laws as well as a reason for wanting to pass this law. Part of the reason was the rising cost of energy and the impact on the communities that had to pay the energy bills. When the Regulations were built for this particular law, there were twelve required things that were come up with to get state funding. The building needs to be or have the following: commissioned by a third party independent commissioning agent working for the community; integrated design process; 21% better (more efficient) than code; an indoor air quality management plan; water efficiency; recycling of materials; erosion/sedimentation control (which is already a law); sustainable site development; no smoking policy (which is already a

law); pest management control (which is already a law); CFC refrigerant ban (which is already a law); and metering of buildings (for a campus setting with multiple buildings). He explained in more detail each of these twelve required points as he mentioned them.

Bill Leahy went over the set of standards for high performance schools. He said LEED does not have to be used. This standard was created by the United States Green Building Council, which is a non-profit organization made up of designers, engineers, energy people and environmental people. There is a Chapter here in this state (The Connecticut Green Building Council). There is a guideline to go through with regards to what an efficient building is. LEED for schools is 37 points now on the new LEED for school checklist. There are 78 points total and they can't all be used because some substitute for one another. As the building is designed, people select from the list those things that make the building the way they want it to be. If this adds up to enough points, then they get the Silver rating. The level ratings are Standard, Silver, Gold and Platinum. This state requires the Silver level. Other systems can be used. The Collaborative for High Performance Schools was designed in California and is being used in Massachusetts. This basically was a group of people from LEED and the United States Green Building Council who only wanted to work with schools. They created the Collaborative for High Performance Schools Standard which is LEED. Collaborative for High Performance Schools have great manuals for building committees. Smart Schools is the Department of Energy. Green Globes is the standard out of Canada and within the law, this is an acceptable standard to use. There is the Sustainable Buildings Industry Council out of Washington. All of these standards are pretty much the same. They ask for the site to be evaluated and the indoor air quality and environment to be looked at as well as energy. They ask for water to be looked at as well as other things associated with the building of the school. ASHRAE which is the typical standard used for the building code is in the process of developing a Standard ASHRAE 189. This is associated with IECC (International Energy Conservation Code). This state uses ASHRAE 90.1 as the building code. The 2004 version applies to schools. IECC should be updating to the 2006 version this fall. This is the standard the engineer should be designing to as the base. This town will then be building something that is more efficient than the code.

Bill Leahy referred to a partial list of things to do to make a school energy efficient and green. There is the advanced/integrated design; solar orientation and daylighting (which is good from the energy viewpoint as well as educational viewpoint); controls to keep lights and HVAC off when not needed; ENERGY STAR appliances; superior insulation to cut heating and cooling expenses; utilization of clean renewable energy systems (i.e. photovoltaics and geothermal); heat recovery to reduce overall heating costs; natural ventilation (i.e. operable windows) and superior indoor quality; water and sewer cost reductions; use of environmentally friendly materials; use of life-cycle costs; and making sure the building is commissioned so that people get what they paid for. These are the ways a building is made green. As he was mentioning each of these things, he gave more detail on them.

Bill Leahy mentioned how Rich Cooke had shared with him this town's Board of Education's educational specifications. Bill Leahy said he was happy to find that this town had a lot of things in the educational specifications already that he had just mentioned which is great but not typical. In the educational specifications, they state that advanced commissioning wants to be done. The use of light shelves and other types of passive solar daylighting are mentioned in them also as well as the passive dual technology control which are motion sensors. These educational specifications include a very energy efficient design with VAV (Variable Air Volume) which allows each room to function based on what its needs are as opposed to having a wing of a

building be a zone. There is also DDC (Direct Digital Control) in these educational specifications. He explained what this is. With DDC for the lights and the HVAC, schedules can be put in. The code states that there has to be the switching ability to go to 50% dim and with DDC, the time can be programmed in when all of the lights will go to this amount. In Rocky Hill's educational specifications there are CO2 sensors and a demand ventilation system which determines if anybody is in the room to determine if fresh air is needed. Also in the educational specifications is the utilization of clean renewable energy systems (i.e. geothermal); heat recovery on the heating units; VFDs (Variable Frequency Drive) on fans; boilers that have Dual Fuel capability (which is a very good thing); summer domestic hot water systems; low E glass in the windows; and reduced maintenance costs through life-cycle analysis.

At this point, Chairman Charles Wisnioski said he wanted to ask a question that he thought the public would want to hear. He said Mike Sorano, the Architect from Friar Associates, was not present at this meeting. Chairman Charles Wisnioski referred to this town building a new school which has been designed with fixed windows and a central HVAC system. He told Bill Leahy that he thought everyone would want to hear his opinions about operable windows and the cost. Chairman Charles Wisnioski said Mike Sorano expressed that if someone opens some windows in one part of the building that it may cause havoc with the system in another part. The idea is that the other two schools would have an equal indoor environment as this new school would. Air conditioning is being planned on being added to the existing two schools that don't have it. Chairman Charles Wisnioski wanted to hear a little discussion on this and he thought that the public did too. He did mention that this was a little unfair because of the fact that Mike Sorano was not here.

Bill Leahy said there are two sides to this. When there are fixed windows, the environment can be controlled because it has to be controlled because there is no place for people to open windows. By having DDC, CO2 sensing and variable air volume, it does mean that the space is being controlled. He said on the other hand that most people like fresh air. If there is variable air volume, it can be made so that the person opening their room is not affecting the person in the next room. This has to do with the level of control that is put in the building. He explained that they have dormitories on the campus of Eastern CT State University so that when the building is open, the VAV box shuts down so that part of the building being opened is not affecting the rest of the building.

At this point, Town Manager Barbara Gilbert explained why Mike Sorano was not at this evening's meeting. She said that he had another business commitment which she and Rich Cooke recommended to him that he keep after they had a conversation. She didn't want anyone to think that Mike Sorano was present. She mentioned that Ken Biega from O & G Industries, Inc. was present at this meeting.

Rich Cooke thought that if there is going to be 100% air conditioning in a building which he said seems to be the desire of parents and students, then operable windows would not be wanted because of the latent load. He said 90% of the cooling load is latent heat removal and not sensible heat. Chairman Charles Wisnioski said air conditioning is in the educational specifications. Bill Leahy said it is true that if by opening a window, space is being overheated then the space will have to be re-cooled when somebody closes the window. His feeling is that it seems they have quite a bit of control in the building. He is not a fan of closed system buildings because people like different conditions. When a building is 100% air conditioned then it is assumed that everybody wants the same condition at the same time. He thought there will be spaces where operable windows will be the preference for the occupants but on the other hand

there is a case to be made for controlling the whole environment. There are a lot of times when the building will operate with zero energy and it won't need air conditioning but it just needs fresh air. If air conditioning is put in, mechanical systems will be required to be used to meet loads. He said the question is how much of the year no system will be needed if a window is opened.

Town Manager Barbara Gilbert told Bill Leahy that at several meetings, he has been quoted as stating that he doesn't believe air conditioning is needed in schools and that he does not recommend it. Town Manager Barbara Gilbert asked Bill Leahy if this is correct. Bill Leahy thinks there are areas of a school where air conditioning is needed (i.e. internal areas, Special Needs areas, etc.). He thought good air conditioning, good window treatment, high E windows, good ventilation and humidity control are less expensive to operate than air conditioning the building. Everything has to do with the modeling and which way the building faces as well as how much sunlight there is and which areas are crowded with people so that the space needs to be conditioned. When the temperature outside is over 45 or 50 degrees and under 75 or 80 degrees, nothing is needed if a window can be opened. When a building is sealed though, forced ventilation is required to be used because indoor air requirements have to be met. He told everyone about a new early childhood development center that was just built. Town Manager Barbara Gilbert asked if this is air conditioned. Bill Leahy said certain zones are air conditioned but not the whole building. He told everyone that if their choice is to put air conditioning in then a forced ventilation system will have to be used all of the time if there are no operable windows. If air conditioning is put in as well as the operable windows then it will be found out that the chillers don't have to be used for a significant amount of time.

Under new construction, Town Manager Barbara Gilbert said this town has typically used inoperable windows. This has been done mainly because they don't want heat going out of the window. They have found in certain instances that instead of having the heat reduced, people just open a window. It is more for heat conservation than anything else as to why they have opted to go with inoperable windows. Bill Leahy said if people are opening windows in the heating zone then this is a telltale sign that something else is wrong. He said they have had this even in the brand new buildings at Eastern CT State University.

Rich Cooke said it has been his experience over the years that when operable windows are introduced into a building that is fully conditioned even with DDC control, motion sensors and occupancy schedules, etc., it is problematic as well as more costly in operational costs. There are a lot of variables to consider. Bill Leahy said this probably has to be modeled both ways and a number of opinions have to be received.

Peter Maxwell (a resident of Rocky Hill) said in talking with David Wedge at the Bureau of School Facilities that he advised him that the vast majority of new school construction is not air conditioned with the exception of administrative offices and the auditorium. Peter Maxwell said he shared this with the Town Council. Through having a properly designed building where there is low E glass, ventilation, good insulation and orientation, etc., he wondered if the vast majority of students who feel uncomfortable in schools this town has and who think they need air conditioning would be surprised to find that a school is comfortable without it. Bill Leahy said when air conditioning is thought about and without an extended school year that typically there are only a few days a year where there might be a condition outside that drives the inside where people think air conditioning is the only way out. He thought dehumidification solves part of this. From a humidity viewpoint, especially for the single story schools, they tend to be

relatively moist on the inside. If the school is humidity controlled then there probably wouldn't be a lot of days where air conditioning is required. A very large system would be put in for air conditioning and he guessed if this is what the taxpayers are asking for then it's okay but his concern is how much it is going to be used. If there is a good school then it shouldn't require this. Most of the new schools are looking at reflective roofs and the insulation in the walls is much more superior. Vapor treatments for the foundations are much better than they used to be so the moisture levels are being cut there. He gave a few more examples and he said there really aren't the air conditioning loads. He told everyone at the meeting that all of them went to schools that weren't air conditioned. It seems there is this requirement now but he didn't know if this is more a function of the fact that there are all these old schools out there that are really worse case condition for moisture, flat roofs and poor windows, etc.

Chairman Charles Wisnioski asked Bill Leahy if he had any information on the difference in capital expenditures for schools that are either all air conditioned, not air conditioned at all or some hybrid of them. Chairman Charles Wisnioski also asked Bill Leahy if he had any operating historical data or if the software that he spoke about modeled a school with all air conditioning, no air conditioning or a hybrid with different types of fuels. Bill Leahy said the Architect either has this modeling software or he can contract this as part of what is being done. Bill Leahy said this is the reason for the integrated design which means that the school has to be modeled and the two or three alternatives have to be compared. This will tell everyone what the cost is. He said there probably is data out there but the best way to do this now is to put this in the educational specifications and to have it as an option that has to be evaluated. Modeling is required when the educational specifications are complete, the Architect is hired and the building is ready to be designed. At this point, it is known what the land is and what the footprint is going to be. These are the things that will be modeled. Whether the building is multiple story, two story or single story as well as how it is oriented will affect the energy use which is very specific to the site.

Chairman Charles Wisnioski said this town has two school buildings of which their structure is known about as well as their location. There is a schematic for referendum purposes and an Architect will be selected that may be the same one that there is now. In the summer, the schools are used for sports, youth activities and summer school, etc. so the schools are in use 364 days out of the year and not 184 days. He referred to air conditioning and he said Superintendent Dr. Jeffrey Villar said that asthma is more prevalent than it was before. Chairman Charles Wisnioski said everyone has been in buildings where the south side is too hot and the north side is too cold. There are some advocates that say there has to be air conditioning and others say that it can't be afforded. He told Bill Leahy that part of the reason he is here this evening is to help the community think about the issue and he didn't know what the Resolution will be. Chairman Charles Wisnioski said the present estimate for a referendum amount includes three buildings with full central air. Bill Leahy asked Chairman Charles Wisnioski if there was an idea as to what the incremental cost would be to air condition or not to air condition. Chairman Charles Wisnioski asked Rich Cooke if he or Ken Biega knew what this would be. Rich Cooke said he didn't know what the cost is but that Mike Sorano from Friar Associates had pointed out that the incremental cost is minimal. Rich Cooke explained what would have to be put in. The only difference would be the upstart cost of the air conditioning equipment (coils and compressors). It does also cost more to operate a mechanically cooled system than it would cost without air conditioning but the building would be much more stable and the temperatures would be comfortable.

Ken Biega, O & G Industries, Inc., said he was the Construction Manager. He told Bill Leahy that one of the schools looking to be done is geothermal. For the other schools, they are talking about having renovation projects done to them. Ken Biega referred to what Rich Cooke had said which is that if the duct work is going to be redone then by not going with air conditioning, the duct work size can be reduced and a little will be saved on this cost and the piping cost. If this school is going to be used more in the summer, then people might question why air conditioning wasn't done if people had the chance to do that. This is the case especially if there is going to be "Renovate as New" with the state because then there is better reimbursement. He said if renovation is good for thirty years then he asked what would be recommended in a situation like that knowing what is going to happen fifteen years or twenty years from now. Bill Leahy said that geothermal is a "no-brainer" because the water can almost be used direct. He thought the added cost in the duct work is very minimal. He said it would be nice to know what the hard number is versus the whole project number less the reimbursement because it may be worth it. His concern is that when this is coupled with a building that has inoperable windows then it is going to be used. Chances are that there is going to be a higher electric bill with a building that has full air conditioning. This is the investment that is made.

Ken Biega said a lot of sunlight coming into some classrooms would be reduced with the low E windows but for some of the classrooms the sun will just beat in there and something will be needed to cool those rooms off. He told Chairman Charles Wisnioski that this is almost looking at what is going to be done in different areas in different situations. By doing a VAV, the whole building won't be cooled but this will be isolated. Chairman Charles Wisnioski thought that VAV should be explained. Bill Leahy said this is variable air volume. Chairman Charles Wisnioski said this means there is a unit under control of the Facilities Department that can be adjusted or programmed so that it doesn't let a teacher or sixth grader leave windows open all night when the heat is on. He asked if this is something that can be controlled. Bill Leahy explained what the VAV function is. He said with this, there is a better job of control. He gave an example of having air conditioning but not using it all of the time but still doing it because there are some places that require air conditioning and some that don't and he said there is the question of how that load is met. If a large chiller is put in and this is sized for 100% cooling then there will be a building that has a partial cooling load but a big chiller that has been designed for a large chilling load. He gave an example of a school in a neighboring town that has a fully air conditioned intermediate school and he explained some more about this. He then referred to another school that has a big chiller. He said the problem is that some of the time only a little bit of chilling is needed. It has to be made sure that the engineers sharpen their pencils to say how they are meeting part load conditions versus full load conditions. In the past with older schools, packaged units are dropped in here or there. For new buildings, when 100% air conditioning is put in, there still is the need to bring this on in increments. There is this same problem with boilers and he explained a little more about this. He said the modeling is making sure what the most optimal system is to use for the heating load and cooling load that there is. Equipment is then matched to make sure that it meets the load of the building most of the time and it is still capable in the worse case condition. He said O & G Industries, Inc. certainly has experience in this. He explained that they are here to help but unfortunately building committees and Architects don't always follow those rules.

Chairman Charles Wisnioski said there were a lot of Board of Education members present who might have questions as well as the Councilors. He told everyone that Phil Sylvestro is a Councilor who is on the Government Operations Committee. Councilor Phil Sylvestro told Bill Leahy that he could attest to the beginning of his presentation relative to the age of many of the

buildings in Connecticut and to the problems that he described at the beginning of his presentation. Councilor Phil Sylvestro said he had started out in a building that had been constructed in 1957 and he went to a building that was constructed in 1971. He said these buildings were "God awful". He referred to the whole thing about air conditioning and air quality being something that he wanted to speak to because he lived with it for 35 years and he was in contact with teachers around the state who lived with it for the years that they were involved with public education. He told people that he would keep an open mind on this and the LEED certified buildings are something that he is not personally familiar with. If the voters approve of what is being put forward to them as a question in November then this town will get a chance to find this out. This town will end up with a Construction Manager and Architects that will have a good deal of experience. The town's qualification for these individuals who will ultimately be selected is that they will have a lot of expertise in these areas. He looks forward to visiting and speaking with the people who actually work in these buildings that are called LEED certified with regards to the question of air conditioning and how much of it there should be, etc. He said there was a lot of discussion about this now and this is in a vacuum because this town doesn't have a project yet. The voters will tell the town about this in November. He said it is about air quality more so than it is about comfort. He told Bill Leahy that he appreciated him coming this afternoon to this meeting. Councilor Phil Sylvestro has been involved in several of the building projects in this town including the Town Hall. He hopes to be involved with the upcoming project assuming that the voters approve it. He said his interest is the classroom, the children and what goes on in those particular classrooms and that is why he is interested in visiting one or more of these LEED buildings and speaking specifically with individuals who work in them, particularly the classroom teachers. He is interested in what these individuals will tell him about the need for air conditioning or perhaps for no need for it. Bill Leahy said being LEED certified does not preclude having air conditioning and there can certainly be air conditioning. Councilor Phil Sylvestro said it became pretty clear to him that at least partial air conditioning would be at the very least what would happen in many of these buildings and in particular in the classrooms. He thought that the operational costs are not necessarily a big deal with the ability to turn things off and on but he is concerned about the classrooms more than any other place.

William MacDonald said he had a quick comment to make. He thanked Bill Leahy for his presentation today and he said he attended the CBIA Conference where he had spoken with one of many professionals in this area. William MacDonald said for himself and for many others that the high performance building will happen in Rocky Hill assuming the referendum gets passed. He also thanked Bill Leahy for his positive comments on the educational specifications. A lot of time was given to these by the Board of Education, Friar Associates and O & G Industries, Inc. with regards to developing these and working together on them which he felt was time well spent. With regards to the air conditioning, it will have to be seen overall where the referendum goes but William MacDonald equated this to the Town Hall. When the Town Hall building was built, he thought it was unconscionable to think that a building like this would be built without air conditioning but there has been a debate that took forty minutes with regards to whether children should be put in a room with no air conditioning and fixed windows. He said it was illogical to him. He referred to the many children who have asthma, children being sent to schools with water bottles because it is too hot and with schools being shut down because a classroom reached 108 degrees. This town does not have the luxury of building all new schools. This town does have the necessity of making sure that there is a learning environment that is both conducive for the teachers and administrators in the school as well as for the learning of the

children. He would have a hard time believing that air conditioning is not needed in any school. He said this is his personal opinion.

Chairman Charles Wisnioski told Bill Leahy that everyone appreciated the fact that he did come to this meeting and that they have a greater appreciation with the fact that he and Rich Cooke as well as the town are making an effort to reduce its costs for energy no matter what happens with the referendum. From listening to Mike Sorano with regards to the light shelves, etc., there is a lot that this town has been doing and there is a lot it can do. Chairman Charles Wisnioski knew the public is concerned about the town spending a lot of money and that it just sits around and thinks of ways to do this but he said this is not the case. The people who clean the schools, control the air and run the schools are not "dopes". They work hard and they go on their own time with the intent of taking the actual measurement of what is happening not just in this town but other towns in order to learn from it in an attempt to deliver services at less cost. He said there are lots of ways to say that this is just being done because it is someone else's money or those people don't know what they are doing. This is hugely complicated and hugely constrained by the process that is gone through. He hoped through Mike Sorano and Ken Biega, etc. that the most likely thing to be approved by the public will be come up with. The town may go through this a couple of times and it may be cutting things out (i.e. air conditioning). This is just part of the process to show the public that this is being worked on with a reasonable sense of responsibility and the voters will tell the town what it wants.

Rich Cooke referred to what Councilor Phil Sylvestro as well as other people had mentioned about indoor air quality. Rich Cooke referred to the inoperable windows and he thought an argument could be made that the indoor air quality could be enhanced with inoperable windows better than if there are operable windows because 100% of the outside air is being controlled and 100% of the outside air that comes in is being filtered.

Chairman Charles Wisnioski said the Board of Education did not vote on final educational specifications. It is working on this with all of the consultants (O & G Industries, Inc., and Friar Associates) on the idea of high performance schools. This will continue to be discussed. He is not sure what the final outcome will be. The public wants to know how much it will cost to run the schools. This is a consideration of health, performance by students and faculty and the ability to afford this. This will continue to be looked at and he didn't know the outcome.

This meeting was adjourned at 5:40 p.m.

Respectfully submitted,

Jo-Anne Booth

Accepted by: _____ Date: _____