PA10-156

HB5164

Higher Edu.	169-171	3
House	3650-3662	13
Program Rev.	253-261, 262, 266, 269, 311-312, 374, 375, 428-429, (432-444), 445-448, 451, 453-463,	49
Senate	4118, 4125-4127	4
		69

H – 1084

CONNECTICUT
GENERAL ASSEMBLY
HOUSE

PROCEEDINGS
2010

VOL.53
PART 12
3573– 3922

Those absent and not voting 12

DEPUTY SPEAKER ORANGE:

The Bill passes in concurrence with the Senate.

Will the Clerk please call Calendar Number 94.

THE CLERK:

On Page 34, Calendar 94, Substitute for House Bill Number 5164, AN ACT IMPLEMENTING THE RECOMMENDATION OF THE PROGRAM REVIEW AND INVESTIGATIONS COMMITTEE CONCERNING THE ALIGNMENT OF POSTSECONDARY EDUCATION AND EMPLOYMENT IN THE GREEN INDUSTRY, favorable report of the Committee on Education.

DEPUTY SPEAKER ORANGE:

The distinguished Dean of the House, Representative Mushinsky. You have the floor, ma'am.

REP. MUSHINSKY (85th):

Good afternoon, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Good afternoon.

REP. MUSHINSKY (85th):

Thank you. I move acceptance of the joint committee's favorable report and passage of the

bill.

DEPUTY SPEAKER ORANGE:

The question is acceptance of the joint committee's favorable report and passage of the bill. Will you remark?

Representative Mushinsky.

REP. MUSHINSKY (85th):

Thank you, Madam Speaker. The Clerk has LCO 4502. The Clerk please call and may I be allowed to summarize.

DEPUTY SPEAKER ORANGE:

Will the Clerk please call LCO Number 4502, which will be designated House Amendment Schedule "A."

THE CLERK:

LCO Number 4502, House "A", offered by Representative Mushinsky.

DEPUTY SPEAKER ORANGE:

The Representative seeks leave of the Chamber to summarize the amendment. Is there objection to summarization? Is there objection? Hearing none, Representative Mushinsky.

REP. MUSHINSKY (85th):

Thank you, Madam Speaker. This Amendment adds

a standard definition of green jobs and green technology. This definition is also used in other pending legislation that we will be dealing with before May 3rd, 5th.

I move adoption of the amendment.

DEPUTY SPEAKER ORANGE:

The question before the Chamber is adoption of House Amendment Schedule "A."

Will you remark on the amendment? Will you remark on the amendment? Will you remark further on the amendment?

Representative Mushinsky.

REP. MUSHINSKY (85th):

I did summarize the amendment, Madam Speaker. I urge adoption.

DEPUTY SPEAKER ORANGE:

The question is on adoption. Will you remark further on the amendment before us? Representative Sawyer of the 55th.

REP. SAWYER (55th):

Through you, Madam Speaker, a question to the Chairwoman.

DEPUTY SPEAKER ORANGE:

Please proceed, ma'am.

REP. SAWYER (55th):

Thank you, ma'am. In looking at Lines 17, 18, and 19 where the discussion of green jobs definition is, it throws it to the U.S. Bureau of Labor and Statistics and any code identified as green jobs by the Labor Department, the Department of Economic and Community Development, is that something that (inaudible) summarized because that's something that I certainly don't have any access to at the moment, and this is an amendment that's just being put before us? Thank you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Mushinsky.

REP. MUSHINSKY (85th):

Through you, Madam Speaker, this is easily accessible. That's why this definition was agreed to by both the Governor's Office and our Chamber.

DEPUTY SPEAKER ORANGE:

Representative Sawyer.

REP. SAWYER (55th):

And if I might ask the Chairwoman if she could give a brief, thumbnail sketch of what a green job is, as a definition, Madam Speaker?

DEPUTY SPEAKER ORANGE:

Representative Mushinsky.

REP. MUSHINSKY (85th):

Green technology will be defined as the technology that promotes clean energy, renewable energy, or energy efficiency or reduces greenhouse gases or carbon emissions, or involves the invention, design and application of chemical products and processes to eliminate the use and generation of hazardous substances.

And green jobs will mean jobs in which green technology is employed and may include the occupation codes identified as green jobs by the United States Bureau of Labor Statistics, and any codes identified as green jobs by the Labor Department and the Department of Economic and Community Development.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Sawyer.

REP. SAWYER (55th):

I thank the lady for her answer. The question that I had, though, has been when we have looked at a company that creates a green product, you're

certainly going to have someone that is in the design phase, someone that is in the purchasing phase, someone who is in the accounting phase of getting that product to market or in satisfying a service job. Perhaps it's going to be considered green.

How do we classify those types of auxiliary people who are in the production of the industry that might be green?

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Mushinsky.

REP. MUSHINSKY (85th):

Through you, Madam Speaker, because we do include the classifications of the Connecticut Department of Economic and Community Development, that would be an opportunity for them if they think they're missing some of the list, they could approach the Department.

DEPUTY SPEAKER ORANGE:

Representative Sawyer.

REP. SAWYER (55th):

I understand the Chairwoman's explanation. There is leeway then to get a waiver or increase

this particular job classification portion?

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Mushinsky.

REP. MUSHINSKY (85th):

Through you, Madam Speaker, I believe design is already covered as I read the amendment. However, if the person is unsure if they're covered, they could approach the Department of Economic and Community Development and make sure they're on the list.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Sawyer.

REP. SAWYER (55th):

Thank you. And is there a process for the Department to be able to do that? Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Mushinsky.

REP. MUSHINSKY (85th):

Through you, Madam Speaker, the amendment does not identify the process, just that they would be the cheaper of the codes for green jobs.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Sawyer.

REP. SAWYER (55th):

Through you, Madam Speaker, I apologize because I haven't seen the fiscal note on this. Does this require that the Department has to increase its staff?

DEPUTY SPEAKER ORANGE:

Representative Mushinsky.

REP. MUSHINSKY (85th):

Through you, Madam Speaker, no, it has no fiscal impact.

DEPUTY SPEAKER ORANGE:

Representative Sawyer.

REP. SAWYER (55th):

Thank you, Madam Speaker. I'd like to commend the Chairwoman for all of her work on this. This has certainly been something that has been of an interest to both sides of the aisles, the Governor's office as well, trying to do just about anything we can to improve the state's climate for those people who are working in green jobs.

The sticking points have been in some of the

details as to who actually would be qualified for that particular designation, because there is quite a benefit to working through a green job.

So as we move forward with this, I'm sure this could possibly be coming back in the next couple of years that we'll find tweaks in it to iron out the bugs.

I hope the Department will be able to do this smoothly and actually have a smooth, fast, easy process that someone can get in and get out of at a fast pace. I think that is one of the things we don't do well in state government, is get our people in the state through the processes so that they can get their permits, get the regulations changed to satisfy their working needs.

Thank you and thank you to the Chairwoman.

DEPUTY SPEAKER ORANGE:

Thank you, ma'am. Will you care to remark further on House Amendment Schedule "A?"

Will you care to remark further on House Amendment Schedule "A?"

If not, let me try your minds. All those in favor please signify by saying aye.

REPRESENTATIVES:

Aye.

DEPUTY SPEAKER ORANGE:

All those opposed, nay. The ayes have it.

The Amendment is adopted.

Will you care to remark further on the bill as amended? Will you care to remark further? Representative Mushinsky.

REP. MUSHINSKY (85th):

Thank you, Madam Speaker. This Bill implements the legislative recommendations of the Program Review and Investigations Committee Report, titled Alignment of Postsecondary Education and Employment, and this study that the Committee did examined whether there was mechanism that links, in Connecticut, that links the production of skilled graduates from our higher education institutions with the projected workforce needs, especially for the new jobs that will be coming down the pike in Connecticut.

The study also specifically looked at the emerging green jobs industries, which the researchers of our committee believe will be one of the growth areas for our state and a very promising growth area.

I do want to thank the committee researchers, Mary Ellen Duffy and Miriam Kruger who worked on this project, Director Carrie Vibert and our leadership on our committee, my cochairman, Senator Kissel, Representative Carson and the Members of the Committee.

Some of the changes in this bill that will improve alignment are uniform naming of green certificate and degree programs, collaboration between Connecticut Appointment and Training Commission and the Connecticut Energy Sector Partnership and new green certificate and degree programs.

Also, agreements to share the expensive equipment that will be used in the field, and a partnership between the colleges and the regional workforce development boards to create career ladders in this new field.

In addition, the bill requires the Department of Higher Ed and the Department of Education to prepare and publish a cross system list of green courses so that workers who are wishing to get into this field will be able to enter and move up the ladder.

And finally, it collaborates between the public college green institutes and centers located near one another to share resources and staff.

So we think this will help workers develop careers in this new field and develop career ladders for workers who recently entered the field as a result of federal funding.

I urge your support for this green jobs measure and I hope it will help reduce unemployment in our state.

DEPUTY SPEAKER ORANGE:

Thank you, ma'am. Will you care to remark further on the bill as amended? Will you care to remark further on the bill as amended?

If not, staff and guests please come to the well of the House. Members take your seats. The machine will be opened.

THE CLERK:

The House of Representatives is voting by roll call. Members to the chamber.

The House is voting by roll call. Members to the chamber, please.

DEPUTY SPEAKER ORANGE:

Have all Members voted? Have all Members

voted? Please check the board to determine if your vote has been properly cast.

If all Members have voted, the machine will be locked and the Clerk will take a tally. And will the Clerk please announce the tally.

THE CLERK:

House Bill 5164 as amended by House "A."

Total number Voting	138
Necessary for Passage	70
Those voting Yea	138
Those voting Nay	0
Those absent and not voting	13

DEPUTY SPEAKER ORANGE:

The bill as amended passes.

Will the Clerk please call Calendar Number 305.

THE CLERK:

On Page 41, Calendar 305, Substitute for House Bill Number 5522, AN ACT CONCERNING JUVENILE MATTERS, favorable report of the Committee on Transportation.

DEPUTY SPEAKER ORANGE:

Representative Michael Lawlor, you have the floor, sir.

S – 610

CONNECTICUT
GENERAL ASSEMBLY
SENATE

PROCEEDINGS
2010

VOL. 53
PART 13
3842 – 4128

Next, Mr. President, calendar page 19, Calendar 553, House Bill 5159, move to place the item on the consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Thank you, Mr. President.

Calendar page 19, Calendar 554, House Bill 5164, move to place on the consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Thank you, Mr. President.

Calendar page 20, Calendar 556, House Bill 5498, move to place on the consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Thank you, Mr. President.

Calendar page 20, Calendar 557, House Bill 5270, move to place on the consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Calendar page 10, Calendar 461, House Bill 5207; Calendar 483, House Bill 5244.

Calendar 484, on page 11, House Bill 5383; Calendar 487, House Bill 5220; Calendar 488, House Bill 5297; Calendar 490, 5425 -- House; Calendar 496, House Bill 5497; Calendar 509, House Bill 5126.

Calendar page 14, Calendar 511, House Bill 5527; Calendar 514, House Bill 5426; Calendar 516, House Bill 5393.

Calendar page 15, Calendar 520, House Bill 5336; Calendar 521, House Bill 5424; Calendar 523, House Bill 5223; Calendar 525, House Bill 5255.

Calendar page 16, Calendar 531, House Bill 5004.

Calendar page 17, Calendar 533, House Bill 5436; Calendar 540, House Bill 5494; Calendar 543, House Bill 5399.

Calendar page 18, Calendar 544, House Bill 5434; Calendar 547, House Bill 5196; Calendar 548, House Bill 5533; Calendar 549, House Bill 5387; Calendar 550, House Bill 5471; Calendar 551, House Bill 5413; Calendar 552, House Bill 5163; Calendar 553, House Bill 5159.

Calendar page 19, Calendar 554, House Bill 5164.

Calendar page 20, Calendar 556, House Bill 5498; Calendar 557, House Bill 5270; 559, House Bill 5407; 562, House Bill 5253; and House Bill -- Calendar 563, House Bill 5340; Calendar 567, House Bill 5371; and Calendar 573, House Bill 5371.

Mr. President, I believe that completes the items --

THE CHAIR:

Mr. Clerk, could you please give me on Calendar 567, do you have 5516, sir?

THE CLERK:

What -- what calendar?

THE CHAIR:

567 on page 22.

THE CLERK:

It's 5516.

THE CHAIR:

Yes, sir. Okay.

Machine's open.

THE CLERK:

An immediate roll call vote has been ordered in the Senate on the consent calendar. Will all Senators please return to the chamber. Immediate roll call has been ordered in the Senate on the consent calendar. Will all Senators please return to the chamber.

THE CHAIR:

Have all Senators voted? Please check your vote. The machine will be locked. The Clerk will call the tally.

THE CLERK:

Motion is on adoption of Consent Calendar Number 2.

Total number voting	35
Necessary for Adoption	18
Those voting Yea	35
Those voting Nay	0
Those absent and not voting	1

THE CHAIR:

Consent Calendar Number 2 passes.

Senator Looney.

SENATOR LOONEY:

Yes, Mr. President.

Mr. President -- Mr. President, before moving to adjourn, I would like to ensure the entire chamber will wish Laura Stefon, Senator McDonald's aide, my former intern, a happy birthday.

And with that -- and with that, Mr. President, I would move the Senate stand adjourn

JOINT
STANDING
COMMITTEE
HEARINGS

HIGHER EDUCATION
AND
EMPLOYMENT ADVANCEMENT

PART 1
1 - 305

2010

name.

LOUISE FEROE: That's no problem.

SENATOR HANDLEY: Representative Mushinsky is the next person on our list.

REP. MUSHINSKY: Madam Chairs, members of the committee, I'm Representative Mary Mushinsky, House Chair of Program Review and Investigations Committee.

And the bill you're working on today has some overlap with what we're doing. And I know you were interested, I think, in a joint hearing with us as well, which is very nice. Thank you for agreeing to that.

I am speaking in support of 5025, the Governor's bill, but with some amendments. The bill is in line with what Program Review is doing to increase the STEM graduates, the science technology, engineering and math.

And our researchers on the committee found that the state does not have a brain drain. What we have is not enough students interested in the STEM fields. In fact, only less than 5 percent of the Connecticut students are in the computer, math, architecture, and engineering occupational sectors, which are key areas for the economy.

So it's that our students that are not making choices that will put them in the new global economy. That's really our problem.

And we would recommend that you add some of the language of our bill, Raised Bill 5164, which is the alignment of post secondary education with green industry. And we'll -- I

will submit a copy of that bill.

A VOICE: (Inaudible.)

REP. MUSHINSKY: Sure.

In our bill, we are -- we have actually five bills on alignment of students with the future technologies, but our main bill has to do with a career ladder for green jobs, especially those who got into the field through the federal ARRA program.

SENATOR HANDLEY: Could you, again, give us the number of that bill, Mary?

REP. MUSHINSKY: Yes. Our bill is 5164, and it's the alignment of --

SENATOR HANDLEY: Thank you.

REP. MUSHINSKY: -- education with the (inaudible).

SENATOR HANDLEY: Okay. We just wanted to make a note of that.

REP. MUSHINSKY: Okay. We also are recommending an alignment between the Connecticut's institutions of higher education, so the career ladder is the same for the green industry all across the schools and people have a certification and they know what field they're in and the employers know what field they're in.

Our definition of green jobs is different from your definition. We took ours from the Institute for Sustainable Energy, and yours is slightly different. So we probably shouldn't --

SENATOR HANDLEY: Wait. This is not ours, Representative.

REP. MUSHINSKY: The bill you're considering today --

SENATOR HANDLEY: The bill is -- yes. Okay.

REP. MUSHINSKY: So we probably should have one working definition for the whole State of Connecticut. So we'll give you the one we have for sustainable energy.

There are two problems with the funding of this loan forgiveness program. One is the -- that the -- that it is a raid on the Conservation Load Management Fund as you have noticed. And -- which might be okay as long as we tailor this correctly.

And the other problem is there's no asset test for this loan forgiveness program. We probably should first target the underemployed and the unemployed. They got into ARRA. They're doing the first rung on the ladder. They need to make more money for the families and do well in Connecticut. Or they're in the wrong employment and we need to get them into the green job field.

So we probably should be targeting our very meager funds toward the underemployed and the unemployed who are at the bottom rung of this ladder.

We did find in PRI that the State -- that the demand for jobs is greatest for the -- not all the health care fields are the same. So again, we don't want to spend our money on fields where we don't need the help. We want to tailor it very carefully to the fields

JOINT
STANDING
COMMITTEE
HEARINGS

PROGRAM
REVIEW AND
INVESTIGATIONS
PART 1
1 –- 296

2010

REP. MUSHINSKY: Okay. Well, thank you, Shawn. Thank you for coming and pointing that out.

Are there any questions? All right.

SHAWN LANG: Okay. Thank you very much.

REP. MUSHINSKY: Next speaker is Bill Leahy for President Elsa Nunez to be followed by Jude Carroll.

WILLIAM LEAHY: Good afternoon, Senator Kissel, Representative Mushinsky and members of the panel. My name is William Leahy. I'm the chief operating officer for the Institute for Sustainable Energy at the Eastern Connecticut State University, and I'm here speaking on behalf of Elsa Nunez, our president. And I'm speaking towards the House Bill 5164, dealing with -- concerning the alignment of post-secondary education with employment in a green industry.

I want to thank you first as a panel for -- for dealing with workforce development issues in Connecticut. We certainly want to take advantage of some of the federal money and -- and incentive to build our -- our economy around green jobs, especially where we have sagging areas of our economy in construction and also in manufacturing and so on.

At the Institute and through the University, we've had a couple of very successful opportunities recently. As a member of the Connecticut Energy Sector Partnership, we helped to secure a $3.3 million grant through ARRA for a number of the skilled programs that I'm sure you're interested in for green jobs, including water and waste water and

weatherization and energy analysts and green builders and so on.

Probably a more important program for a model is the second project, which was with a workplace in Bridgeport, where we were able to help secure a $4 million Pathways from Poverty grant, and this is actually a career ladders program to take people from unemployment on a number of very patterned steps in four separate career areas, up to what we call family supporting career directed jobs.

So, these -- this program starts with screening people in neighborhoods where there's very high unemployment and high poverty levels and introducing them to what it takes to be a productive worker in the workplace, starting them off at an entry level job or at a step higher on the ladder if they come to you with some skills based on past performance.

At a press conference this morning, I was kind of startled to hear that right now we have over 35 percent of our union electricians out of work. So, we're really talking about people who, in those cases, would be entering our ladders at the third or fourth level compared to someone who is coming in and saying, I'm not sure what I want to do but I'm good with my hands and I'd like to be in a green job.

So, I did include in this package or in the testimony a description of the Bridgeport program and the ladders and how they work, and we've done a lot of work with creating the educational infrastructure using Connecticut's secondary education and post-secondary education systems.

The Connecticut technical high schools are on board. I think they're doing a great job right now of revamping their curriculum in the areas of green jobs, both construction and in the area of automotive and architectural drafting, to train our high school students in tech high school as to what these careers will be. We're also working with the community colleges for the one and two year certification programs.

And to address your comments in Section 3, we'll be utilizing the technical high schools for those classes at the community college, rather than having to duplicate laboratories at both levels. So, during the day the trades are being taught to the high school; at three o'clock the facilities are available to be used for retraining people or the more non-traditional learner who might be holding a job during the day and needing this training at night. So, that partnership is going on.

The community colleges in the CSU system have very clear articulation agreements so that their programs lead directly into our programs. Any student getting a two-year degree at a community college can move right on to the CSU system to a four-year program, under articulation agreements created by Dr. Carter two years ago, which I'm sure many of you know about.

So, I think there's a lot going on in this area, utilizing the infrastructure that we have in place. Some of it is still in the planning stages; much of it is in that grant preparation, hoping to get that federal money to boost us up.

There is definitely an issue in Connecticut of how do we get access to that money when we don't have a central clearinghouse that's saying these are opportunities that are available. Most of us have to scan these things on a daily basis, call up people we know and say, hey, do you want to partner on this? It shouldn't be such an informal process. It should be a much -- we would be able to do a lot better at securing that money if we had a better formal process in place for that.

There was a -- a recommendation under Section 5 where you talked about creating a list of green courses and green jobs training in the state. I think you need more than a list. I think we need a website. I think we need to tie it into traditional career counseling software that's out there, the O-net program or the Occupational Outlook Handbook. So that not only will you know we have courses, but also anybody who is looking for courses, whether they be a counselor at a high school or a counselor at a college or in a one-stop out in a city or a student who just gets on the web and can say, these are my interests. What kind of a job does this lead me to? Does Connecticut have programs?

So, my advice to you is that we could create a website that would allow people to access that and find out what is available in Connecticut and what do I have to do to get in to those programs and then tie it into the more traditional career sentiment skills.

In Section -- finally, I guess, in Section 6 you talked about collaboration and certainly, at this point, we have very strong collaboration between the Connecticut

technical high schools and the community colleges in the CSU system. We do some projects with the University of Connecticut. They tend to be more involved in the research and commercialization of new technology, but certainly we could enhance that relationship as well to get to the point of what kind of job training do those people need as those new products become commercially viable.

So, at that point there is written testimony but I did my finer points, but if you have any questions --

REP. MUSHINSKY: I do. I'm -- and I'm glad to see you here.

We -- we are trying to create a standardized certification all across -- all across the state, all across the educational institutions, so that people in any -- wherever they live in Connecticut, they can enter the green jobs career ladders and then move up.

Do you have specific suggestions how we can standardize that certification process --

WILLIAM LEAHY: You mean (inaudible).

REP. MUSHINSKY: -- so we have 240 or whatever it was people certified. We're trying to get thousands into this deal. So --

WILLIAM LEAHY: Well, I -- I guess my first piece of advice -- and there's a slide in the power point that's attached to this -- it's important to -- to seek national credentialing. I mean -- any of us who are going through the same process of going up a career ladder know that there's value in

degrees, there's value in certifications. If you happen to move from here to there, you can put those credentials on the table and, as a result, people will know what you know and what you don't.

There's a page in here that lists some of the more common credentials that are out there and we work -- work very hard to try to get the school systems, the technical high schools and the community colleges, to use that as their basis.

The architectural drafting teachers at the Connecticut technical high schools are all in the process of getting lead certification right now. They've just finished their last class. We have one more professional development. They'll be taking their test. So, that's a credential and there's no worldwide now. And by teaching the students that and having the students get their lead associates level, then they can go out and say, I know how to design a green building. Here's my credentials.

And I think that needs to be looked at. A certificate from any institution that doesn't have any kind of national recognition or at least regional recognition is going to be questioned. What did you really learn there? We have -- all have a drawer full of those certificates. But I think the ones that stand out are the ones that have national or at least regional and that would be the way to standardize.

REP. MUSHINSKY: Okay. That's very good advice. Thank you.

And the other question -- the previous speaker

was not happy with our committee's decision to try to revamp those tax credits, to work on some of the innovative jobs, promote those by -- by sacrificing some of the old tax credits

And, so, I wanted to ask you, because I -- outside of the hearing room the vendors were coming up talking about, we'd like to come to Connecticut and do green jobs but your credits aren't as favorable as New Jersey, say, and I just wanted to ask you, while you're here, what do you think we have to do to make Connecticut more attractive for green industry vendors to come in here and start working with our young people?

WILLIAM LEAHY: I think in the area of manufacturing, which is a difficult area to -- to deal with, there -- there may be some need for some special -- special legislation that supports the idea of manufacturers moving here to -- to build new products, to build new state-of-the-art products.

I think in the area of the -- most of the green jobs tend to be the same jobs that most of us know about but they're enhanced by an additional amount of knowledge. And those enhancements come in handy when we have laws.

For example, we have our green schools law now, thanks to the Legislature. So, we know that any school that's funded after last January has to be built to these high performance standards. Well, that's real important to the architects who are bidding the job, but it's also important to the builders and the contractors, with material suppliers and so on.

So, I think by having a standard like that in the public sector it helps. In the private sector we have the Energy Efficiency Fund and we have the Clean Energy Fund and those tend to be the major stimulants for bringing those technologies to bear with the -- the people who use energy in Connecticut.

Stabilizing those funds is -- is incredibly important because every time that the funds go up or go down or get taken away or get put back, the workforce leaves or comes back. You have a tendency as a contractor to hire temporary help instead of long-term help because you don't like to let skilled workers go. So, you try to get through with people who are maybe less skilled.

So, I think stabilizing the incentives that are there -- there's very good federal tax credits right now for doing work in this field, 30 percent in most cases, having incentives available.

I think financing is the big one, some sort of a -- a financing project that is very holistic in how it addresses whatever that is, and that goes for brown field recovery or that goes for -- you know, we have -- we have -- I'm working in Bridgeport right now. There's 1100 brown fields. We -- we'd like to put some of those back on the tax rolls and use them for development but it takes, you know, somebody has to go in there and borrow money and the fact that it's a brown field makes it hard for them to borrow money. So, maybe it's loan guarantees or maybe it's loan programs but I think those are the kind of incentives.

I'm not sure you have to offer large incentives for the service industries and the

construction industries to come here. That will come by way of people adopting better building standards. But I think manufacturing might be another case. You may need to use more traditional economic development activity for that.

REP. MUSHINSKY: Okay. That's also very good advice and I appreciate your coming in.

Other questions? All right.

Thank you, Bill.

Jude Carroll followed by Alice Pritchard -- Pritchard.

JUDE CARROLL: Good afternoon, Senator Kissel, Representative Mushinsky and members of the committee. My name is Jude Carroll. I'm the director of the Connecticut Kids Count project at the Connecticut Association for Human Services. I'd like to testify for the series of bills that are related to the alignment of post-secondary education and employment. I've submitted written testimony, so I'm just going to summarize a few points.

SB 268 HB 5164 HB 5349

The first point I'd like to make is related to Bill Number 266. I'm recommending a study to transfer adult education to community colleges. The language of the bill is unclear, whether or not it's all adult education classes or only those at the technical high schools. I think that the PRI study recommendations were originally for the technical high schools and we support that and it would be a great opportunity to create true bridge programs between high school students -- for high school students who want to go into technological fields, and it would

be a way to help them move through the system more easily with supports.

Senate Bill 268, creating a pilot program to reward higher ed institutions that need established goals. This bill looks like it would replicate the student achievement initiative in Washington State. That program has been in effect for maybe two or three years and it has been very effective in getting the community colleges to really ramp up their services for -- to increase the number of students who actually get a degree or a certifi -- certificate.

The colleges actually compete with themselves. They have to up their own numbers and I think that the funds are used specifically for academic and nonacademic counseling services for students. So, the money that they receive actually is invested in the student population.

Senate Bill -- or, no, House Bill 5164, the green jobs bill. We would like to see the community colleges added to Section 6, where there's a link or an opportunity for UConn and EastCONN to get together to make sure that their programs are able to get the best bang for their buck. Community colleges really need to be part of that link, so that students can move from the two-year to the four-year opportunity for green skills.

And, finally, Bill 5349, to develop a strategic plan. We've -- we definitely appreciate the concept of this bill and you certainly have put a lot of ideas together. There are a couple of concerns that we have.

First of all, the way that the bill is written

REP. MUSHINSKY: -- turn over the chair temporarily to Senator Kissel, so I can go back to the other two hearings.

JUDE CARROLL: Thank you.

SENATOR KISSEL: Thank you very much, Jude.

Next is Alice Pritchard followed by Kachina Walsh-Weaver.

ALICE PRITCHARD: Good afternoon, Senator Kissel, members of the committee. Again, my name is Alice Pritchard. I'm the executive director of the Connecticut Women's Education and Legal Fund, which is a statewide nonprofit organization dedicated to empowering women, girls and their families to achieve equal opportunities in their personal and professional lives.

HB5349
SB266
HB 5164

CWEALF's been around for 37 years and focused on opportunities to advance women's rights, but we've also for the past five years led the career ladder initiative and many of the bills raised today around post-secondary alignments have been issues that we've worked on.

I have a long written testimony, so I will not read it to you today, but I do want to tell you that I'm here to support a couple of bills and -- and would like to run through some brief comments on each one of them, starting first with 5165, which you heard from the commissioner about. We believe that the entire bill is -- is exciting and -- and are in favor of -- of increasing high school requirements but particularly excited about the opportunity to increase math requirements.

Algebra II, which is required here, is

that is -- really needs to be looked at.

I don't believe necessarily that when you look at what it would cost to move those types of programs to the community colleges that you will find any savings. And if the intention is to find savings, I'm not sure that that's what's going to happen there.

And also recognizing that it's a long-term and not a short-term process to consider a move such as that, I do think there's some real opportunities there. And, again, similar to the strategic plan, there ought to be a large number of stakeholders involved in that conversation.

But I just want to -- to make it clear, I do think there are some opportunities to clear up the pathway between post-secondary education that happens at the technical high schools for adults and what happens at the community colleges and would encourage this to go forward but just recognizing that it may not be a cost savings.

And, then, just also in support of -- of Raised Bill 5164, which I don't need to (inaudible.)

And I'm happy to answer any questions. Thank you and --

SENATOR KISSEL: Thank you, Ms. Pritchard.

Any questions from the members of the committee?

Thank you very much.

ALICE PRITCHARD: Great. Thank you.

JOINT
STANDING
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HEARINGS

PROGRAM
REVIEW AND
INVESTIGATIONS
PART 2
297 –- 591

2010

And in ours, the numbers I'm telling you from a jobs point of view are accurate.

Now, if you -- if you take that and look at it over a ten year period, the payback is going to be there. So I'm not as, you know, I -- I listened to what everyone said about tightening up a law. And I don't think -- I heard people say tighten it, I didn't hear them say it's too liberal. I've heard you guys say that, since they -- they testified, but I think that there is a difference. And I still think that it could be tightened. But the biggest place to start is by us not throwing the baby out with the bath water on deals that want to come to Connecticut.

Thank you.

SENATOR KISSEL: Thank you.

REP. MUSHINSKY: Thank you.

JOSEPH GROCHMAL: Thank you.

REP. MUSHINSKY: Martin Mador followed by Elizabeth Gara.

MARTIN MADOR: Good afternoon, members of the committee. I'm Martin Mador, I'm here testifying as a volunteer legislative Chair for the Connecticut Sierra Club. I hold a masters of environmental management from the Yale School of Forestry and Environmental Studies. I'm testifying on House Bill 5164, the green industry bill.

There seems to be a consensus here that job preservation and creation is the top priority for the state now and in the coming years. Our economic prosperity and our ability to

provide for a healthy environment and a high quality of life, depend on a robust workforce.

The new concept of green jobs will be an important component of the state's workforce. These are jobs which will strengthen the state's infrastructure. They will help provide a building stock, which is energy efficient. They will help us move from our dependence on fossil fuels to an economy more based on renewable energy. And these are jobs which, by definition, must remain within the state. They cannot be outsourced or off shored.

So 5164 is one of several bills introduced this session which will help to provide substantial training and education for this green workforce.

We thank the committee for raising this bill and we hope you vote it out so it will be included in the mix of the other green job bills, which we're seeing in the Legislature this session.

REP. MUSHINSKY: Thank you. And thanks for coming in. We're trying to take advantage of any ARRA money we can and create as many green jobs as we can to use that federal money for our workforce, so. Thanks and we're trying to keep an eye on the other bills in the other committees so that we finally end up with one version of this legislation.

MARTIN MADOR: Right, well, we strongly endorse that initiative and we're pleased with the committee for raising the bill.

REP. MUSHINSKY: Thank you.

CAHS

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Testimony before the Legislative Program Review and Investigations Committee
Submitted by Jude Carroll, Director, Connecticut KIDS COUNT Project
Connecticut Association for Human Services
March 1, 2010

HB 5164 HB 5165
HB 5349

Good morning, Senator Kissel, Representative Mushinsky, and members of the Program Review and Investigations Committee. My name is Jude Carroll; I am the Director of the Connecticut KIDS COUNT Project of the Connecticut Association for Human Services (CAHS). CAHS is a 100-year-old statewide nonprofit organization that works to end poverty and to engage, equip, and empower all families in Connecticut to build a secure future.

I am here today to testify on the bills that have been raised to align postsecondary education and employment. I have directed my comments to each individual bill.

S.B. No. 266: An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning Transferring Adult Education Programs to the Community-Technical College System. The original recommendation from the PRI report referred exclusively to adult education programs administered by the technical high school system. What would be the benefit of transferring specific adult education programs to the community colleges? Would the community colleges develop bridge programs between adult education, college-level courses, and certification for specific careers? The language of the bill is unclear and needs clarification.

I would like to refer you to CAHS' 2009 report *Connecticut's Challenge: Preparing Our Workforce. . . Strengthening Our Community Colleges*. The report notes that Connecticut has established a bridge program between 17 of the 70 local adult education programs and community colleges, funded by the federal Program Improvement Projects administered by the Connecticut State Department of Education. The intent of the bridge programs is to create a smooth transition as students move from adult education to community college. We suggest that the programs be examined to determine how these agreements are working and if they should be replicated. Locating adult education classes in community colleges for those interested in technical careers and providing a career pathway for them could potentially create a shorter route to employment, thus helping students and employers.

S.B. No. 268: An Act Implementing the Recommendations of the Program Review and Investigations Committee Establishing a Pilot Program to Reward Institutions of Higher Education that are Meeting Established Goals. CAHS supports Senate Bill 268. This bill would replicate the Student Achievement Initiative created in Washington State as an incentive for community colleges to improve student success and increase the number of students attaining certification or a two-year degree. Under this initiative, Washington-state community colleges compete with themselves and the criteria for success are established in four work-related areas, including: (1) improving student preparation for college-level studies, (2) increasing the number of students who complete a year of college credit, (3)

increasing the number of students who complete college-level math, and (4) increasing the number of students completing certificates, degrees, and apprenticeship programs.

Again, the details of the bill need to be developed. What are the criteria for the awards? Would there be stipulation about how the funding would be allocated at the college level? A good use of the funding would be to increase academic and non-academic counseling for part- and full-time students. While Connecticut is experiencing an extreme budget deficit, a pilot of this nature is the type of counter-cyclic program that could provide the state with information about how to best support student retention.

H.B. No. 5164: An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry.

HB 5164 lays the ground work for the development of a robust system of career ladders in the newly emerging green industry. As noted in the PRI report, many green jobs do not require an associate's or bachelor's degree. However, entry-level jobs pay little and should be the starting point rather than the end point for both workers and those who seek their services.

We would like the Committee to consider two additions. First, Section 5 should be expanded to require the Departments of Higher Education and Education to include a catalogue of the types of courses offered by private companies and organizations in order for there to be a more thorough understanding of public and private offerings. In addition, Section 6 should be expanded to include Connecticut's Community College system, so that linkages can be made between two and four-year degree programs.

H.B. No. 5165: An Act Concerning High School Graduation Requirements.

CAHS supports the specification of academic subjects required to obtain a high school diploma. We also support a minimum number of adult education classes that count toward graduation. Unfortunately, we do not feel the bill goes far enough to establish the academic goals students must reach to succeed in college. Alignment of postsecondary education and employment will only be successful when high school students are able to move into college-level courses without the need for remedial education.

H.B. No. 5349: An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning a Strategic Plan and Coordination for Alignment of Postsecondary Education and Employment.

CAHS supports the concept of HB 5349—that is increasing postsecondary student retention and success, addressing the challenges facing the delivery of higher education, and developing a strategic plan for Connecticut's postsecondary public institutions. We applaud you for including adult and non-traditional students, incumbent workers, immigrants and former inmates—those who need college education to improve their earning capacity yet may need additional supports to reach their academic goals.

However, we feel that as the bill is written, the goals the Committee has laid out may not be achieved.

First, assessing the current higher education system and posing solutions for the barriers that stand in the way of greater student attainment can't be completed without the participation of the Departments of

University of Connecticut
Office of the Provost

Peter J Nicholls
Provost & Executive Vice President for Academic Affairs

Testimony

By

Peter Nicholls
Provost

Legislative Program Review and Investigations Committee Public Hearing (SB 268) HB 5349

March 1, 2010

Co-Chairs and Members of the Committee, thank you for providing me with an opportunity to submit written testimony on three bills currently under consideration by the Committee

Before commenting specifically on the bills, I would like to stress that the University shares the Committee's goal of aligning our academic programs with the state's workforce and economic development needs. As our October testimony to the Committee indicated, we are continuously reviewing our academic programs to ensure alignment, and it is a core tenet of our recently approved Academic Plan. In response to workforce and industry needs, UConn has increased enrollment in key areas like engineering, and the life and physical sciences. We have also developed new or expanded programs in nanotechnology, finance, environmental science and entrepreneurship. We contribute significantly to Connecticut's talented workforce; graduating doctors, dentists, nurses, engineers, teachers, lawyers, pharmacists, business and financial analysts, communication and media specialists, and scientists. Seventy percent of our student stay in Connecticut after graduation and contribute daily to our economy

Since we are the state's only public research university, we take our unique role in promoting the commercialization and technology transfer very seriously. In the past decade alone, our faculty have generated 184 patents, and we have begun to incubate new businesses from University research. Our expanded research and technology transfer activities provide our students at the undergraduate, graduate and doctoral levels with skills that will make them invaluable to Connecticut industry.

The University commends the Committee for focusing on this important area and hopes that the following information is helpful as the legislative process continues.

House Bill 5164, An Act Implementing the Recommendation of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry

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The University supports this legislation which promotes education and training in environmental science, technology and the emerging green industry. We offer an array of academic, research and outreach programs in this area that are detailed in the attached document for your information.

Senate Bill 286, An Act Implementing the Recommendations for the Program Review and Investigations Committee Establishing a Pilot Program to Reward Institutions of Higher Education that are Meeting Established Goals (SB268)

Senate Bill 286, *An Act Implementing the Recommendations for the Program Review and Investigations Committee Establishing a Pilot Program to Reward Institutions of Higher Education that are Meeting Established Goals,* creates a pilot program that would provide incentives to public institutions of higher education for meeting the goals and accountability measures established pursuant to 10a-6b.

While the University welcomes new funding opportunities, we ask the Committee to consider expanding an existing Department of Higher Education grant program which is currently successful at aligning academic programming with workforce and economic development needs. DHE's Education and Health Initiatives program – which provides grant funding to public universities and colleges to address education and healthcare workforce shortages—has helped the University respond to workforce needs in nursing very quickly. Through a grant from this program, the University was able to do a market analysis which became the impetus for the University to start Nursing programs at our Stamford and Waterbury campuses to address this important workforce shortage area. In fact, our School of Nursing hopes to begin offering programs at our Avery Point campus in the near future. The Connecticut State University System and the Community College System have also used this grant program to start similar programs in the teacher prep and healthcare professions.

The accountability measures established pursuant to 10a-6b address a number of access, quality and institutional objectives and are by no means limited to a public institution's responsiveness to workforce and economic development needs. Therefore, we believe that the most affective way to encourage public colleges and universities to address workforce needs is to expand the successful DHE Education and Health Initiatives program to encompass all workforce shortage areas.

House Bill 5349, An Act Implementing the Recommendation of the Program Review and Investigations Committee Concerning a Strategic Plan and Coordination for Alignment of Postsecondary Education and Employment

The University shares the goals of House Bill 5349, *An Act Implementing the Recommendation of the Program Review and Investigations Committee Concerning a Strategic Plan and Coordination for Alignment of Postsecondary Education and Employment.* However, it is important to balance the needs of industry with the broader mission of higher education institutions.

There are a variety of formal and informal ways in which the University interacts with industry and receives input from the private sector regarding academic programs. Almost every school and department at the University has an advisory committee with strong

University of Connecticut
Green Research, Outreach and Academic Programs

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

The College of Agriculture and Natural Resources has a significant focus on environmental sustainability, the Green Industry (usually defined as turf and landscaping, nurseries, and greenhouses) and green energy (biofuels and other alternative energy sources). Annually, the Departments of Plant Science and Landscape Architecture, Natural Resources and the Environment, and Agricultural and Resource Economics conduct research and outreach programs in these areas that directly benefit Connecticut citizens and create employment opportunities. Outreach and non-credit public education is coordinated through the Department of Extension. In 2008, the college received nearly $2 million in research awards for research and outreach directly related to sustainability, the green industry and bioenergy. A few highlighted programs are noted below.

Approximately 50 faculty members (which is more than 30% of the total faculty in the college) devote at least a portion of their time to teaching, research or outreach in areas related to environmental sustainability, the green industry or bioenergy. Over the past five years, the college produced 390 undergraduates and 68 graduate students in this broad area. Determining the proportion of these students that remains in Connecticut is challenging; we do know that job placements have been very high in some areas. For example, demand for students entering the green industry has exceeded the number of graduates annually for each of the last 4 years.

Plant Science and Landscape Architecture

- In collaboration with faculty members in the Department of Natural Resources and the Environment, faculty members have worked with the green industry to develop green roof modules that are lighter weight and more drought tolerant than those previously used.
- Invasive plant species aggressively displace native species and pose a threat to the sustainable native species. The department is using faculty expertise in plant biotechnology and plant breeding to develop new cultivars of ornamental plants that are less invasive than those currently used by the nursery industry. The department is providing regional leadership to New England on invasive plant control.
- Faculty members are participating in a project to identify potential biofuel feedstocks and genetically improving those feedstocks for use in Connecticut as part of a broader bioenergy research initiative. A new $1.5 million research award has been received for the bioenergy initiative in collaboration with the School of Engineering and College of Liberal Arts and Sciences.
- A faculty member is investigating the use of plants to clean up lead-contaminated brownfield sites. The test site is located in Sprague, CT.
- With changing legislation limiting pesticide use on school athletic fields, the turf management team is investigating best practices for organic management of athletic fields.

Natural Resources and the Environment

- A faculty member is using the Gant Building "Green Roof" demonstration as a research site to investigate benefits gained from the use of green roof technology.
- Significant research is being conducted on various aspects of water quality and availability. For example, through the College's Institute of Water Resources, a drought simulation exercise was conducted with the Pomperaug Watershed Coalition that included over 40 federal, state and local officials.
- A second statewide assessment of mercury contamination of fish was recently completed in collaboration with DEP.
- The Center for Land Use Education and Research (CLEAR) provides much of the land use mapping data utilized by state agencies and local government in Connecticut. Through the Cooperative Extension

System, CLEAR delivers more than 150 community workshops annually on land use planning and use of geospatial technology. More than 10,000 visitors visit the research or outreach websites monthly. In 2009, an updated version of Connecticut's Changing Landscape web-based database was released and most recently a new Forest Fragmentation Study was released. UConn is recognized for having one of the most extensive and comprehensive land use planning programs in the nation.

Agricultural and Resource Economics

- Faculty members are engaged in research on the environmental sustainability of CT dairy farms as well as the economics of sustainable water resource management.

Outreach and Extension

- The Green Valley Institute is a partnership between the Quinebaug-Shetucket National Heritage Corridor, UConn, UMass and the Nature Conservancy. The institute has provided workshops to more than 1500 community leaders, landowners and developers on land use and conservation planning.
- The Non-point Education for Municipal Officials (NEMO) was created to provide education and assistance to municipal land use planning boards and commissions. Workshops have been held in nearly all of Connecticut's 169 towns. This program has been emulated in 30 other states or countries.
- The Land Use Academy has reached more than 600 local commissioners on land use planning. UConn extension has been designated as the lead agency for delivering land use training in CT.
- The Home and Garden Information Center provides a wide range of information on sustainable gardening, home landscapes and other topics. They respond to more than 10,000 homeowner requests annually.
- The Forest Stewardship Program trains landowners in the development of forest management plans and forest stewardship through scheduled workshops and one-on-one training.
- The Soil Testing Laboratory provides fee-based soil testing for homeowners and commercial operations. More than 15,000 soil samples are processed annually.

University of Connecticut

College of Agriculture and Natural Resources

Programs with Environmental Focus

	Fall Enrollment					Degrees Conferred				
	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	2004-05	2005-06	2006-07	2007-08	2008-09
Undergraduate										
Agricultural & Resource Economics: Resource Economics Major, Environmental Economics & Policy Concentration, Environmental Economics & Policy Minor[1]	72	88	60	67	98	20	33	42	47	29
Natural Resources & the Environment: Natural Resources Major, Air & Water Resources Concentration, Environmental Conservation Concentration, Fisheries & Wildlife Conservation Concentration, Forest Resources Concentration, Geometrics Concentration, Wildlife Conservation Minor	77	89	84	77	82	16	20	30	33	23
Plant Science & Landscape Architecture: Horticulture Major, Landscape Architecture Major, Turfgrass & Soil Science Major, Ornamental Horticulture Minor, Landscape Design Minor, Turfgrass Management Minor	139	124	128	120	100	43	54	34	38	50
Environmental Science Major[2]	34	30	25	36	63	7	6	5	7	9
Pathobiology Major	61	70	65	74	81	19	9	20	12	17
Master's										
Agricultural & Resource Economics	12	13	15	7	11	1	9	8	12	7
Natural Resources: Land, Water, & Air	16	23	23	23	18	7	3	10	2	6
Plant Science	7	12	12	11	6	3	4	1	2	4
Pathobiology	11	6	3	4	6	5	2	4	3	3
Doctoral										
Agricultural & Resource Economics	20	21	20	24	19	1	5	4	3	2
Natural Resources: Land, Water, & Air	13	14	16	13	19	2	0	2	3	0
Plant Science	15	15	15	14	16	2	1	4	5	4
Pathobiology	14	10	11	12	11	2	3	2	1	0
Total Master's and Doctoral										
Agricultural & Resource Economics	32	34	35	31	30	2	14	12	15	9
Natural Resources: Land, Water, & Air	29	37	39	36	37	9	3	12	5	6
Plant Science	22	27	27	25	22	5	5	5	7	8
Pathobiology	25	16	14	16	17	7	5	6	4	3

Note. Undergraduate minors may be a double-count of a student also listed with their major.

[1] The Environmental Economics and Policy minors are also shown on the College of Liberal Arts and Sciences table since the minor is offered by both Colleges.

[2] Environmental Science majors that are in the College of Agriculture and Natural Resources are reported above. There are additional Environmental Science students that are in the College of Liberal Arts and Sciences reported on the Liberal Arts table.

OIR/October 26, 2009

SCHOOL OF ENGINEERING

The UConn School of Engineering contributes significantly to the creation of jobs, technological ingenuity, business startups and economic advancement in the state of Connecticut and, indeed, the region. In recent years, as the nation has grown increasingly sensitized to the complex interrelationships linking the environment, natural resources, energy, health and climate, UConn Engineering has focused its expertise more acutely on helping to address these challenges and advance a culture of informed stewardship and sustainable technologies.

This focus on sustainability has gained momentum with the advent of the federal economic stimulus package. The School of Engineering is keenly committed to developing the forward-thinking, agile workforce that will propel the green revolution. Below are a few of the initiatives currently underway in the School of Engineering that contribute toward this culture of sustainability and green engineering.

Undergraduate Training in Green Engineering
(Chemical Engineering, Civil Engineering, Environmental Engineering, Mechanical Engineering, Computer Science & Engineering, Electrical Engineering, Materials Science & Engineering)

The strong academic and research emphases in Green Engineering enable students to pursue studies in seven disciplines that are listed below:

- Civil Engineering: sustainable buildings, resilient infrastructures; health monitoring, energy efficiency
- Chemical Engineering: biofuels, fuel cells, electrochemical engineering, biochemical engineering, reaction engineering.
- Computer Science & Engineering: modeling and simulation of energy systems, efficiency devices and usage.
- Electrical Engineering: wind and solar energy, power systems, high voltage engineering and microwave technologies.
- Environmental Engineering: biogeochemical processes, air pollution and atmospheric processes, hydro-geosciences, waste treatment, land reclamation, climate analysis.
- Materials Science & Engineering· energy applications, thermodynamics of materials, phase equilibria, and microstructural characterization.
- Mechanical Engineering: thermodynamics, combustion, fuel cells, heat transfer, carbon sequestration, and biofuels.

Students enrolled in these programs can specialize in areas related to Green Engineering through coursework including Air Pollution; Environmental Rate Processes; Introduction to Nuclear Engineering; Bioremediation; Water Quality Engineering; Environmental Geology; Water Pollution; Pollution from Combustion; Biochemical Engineering.

Other extracurricular activities include:

- Participation in co-operative education and internships at firms engaged in clean energy conversion (UTC Power, Fuel Cell Energy, Connecticut Light and Power, Dominion Nuclear, etc) and environmental remediation (Fuss & O'Neill, URS, Kiewit & Sons, etc).
- Undergraduate research in faculty laboratories is an important component to the training of students in Green Engineering opportunities. Students are provided with either course credit or stipend to participate in the many aspects of research including experiment design, measurements, and analysis.

Joule Fellows

- The School initiated a new National Science Foundation, $500K program that brings middle and high school teachers to campus for five weeks of intensive immersion in energy-related research.

- This Research Experiences for Teachers program is an innovative approach to acquainting students with engineering and energy engineering concepts and careers. Because engineering is not included in the curricula of most schools, students are not exposed to engineering principles at a time when they are formulating career ideas.
- By engaging their teachers in cutting-edge energy and engineering research, this program aims to enrich middle and high school classrooms with hands-on experiments that expose the students to energy engineering principles and outcomes.

Graduate Fellowships in Sustainable Energy Technologies
(Chemical Engineering, Civil Engineering, Environmental Engineering, Mechanical Engineering, Computer Science & Engineering, Electrical Engineering, Materials Science & Engineering)

- The recently awarded $700K U.S. Dept of Energy Graduate Assistantships in Areas of National Need (GAANN) will be used to train and educate doctoral students in the critically important field of clean energy.
- The motivation for this program is to train GAANN Fellows to play a central role in new discoveries that will enable the advancement of energy technologies including fuel cells, wind and solar power, waste-to-energy conversion, carbon sequestration and distributed power distribution.

Microbial Fuel Cells and Wastewater Filtration
(Civil Engineering, Environmental Engineering, Environmental Engineering)

- Several faculty members have partnered with environmental companies to develop advanced fuel cells and water treatment protocols using microbial activity. Professor Baikun Li and her partners at Fuss & O'Neill seek to harness the energy-production capabilities of microscopic bacteria to produce power and clean wastewater on a large commercial scale.
- The aim is to develop efficient microbial fuel cells that rely on carbohydrate-rich wastewater at water treatment plants as a feedstock for large-scale fuel cells. Related research between Drs. Li and Jeffrey McCutcheon focuses on improving the wastewater filtration system that is less energy intensive and more cost effective than the current options.
- The projects have an immediate impact on the education of graduate students and employees of the partnering company, and in the longer term these research programs will help to build a green energy industry that blends wastewater cleanup with carbon-neutral energy production.

Eminent Faculty Initiative in Sustainable Energy
(Chemical Engineering, Civil Engineering, Environmental Engineering, Mechanical Engineering, Computer Science & Engineering, Electrical Engineering, Materials Science & Engineering)

- The School launched a new program in late 2007 –rooted in the 2006 enactment of Connecticut's 21st Century Jobs bill and with support from the State of Connecticut and industrial partners FuelCell Energy, the Northeast Utilities Foundation and UTC – to conduct advanced research, education and training in renewable, low CO_2 impact energy including fuel cells, biofuels and other sustainable technologies.
- The core initiative has attracted 12 world-class faculty members whose advanced energy research will, in turn, attract top graduate students and lead to a novel green energy curriculum across the engineering disciplines.
- Involving undergraduate and graduate students in novel energy research, this Initiative will nurture enormous interest in, and excitement for, energy careers.

Biofuel Consortium
(Chemical Engineering, Department of Chemistry, College of Agriculture & Natural Resources)

- The multidisciplinary consortium of faculty and students from various departments across the university aims to stimulate a biofuels industry within Connecticut, thus reducing the state's reliance on fossil fuels and associated environmental and health impacts. Dr. Richard Parnas heads the consortium, whose efforts include the collection and conversion of waste oils collected only from on-campus dining halls into transportation biofuel. Both state and federal dollars have funded the efforts of the consortium.
- An important aspect of the biofuel initiative involves the educational component: the 50 gallon/week biodiesel facility serves as an educational laboratory for chemical engineering students at UConn as well as a demonstration project for visiting school groups.
- Furthemore, the consortium partners with the Center for Continuing Education at UConn to develop a new Certificate Program in Biofuels for business executives, town managers and other decision makers.

Industry Partnerships
(Chemical Engineering, Civil Engineering, Environmental Engineering, Mechanical Engineering, Computer Science & Engineering, Electrical Engineering, Materials Science & Engineering)

- The Center for Clean Energy Engineering (C2E2, formerly the Connecticut Global Fuel Cell Center) maintains close alliances with regional energy companies. FuelCell Energy, Inc. of Danbury, CT has worked with the CGFCC to develop an advanced electrochemical hydrogen separator (EHS), a device that will be used with the company's Direct FuelCell® power plants.
- This program was sponsored by the Connecticut Clean Energy Fund and targets the demonstration of a novel technology that separates hydrogen from other gases.
- The C2E2 has also partnered with UTC Power for a Yankee Ingenuity grant that served as the first application of a reliability assurance methodology to fuel cell systems
- This program will contribute substantially to the deployment and commercialization of a 5 kW fuel cell-based backup power system designed for the telecommunications industry. These activities contribute new, advanced products/processes and also enrich the energy workforce.

University of Connecticut

School of Engineering

Programs with Environmental Focus

	Fall Enrollment					Degrees Conferred				
	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	2004-05	2005-06	2006-07	2007-08	2008-09
Undergraduate Majors with a Primary Focus on the Environment										
Chemical Engineering, Environmental Engineering, Civil Engineering	346	387	396	455	500	55	58	71	86	102
Undergraduate Majors with Enabling Skill Development										
Electrical Engineering, Materials Science & Engineering, Computer Science & Engineering, Mechanical Engineering, Engineering Physics	846	863	853	931	949	177	161	180	188	202
Master's Programs with a Primary Focus on the Environment										
Chemical Engineering, Environmental Engineering, Civil Engineering	50	37	46	56	68	41	31	21	21	29
Doctoral Programs with a Primary Focus on the Environment										
Chemical Engineering, Environmental Engineering, Civil Engineering	64	55	52	49	60	20	13	17	13	6
Total Master's and Doctoral Programs with a Primary Focus on the Environment										
Chemical Engineering, Environmental Engineering, Civil Engineering	114	92	98	105	128	61	44	38	34	35
Master's Programs with Enabling Skill Development										
Electrical Engineering, Materials Science & Engineering, Computer Science & Engineering, Mechanical Engineering	96	93	115	100	100	51	50	34	34	29
Doctoral Programs with Enabling Skill Development										
Electrical Engineering, Materials Science & Engineering, Computer Science & Engineering, Mechanical Engineering	182	182	204	199	220	15	27	27	31	13
Total Master's and Doctoral Programs with Enabling Skill Development										
Electrical Engineering, Materials Science & Engineering, Computer Science & Engineering, Mechanical Engineering	278	275	319	299	320	66	77	61	65	42

OIR/October 26, 2009

COLLEGE OF LIBERAL ARTS AND SCIENCES

The College of Liberal Arts and Sciences is an intellectually diverse collection of 23 academic departments and a variety of interdisciplinary programs and centers. Thematic areas of study such as the environment occur in many different corners of the college. In this document we have collected several of our strongest areas as representative of our focus on this topic. We first discuss our signature undergraduate program in "Environmental Science" with a growing number of enrolled students. Scholarly research as well as teaching occurs in all of our academic departments and centers and we have selected programs in the Departments of Chemistry, Marine Sciences, Ecology and Evolutionary Biology, and Geography to highlight in this report. An emerging program in "Human Behavior and the Environment" is an important part of our planning for future teaching and scholarship in this important area of environmental studies The college is proud of its efforts in outreach and public engagement and we discuss the Bioblitz program as an example of our efforts in this area.

Environmental Science
An interdisciplinary major for undergraduates with a strong science component, offered jointly with the College of Agriculture and Natural Resources

- The undergraduate Environmental Science major is based in the physical and biological sciences and incorporates relevant components from nine departments across two colleges at UConn. As a result, it is one of the University's primary interdisciplinary undergraduate programs.
- The major leads to a Bachelor of Science degree in either the College of Agriculture and Natural Resources or the College of Liberal Arts and Sciences, depending on the students' interests and background. The cross-disciplinary curriculum offers a comprehensive approach to the study of environmental problems built on a traditionally rigorous scientific background.
- The core requirements for the major include a year each of Biology, Mathematics, Chemistry, Physics, and Geology as well as introductory courses in the Hydrosphere, Ecology, Meteorology and Resource Economics. Upper level students then focus in a particular area of the environmental sciences where they often complete a detailed senior thesis and/or analyze social and economic implications of specific environmental issues.
- Since the ENVS curriculum was reorganized in 2004, the number of applications to the major has nearly tripled from about 65 to nearly 180 per year in 2008. During the same time period the number of enrolled majors nearly doubled to over 110.
- Many of the Environmental Science graduates continue their research interests in the environmental sciences through graduate programs around the country or accept employment at local environmental consulting companies or State or Federal agencies such as the Connecticut Department of Environmental Protection or the U.S. Environmental Protection Agency.

Chemistry
Federally funded research and graduate training programs in basic science leading to applications in clean energy, environmental remediation, and renewable resources. Core contributions to the education of all scientists and engineers.

- The Chemistry Department has several funded programs in the area of environmental and green chemistry.
- The National Science Foundation (NSF) is supporting a research project to develop methods to use microwaves to transform biological materials and waste products into useful and combustible products. The microwave radiation causes molecular heating and can accelerate chemical reactions, leading to a significant time saving and improving product yields. The reactions are either solvent-free or else use water as the solvent. This makes them environmentally clean as well as efficient and is an important example of the concept of "green chemistry "

- Another NSF supported research project is a joint UConn-industrial investigation of the synthesis of so-called green catalysts for enhancing (or suppressing) bacterial growth in petroleum products. The ability of these catalytic materials to modify the rate at which these microbes use petroleum to satisfy their nutritional requirements for carbon has a number of environmentally beneficial applications.
- The US Department of Energy (DOE) supports research projects to study fuel cell components in order to remove detrimental impurities and enhance their efficiency.
- Another DOE project supports a study of selective oxidation catalysts for environmental remediation and seawater desalination.
- A synthesis of novel battery materials for use in extreme environments in collaboration with Yardney Technical Products of Pawcatuck, CT is funded by the Global Intelligence
- The Chemistry Department is also a participant in a new cross-college Bio-Energy Consortium that recently was awarded $1 5 million in federal funding to analyze the benefits and develop methods of shifting to bio-energy.
- These examples of funded research projects in green and environmental chemistry brings a total of $3.2 million in federal, state and industrial support to the department and support the research activity of 10 doctoral students.
- The department has also recently added an environmental chemistry concentration to its undergraduate curriculum which has attracted significant student interest.

Marine Sciences

Interdisciplinary research and teaching in Marine Science, especially Long Island Sound, including the study of heavy metals in the environment, invasive species, fisheries, the sea-air boundary and climate change. Recipient of substantial funding from Federal and other sources.

- The Department of Marine Sciences is located at UConn's coastal campus at Avery Point and has a number of signature programs focusing on the marine and coastal environment.
- The Long Island Sound Integrated Coastal Observing System (LISICOS), is a unique project for Marine Sciences that provides real-time and continuous records of the biological, chemical and physical properties of the water for researchers, coastal managers, fishermen, boaters, and weather forecasters. Despite natural resources and commercial and recreational opportunities valued at more than $5.5 billion annually, LIS remains an understudied coastal sea that suffers from eutrophication, hypoxia, toxic or nuisance algal blooms, and depleted fish and shellfish stocks.
- A new $500 thousand award from NOAA's Oceans and Human Health Initiative (OHHI) has lead to a partnership with CT Sea Grant, Mystic Aquarium, and NOAA NMFS Milford Laboratory, to train doctoral students and post-doctoral researchers in critical issues for the coastal zone, including marine pollution, diseases and pathogens.
- A four-year, $1 million research project investigating the genetic makeup of organisms that cause coastal red tides is the subject of a new public exhibit at Mystic Aquarium.
- Marine Sciences is in the forefront of global studies of mercury cycling in marine environments the and impact on human health via bio-accumulation in freshwater and marine fish.
- The Mercury Laboratory, in operation for more than 30 years, is nationally and internationally recognized for pioneering research on Arctic lakes, coastal waters, and the global ocean.
- The department is also studying the marine bioinvasions in Long Island Sound where faculty and students are documenting the distribution, ecology, and potential impacts of the invasive species on the Long Island Sound ecosystem. Students learn the fundamentals of marine benthic community ecology, participate in advanced technology development (e.g., underwater video surveys), and assist with public outreach and education through CT Sea Grant.
- Another important research area is marine meteorology where interactions between the atmosphere and the ocean's surface that drive storms, waves, and currents are being investigated. This research is critical to improving predictions of climate change based on direct measurements of carbon dioxide exchange between the ocean and atmosphere.

- A unique project in marine ecology uses satellite-based remote sensing imagery to measure phytoplankton and organic matter in coastal waters. Shallow waters are optically complex, and present significant challenges for ocean optics, a specialized field involving measurement of optical and physical properties of the water column.
- The Department had funded research expenditures of over $5 million in FY 2008 with 12 masters and 33 doctoral students working on projects of coastal and marine science.

Ecology and Evolutionary Biology
Worldwide research basic research into ecology and the genetic basis of the interaction between organisms and their environment having applications in conservation biology both locally and abroad, biodiversity and sustainability, and the control of invasive species. Fundamental training for life scientists at the undergraduate and graduate levels. Extensive Federal and other funding.

- The Department of Ecology and Evolutionary Biology (EEB) has about 30 faculty members with research interests spanning a wide range of fields including population and community ecology; landscape ecology, conservation biology; biodiversity, systematics, and evolution; and animal behavior.
- Total grant awards average about $2.5 million per year, with most of the funding coming from the National Science Foundation (NSF), but significant funding also coming from other sources such as the U. S. Geological Survey, the Mellon Foundation, the Hudson River Foundation, and the Connecticut Department of Environmental Protection.
- Most faculty and about 50 graduate students work on basic research in ecology and evolutionary biology with implications for conservation biology and environmental protection.
- One of the EEB faculty recently received a $3 million NSF Planetary Biodiversity grant to lead a consortium of institutions in discovering and documenting the biodiversity of parasitic species.
- EEB researchers are heavily involved in studying the ecology and conservation of tropical forests in regions from Central America to Madagascar.
- Graduates of the doctoral program have taken academic positions with government or non-government agencies concerned with conservation and environmental issues.
- The B.S./M.S program in Biodiversity and Conservation Biology has successfully placed many students in environment-related internships, and many graduates of this program have gone on to jobs with environmental agencies.
- The Center for Conservation and Biodiversity, which is associated with the department, sponsors the Connecticut BioBlitz, a major public outreach effort, funds workshops related to environmental issues, and provides funding for graduate student research.
- The Invasive Plant Atlas of New England (IPANE) project is run by a consortium that includes UConn and several other universities and both state and federal agencies.
- EEB has 60 undergraduate majors, but our department also is responsible for advising and teaching many of the more than 900 Biological Science majors, as well as Environmental Science majors with a concentration in Environmental Biology.

Geography
An interdisciplinary approach to the interaction between human society and environmental factors; urban planning, transportation, resource management, and climate change. Applications of remote sensing and geographic information systems. Broad undergraduate and graduate programs.

- The Department of Geography has several active research programs related to environmental concerns as well as offering a wide range of courses that deal directly with issues of the environment. Each of the introductory core courses in geography has a section that deals with the environment in some fundamental way
- Specific courses such as "GIS Modeling of Environmental Change," "Climate, Weather, & the Environment," "Environmental Evaluation & Assessment," "Climate and Weather," and "Human Modification of Natural Environments" focus entirely on current environmental issues.

- In addition the department offers a full complement of courses in the area of Geographical Information Systems (GIS), a technology that is in great demand by environmental firms.
- Over the past 3 years the department has graduated over 15 master students who have found careers with environmental firms located in Connecticut, Massachusetts, and New Jersey.
- Last year one of our undergraduate students was awarded a research assistantship in the Department of Environmental Sciences at the University of Virginia to continue his graduate education.
- Besides providing environmental education to students in the classroom, the faculty works with students on funded environmental projects.
- Grants to study environmentally related issues have come from national and international agencies including: the Connecticut Department of Public Health, the United States Agency for International Development, the Center for Transportation & Urban Planning at UConn, the New York City Department of Environmental Protection, and the National Oceanic and Atmospheric Administration.
- The grant funding for this environmental research, currently over $100 thousand, has tripled over the last several years.

Human Behavior and the Environment

A college wide initiative to strengthen expertise in understanding human contributions to environmental challenges and human approaches to managing those challenges, including technical, policy, and human rights implications of changes in the environment.

- In addition to the scientific focus of the programs discussed above, CLAS is actively expanding its presence in the area of "Human Behavior and the Environment "
- Ultimately, the quality of our environment depends on natural systems, human systems and the interactions between the two. Thus, advancing research and understanding regarding the environment will require a deeper consideration of the role of human behavior, at both the individual and institutional (policy) levels, and the factors that drive that behavior.
- The college has identified economics as an important component of a proposed thematic area in "Human Behavior and the Environment" and noted the need for additional expertise in this field.
- Economics plays an important role in understanding the behavioral factors affecting environmental quality and in designing and evaluating public policies to improve it. The number of environmental economists at UConn is small, but the faculty in this area has a record of collaborative work with faculty in the natural sciences and engineering.
- In addition, the Science Advisory Board of EPA has recently concluded that the EPA is in "dire" need of additional research in social and behavioral science. Thus, opportunities for additional collaboration are significant, and increasing faculty in this area should increase opportunities for competitive support.
- In addition, CLAS has a particular strength in the area of human rights. There are few human rights programs with a science and environmental policy focus. Investment in this area, with a focus on environmental justice and law, could provide the University with a first-mover advantage and leverage previous investments in human rights as well as existing expertise in environmental law in the UConn Law School.

Connecticut State BioBlitz

A renowned outreach program that unites scientists, college students, and school children to build an understanding of conservation and biodiversity. A model program adopted across the globe.

- The internationally recognized Connecticut State BioBlitz is now in its 10th year and is an important outreach and public engagement activity for CLAS. It brings together scientists, college students, and school children from a number of universities and scientific institutions in a race against time to see how many species they can find and identify in a 24-hour biological survey.
- The activity is funded through the College of Liberal Arts and Sciences, Center for Conservation & Biodiversity, Department of Ecology and Evolutionary Biology, the Connecticut State Museum of Natural History, in partnership with the Connecticut Department of Environmental Protection.

- During the 2009 event, scientists were able to identify 1,715 different plants and animals from Hartford's Keney Park, including adjacent reaches of the Connecticut River. Recorded species included numerous mammals, reptiles, amphibians, birds, fish, plants, mosses and lichens, algae, parasites, insects, spiders, and fungi.
- The participants included 26 middle school and high school students from across Connecticut that were selected as junior scientists to work alongside some of the region's top naturalists and environmental scientists. The students had guided mini-safaris, collected their own specimens, and offered presentations to the public.
- The Connecticut State BioBlitz has become a model for more than 500 similar events around the globe, whose singular charge is to reveal the wonderful diversity of life occurring just outside our backdoors. The event underscores the important role that urban environments can play in sustaining Connecticut's biological riches, and encourages curiosity and excitement about science in both children and adults

University of Connecticut

All Campuses

College of Liberal Arts and Sciences

Programs with Environmental Focus

	Fall Enrollment					Degrees Conferred				
	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	2004-05	2005-06	2006-07	2007-08	2008-09
Undergraduate Majors with a Primary Focus on the Environment										
Coastal Studies, Maritime Studies, Ecology and Evolutionary Biology, Environmental Science[1], Geography, Geology and Geophysics	209	239	244	249	264	46	61	40	60	73
Undergraduate Majors with Enabling Skill Development										
Biological Sciences, Chemistry, Economics, Mathematics, Applied Math Sciences, Math/Actuarial Science, Math/Statistics, Molecular and Cell Biology, Physics, Physiology and Neurobiology, Statistics, Structural Biology and Biophysics	2,037	2,246	2,465	2,746	2,943	383	495	527	592	622
Undergraduate Minors with a Primary Focus on the Environment										
Ecology and Evolutionary Biology, Environmental Economics and Policy[2], Environmental Studies, Geographic Information Systems, Geography, Geology and Geophysics, Marine Biology	1	5	8	13	15	18	21	23	37	43
Undergraduate Minors with Enabling Skill Development										
Biological Sciences, Chemistry, Economics, Mathematics, Molecular and Cell Biology, Physics, Physiology and Neurobiology, Statistics	26	63	92	95	101	110	124	162	208	215
Master's Degrees										
Graduate Programs in Areas of Environmental Education and Research										
Life Sciences										
Applied Genomics, Biochemistry, Biodiversity and Conservation Biology, Cell Biology, Ecology and Evolutionary Biology, Genetics, Microbial Systems Analysis, Microbiology, Physiology and Neurobiology, Structural Biology and Biophysics	50	51	63	77	95	31	28	38	25	40

II. Mathematics and Physical Sciences										
Chemistry, Geological Sciences, Mathematics, Applied Financial Mathematics, Oceanography, Physics, Polymer Science, Statistics	89	109	99	101	123	76	54	83	68	82
III. Social Sciences										
Economics, Geography, Public and Non-Profit Management Certificate[3], Public Administration M.P A , Public Financial Management Certificate[3]	70	82	101	122	110	40	37	32	55	77
Doctoral Degrees										
Graduate Programs in Areas of Environmental Education and Research										
I. Life Sciences										
Biochemistry, Cell Biology, Ecology and Evolutionary Biology, Genetics, Microbiology, Physiology and Neurobiology, Structural Biology and Biophysics	154	159	150	148	154	23	21	16	20	16
II. Mathematics and Physical Sciences										
Chemistry, Geological Sciences, Mathematics, Oceanography, Physics, Polymer Science, Statistics	348	352	370	377	356	27	40	49	39	42
III. Social Sciences										
Economics, Geography	63	65	62	52	61	10	3	9	6	9
Total Master's and Doctoral Degrees										
Graduate Programs in Areas of Environmental Education and Research										
I. Life Sciences										
Applied Genomics M.S., Biochemistry, Biodiversity and Conservation Biology, Cell Biology, Ecology and Evolutionary Biology, Genetics, Microbial Systems Analysis M.S., Microbiology, Physiology and Neurobiology, Structural Biology and Biophysics	204	210	213	225	249	54	49	54	45	56
II. Mathematics and Physical Sciences										
Chemistry, Geological Sciences, Mathematics, Applied Financial Mathematics M.S , Oceanography, Physics, Polymer Science, Statistics	437	461	469	478	479	103	94	132	107	124
III. Social Sciences										
Economics, Geography, Public and Non-Profit Management Certificate[3], Public Administration M P A., Public Financial Management Certificate[3]	133	147	163	174	171	50	40	41	61	86

Note: Minors are not reported on the required annual Connecticut Department of Higher Education and Federal IPEDS Degrees Conferred Survey Students enrolled with a minor reported in the fields above are as of tenth-day of the fall term A student may add a minor after the tenth day of classes, or during the spring term, which will not be reflected in the enrollment counts of minors above

[1] Environmental Science majors that are in the College of Liberal Arts and Sciences are reported above There are additional Environmental Science students that are in the College of Agriculture and Natural Resources reported on the Agriculture table (This is not a duplicate count.)

[2] The Environmental Economics and Policy minors are also shown on the College of Liberal Arts and Sciences table since the minor is offered by both Colleges (This is a duplicate count.)

[3] The Public and Non-Profit Management Certificate and the Public Financial Management Certificate are not reported on the Connecticut Department of Higher Education and Federal IPEDS Degrees Conferred Survey.

OIR/October 26, 2009

STATE OF CONNECTICUT

EMPLOYMENT AND TRAINING COMMISSION

WALLACE BARNES
CHAIRMAN

March 1, 2010

The Honorable John A. Kissel
The Honorable Mary M. Mushinsky
Co-Chair, Legislative Program Review
and Investigations Committee
State Capitol, Room 506
Hartford, CT 06106

Re: Raised Bill No.5164 – An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry.

Dear Senator Kissel and Representative Mushinsky:

The Connecticut Employment and Training Commission (CETC) is Connecticut's state workforce investment board. CETC provides policy and planning guidance to the Governor and General Assembly on workforce development, training and education-related matters and promotes coordination of relevant efforts in Connecticut. The majority of CETC members are business sector employers, with the balance representing organized labor, education, state agencies, community-based organizations and other key stakeholders. The Connecticut Office for Workforce Competitiveness (OWC) provides technical assistance and support.

On CETC's behalf, I want to express support for Raised Bill No. 5164, *An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry*, drafted as a product of the Committee's December 2009 report on *Connecticut's Economic Competitiveness in Selected Areas*.

In April 2009, CETC established the Connecticut Green Jobs Council (Council) in response to Governor Rell's Executive Order 23 establishing a blueprint for green jobs in Connecticut. In response to competitive funding opportunities available through the Federal American Recovery and Reinvestment Act, the Council subsequently transitioned into the Connecticut Green Jobs Partnership (Partnership) and submitted a successful proposal for a $3,360,000 State Energy Sector Partnership (SESP) training and strategic planning grant. The Partnership's winning proposal was submitted on CETC's behalf, the eligible entity in its capacity as Connecticut's state workforce investment board. The Partnership comprises a broad spectrum of state agencies, education leaders, representatives of the state's green industries, organized labor, workforce development officials and community organizations. In fact, each of the entities identified in the various sections of Raised Bill No. 5164 is included as a Partnership member.

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The proposed efforts outlined in the six sections of Raised Bill No. 5164 are entirely consistent with the green jobs creation strategic initiatives for Connecticut that will be promoted by the Partnership going forward, and also with the training efforts that will be supported by the SESP grant. We appreciate the Committee's efforts to focus on the need for a coordinated green jobs creation strategy for Connecticut. I believe that the proposed legislation promotes a set of useful, practical steps to promote that strategic agenda.

We will continue to follow your efforts on these matters with great interest. In conjunction with our colleagues from the Connecticut Green Jobs Partnership and the Office for Workforce Competitiveness, we would be pleased to consider providing any further support you may think helpful as you move forward with this important legislation.

Thank you for your consideration.

Sincerely,

Wallace Barnes

Wallace Barnes
Chairman

Line 9 pg 7

Connecticut Chapter
645 Farmington Ave.
Hartford, Connecticut 06105
www.connecticut.sierraclub.org

Martin Mador, Legislative Chair

Program Review and Investigations Committee
March 1, 2010

Testimony In Favor of
HB 5164 AC Implementing the Recommendation of the PRI Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry

I am Martin Mador, 130 Highland Ave., Hamden, CT 06518. I am the volunteer Legislative Chair for the Sierra Club Connecticut Chapter. I hold a Masters of Environmental Management from the Yale School of Forestry and Environmental Studies

There is a consensus that job preservation and creation is a top priority for the state now and in the coming years. Our economic prosperity, and our ability to provide for a healthy environment and a high quality of life, depend on a robust workforce

The new concept of "green" jobs will be an important component of the state's workforce. These are jobs which will strengthen the state's infrastructure They will help provide a building stock which is energy efficient They will help move us from our dependence on fossil fuels to an economy based on renewable energy. And, these are jobs which, by definition, must remain with the state They cannot be outsourced or offshored

HB 5164 is one of several bills introduced this session which will help to provide substantial training and education for this green workforce.

Sierra strongly recommends passage of the bill

Testimony before the Program Review and Investigations Committee
By Louise Feroe, Senior Vice Chancellor, Connecticut State University System
Monday, March 1, 2010

Thank you Senator Kissel, Representative Mushinsky and members of the Committee for the opportunity to testify today. My name is Louise Feroe, Senior Vice Chancellor for Academic and Student Affairs for the Connecticut State University System (CSUS). You are considering a number of bills of particular interest to us.

First, regarding House Bill 5164, *An Act Implementing the Recommendation of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry*, I commend you for your interest and commitment to green jobs and the Connecticut economy. I was very pleased to testify before this committee during the development of your report, and I am pleased that a number of your recommendations are now moving forward as proposed legislation. On this bill specifically, you will be hearing from Bill Leahy of the Institute for Sustainable Energy at Eastern Connecticut State University. Bill will share his expertise in sustainability and our views in support of the initiatives outlined in the legislation.

Second, regarding Senate Bill 268, *An Act Implementing the Recommendations of the Program Review and Investigations Committee Establishing a Pilot Program to Reward Institutions of Higher Education that are Meeting Established Goals*, I would say that since our Chairman of the Board of Trustees and Chancellor are statutory members of the Higher Education Coordinating Council, they certainly look forward to working with Commissioner Meotti and our colleagues on the Council to develop appropriate measures and identify the most feasible pilots. As you know, we place a high value on coordination and collaboration, because we believe it is beneficial to our students and our state.

I'd like to spend my remaining time discussing House Bill 5165, *An Act Concerning High School Graduation Requirements*. Let me first offer you some context. This year, for the first time in our history, CSUS set all-time records for the number of full-time undergraduate and full-time graduate students in the same year. Our total enrollment now exceeds 36,000. Most important for this discussion, especially when so many of Connecticut's young people are leaving our state, is the fact that 86 percent of our graduates stay in Connecticut after graduation, to pursue their careers, raise families and contribute to the economic vitality and quality of life in Connecticut.

We also take tremendous pride in the work we are doing with the business community in Connecticut, responding to the workforce needs they have today, and anticipate having in the years ahead. And we are taking concrete steps to develop academic programs that respond specifically to their needs, and their concerns.

Along the lines of coordinated planning and programs, let me first mention the new Dual Admission program launched last fall by the Connecticut State University System and the Connecticut Community Colleges. The goals are simple but substantial: to make the transfer of credits from community college to university easier, to better advise students at the community college level so that they will take courses that will transfer, and to provide students with the opportunity to pursue a bachelor's degree after completing their associate's degree.

State of Connecticut
Department of Higher Education

Testimony by the Connecticut Department of Higher Education
Before the Program Review and Investigations Committee
1:30 p.m. – LOB Room 2D
March 1, 2010

HB5349

House Bill 5164 (Raised) An Act Implementing the Recommendation of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry

The Department of Higher Education is pleased to support HB 5164: An Act Implementing the Recommendation of the Program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry.

We applaud the Program Review Committee's proposal which addresses two critical needs for creating new educational curriculum, and for stimulating economic development in emerging fields of green technology. Today's economy demands both for Connecticut to create new and meaningful employment opportunities for our citizens. The renewed emphasis on credentials and careers is further encouraged by the governor's loan reimbursement initiative. This alignment will attract students to new fields of study and encourage the establishment of new careers. It wisely builds upon the federal government's recent focus on the creation of both green economic investments and new green jobs.

On behalf of our colleges and universities, both public and independent, we very much support this proposal's involvement of higher education in stimulating economic development, and we look forward to working on it with members of the Program Review and Investigations Committee.

Senate Bill 268 (Raised) An Act Implementing the Recommendations of the Program Review and Investigations Committee Establishing a Pilot Program to Reward Institutions of Higher Education that are Meeting Established Goals

The Department of Higher Education is pleased to support the establishment of a pilot performance measure incentive for the Accountability Report as outlined in SB 268.

We are cognizant of the limited availability of funding resources at this time, and are heartened by the Committee's support of goal attainment. We are encouraged by the recognition of the importance of accountability in the construction of an efficient and high quality education system. It is in difficult economic times such as these that any incentive to the pursuit of goal oriented performance is greatly appreciated.

Our public colleges and universities work hard to achieve and maintain excellent performance and are pleased to continue to demonstrate accountability for established goals.

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Independent Electrical Contractors of New England, Inc.

TO: Program Review & Investigations Committee

From: Lisa Hutner, Executive Director

Date: March 1, 2010

RE: H. B. No. 5164 (RAISED) AN ACT IMPLEMENTING THE RECOMMENDATION OF THE PROGRAM REVIEW AND INVESTIGATIONS COMMITTEE CONCERNING THE ALIGNMENT OF POSTSECONDARY EDUCATION AND EMPLOYMENT IN THE GREEN INDUSTRY

Thank you for the opportunity to comment regarding training and employment in the green industry, specifically solar photovoltaic.

In reviewing the committee's report, we noticed that the information regarding solar photovoltaic (PV) licensing does not indicate that licensed E-1 and E-2 electricians are currently authorized to perform solar PV installations. In fact, the state Department of Consumer Protection has confirmed that solar photovoltaic installations are within the scope of the E-1 and E-2 licenses and incorporated into the four-year apprenticeship training program that one must complete in order to be eligible to obtain an E-1 or E-2 license. ***We believe the report should be revised to clarify this.***

We also believe that the committee should address concerns with the administration of the Connecticut Clean Energy Fund's solar PV incentive program in order to support the growth of green jobs in the solar industry. As currently structured, Connecticut's energy efficiency programs create barriers for Connecticut's skilled tradespeople to become eligible as certified installers. As indicated, under current law, E-1 and E-2 electrical license holders are duly authorized to perform solar PV work. However, the Connecticut Clean Energy Fund requires licensed electricians to meet unnecessary training and experience requirements which have hindered opportunities to compete for solar PV jobs in Connecticut.

In addition, several of our members have pursued approval as a "Qualified Installers" or "Provisional Installers". Under the program, a "Qualified Installer" is an installation supervisor who has taken a PV installation training course and has completed at least three installations as the lead installer or ten installations as an apprentice. This is an arbitrary requirement, particularly as it pertains to E-1 and E-2 electricians. Again, an E-1 and E-2 electrician is already authorized to perform solar PV work. In addition, allowing an individual who has served as an apprentice on 10 installations to become a certified installer is arbitrary inasmuch as an

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apprentice may not have gained any significant experience in solar PV or electrical grounding and wiring, depending on how far along in their apprenticeship they were.

To address these disparities, CCEF created a "Provisional Installer" status. In order to obtain "Provisional Installer" status, a PV-1 or an E-1 licensed electrician must install 3 systems subject to review by CCEF. Inasmuch as licensed electricians are already authorized by the state Department of Consumer Protection to install solar PV systems, this requirement is unnecessary for E-1 license holders. In addition, given the high cost of solar PV systems, a homeowner is not going to choose to have a system installed by an installer where the installation will not be eligible for the rebate.

We therefore recommend the inclusion of language in the bill which provides that a properly licensed electrician is authorized as a qualified installer for purposes of the Connecticut Clean Energy Fund program.

In addition, CCEF is now requiring all PV contractors to have at least one permanent employee successfully complete and pass the NABCEP entry level PV exam. All provisional installation contractors will be required to complete the NABCEP entry level certificate exam before final approval to the CCEF approved eligible installation contractor list. Although NABCEP is considered a suitable training program, other relevant training programs, such as those offered by the state's community colleges, should also be considered.

We therefore recommend the inclusion of language in the bill which directs CCEF to recognize the validity of solar PV training programs offered by the state's public institutions.

Thank you for your consideration of these recommendations. We look forward to working with the committee to develop a bill that will nurture the growth of green jobs in Connecticut.

The Independent Electrical Contractors of New England is the premier trade association representing Connecticut, Massachusetts and Rhode Island independent electrical contractors aggressively working with the industry to establish a free environment for merit shop – a philosophy that promotes the concept of free enterprise, open competition and economic opportunity for all.

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At Eastern Connecticut
State University

Testimony of William Leahy
Institute for Sustainable Energy at Eastern Connecticut State University
Before the
Program Review and Investigations Committee
Monday, March 1, 2010

Good afternoon, Senator Kissel, Representative Mushinsky, and distinguished members of the Program Review and Investigations Committee. My name is William Leahy and I am the Chief Operating Officer for the Institute for Sustainable Energy (ISE) at Eastern Connecticut State University. I am speaking on behalf of President Elsa Nunez. I am here today in support of the progress being made to create workforce development programs for Green Collar Jobs in Connecticut and to comment on the recommendations included in HB 5164: AN ACT IMPLEMENTING THE RECOMMENDATION OF THE PROGRAM REVIEW AND INVESTIGATIONS COMMITTEE CONCERNING THE ALIGNMENT OF POSTSECONDARY EDUCATION AND EMPLOYMENT IN THE GREEN INDUSTRY.

I would like to take this opportunity to thank you for addressing workforce development issues in Connecticut. ISE supports your concerns over the impact which the current economic climate is having on business, jobs and the workforce. We also appreciate your continued interest in supporting the educational needs of our workforce as we transition to a Green Economy.

Having spent my entire forty year career in the fields of technical education, energy and sustainability, I feel particularly well qualified to assist Connecticut in this period of transition. There are many good ideas and initiatives being considered which could be supported by the legislation that you are considering in this session.

Connecticut has taken advantage of a number of opportunities to participate in the American Recovery and Reinvestment Act, moving the state forward towards a more energy efficient and sustainable future through the creation of a highly quality and highly skilled Green-Collar workforce.

Connecticut Energy Sector Partnership, after receiving a $3 million ARRA grant from the Department of Labor, is utilizing existing organizational and educational frameworks within state agencies and the higher education system to design programs which support the full spectrum of career options including: weatherization specialists, building analysts, water and waste water operations technicians, green manufacturing specialists, Brownfield recovery technicians, deconstruction specialists, solar energy system installers, green builders, and more informed local code officials.

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The Workplace, Inc. through a $4 million "Pathways from Poverty" grant, has created "Green-Up Bridgeport" which creates a virtual academy in the community, connecting the resources of community organizations and the local office of the Department of Labor with training partnerships at Bullard Havens Technical High School, Housatonic Community College, the CSU system, University of Bridgeport, and EPA New England. This competitive grant was one of 30 awards from over 500 applications, and will become a national model for inner city green job training. It will provide individual counseling, assessment, family support, and placement, linked to classroom and hands-on training in four green job career ladders. These ladders provide opportunities to progress to a "family supporting, career directed, sustainable job" including:

- Green builders, home improvement contractors and deconstruction technicians,
- Building energy systems operators and maintenance technicians,
- Resource management specialist including sustainable landscapers, recyclers, water and waste water technicians; and
- Transportation specialists working on mass transit operations and maintenance.

These exceptional programs focus primarily on the unemployed and under-employed. The CSUS is developing programs that are aimed at management level careers, including; certified energy managers; civil, mechanical and construction technology engineers; specialists in sustainable energy systems, lean and green manufacturing; economists for analysis for financing energy efficiency projects and renewable energy systems; carbon trading, and other energy industry and public policy jobs with more emphasis on business development and encouraging entrepreneurs.

Comments on Sections 3 through 6

Sec. 3. Each regional vocational-technical school and public institution of higher education shall develop, in such manner as the Commissioners of Education and Higher Education prescribe, agreements to share equipment required for students participating in green jobs certificate or degree programs or enrolled in a course of study concerning green jobs, including, but not limited to, solar photovoltaic installation.

Response: CTHSS, CCC and the CSUS have already forged a strong relationship between Connecticut's technical high schools and community colleges focused on making underutilized technical classrooms available after normal high school hours for continuing education students. The ARRA funding does not always provide necessary equipment to adequately offer certification training in some of the emerging technologies. Providing funding for equipping regional centers would be both helpful and cost effective.

CCC and CSUS have clear articulation agreements in place linking their educational programs so that students who want to progress from a community college to a state university upon earning an associate's degree, can move on in a seamless fashion. The faculty at both levels share course content and educational objectives so that students transferring for their junior year blend with students that have been at the universities from the start of their programs.

Sec. 4. Public institutions of higher education, in consultation with the regional work force development boards, shall support efforts to develop career ladders and lattices in the green collar

fields, particularly for those workers who gained entry into such fields as a result of funds made available pursuant to the American Recovery and Reinvestment Act of 2009.

Response: Eastern Connecticut State University, through the initiative of the Institute for Sustainable Energy, partnered with the Workplace, Inc., the Workforce Development Board for Southwest Connecticut, has developed four Green Job Career Ladders being utilized in "Green-Up Bridgeport," a ARRA – Department of Labor grant sponsored model program. The materials being developed include: client assessment criteria, exploratory course curriculum and support material, and the mapping of existing local training programs for national credentialing. The materials developed in this project will be widely circulated at the completion of the pilot phase. Attached is a power point describing the career ladders.

Sec. 5. The Department of Higher Education, in consultation with the Department of Education, shall annually prepare a list of every green jobs course and green jobs certificate and degree program offered by regional vocational-technical schools and public institutions of higher education and an inventory of green jobs related equipment used by such schools and institutions of higher education.

Response: This database will be extremely helpful if it is structured and accessible as a web-based career search tool. Once completed, it will be used by the Workforce Development Boards, career counselors in our community organizations, schools and universities and also accessible by the public. If it is displayed on a website in a manner that makes it easy to search, it can be used to identify courses and certification that meet the client's interests and abilities. The website should also have links to traditional job search tools like O-net and the on-line Occupational Outlook Handbook. ISE currently maintains five websites, including www.ctenergyinfo.com, and would be interested in working with the Department of Education and Department of Higher Education to develop and maintain this database and provide regional instructional workshops on its use.

Sec. 6. Staff of the Center for Clean Energy Engineering at The University of Connecticut and the Institute of Sustainable Energy at Eastern Connecticut State University shall meet at least quarterly to discuss possible ways to collaborate on green initiatives. Staff of other public institutions of higher education and centers affiliated with such institutions of higher education that focus on clean or sustainable energy and that are located within the same geographic regions shall meet to develop collaborative efforts with regard to the green industry.

Response: As can be verified by the administrators at the CTHSS and the CT Community Colleges, and the many municipal and school officials we have assisted since our formation in 2001, the staff of the Institute for Sustainable Energy is available to plan and form collaborative relationships that are in the best interest of the citizens of the State of Connecticut. Our mission has always been ***"to identify, develop and become an objective energy and educational resource regarding the means for achieving a sustainable energy future for Connecticut."***

ISE has experience in Green Collar Job task analysis, program identification, and development including our recent experience as an active member of the State Energy Sector Partnership, the Connecticut Energy Workforce Development Consortium, and the Green Jobs Panel convened by House Speaker Donovan, and the Green-Up Bridgeport Pathways from Poverty design team. ISE could facilitate the collaboration effort needed to promote better communication between all the Green Jobs training stakeholders recommended in Section 6. .

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Thank you for this opportunity to support your assessment of this important legislation. I would be happy to answer any questions that you may have at this time.

Respectfully Submitted;

William M. Leahy,
Chief Operating Officer

Background on
The Institute for Sustainable Energy
Eastern Connecticut State University

The Institute for Sustainable Energy at Eastern Connecticut State University was established in 2001 by the Board of Trustees of the Connecticut State University System to provide an unbiased view of energy resources and practical solutions to improving the state's energy profile and to promote a more sustainable energy future for Connecticut. The Institute's focuses on matters related to the formation of public policy, providing educational outreach, supporting energy solutions and maintaining information resources on energy and sustainability. The Institute provides educational programs, benchmarking and energy planning services, relative to energy efficiency, the use of renewable energy sources and the application of high performance building standards, to Connecticut's state agencies, legislature, municipal governments, school systems and not-for-profit organizations. Institute is the recipient of the 2004 National Energy Star Partnership Award for Community Leadership in Energy Education from the US Department of Energy and Environmental Protection Agency, as well as numerous recognitions from regional and state organizations. The Institute is currently assisting the CT Technical High Schools, community colleges and the cities of Bridgeport in developing Green Collar Job training initiatives.

William M. Leahy is the Chief Operating Officer of the Institute for Sustainable Energy at Eastern Connecticut State University (ECSU). He holds a BS and MS in Industrial Education from Central Connecticut State University and a MS in Business from Rensselaer. He earned a Certified Energy Manager (CEM) and Certified Energy Auditor (CEA) from the Association of Energy Engineers and is a LEED Accredited Profession from the US Green Building Council. Leahy has forty years of experience in public education and/or energy management. In 2002, Leahy was appointed Director at the Institute for Sustainable Energy at Eastern Connecticut State University.

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"Green-up Bridgeport"
Pathways to Green Collar Jobs
March 1, 2020

"...a major shift to renewable energy and efficiency is expected to produce 2 million new Green Jobs during the next decade."
US Conference of Mayors

William Leahy, Director
Institute for Sustainable Energy
Eastern Connecticut State University
www.sustainenergy.org

WORKPLACE, INC.

What are Green Collar Jobs?

"Green jobs...help conserve energy, preserve the environment, promote the deployment of new technologies, and contribute to the mission of becoming a more sustainable nation."

Why Green-Collar Jobs?

- Creating **new jobs** or **retraining** the unemployed in a time of economic downturn
- Providing opportunities for **career advancement** in the sustainability fields
- Lower energy costs and reduce our dependence on foreign oil, and strengthening national security.
- Promoting the use of domestic renewable energy resources and advanced technologies.
- Reducing the tax burdens of inefficient public buildings and public housing
- Mitigating pollution and climate change by cutting emissions including green house gas .

Revitalize Bridgeport

- Weatherization, energy efficient retrofits and energy management for existing buildings, green building standards,
- Clean "Green" energy, renewable energy systems (solar photovoltaic, solar thermal, geothermal, small wind, landfill gas, anaerobic digesters), biofuel production, and cogeneration,
- Community farming and urban forestry, sustainable landscaping, waterfront restoration, rainwater run-off management and green roofs,
- Recycling, waste reduction, and single stream separation,
- Deconstruction, recycling of building construction waste, and reuse of building materials,
- Brownfield Remediation, Clean-up abandoned, idle or under used sites, restore value and use or return to tax rolls
- Pedestrian and bike friendly, mass transit options, auto and bus retrofits for reduced emissions and use of alternative fuels,

000459

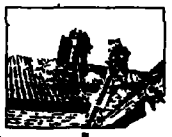
Why Train using Green Collar Job Career Ladders?

- Multiple exploratory experience and options.
- Matches jobs to the participants' interests and abilities.
- Advancement depends on aptitude and development.
- Provides a clear path toward upward mobility.
- Motivates participant to advance to next level.
- Offers starting job with minimal experience & training.
- Provides multiple possibilities for work setting.
- Provides nationally recognized credentials.
- Leads from minimum wage job to **"Family Supporting, Career Directed Sustainable Career."**

Green Construction Career Ladder

- Deconstruction Contractor*
- Green Home Improvement Contractor*
- Green Carpenter or Deconstruction Tech
- LEED Associate*
- Analyst* or Crew Supervisor
- Weatherization and Envelope Specialist*
- Helper or Apprentice*
- Laborer

Building Energy Systems Career Ladder



- Certified Energy Manager*
- Renewable Energy Systems Installer*
- Energy Improvement Contractor*
- Analyst* and Crew Supervisor
- HVAC Technician*
- Weatherization and Envelope Specialist*
- Building Maintenance
- Custodian

Resource Management Career Ladder

- Urban Landscape and Garden Contractor
- Water and Waste Water Technician*
- Brownfield Restoration Technician*
- Rainwater Runoff Mitigation Technician
- Sustainable Landscape Technician
- Community Garden Worker
- Recycling Technician
- Grounds Maintenance Worker

000460

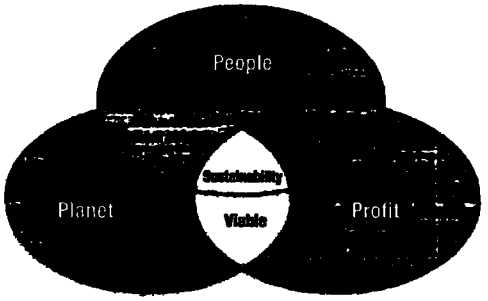
Transportation Career Ladders

- Transit Operations Supervisor
- Bikeway and Greenway Planner
- Auto, Truck and Bus Mechanic*
- Biofuel Production Worker
- Rail Maintenance Tech
- Diesel Retrofit Installer
- Mechanics Helper
- Vehicle Servicer

Recognized Credentials

- Building Performance Institute (BPI)
- North American Board of Certified Energy Practitioners
- US Green Building Council
- Association of Energy Engineers
- Environmental Protection Agency

People, Planet, Profit The Intersection of Interests



Components of the Triple Bottom Line

- **Economic Prosperity** – The profit that businesses and individuals accrues for themselves and shares with the community
- **Environmental Quality** – The practices that we employ to support sustainability
- **Social Justice** – The practices that we employ to limit negative impacts upon society and improve the quality of life of residents of the local and global community

000461

Businesses can be Successful AND Sustainable

United Technologies

GREEN MOUNTAIN COFFEE ROASTERS

General Electric - Ecomagination

"This is not just good for society, it's good for GE inventors – we can solve tough global problems and make money doing it."

Jeffrey R Immelt, CEO of General Electric

Green – UP Bridgeport

THE WORKPLACE, INC.
Southwestern Connecticut's Regional Workforce Development Board

Institute for Sustainable Energy
At Eastern Connecticut State University

000462

Testimony of Jesmin K. Basanti
Staff Attorney, CBIA
Before the Committee on Program Review and Investigations
Hartford, Connecticut
March 4, 2010

H.B. 5164 An Act Implementing the Recommendation of PRI Concerning Alignment of Postsecondary Education and Employment in Green Industry.
And
H.B. 5349 An Act Implementing the Recommendations of PRI Concerning a Strategic Plan and Coordination for Alignment of Postsecondary Education and Employment.

Good Afternoon Representative Mushinsky, Senator Kissel and other members of the Committee. My name is Jesmin Basanti, Staff Attorney for the Connecticut Business and Industry Association (CBIA). CBIA represents approximately 10,000 member companies in virtually every industry and the vast majority of our member companies have fewer than 50 employees.

As our economy continues to move in to new and growing industries like "green jobs" and the knowledge economy, Connecticut will need to ensure that our workforce is equipped with the skills necessary to work and grow in this new atmosphere. CBIA **supports** the goals behind **HB 5164 and HB 5349** to create job training programs, determine sectors for growth and where there are teacher shortages. We have been working with regional workforce development boards on an Advanced Manufacturing grant to assist in this area and our members agree it is important. We understand that state may be receiving federal funds that could assist in this area and it is equally as important to ensure that Connecticut can be successful in future bidding processes when applying for further assistance from the federal government to create green jobs and promote green energy and conservation.

CBIA continues to support initiatives aimed at developing a better educated and skilled workforce. Thank you for the opportunity to testify today and I would be happy to answer any questions that you may have.

Line 28-pg 2

Program Review and Investigation Committee
Testimony prepared by Dr. Alice Pritchard
RB 5165, *An Act Concerning High School Graduation Requirements*, RB 5349 *An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning a Strategic Plan and Coordination for Alignment of Postsecondary Education and Employment*, RB 266 *An Act Implementing the Recommendations of the Program Review and Investigations Committee Concerning Transferring Adult Education Programs to the Community-Technical College System*, RB 5164 *An Act Implementing the Recommendation of the program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry*
March 1, 2010

Good afternoon. My name is Alice Pritchard and I am the Executive Director of the Connecticut Women's Education and Legal Fund (CWEALF). CWEALF is a statewide non-profit organization dedicated to empowering women, girls and their families to achieve equal opportunities in their personal and professional lives.

For 37 years, CWEALF has worked to advance women's opportunities. We believe that extending, enhancing and the coordination of opportunities in education will improve the future earning potential of all Connecticut residents, particularly women and girls. Therefore, I am here today to urge your support for the following bills:

RB 5165, *An Act Concerning High School Graduation Requirements.*

While the entire bill is important to the educational needs of youth in Connecticut, we applaud the legislature's efforts to align the state's high school math requirements with increasing college and professional expectations by requiring that students take Algebra II. Algebra II is often referred to as a "gateway" course because it increases access to postsecondary education, is important for success in college and graduate school, and is critical to many occupations, including those that don't require a four-year college degree.

Evidence shows that the higher level of math a student attains in high schools, the greater chance he or she will attend and graduate from college and find higher-paying jobs in the future. Students who complete Algebra II in high school more than double their chances of earning four-year college degrees, while low-income students who take advanced math go to college almost three times the rate than similar students who do not.

Many, if not most, colleges require more than basic math classes for admission. The University of Connecticut, for instance, states that competitive applicants should enroll in rigorous programs of study and college preparatory work that extends beyond the minimum academic requirements of their high school. Some technical schools, like Virginia Tech, mandate two years of algebra to be considered for admittance. In fact, Virginia Tech states that it gives admission preference to those who complete math beyond Algebra II.

It is not only students attending four-year colleges that need to complete advanced math courses in high school. Students in two-year colleges also must have acquired Algebra II skills in order

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improvements in the CTHSS's Licensed Practical Nurse program to ensure a seamless transition to the associate degree nursing programs offered by the CCCS. If these programs were operated by the CCCS, articulation with degree programs could be greatly enhanced and students would be eligible to receive college credit for a wider range of post-secondary training. Programs might be combined between the two systems or coordinated to provide programs statewide using the resources of both systems to ensure geographic spread. In addition, students might be eligible for additional financial assistance and student supports that aren't available to the CTHSS programs. It is critical however that this assessment fully examines the costs of faculty, facilities and equipment and student supports. In addition, a broad range of stakeholder groups, such as apprenticeship programs, employers, faculty, and workforce professionals, need to be engaged in this review to identify challenges and opportunities for improvement. This will not be a cheaper alternative most likely but will provide for a clearer career pathway for adults and a strengthened workforce pipeline.

RB 5164 *An Act Implementing the Recommendation of the program Review and Investigations Committee Concerning the Alignment of Postsecondary Education and Employment in the Green Industry.* The engagement of the CT Employment and Training Commission, Workforce Investment Boards and the state's secondary and post-secondary education institutions in the establishment of certificate and degree programs, program alignment, and career ladder development will strengthen the state's workforce training system and better position current and future workers to meet the needs of employers in this emerging field.