

PA10-080

HB5225

General Law	421-445, 489-499, 504-510, 518, 519-520, 527-530, 536- 544, 548-550, 553-555, 601-635	100
House	712-729	18
Senate	3542, 3550-3552	4
		122

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**CONNECTICUT
GENERAL ASSEMBLY
HOUSE**

**PROCEEDINGS
2010**

**VOL.53
PART 3
595 – 894**

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REPRESENTATIVES:

Aye.

DEPUTY SPEAKER ORANGE:

All those opposed, nay.

The ayes have it. The resolution is adopted.

Will the Clerk please call Calendar Number 116.

THE CLERK:

On page 9, Calendar 116, substitute for House
Bill Number 5225, AN ACT CONCERNING SOLAR WORK,
favorable report of the Committee on General Law.

DEPUTY SPEAKER ORANGE:

Representative Shapiro, you have the floor, sir.

REP. SHAPIRO (144th):

Thank you, Madam Speaker.

Madam Speaker, 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.
Representative Shapiro, you have the floor, sir.

REP. SHAPIRO (144th):

Thank you, Madam Speaker.

Madam Speaker, this bill allows qualified
electricians to be eligible for Clean Energy Fund

rebates. It eliminates the traditional chicken and egg problem that we've had where qualified licensed electricians who've been practicing for 20 or 30 years have been unable to get credits until they do a certain number of installations. You can't do the installations if you don't have access to the credits. So it was really stalling people's ability to work in this field.

By expanding the number of installers, we would be creating green jobs, expanding the solar industry, bringing costs down and ultimately getting more of this into consumers' hands, which is a good thing.

The bill defines qualified installers by experience or training. It would require that all of these licensed electricians complete a training course or receive certification from a manufacturer on the product they're going to install. In addition, they would have to complete one or more systems fully installed and inspected.

As I've just mentioned, all of these projects would still be subject to insurance requirements that are currently in place and also inspection requirements that are currently in place.

Finally, I would say that this is an example of

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how we can take a simple step to create our green economy. And something that will put a smile on everyone's face, there is no fiscal note, so this can be helpful to our economy without any impact on the state budget.

And I urge passage of the bill, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Thank you, Representative Shapiro.

Will you remark further on the bill? Will you remark further on the bill?

Representative Bacchiochi of the 52nd, you have the floor, ma'am.

REP. BACCHIOCHI (52nd):

Thank you, Madam Speaker.

Madam Speaker, I want to thank the chairmen and the members of the committee. This was a long work in progress and together, with the leadership of the chairs, we did end up with a good bill.

But I do have just a couple of questions for clarification, through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Please proceed, ma'am.

REP. BACCHIOCHI (52nd):

Thank you.

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Approximately, in line 16, it breaks down what the qualifications will be for the photovoltaic installers. And I'm just a little bit confused, and I hope we can clarify that the A, B, and C, like, do you need to do A or B?

If the chairman could just clarify those lines around lines -- between 10 and 16. Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Thank you, Madam Speaker.

And through you to Representative Bacchiochi, whose work I appreciate on this bill and on the committee, it would be either/or for these options. So an installer would have to either complete one or more installations as a lead installer or a subcontractor, which is tied to the grid. Or they could have been the on-site supervisor, or they could have been on seven systems as an apprentice. So it's one of those three options.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Thank you, sir.

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Representative Bacchiochi.

REP. BACCHIOCHI (52nd):

Thank you.

You're saying then, Mr. Chairman, that it should be only one of the three that are listed. Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Yes. Thank you, Madam Speaker.

And through you, it is one of those three in addition to the training requirement, which would be either -- have a training course in this field or a manufacturer certification.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Bacchiochi.

REP. BACCHIOCHI (52nd):

Thank you.

Do you -- through you, Madam Speaker, if the good chairman wouldn't mind, could you just state the three requirements for the Chamber?

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

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REP. SHAPIRO (144th):

Certainly. Thank you, Madam Speaker.

And through you, the requirements are that they would have completed one or more PV installations as a Lead installer or as a subcontractor. The second one is that they've been the on-site supervisor for one or more PV installations. And the third is that they would have completed not less than seven PV installations as an apprentice.

So you've either installed one yourself, you've been the supervisor who managed the project, or you've been an apprentice on seven of them, all of those in conjunction with your training requirements.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Bacchiochi.

REP. BACCHIOCHI (52nd):

Thank you, Madam Speaker.

And through you, Madam Speaker, I appreciate those answers, and I will be supporting the bill.

Thank you.

DEPUTY SPEAKER ORANGE:

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

Representative Willis of the 64th.

REP. WILLIS (64th):

Thank you, Madam Speaker.

A question to you through the -- through you to the proponent of the bill.

DEPUTY SPEAKER ORANGE:

Please proceed, ma'am.

REP. WILLIS (64th):

I have some questions about installers who are not qualified E1 or E2 electricians. How -- what would the status of someone who is a certified solar installer right now? When they have to go through an electrician's licensing process?

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Through you, Madam Speaker, absolutely not. This bill does not affect already licensed PV1 and PV2 solar installers. Their status is unchanged by this bill.

They would not have to become electricians in order to do it. They wouldn't have to jump through any additional hoops in order to practice business the way they are doing it today. They would practice just

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as they are.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Willis.

REP. WILLIS (64th):

Thank you for your answer.

Through you to the proponent of the bill, my question is in the original draft of the bill -- because I can see that there's probably been some changes made to the original -- was there different standards in the original bill for solar installers?

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Thank you, Madam Speaker.

Through you, there were not different requirements for solar installers, but there were provisions that would have affected their business.

In the earlier bill it would have required certain licensing for people working who were working on those projects, not the PV1 or PV2 licenses, but people who were carrying things for them, doing some work on the roof.

There would have been requirements placed on

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those individuals, but that is not in the current version of the bill. And so the existing solar companies' practices will not be changed at all. Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Willis.

REP. WILLIS (64th):

Thank you very much; the answers to my questions.

DEPUTY SPEAKER ORANGE:

Thank you, ma'am.

Will you care to remark further? Will you care to remark further?

Representative Pat Dillon of the 92nd, you have the floor, ma'am.

REP. DILLON (92nd):

Thank you very much, Madam Speaker.

Through you, a question to the proponent.

DEPUTY SPEAKER ORANGE:

Please proceed, ma'am.

REP. DILLON (92nd):

Thank you.

Like some other people, I received communications from folks in my district who were very troubled about the original proposal. And they believe that it

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effectively eliminated the PV1 and that it might lead to less safe installation.

I just wanted to be assured because I don't follow these issues closely, but this is an issue that has a tremendous amount of support and concern in our area. What fixes were changed in the various iterations to remedy the concerns? And I believe we forwarded you some of those issues; I requested that they be done.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Thank you, Madam Speaker.

And through you, there were several remedies in the bill. There was an inconsistency about how it would affect the licensed electricians versus the PV installers. There is no reference to the PV1 or PV2 license here. It does not eliminate them in any sense. It deals strictly with the electricians and how they deal with credits from the fund.

Because under existing statute, electricians are already licensed to do this work. They just weren't eligible for the credits. And the PV1 and PV2

installers are also already licensed under existing statute to perform this work and they are already eligible for the credits. So nothing in this bill changes that.

Originally in the bill there were some provisions, as I mentioned to Representative Willis, that might have affected portions of the solar installer's business; some of their workers, not the PV1 or PV2 licensees, but more laborer types. And those provisions have been removed so that the solar installer companies can operate as they did before this bill.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Dillon.

REP. DILLON (92nd):

Thank you, Madam Speaker.

For some reason there seemed to be a perception that solar installation work would be restricted to E1 and E2, and I don't know why. And I must admit that I'm not familiar enough with the issue, but I do respect a lot of the people who have been quite energetic in raising the issue. And I just want to question you about that E1/E2 question and how it

would affect what the current practice is now.

DEPUTY SPEAKER ORANGE:

Thank you, ma'am.

Would you care to remark further? Would you care to remark further?

Representative Chapin of the 67th, you have the floor, sir.

REP. CHAPIN (67th):

Thank you, Madam Speaker.

A few questions to the chairman of the General Law Committee. Through you, please.

DEPUTY SPEAKER ORANGE:

Please proceed, sir.

REP. CHAPIN (67th):

Thank you, Madam Speaker.

In following up on the ranking member's questions, I just want to be clear. Is my understanding correct that one of these installers, in order to be eligible, would have to both complete the training course or have a manufacturer's certification, and been a Lead installer or one of the other provisions?

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Through you, Madam Speaker, yes. You are correct, sir.

DEPUTY SPEAKER ORANGE:

Representative Chapin.

REP. CHAPIN (67th):

Thank you, Madam Speaker.

And again, through you, it seems to me last year we were dealing with a similar issue. Could the gentleman confirm for me that that was for the Connecticut Clean Energy Fund and this is for a different grant program?

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Through you, Madam Speaker, I believe they are for the same rebate program.

DEPUTY SPEAKER ORANGE:

Representative Chapin.

REP. CHAPIN (67th):

Thank you, Madam Speaker.

And I thank the gentleman for his answers. I'd

also like thank the leadership of the committee and the committee itself for bringing this issue forward. It is something that I have some familiarity with through discussions over the last session on similar issues.

I think there's one thing that we need to be clear here; one point we need to be clear on here and that's that the Department of Consumer Protection, who does the licensing of both E1 and E2 license holders as well as PVI PV2 license holders, the Department of Consumer Protection correctly maintains that an E1 or E2 license holder is eligible under Connecticut law to do these installations.

And what this bill attempts to do is just to clarify that those individuals as well can apply for these grant programs. So I thank the committee for bringing the bill forward and I urge my colleagues to support it.

Thank you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Thank you, sir.

Representative Pat Dillon of the 92nd, I profusely apologize. I do believe I cut you off, that you were about to ask a question or had asked a

question. So I apologize to you, ma'am. And if you wish, you have the floor.

REP. DILLON (92nd):

Thank you, Madam Speaker.

Yes. There was a question pending, and the concern which may be based on an earlier iteration was that this work was restricted to E1 and E2, that there aren't enough of them, that there would be unqualified people who would be performing under the supervision of people in that category. And the concern was exactly how that affects, is that still in the current bill? And obviously, a lot of folks believe that a PV1 specialist should be there and that it shouldn't be under the general -- it's almost like a practice act to me, that the letters I've been getting.

But is that original intent still in the bill or has that language changed? Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Shapiro.

REP. SHAPIRO (144th):

Thank you, Madam Speaker and thank the good Representative for her question.

In fact, that intent never existed, and I believe

it was a missed perception of parts of the bill and perhaps also a misreading of earlier language. The electricians and the PV installers were always meant to coexist. They both already, under existing statute, have the ability to install these.

And this is clearly, as Representative Chapin just said, an opportunity to expand people who are eligible for the Clean Energy Fund credits to add electricians to that list to which the licensed PV1 and PV2 people already exist.

So the solar installation companies, who are doing good work and operating in Connecticut and blazed the trail in the Green industry for us, will be able to continue doing their good work. And now we will be able to add an additional pool of people who has already qualified to do the work to get credits to do that work and expand the pool of installers who customers can choose.

Through you, Madam Speaker.

DEPUTY SPEAKER ORANGE:

Representative Dillon.

REP. DILLON (92nd):

Thank you.

And thank you, Madam Speaker for remembering.

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DEPUTY SPEAKER ORANGE:

And once again, I apologize to you,
Representative Dillon.

Will you care to remark further? Will you care
to remark further on the bill before us? If not,
staff and guests to the well of the House. Members
take your seats. The machine will be open.

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.

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 so, the machine will be locked
and the Clerk will take a tally. Will the Clerk
please announce the tally.

THE CLERK:

House Bill 5225.	
Total Number voting	147
Necessary for adoption	74
Those voting Yea	147
Those voting Nay	0
Those absent and not voting	4

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DEPUTY SPEAKER ORANGE:

Thank you, Mr. Clerk. The bill passes.

Will the Clerk please call Calendar Number 209.

THE CLERK:

On page 20, Calendar 209, substitute for House
Bill 5452, AN ACT CONCERNING THE PROVISION OF
VOLUNTEER HEALTH CARE SERVICES ON A TEMPORARY BASIS,
favorable report of the Committee on Public Health.

DEPUTY SPEAKER ORANGE:

Representative Betsy Ritter, you have the floor,
ma'am.

REP. RITTER (38th):

Madam Speaker, I move for 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 Ritter?

REP. RITTER (38th):

Thank you, Madam Speaker.

This bill allows out-of-state volunteer health
care practitioners to provide health care services in
Connecticut at a free clinic or similar event, or at
the Special Olympics or a similar athletic event that

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I move to place that item on the consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Thank you, Mr. President.

Mr. President, moving now to calendar page 36,
Calendar 374, Substitute for House Bill Number 5225.

Mr. President, I move to place this item on the
consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Yes, thank you, Mr. President. Moving to
calendar page 37, Calendar 415, House Bill Number
5131. Mr. President, I move to place this item on the
consent calendar.

THE CHAIR:

Seeing no objection, so ordered.

SENATOR LOONEY:

Thank you, Mr. President, and Mr. President, on
calendar page 38, Calendar 454, House Bill Number
5526. Mr. President, move to place that item on the
consent calendar.

THE CHAIR:

Bill 121; calendar page 7, Calendar 377, Substitute for House Bill 5291; Calendar page 8, Calendar 398, Substitute for Senate Bill 231; calendar page 9, Calendar 442, Substitute for House Bill 5141; calendar page 10, Calendar 449, House Bill 5495; calendar page 11, Calendar 451, Substitute for House Bill 5535; Calendar 465, Substitute for House Bill 44 -- 5448; calendar page 12, Calendar 466, Substitute for House Bill 5289; Calendar 473, Substitute for House Bill 5059; Calendar 476, Substitute for House Bill 5117; calendar page 13. Calendar 478, House Bill 5290; Calendar 481, Substitute for House Bill 5119; Calendar 482, Substitute for House Bill 5120; calendar page 15, Calendar 492, Substitute for House Bill 5446; Calendar 494, House Bill 5315; Calendar 504, Substitute for House Bill 5306; calendar page 20, Calendar 532, Substitute for House Bill 5033; calendar page 21, Calendar 534, Substitute for House Bill 5543; Calendar 539, Substitute for House Bill 5350; calendar page 25, Calendar 561, Substitute for House Bill 5419; calendar page 36, Calendar 374, Substitute for House Bill 5225; calendar page 37, Calendar 415, House Bill 5131; calendar page 38, Calendar 454, Substitute for House Bill 5526.

Mr. President, that completes the items placed on Consent Calendar Number 2.

THE CHAIR:

Please call for a roll call vote. The machine will be open.

THE CLERK:

The Senate is now voting by roll on the consent calendar. Will all Senators please return to the chamber. Senate is voting by roll on the consent calendar. Will all Senators please return to the chamber.

THE CHAIR:

Have all Senators voted? If all Senators have voted, please check your vote. The machine will be locked. The Clerk will call the tally.

THE CLERK:

Motion is 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, thank you, Mr. President.

Mr. President, I would move that any items on the consent calendar requires additional action by the House of Representatives be immediately transmitted to that chamber.

THE CHAIR:

Without objection, so ordered, sir.

SENATOR LOONEY:

And also any other items acted upon today, not on the consent calendar requiring action by the House of Representatives. Also would move that those items be immediately transmitted.

THE CHAIR:

Seeing no objection, sir, so ordered.

SENATOR LOONEY:

Thank you, Mr. President.

Mr. President, I would yield to any members seeking recognition for announcements or points of personal privilege.

THE CHAIR:

At this time, I will entertain any points of

**JOINT
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CHRISTOPHER HERB: Usually on significant sales or acquisitions and mergers is when this typically happens.

MICHAEL FOX: Our industry, I think it was very limited use and now it's a very common tool. Because of the consolidation that's taken place within the industry, every single time something is announced that somebody's going to buy somebody else, you go immediately there.

REP. ALTOBELLO: And an analysis is done?

MICHAEL FOX: An analysis is done, hearings are opened. It's a very transparent process. And again, it's not -- you can pick any number you want, you start getting close to that number, you're going to start making deals that you wouldn't normally make because of that number.

CHRISTOPHER HERB: And as Mike stated earlier, this is not exclusive to the federal government. The attorney generals in various states use this to apply when transactions occur and are intimately involved in that process.

REP. ALTOBELLO: And I can understand that the attorney general would say, "Write the law this way so that I can pick the number at which I start proceeding," but --

Thank you. Thank you, Mr. Chairman.

REP. SHAPIRO: Thank you. Are there further questions from the committee? Hearing none, thank you very much for your testimony, gentlemen.

We have Mike Trahan followed by David Luft, I believe.

MICHAEL TRAHAN: Good morning, Mr. Chairman and

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members of the committee. My name is Mike Trahan and I am executive director of Solar Connecticut. Solar Connecticut is a non-profit organization that has been promoting solar use in the state of Connecticut for the last four years. Our members are largely the roughly 70 businesses in Connecticut who are installing, making or supplying solar electric parts for the last four or five years.

I'm here to testify in opposition to House Bill 5225, AN ACT CONCERNING SOLAR WORK. And I'm surprised, Mr. Chairman, that in a year when most economic forecasts are predicting one of the few sure things in job growth being solar jobs, clean energy jobs, and that several committees in the legislature are proposing green job growth bills, that this bill would be proposed in this committee.

But changes in state license law contained in this bill make this bill an anti-green jobs bill. And I want to be very clear about this. This bill is an anti-green jobs bill because of the license changes that it proposes.

The current system -- license system works. It's been working for several years. The system's been humming along. Our members are largely responsible for the nearly 1,500 solar systems installed, safely installed over the last four years.

The bill has two major changes to the current license law. One is a restriction to the PV or photo voltaic or solar electric contractor license. The change restricts what the PV-1 license holder can do with that license. We're talking about the pioneers of solar in Connecticut, several of them are here. Half a dozen solar electric companies here to testify against this bill today. These are the people

who built the industry today that others are trying to get into. They are the people who've put their companies up, they've put up the risk to make their businesses go. They're pulling several hundred people in this state and I think that the current licensing system should stay so that these companies stay. They will not stay if this bill passes eventually.

The first part of the bill that effects the license, the PV contractor license, would make it so that the PV-1 license holder, the contractor would not be able to connect to the grid, which is a very important part of the job.

The second part revokes the exemption of workers who do not come into contact with the electricity on the job from requiring a license. There are over a hundred workers in Connecticut who are working on solar roofs that are out there today installing solar systems who are exempted from having a license. They carry the panels up on their backs on the ladder, they put them on the roof, they install the rack mounting systems and they place those panels into the rack mounting systems and they get back down and they do it again. That is their job. They don't want to be electricians.

Let me summarize if I can. The job growth in Connecticut as far as solar is greatly compromised by this bill. Several companies have told me if this bill passes that they will leave. Several solar companies have a foot out the door already. They're opening businesses in New Jersey, in Massachusetts, in New York state where the regulations are less strict and the licensing laws are less strict. I urge you not to move this bill out of committee. Thank you very much.

REP. SHAPIRO: Thank you for your testimony. One of the questions that I have and this is something that came up last year when we had a similar bill is that the argument in favor of this bill -- and we see it as a green jobs bill, I understand you differ -- is this would allow more people who are licensed as electricians, who have an extensive knowledge of electrical systems and how a PV system would work. Because it would work very similarly to all the other electrical systems that they practice on. It would allow more people to enter the industry and provide greater competition and lower cost for people and spread the industry.

Now, you're saying that you think people will leave because additional players are able to come into the market. That sounds strange so I'd like to ask you to elaborate on that. And in addition, I'd like you to discuss whether the people who have told they might leave, whether that has anything to do with the fact that our purchase funds in the Clean Energy Fund have run out.

MICHAEL TRAHAN: Well, I'll take the second first. The threat of taking funds out of the Clean Energy Fund has slowed the release of Clean Energy Fund dollars to be released into the market place. And because of that, some solar power companies have laid off workers. And there are people who are trying to get into this industry. I've got news. We're leaking solar jobs right now because the funds aren't there. Funds aren't coming out fast enough. That's the truth.

And as far as allowing others into the market place, every E-1 in the state of Connecticut has been allowed to install solar power since the sun started to shine. There are no restrictions for electricians to do solar

installation work today. They just haven't. That's been their choice. We welcome competition.

I agree with you, Mr. Chairman, adding others to the market will drive the price down. The price right now has dropped significantly. Solar power costs have dropped significantly because these guys over here have been working their butts off for the last four years to create demand in the state of Connecticut. Demand is huge for solar power, can't keep up with demand because the incentives and there's the threat of the incentives going away. And the last pool of incentives was supposed to last three years, ran out in 18 months.

So, I want to be clear, Mr. Chairman, we don't oppose competition for those who want to get in the business, they are more than welcome. We have no -- there's no barriers for them to get in, they can do it now.

REP. SHAPIRO: I appreciate your comments and I couldn't agree more with you about the funds going away. I think most of the members on this committee would like to see it fully funded and up and running again. We know the consumers want it, but they do need that subsidy, that's what's helping the industry along right now and without it, there's going to be a rebound. It's a budgetary issue beyond the realm of this committee, but we do understand that and I appreciate it. Thank you.

Questions from members of the committee.
Representative Altobello.

REP. ALTOBELLO: Thank you, Mr. Chairman. I'm reading from the statement of purpose for the bill. It says "to ensure solar electricity

workers perform safely, to authorize E-1 and E-2 license holders to perform photo voltaic work." Did you just tell us that they already can?

MICHAEL TRAHAN: They can.

REP. ALTOBELLO: So the statement of purpose is incorrect in your opinion.

MICHAEL TRAHAN: The second half and the first half, too. The idea about -

REP. ALTOBELLO: That's why I'm confused, I guess.

MICHAEL TRAHAN: Well, to install solar energy safely. I mean, our -- to have a solar system turned on in the state of Connecticut, that is incentivized by the Connecticut Clean Energy Fund, it has to get an inspection by the local building inspector, just like any other electrical job. It has to get an inspection by the Connecticut Clean Energy Fund. They have their own individual inspectors come, make sure the job's correct. And depending on where you are in the state of Connecticut, you have to get an inspection done by UI or CONP. So this idea that the notion that the systems that have been installed up to now have not been installed safely is a fallacy. I mean, the solar jobs incentivized by the Clean Energy Fund have to go through three times as much inspection than a regular home inspection connected to an electrical job.

REP. SHAPIRO: Thank you. Representative Nafis.

REP. NAFIS: Thank you. When -- and I'm really naïve on this issue so -- when you connect to the grid, do you in your industry have to have a licensed electrician to do that or does that other license let them -- I'm talking about the

actual connection to the grid.

MICHAEL TRAHAN: All solar installation companies in Connecticut employ electricians to make electrical connections. There are some PV-1 license holders who have -- who are highly trained, highly educated, highly certified, licensed to do this work who do some connection work on smaller jobs. Some of them are here, they'll talk about that a little bit. But the interpretation of the license is that they can do that work. Now, for a large commercial job, for a large home there are E-1s who are hired to do that kind of work. Many of our installation companies here today have E-1 license holders on full time. They do all the electrical work. And that, by and large, is typical of solar installations.

REP. NAFIS: And to follow up, so -- and actually this goes to what Representative Altobello said: are there certain criteria that electricians would have to follow to be able to perform the solar? Because I know I've had contact from electricians in my district that -- actually I've met with some people on this in the past and I -- isn't there a certain criteria -- they have to perform so many types of jobs -- or is there something different about them versus what you're doing? I guess that's what I'd like to know.

MICHAEL TRAHAN: There is, yes, the Connecticut Clean Energy Fund, which is the group that manages the incentive program has as steps by which those who are not PV -- photo voltaic -- solar electric license holders, if you're not a PV license holder, you can become a provisional contractor, is probably the term that you've heard.

Clean Energy Fund -- and I don't want to speak

specifically, but I'll do the best I can on the program they have set up. They want to encourage more people to get involved in solar installations. So they have a plan, several of my members are going through that process right now to become qualified and eligible to offer the incentive. To do that, you have to install several -- three -- installations on your own nickel. You don't get the incentive from the Clean Energy Fund.

But my interpretation of that is that it's good for electrical companies to put some skin in the game. You should have to -- you should show some and demonstrate that you have the ability to install systems and install them correctly. So you're not a PV license holder, you want to be part of the incentive program, go out and install three systems, you get them inspected by the Clean Energy Fund and the utility and you're in. You are now eligible to offer the incentive.

REP. NAFIS: Are they able to get those jobs that they can, you know, cut their teeth on in order to get that easily or is that something that becomes problematic for them because they don't have that PV? I mean, what's the market like in that area?

MICHAEL TRAHAN: Well, they have to convince somebody -- if they've never done a system before they have to convince somebody that they can put a solar electric system on the rooftop. I can imagine that's a hard sell. Some of them are putting them on their own homes. Some of them are putting on some of their customers, their long time customers who trust them to do it and I think it's great that they have that sort of trustworthy relationship to get that done. But it is, it's a hurdle. It is. But I think in many ways, it's appropriate. Yes,

ma'am.

REP. SHAPIRO: Representative Reed, followed by Representative Taborsak.

REP. REED: Thank you, Mr. Chairman. I just want to -- you know, I think sometimes we have these great friendly, fuzzy, warm, fuzzy statements of purpose. And then there are unintended consequences, so I'm concerned about this bill for that reason. I know I have at least one installer in my district who has had to let four people go because of the slow payment on already installed systems from the Clean Energy Fund because the money is drying up. So here we're trying to create new jobs and we're actually driving existing jobs away because we're making small businesses hold onto a \$200,000 float for 150 days, which -- it's just not possible.

I've also heard from several young twenty-somethings who've said that they are working in this solar installation field, doing what you said. Lifting the panels, hiking them up the roof and laying them in place for the professionals to install and there's concern that this bill will preclude them from doing that and that those jobs will go away. Can you kind of articulate that for me?

MICHAEL TRAHAN: My understanding is that when the bill was drafted several years ago that the idea was that they wanted solar power to be reasonably priced in the state of Connecticut. It's a high priced piece of equipment. The idea was that they would have everybody on the job site -- the idea was that everybody on the job site coming into electricity had to have some license, had to have a license and there is one. And they created one, the PV license. Everyone who's not involved directly with

electricity should not need a license. And that is those individuals who lug the panels up on the rooftop, drive the racking system into the roof, set the panels into the racking system, connect them and get back down. Those individuals are not licensed right now. And our position is that they don't need to be.

And the bill doesn't speak to what type of license. I don't know if they want them to become electricians in order to do that kind of work, but they don't want to become electricians. I mean, there are many roofers in this state out of a job, the roofers have been unemployed who have been hired by solar companies and retrained to do this kind of work. Roofers are extremely qualified to climb a ladder and work on a 30 degree roof and install panels. Construction workers are qualified to do this kind of work. They don't need to be electricians. They don't need licensed electricians to do this kind of work. And frankly, if the companies here have to license those kinds of workers, they'll easily leave. Like I say, several companies in Connecticut, the major players, those who have most of the solar energy experience in this state have already opened offices outside of Connecticut in preparation of the dismantling of the funds and the dollars that the Governor plans to take.

I mean, it's not a surprise to them that these dollars are in jeopardy. So they're good business people, they're going to go and with them will go all the solar energy installation experience that has been built up the last four years. That by the way, the rate payers pay for. The rate payers created this fund. The rate payers on the electricity bill, they fund it. So they are due something. And because they funded it the last four years, the price

of solar has gone down because the pioneers have built the industry here. Now, if those pioneers leave, there will be nobody left within the state of Connecticut with any solar installation experience to get the job done. Solar jobs will stop, demand will stop, prices will go back up and 40, 50, 60 million dollars, whatever it is that the rate payers have contributed in incentives will have been a waste of time.

REP. REED: Thank you. Thank you, Mr. Chairman.

REP. SHAPIRO: Thank you. Representative Taborsak.

REP. TABORSAK: Thank you, Mr. Chairman. Thank you for your testimony. Can you -- well, I guess I kind of have two questions in one. First, to your knowledge, do you know of any E-1s that have gone through taking the PV certification process and received PV licenses?

MICHAEL TRAHAN: There are several in the process right now. There is at least one here. I don't know the number of them. I don't know that there's been a huge demand of individuals looking to go that route.

REP. TABORSAK: If you know, if I were, say, a E-1, can you kind of explain what the process would be like under the current law for me -- what I would have to go through basically to obtain a PV license?

MICHAEL TRAHAN: You have to demonstrate to the -- I may be speaking out of turn, but I believe you have to demonstrate your experience and ability to the electrical state licensing board. If those individuals feel as though you qualify then you can sit for the exam, take the exam and get your license. There is an apprenticeship program in place now, a three-

year apprenticeship program that individuals can be a part of. In fact, several companies, several solar installation companies are part of that process, part of the apprentice program. You can match an individual, an apprentice up to a PV license holder and have them on for a couple of years. They sit for the exam after that. That would be for the PV-2 license. After two years holding that license, you sit for the PV-1 and you become a contractor.

REP. TABORSAK: Okay. Just to clarify. I understand that there's an apprentice program, but is it your understanding that it is -- there is also an alternative route for -- a possible alternative route for E-1s whereby if they were able to demonstrate that they had enough knowledge, they could actually sit for the exam without being apprentices? Is that a possibility? If you're aware of that?

MICHAEL TRAHAN: I don't have any understanding of that area for certain.

REP. TABORSAK: Okay, okay. Thank you.

MICHAEL TRAHAN: You're welcome.

REP. SHAPIRO: Any other questions from the committee. Hearing none, thank you for your testimony.

We have David Luft followed by Betsy Gara.

DAVID LUFT: Good morning. That should take care of HB5225 just about everything I'd written down. Now, I've thought of new things to say.

My name is David Luft. I own Dalco Electric in Meriden, Connecticut and I am a provisional installer for the CCEF in Connecticut. I'm

going through a lot of growing pains. I started a company called Sundoor Solar. We put up -- actually, I've done two jobs in New York because it was easier to work there than in Connecticut.

I've only done one residential job in Connecticut and now I have two more signed contracts so I can get my three jobs in. Now, I can call myself the electrician that I am before I started.

I put a Sundoor Solar booth up at the flower show. I had 80 homeowners sign up at my booth for solar jobs. Tomorrow the funding runs out, they're going to stop taking applications for the Connecticut Solar Lease Program. I have 24 people preapproved. I'm begging the CCEF to get things quickly to me so I can keep going. I did have to get a financier behind me for up to three or four hundred thousand dollars so I can carry the money, but we're out there doing it.

I believe we went down the wrong road making a PV-1 license. We didn't need a PV-1 license. Solar isn't a new industry, but it's a new product, and it's a certification. We already have people that are qualified to work on the roof and we have a system in place to register those people. It's called the home improvement registration number. I think those people should be required to take a five day course in PV-1 to certify them for the product. Then they know the product, they know they're doing it right. Electricians should also be required to have a certification just like when we get into radio R or neutron, we're required to take a certification so we can install the product up to manufacturer's specs. Same thing with solar.

There's two parts to solar, the roof work, the electrical work. We already have people in place for that. We don't need a new program. If we took the money it cost to implement all those state programs for apprenticeship and licensing and put it into rebate we'd have instant jobs in Connecticut. There's no better time to do it to get us through this economy.

Also we should send our building officials and electrical inspectors to the same certification courses so they know what they're looking at. I had an inspection done by a town inspector, I had to show him what it was. He didn't have to look and tell me what it was. It's not a real hard thing.

REP. SHAPIRO: Are there questions from the committee? Representative Taborsak.

REP. TABORSAK: Thank you, Mr. Chairman. Thank you for your testimony. You might have heard a question that I asked. I'm trying to get a better understand of what -- I believe you said you are an E-1; is that correct?

DAVID LUFT: Yes.

REP. TABORSAK: A better understanding of how an E-1 could go about obtaining a PV license. Is there a process where you can sit for the exam without having to go through an apprenticeship? Can you share your knowledge on that issue with us?

DAVID LUFT: I wanted to install solar systems in Connecticut so I flew to California, took an 800-hour class so I could be certified in PV-1, which is installation; PV-2, which is design; and a sales and estimating course. I came back, showed my certification to the state, I didn't need a PV-1 license, I'm an E-1

electrician so I can hook up solar. Solar is Article 690 of the NEC code. It's already there, it's already covered. But I did want to know about the product, how it worked, what we need to do. If we require a PV-1 license to install solar systems, it's going to stop the people who are doing it right now.

REP. TABORSAK: Okay, sir, can I -- just so I completely understand your testimony, are you telling me that there is absolutely no type of solar work that you as an E-1 are not certified or allowed to do in Connecticut? Is that correct? You're allowed to do anything involved with PV work; is that correct, sir?

DAVID LUFT: Yes, with an E-1 as far as I know.

REP. TABORSAK: With an E-1. Thank you, you clarified that for me.

REP. SHAPIRO: Thank you and to follow up on that, so the barriers that you have are not with your E-1 license, but it's with the provisions that require you to jump through those hoops you mentioned, which is to install three solar projects before you're entitled to use the --

DAVID LUFT: That's not correct. I am entitled to the rebate money as a provisional contractor and I have gotten rebates, in fact, I've already received money from that.

REP. SHAPIRO: Okay, so as a provisional you're already entitled to do that, to receive the funds.

DAVID LUFT: Yeah, and I am -- and they're working with us, but as provisional they don't give you access to PowerClerk, which is what figures out your rebate. The CCEF does it for you. You email your shading and then they take care of

this PowerClerk that gives you your rebate. Then you can go get the job. It's still approved through CCEF and we are using the funding as provisional. It's not real fun being provisional when a lot of out of staters are listed on the list and -- I was covered by my E-1.

REP. SHAPIRO: Provisionals -- you're not listed on the website, the list that they have.

DAVID LUFT: Well, we're on the website as provisional. A year ago -- the rules changed a year ago. A year ago you needed to do 13 jobs. Well, it's pretty hard to do 13 jobs when there were eight or nine solar installers in Connecticut and most of them were from out-of-state and franchises. They didn't want to train us. So that rule got changed to this provisional status. I do believe anybody that does install solar should have a certification. I don't think we need a separate license for it. It's a product.

REP. SHAPIRO: Okay. So putting aside the budgetary issues of whether we're fully funding the Clean Energy Fund, which we're not, or the lease program, which we're also not, putting that aside, which it's difficult to put it aside, what is the largest problem you face in this industry and does this bill address it?

DAVID LUFT: I'm not sure if the bill addresses it because it's almost like reading the code book. It's tough to understand where we're going with it. My -- the largest hurdle is getting through my provisional status, which I don't feel is fair to be put in a provisional status, showing the qualifications, showing the added financing to support the industry and the way -- that's about it. You know, it's pretty simple. It's really not a hard industry. I

don't think it's a separate industry. It's something we're all capable of doing already.

REP. SHAPIRO: Okay. Thank you very much. Further questions from the committee? Representative Reed.

REP. REED: Thank you, Mr. Chairman. I just wanted to go back to the thing you said about inspectors because as I understand it there is the utility witness who's not a real inspector, who has to come by and look at the work and then there is your local building inspector who as you say, doesn't always really understand the machinations of how these things go together. And then there's the Clean Energy Inspector and that's the sign-off inspection and that's when you potentially can get paid. So I'm just wondering if there's something we can do legislatively to make -- to help local building inspectors be the main inspector or do you have a better idea so that we don't have to have three inspectors before you guys could actually get paid for the work you've already done?

DAVID LUFT: Yeah, you have the process down pretty good. First you get a town inspection, which is a local electrical inspector. He really should be the only authority you really need to do it. I think we should require our electrical inspectors to get a two- or three- or four-day course on solar voltaic systems so they know what they're looking at because a lot of them don't know what they're looking at.

We just finished wiring the windmill at the YMCA outdoor center. I brought the inspector up and he's a good guy and we went through it. But it's equipment he's never seen before so I educated him on it, gave him comps on the equipment, showed him what the manufacturer's

specs were and how it's supposed to be wired.

With -- CCEF has these PV inspectors go out and they verify the shading, which is very important. Because shading is the performance of the product and what they base the rebate on. I don't know if they can cut that inspection process down -- Northeast absolutely has to inspect it. CCEF, if they're giving rebate money, well, they should inspect it and they should have a PV inspector -- I don't know what qualifications he should have, but they should verify what's going on out there.

And they do release half the money. Your rebate money is released as soon as you take delivery of materials so it's really not that bad. I had a \$62,000 job, I received \$34,000 right away, and I got it within two weeks and I'm waiting now for \$28,000 when I get done with Northeast. And for inspections I had to wait about two months for it, which isn't too bad. It's almost like doing electrical work, you don't get paid for 90 days anyway because nobody wants to pay you lately.

REP. REED: Thank you. Thank you, Mr. Chairman.

REP. SHAPIRO: Thank you. Representative Altobello.

REP. ALTOBELLO: Thank you, Mr. Chairman. I just wanted to say hello to my neighbor. Nice to see, thanks for coming up.

REP. SHAPIRO: All right. Ending on a high note, thank you for your testimony.

We have Betsy Gara, followed, I believe, by Bruce Angeloski. If I mispronounced that I apologize.

BETSY GARA: Good afternoon, my name is Betsy Gara

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and I'm here to testify on behalf of the Independent Electrical Contractors of New England. And we do agree, Mr. Chairman, that this is, in fact, a jobs bill. And while we understand that the language doesn't achieve some of the goals that we are looking for, we are looking forward to working with the parties to address some of the concerns and the goals of this legislation. And I just want to focus on those before we invite our electrical contractors up to speak on some of the specifics.

The first goal is to address the concerns relative to participation in the Connecticut Clean Energy Fund. As Michael Trahan acknowledged, E-1 and E-2 electricians are duly authorized to perform solar voltaic work under the current scope of their license. The Department of Consumer Protection has confirmed this.

The photo voltaic is part of their apprenticeship training program. Their apprenticeship training program is 8,000 hours in addition to related classroom experience. It's also part of their continuing education requirements, which they are required to take on an annual basis. And so we do think that needs to be addressed because a provisional installer status is very time-consuming and it's really unnecessary given the experience of the electricians with photo voltaic systems. You are going to hear about that.

It also is very arbitrary. If you look at how to become a certified installer, you can simply be an apprentice on ten photo voltaic installations regardless of where you are in that apprenticeship program and be eligible as a certified installer. So you could have essentially have been carrying someone's tool.

box and become eligible as a certified installer. And that's a real problem.

What we're trying to do is open up the Connecticut Clean Energy Fund programs to encourage electricians to pursue designation as a certified installer. So initially when we drafted the legislation we did look at an additional certificate program. In reviewing the current requirements of the apprenticeship training program and licensing program we do not believe that that's necessary. We do however want -- would request specific language to ensure that the Connecticut Clean Energy Fund program does not shut out these licensed electricians.

The other goal of the legislation is to focus on worker safety and I think there's been a lot of changes in the industry, certainly relative to the voltages and amperes involved in solar modules or panels. And one of the concerns is that a solar panel is live right out of the box. It's already generating electricity and if you read any product manufacturer's installation guide -- and I can get you copies of them -- they indicate that these should be installed by a licensed electrician.

So even though people are carrying these up and placing on a roof top and anchoring them and tying them into the grid, they are generating enough voltages to literally blow them off the roof. And that is a significant concern. We understand that there's a lot of issues relative to that and I think we can certainly talk to the people that have concerns and see whether there's a way to address those concerns.

But again, we do feel this is a green jobs bill. We want to encourage people and build

confidence in solar energy as an alternative energy system, but the way to do that is to make sure that you have trained and qualified individuals installing those systems. Thank you.

REP. SHAPIRO: Thank you very much for your testimony. Do we have questions from the committee? Representative Altobello.

REP. ALTOBELLO: Thank you, Mr. Chairman. Good morning. You said when we were drafting the bill at one point in your conversation. Is this your bill?

BETSY GARA: This is our bill. We had worked with the International Brotherhood of Electrical Workers and NECA to develop language, we had done that initially. And then when we had met recently and realized that we do not need the additional certification. It's a little different from the solar thermal because if you look at the solar thermal or actually the scope of the license for plumbing, it excludes specifically solar thermal work. The electrical license does not do that. So we were mirroring it on that legislation and when we talked to our experts in the field, understood that that was not necessary.

REP. ALTOBELLO: So you like the language in this bill as it is without any amendments or?

BETSY GARA: No, we do not.

REP. ALTOBELLO: Oh, you don't like it either. Okay.

BETSY GARA: We like the -

REP. ALTOBELLO: Now, I'm feeling better, thank you.

BETSY GARA: -- we like the intent of the bill. We certainly like the intent of the bill and we feel that we do need to address the situation with the Connecticut Clean Energy Fund, and also looking at the qualifications for the PV license. We actually looked at a lot of the licensing for PV installations throughout the country. And there's really only ten that have a separate PV licensing requirement and of those, most of those are for solar thermal. Connecticut is one of the few that allows a separate or creates a separate solar photo voltaic license. And the requirements are actually less than many other states. So we are concerned that they don't have on the electrical side sufficient training to be wiring things that are considered high voltage appliances.

REP. ALTOBELLO: Thank you very much. Thank you, Mr. Chairman. Maybe we ought to start all over with this bill and have a second public hearing after it gets written correctly.

BETSY GARA: We would be happy to do that. We would be happy to work with Michael Trahan's group and others.

REP. ALTOBELLO: I think we'd save a lot of confusion. Thank you.

REP. SHAPIRO: Thank you very much and this would not be the first bill that was called a work-in-progress in this committee.

BETSY GARA: Thank you for acknowledging that.

REP. SHAPIRO: Thank you for your testimony. Are there questions? Hearing none, thank you. Mr. Angeloszek followed by Don Leavitt.

BRUCE ANGELOSZEK: Senator Colapietro,

Representative Shapiro, members of the committee. I'll read off my sheet because I'm a freshman at this type of thing.

My name's Bruce Angeloszek. I'm a self employed electrical contractor from the town of Eathan Falls, providing residential, commercial and industrial PV installations since 1994.

I'm here to support the House Bill 5225, AN ACT CONCERNING SOLAR WORK, which will ensure that properly licensed electricians are eligible as qualified installers under the Connecticut Clean Energy Program, and address safety concerns regarding the limited PV-1 and PV-2 licenses in the state of Connecticut, which I believe should be sunsetted. I would like to share some highlights with you on this matter.

I have properly earned an E-1 unlimited electrical license in Connecticut by obtaining 12,000 hours of on-the-job training, 720 hours of classroom training and I have worked hard to start and sustain an electrical contracting company. If a company would like to install electrical work according to the national code about Article 690 is electrical work, then one needs to become an electrical contracting firm following Connecticut law. We license holders in Connecticut work hard to earn our licenses and we continue with CEU courses mandated by our state.

By introducing a limited PV license, an E-1 electrical license holder that earned a license loses value. By introducing a limited license through the PV, we in Connecticut are opening up industries to the same. Example, swimming pool companies will want a limited license for wiring swimming pools. Landscape companies will want a limited license to wire landscape lighting and so on. And how can we deny other

industries and allow PV? And before we know it, E-1 and E-2 that I worked so hard and many others worked so hard to obtain, the license holds no value.

And then I just want to go over the National Electrical Code, 90.1C. The National Electrical Code is written for persons who understand electrical terms, theories, safety procedures and electrical trade practices. These individuals include electricians, electrical contractors, electrical inspectors, electrical engineers, designers and other qualified persons. The code -- it was not written to serve as an instructive or teaching manual for untrained individuals.

The National Electrical Code contains 140 articles of importance and each one covers specific subjects; grounding, wiring methods, swimming pools and article 690, photo voltaics. Article 690 photo voltaics was introduced in the National Electrical Code in 1984. In general, electrical limited licenses in Connecticut work with low voltages, up to 48 volts or high voltages over 600 volts. If you wanted an unlimited electrical work, 0 to 600 volts.

And to get to the CCEF, I am a provisional installer and you can only install one job at a time until it is inspected. Then you may start your second job. So it could take nine months to a year to become an eligible installer. And as an E-1, I think the CCEF is a state run program and they are limiting unlimited licenses by their restrictions on how to obtain eligible -- to become an eligible PV installer.

SENATOR COLAPIETRO: Any questions from the committee?

BRUCE ANGELOSZEK: Thank you.

SENATOR COLAPIETRO: Don Leavitt followed by George LaCava and Bob Weideman.

DONALD G. LEAVITT, JR.: Senator Colapietro and members of the committee, I'd like to speak on behalf of raised bill number 188. And this has to do with the consumer protection commission complaint process. And what I'd like to do is share with you a personal story so that you can understand how this process is not working.

I am the president of a home improvement company, Magee Construction Corporation. We're located in West Hartford, Connecticut. We're a 38 year old company continuously operating in the state of Connecticut. We currently were made aware of a complaint that was registered against our company. The complaint was not -- didn't come to us from the Consumer Protection department, it came to us through my general manager discussing with a consumer who was interested in doing business with us a complaint that was on file.

When we went online to try to get this complaint all we saw online was a -- our registration number, our company and it said that "case not attached to credential." There was no way for us to get to it online. There was no way for us to download it, no way for us to know exactly what it was.

We contacted the Consumer Division and we were told that the complaint was an irrelevant complaint and they had made a decision not to notify us. And because it was an irrelevant complaint, it was just posted online. My question at that point was -- I requested a copy of it, a copy of it was sent to us.

there and this is the code that does it.

SENATOR WITKOS: It's not -- that's what would be in the regulations, it's not contained in the statute that we have before us.

AL RIZZO: I thought we -- that's how we understood it. They would take over and do it better. They being the Department of Consumer Protection.

REP. SHAPIRO: Thank you. If there are not further questions, thank you gentlemen for your testimony.

We have next Joe Bonner, and Chris Barrett following.

JOSEPH BONNER: Senator Colapietro and Representative Shapiro and members of the committee. My name is Joseph P. Bonner of Bonner Electric and I'm here to testify in support of the intent of H.B. 5225, AN ACT CONCERNING SOLAR WORK.

I've been an E-1 unlimited electrical contractor in the state of Connecticut for the past 34 years. To become an electrical contractor, I had to serve four years as an apprenticeship, two years as a journeyman prior to sitting for the E-1 exam. As part of the requirements to maintain my license in the state of Connecticut, I'm required to complete seven hours of continuing education every year. Also each of our electricians working on the state projects is required to have completed ten hours or more of OSHA training. In addition, to be an electrical contractor I'm also certified to install solar voltaic installations as part of the Connecticut Clean Energy Fund programs.

PV installations consist of multiple direct current modules that tie back to an inverter and in turn, these DC circuits can be upwards of 600 volts, 50 times more than the 12 volt system that you might find in an automobile. For the sake of consumer's safety it's critical that these circuits be installed by a licensed and experienced electrician that's up to date on the latest codes and safety requirements. By supporting H.B. 5225, you'll be strengthening the training and experience requirements for individuals installing solar PV systems and ensuring the safety of the consumers and the general public. Thank you for the opportunity. Good to talk to you this morning.

SENATOR COLAPIETRO: Any questions? Hearing none, thank you very much for your testimony, appreciate it. Chris Barrett followed by James Savoy. Forgive us for a moment, we're just trying to figure out what the name is. Tony, for the record (inaudible). Are you here, Tony? Oh, James Savoy, followed by John Galvin.

JAMES SAVOY: Good morning, thank you, Mr. Chairman and members of the committee. My name is James Savoy, I'm an E-1 licensed electrician in the state of Connecticut with over 30 years of experience. I have a degree from Central Connecticut in secondary vocational education. I am the United States Department of Labor OSHA certified construction safety trainer. I'm certified by the state of Connecticut, I teach seven hour CEUs for electricians and I have personally worked on several solar projects. I'd like very much to support the bill. I think licensing is critical.

The only problem I have is under photo voltaic licensing, as I read it, line 159, "has

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achieved a passing score on a solar voltaic work exam as determined and approved by the commissioner." As I've experienced, this can be taken online. And if you were to follow the language of the law you could take an online course, pass the test by PSI and be a certified installer without ever having worked in the field.

Now, as an electrician who knows the code fairly well, I've found the comments by the solar contractors association disingenuous. As soon as you open a solar panel and expose it to any light at all, even in here, it's going to generate a current. Outdoors it will put out 90 volts DC with 195 watts per panel. When these are installed they're attached together in series and can generate enormous voltage and tremendous amounts of current.

Also the code requires that the structural membranes be bonded together. Now, if you're not going to have a licensed electrician do that work, then you're asking across the line now and asking unqualified persons to ground the equipment and run the ground wires back to a point where it's bonded to the main grounding grid. This is clearly electrical work. You would no more ask a member from TradeReady to run conduit in junction boxes and support equipment on a job only to have the electrician come in and run the wires because it's not electrical work to run the conduit. You're saying it's not electrical work to run the structural membrane.

Now, the technology as it stands right now, requires those structures to support the panels. But as the industry is progressing, the panels no longer need those supports, they can lie flat on the roof. It's going to come a point in the very near future where the

mechanical supports necessary for the arrays now won't be necessary. Roofs are coming through flat. Tiles on homes are self contained solar panels, now with AC inverters included on it. I think you're going in the right direction. I think this is a licensing issue, but to simply say, "I took a course and passed a test, I can be a photo voltaic installer," is going down a very slippery slope.

You know that if the line is not clear people are going to start crossing it. The law says I can install the structural supports. The next thing I know, I'm installing the ground lugs. Next thing I know, I'm running the ground wire through the ground lugs. If it's not done properly you're exposing both the commercial customer and the residential customer to a potential hazard. I'm not saying it's going to happen, but you should be having this work done by people who have gone through an apprentice program, have taken a licensing test and are going to continuing education, not somebody who's taken an online test, passed an exam, financed their company and advertised as a solar installer. This is electrical equipment and it needs to be installed by an electrician, a licensed electrician.

SENATOR COLAPIETRO: Thank you for your testimony. Before I recognize Senator Witkos and Representative Taborsak, I just wanted to ask - just for the record I wanted to clear up. On the list you wrote down the wrong bill number or?

JAMES SAVOY: Yes, I did. I'm on the back end of the learning curve. I'm an electrician. I'm not a lobbyist, I don't -- I haven't been this nervous since my son was born so.

SENATOR COLAPIETRO: Senator Witkos.

SENATOR WITKOS: Thank you. Are you aware of any incidents where, under the current law, somebody that does not have an E-1 license has been shocked or injured during the installation of one of these panels?

JAMES SAVOY: No, sir. I personally don't, but it's a very good point. When you take these panels out of their casings -- we all know that it's probably not going to be made in the United States, it's probably going to be made overseas somewhere. The quality control might not be one hundred percent. If one in a thousand comes through where the wire is frayed in some way -- and it's DC current -- the person who throws it on his back and is carrying it up the ladder happens to come in contact with an aluminum ladder and a DC panel that's exposed to the sun, he could get injured. Ninety volts will kill you, which is why ground fault protection is such an integral part of this system and it trips at such a low amperage. It trips at milliamps where these panels produce considerably more than that.

To answer your question, no, I don't personally know, but the fact that you brought the question up is important to the issue here. It could happen.

SENATOR WITKOS: Right. It could, but that's like an accident, you never know when -

JAMES SAVOY: I can't say it's never happened. I can't say it has happened, but I would be more than happy to do research with OSHA because if it did happen it's going to be a recordable OSHA accident. I'd be happy to get the information to you.

SENATOR WITKOS: I'd like to hear it -- if you could -- I'd be interested in that.

JAMES SAVOY: I could do that, Senator, yes.

SENATOR WITKOS: You know, in this morning's earlier testimony I heard that basically it's a laborer that would carry this equipment up.

JAMES SAVOY: Exactly, that's what they would like you to do and that's what's doing it right now.

SENATOR WITKOS: Right. And there's no wiring of anything at that stage from what I understood from this morning's testimony -- let me finish and then you can answer. So we have folks that are paid at a lesser rate carrying equipment up. They don't design the system. They're just labor that carries it up, puts the mounts in if they need to be. The panels are installed in the mounts and then somebody else who has whatever licensure or experience makes the connection, and then this bill would speak of when it ties into the grid or when it ties into the actual electrical component then you would need a license. Go ahead.

JAMES SAVOY: That's the rub. That's the rub right there. These panels are connected in arrays and they're grouped in numbers only to limit the size of the conductor. We could put in an entire roof on one circuit, but the conductors would be so large as to not be economically possible. When they are mounted it's an in-and-out plug, which -- arcing is a possibility. You could get an arc, which could cause an injury. So you -- I'm not saying it does, but it's not unreasonable to assume that if you're paying a man eight or nine dollars an hour to bring them up and attach them to the structural membranes that you're not going to ask him to plug them all in and save time or while you're

asking him to screw the arrays onto the structures, you're not going to ask him at that same time to put the ground lug on to save some time down the road. And, oh, by the way, here's the number six pair of copper you need to run all the way through this.

The line is blurred. It needs to be very specific. Once that panel is opened, by definition it is a piece of electrical equipment that is generating current. And under chapter 393, section 20, statute now says that you need to be a licensed contractor, a licensed journeyman or a registered apprentice to work on electrical equipment.

SENATOR WITKOS: If it's generating electric current, is it not contained within, with no mechanism to go out yet because -

JAMES SAVOY: They come with male-female plugs. Unless it is a self contained unit which generates it's own AC power and then it's connected differently. But they have leads on them, electrical leads that need to be connected. And if it's a DC generating system, they need to be connected positive-negative like you would a battery. If it's an AC generating system with its own self contained inverter, they're plugged in parallel in however many groups you want to bundle them in based on the size of the conductor you want to run. They generate electricity that can cause injury.

And one last point I didn't bring up and I don't mean to waste your time. NEPA 70E, which is the National Electrical Code, specifically says that for "work on energized equipment," which the panel is energized as soon as you expose it, "has to be a qualified person, one who has training in and knowledge of the

construction and operation of the equipment and be trained to recognize and avoid the electrical hazards that might be present with respect to the equipment or the work conducted." That's part of the code and you're not going to get that with somebody who is simply -- and I say this with no disrespect for laborers -- that are hired to simply be erectors, to put together the frame and mount the panels. You're not going to have the knowledge, experience and training to recognize the hazard with the equipment or the work method. And that's a code issue.

SENATOR WITKOS: And you know, I see so many warning labels sometimes. "DO not touch this device unless you're a qualified electrician." I'd be broke if I followed that advice every single time, you know. Homeowners have a right to do what they want within their own home -

JAMES SAVOY: But you understand as soon as -

SENATOR WITKOS: I know, but I guess my point is that if somebody's trained in this specific area -- these people aren't just -- I'm assuming, but I don't know because I don't work for them -- they don't drive down the street and say, "I'm hiring today, \$10, come on and we're just going to carry that stuff up there, bolt everything down, connect these leads." I would assume that that business would be out of business relatively soon.

JAMES SAVOY: I would hope so, Senator, but I will say this -- and I teach between 20 and 25 CEU classes a year for over a thousand electricians in this state. And I hear this mostly in the outlying areas that roofing contractors and general remodeling contractors are doing an enormous amount of residential solar work. They may be extremely skilled at the task at

hand in terms of remodeling or roofing or whatever, but I have to question their knowledge, skill and training with regard to electrical equipment. I'm not saying they're incapable of doing it, which is why I hope this bill will go a step further and say, "Well, no you can't just take an online course and think that that's how you get a PV license." The fact that we're trying to get apprentice hours in, I think PVs should be apprenticed in under E licenses who have those photo voltaic skills. I'm not saying you shouldn't do it. And in this economy where Connecticut may have nine percent unemployment, but there's 25 percent unemployment in the construction industry.

SENATOR WITKOS: Would you support a grandfathering in if this bill were to come into place today and there were companies that have been in business or at least people who have been in the practice of doing this and they've installed x amount? Would you support a grandfather of that?

JAMES SAVOY: I would support them hiring a licensed electrician and then those employees that are working there can be apprenticed in, given credit for the hours that they've accumulated before the legislation came in. But to just de facto say, "Well, you've been doing this for three or four years, you have no other training other than installing the arrays on a roof." It's -- that's your ball game. I'm an electrician. If it was up to me, there would be two licenses in Connecticut, an E-1 and an E-2. And if you do any work above 50 volts you should have an E-1 or an E-2.

SENATOR WITKOS: Thank you.

REP. SHAPIRO: Senator Maynard.

SENATOR MAYNARD: Am I mistaken that -- I thought a licensed electrician was required under current law for installation of?

JAMES SAVOY: An E-1 and an E-2 can, by statute, do any electrical work up to 600 volts. Above that it's under the purview of the utility companies, they have their own regulations. Anything under 50 volts is considered controlled voltage or telephones, et cetera. Yes, an unlimited contractor and an unlimited journeyman can do photo voltaic work as now -- as the law now reads, yes.

SENATOR MAYNARD: Thank you.

REP. SHAPIRO: Thank you. Representative Reed with promises that this one will be brief.

REP. REED: I do, I do. On my honor. I -- just quickly -- I'm trying to get a visual of who gets to go on the roof. So you're essentially saying what? Is anybody allowed to be muscle who doesn't have an E-1?

JAMES SAVOY: Right now, as you play by the rules in Connecticut, anybody can go up there and -- well, first of all you need a roofing contractor if -

REP. REED: I guess I should be more clear. I'm trying to say under your vision of how it should happen.

JAMES SAVOY: Well, there's some things that -- asking an electrician to do is foolish. For example, if it's an anchored roof you're going to need a professional roofer to penetrate the roof, which is usually bonded to anchor the system. And if you're going to just put the array up, yes, other than an electrician can just put the physical support structures. But

to then say, "you can put the panels up," that, to me, is electrical work because that is actually a secondary source of electricity. It's generating current as if it were plugged into the grid on the street. It becomes greater as you join them together.

But yes, there are tasks that you shouldn't need an electrical license for, but beyond that, securing the arrays, connecting the arrays, grounding the metal frame that supports the arrays, bringing the wires down to your combiner box through your inverter, your DC disconnect, your AC disconnect, your net metering and then on to the customer's distribution system, that should be electrical work.

REP. REED: Thank you. Thank you, Mr. Chairman.

REP. SHAPIRO: Thank you. Are there further questions from the committee? Hearing none, thank you for your testimony. It seems we skipped somebody by accident. Joe Kuzma, if I'm pronouncing it correctly, followed by John Galvin.

JOE KUZMA: Senator Colapietro, Representative Shapiro, you did do a beautiful job pronouncing "Kuzma," appreciate that, thank you.

Members of the committee, my name is Joe Kuzma and I am the senior director of corporate programs for the American Red Cross here in Connecticut. I'm also a lieutenant on the 81 Volunteer Fire Department. I'm here today in the former capacity of being the senior director of the Red Cross in support of passage of Raised Bill 186, AN ACT CONCERNING AUTOMATIC EXTERNAL DEFIBRILLATORS IN HEALTH CLUBS.

Now, one of the down sides to being the 17th

JOHN GALVIN: That is something that we're looking into and there's language being considered by several groups that includes something more structured in Bill 13 in the draft that's coming out for review.

REP. REED: Thank you very much. Thank you, Mr. Chairman.

REP. SHAPIRO: Thank you. Are there further questions? Thank you for your testimony. Bill Mackey followed by Paul Costello.

VOICE: (Inaudible).

REP. SHAPIRO: We're aware of that situation, that's fine.

MICHAEL MOCONYI: Good afternoon, Senator Colapietro, Representative Shapiro and committee members. My name is Michael Moconyi and I'm the executive director for the Connecticut Chapter of the National Electrical Contractors Association.

Thank you for allowing me to make a few brief remarks on Bill 5225, AN ACT CONCERNING SOLAR WORK. Connecticut NECA is here today to speak in favor of requiring the installation of solar work to be performed by E-1 and E-2 electrical license holders.

Solar electric is loosely defined as the installation, erection, repair, replacement, alteration or maintenance of photo voltaic or wind generation equipment used to distribute power. This technology has been around for decades and the installations have been performed by E-1 and E-2 licensed electricians.

Historically, the state of Connecticut has issued E-1 and E-2 licenses that regulate the

installation of electrical generated power systems. Solar work clearly falls under that definition. The photo voltaic panels once exposed to sunlight begin to produce power immediately. For any agency or group to now remotely claim that our E-1 and E-2 license holders are not sufficiently trained for this type of work is misguided in their claims.

Our industry spends hundreds of thousands of private dollars annually on training our workforce for applications in the residential, commercial and industrial fields, which includes training on solar work technologies. And due to the state of our economy the electrical industry like so many other industries today is experiencing a significant downturn. By many accounts unemployment in the electrical and construction industry is 30 percent or higher. Why create additional regulation to compete in the solar market? E-1 and E-2 license holders provide the infrastructure to perform solar installation work. Do not allow for any licensing exemptions to be included in the statute. By allowing exemptions you raise the possibility of faulty installation by untrained or under trained individuals that place the public at risk. Thank you for your time.

REP. SHAPIRO: Please continue.

WILLIAM F. MACKEY: Good afternoon, ladies and gentlemen, my name is Bill Mackey. I'm the general manager for Woods Electric, an electrical contractor for commercial and industrial installation projects in Farmington, Connecticut. I've been in the electrical industry since 1980. I hold an E-1 license. I have a BS degree in technology management from CCSU and I've taught electrical apprenticeship classes for nine years. I have three concerns

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regarding the photo voltaic industry.

The regulations for applying for and receiving Clean Energy Funds are cumbersome and confusing. The issue of not being allowed to apply for funds until one becomes a certified PV installer may prevent companies from receiving fund reimbursement for up to 18 months.

I have made numerous attempts to become a provider and installer of PV solutions for industrial and commercial settings. I have continually been refused the ability to buy and install the PV product direct from suppliers. I've been told over and over that there are exclusive members in the state and I must buy through them. I'm not sure if this is due to licensing considerations, but as a fully qualified electrical contractor in this state, I feel I'm being cut out of business opportunities.

And lastly, the latest figures that I have heard regarding electrical unemployment in this state is about 30 percent. I know that I have reduced my staff substantially. There are many available E-2 and E-1 licensed people available for this industry that have already been trained or work in this field. We are ready, willing and able to do the work if given the opportunity. So I support this bill, H.B. 5225. Thank you.

SENATOR COLAPIETRO: Who told you that you had to buy within the state? You said you have to buy within the state?

WILLIAM F. MACKEY: I've contacted numerous vendors, suppliers -- I've had people come to my house to get pricing. I say, "I'm an electrician, let me put this on my house." "Oh no, you can't,

you have to go through us."

SENATOR COLAPIETRO: But you said something about you had to buy your units within the state?

WILLIAM F. MACKEY: No, no, no, no, no. No, I'm saying that when I try to purchase the product myself to be able to install it, not only on my house, but on other commercial and industrial applications -- and I've been told over and over that there's certain people within the state that -- I don't like to use the word "control the market," but they control the market. You cannot go to anyone else but these certain people and get the material and you have to do the installation with them.

SENATOR COLAPIETRO: Right, but we're not telling you that you can't buy -

WILLIAM F. MACKEY: I understand that, but what I'm saying is that -- and this is my perception as a contractor as someone who has been -- made every attempt to try to get into this business is that when I contact people, if they don't see something that says "PV installer" or something of that nature, I can't get the product. They don't even want to talk to me. And I've spoken to other contractors, too and they have told me they have the same problem.

SENATOR COLAPIETRO: Has any of them ever gone to the DCP and complained?

WILLIAM F. MACKEY: I don't know, sir. I don't know that that's been the case. And again, I think that that -- I can't say that it has to do with the licensing. All I know is that this -- in my opinion, that appears to be the case. And that a regular E-1 can't get the product.

SENATOR COLAPIETRO: Thank you, Mr. Chairman. Thank

you.

REP. SHAPIRO: If there aren't further questions, thank you, gentlemen for your testimony. Paul Costello followed by Chuck Steedman.

PAUL COSTELLO: Good afternoon, Senator Colapietro, Representative Shapiro and members of the General Law committee. My name's Paul Costello and I'm here to testify on behalf of the IBEW, the International Brotherhood of Electrical Workers and National Electrical Contractors Association to express our support on House Bill 5225. I also am an E-1 contractor and OSHA outreach instructor, director of apprenticeship and training for membership of approximately 800 members. Also, a principle member of the National Fire Protection Association code making panel, that writes the National Electrical Code. And I'd like to express our concerns.

The JACC has been training apprentices for over 70 years to become electricians. The registered apprentice receive 8,000 hours of on the job training, their OJT over a minimum of four years. In addition to a minimal 720 hours of related instructions, apprentices in our program receive up to 10,000 hours of on-the-job and 1,200 hours of classroom training before they are eligible to take their state license exam. Their training includes AC and DC theory, technical math, rigging, conduit bending, wiring, bonding and grounding, blueprint reading, electronics construction safety, CPR and first aid and how to apply and interpret the National Electrical Code.

In addition to all this, they are trained in the design and installation of PV systems. Their OJT includes residential, commercial and industrial applications. These are all

components required for the installation of solar photo voltaics and wind generation, which is also part of the licensing.

Licensed electrical contractors and electricians have been installing PV for many years. This is not new technology, our license covers it. PV installations have been under the scope of the work of the licensing board for the E-1 and E-2 electricians since it was introduced.

Information from the Connecticut Clean Energy Fund eligible installer list identifies 44 installers eligible for the rebate program and the solar lease program. Of those 44 installers, 17 of them are E-1 unlimited contractors, only four are PV-1 license holders. The remaining installers do not make any reference to their license status nor show it on their website, which in state law is a requirement. The remaining installers do not make any reference to license status. This appears to be in line with the overall numbers in the state.

There are over 12,800 E-1 and E-2 licenses throughout Connecticut. There are another 1,700 apprentices registered to close to 1,800 programs throughout the state. PV license holders and apprentices total .26 percent of the electrical industry, just over a quarter. There are only about 29 PV-1 and PV-2 holders while 60 percent of them do not reside in the state of Connecticut. There are only four registered apprentices and three sponsors within the state. Those apprentices are only required to complete a two-year, 4,000 hour apprenticeship program. This does not appear to be sufficient time to gain the experience.

I've been invited to sit on the committee to

actually draft recommended curriculum for that apprenticeship program. H.B.5225 defines solar work as electric and limits the work to a licensed PV holder to perform.

Presently there is much focus on residential PV installations because of the rebates available through the Clean Energy Fund. We must not lose sight that many larger installations are on commercial and industrial establishments. These larger arrays comprise of hundreds of modules capable of producing tens of thousands of watts of power, generating high voltages. These arrays need to be connected and integrated with existing pieces of electrical equipment previously installed by licensed electricians. This work needs to be completed by electricians.

The exemption to the licensing requirement should be deleted in order to maintain the safe installation, protect persons and properties, all materials need to be handled and installed by workers that have been trained properly. There are no exemptions to any other electrical, limited or unlimited license. This is extremely important when handling the PV equipment as the other gentleman explained the safety hazard concern.

We urge you to support House Bill 5225, AN ACT CONCERNING SOLAR WORK, and leave the work to the unlimited E-1 and E-2 license holders that have been properly trained to install electrical equipment, which this is. There is no reason to create a new, separate workforce when there is already one that is available that is facing unemployment. I thank you for your consideration.

SENATOR COLAPIETRO: Thank you for your testimony. Any questions from the committee? Thank you,

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REP. SHAPIRO: I appreciate your comments.

CHARLES H. STEEDMAN: Thank you very much.

REP. SHAPIRO: Further questions on the committee?
If not, thank you for your testimony.

CHARLES H. STEEDMAN: Thank you.

REP. SHAPIRO: Jenn Jennings et al, followed by Tim Phelan.

JENN JENNINGS: Hi, how are you? I'm Jennifer Jennings, executive director of the Connecticut Association of Plumbing, Heating and Cooling Contractors, and the Connecticut Heating and Cooling Contractors Association. We are up here to testify on H.B. 5230, AN ACT CONCERNING LICENSURE of SWIMMING POOL INSTALLERS: We're not in favor or opposing this. We would just like to submit comment regarding.

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As swimming pools and other attendant outdoor recreation structures, such as outdoor kitchen areas and pools become more complex, the need for properly trained and licensed trade persons to perform the work is apparent. Swimming pools and outdoor kitchens have complex piping work and often they are heated by gas or propane heaters. As the department develops regulations regarding the licensure of swimming pool installers, it is imperative that the scope of such license is limited to swimming pool installation only. Any such work that deals with plumbing, piping and heating must be performed only by a properly licensed plumbing or heating contractor. When developing the regulations, Connecticut PHVC and CHVC recommend that language similar to what currently exists in Connecticut General Statute 20-417AA regarding limited licenses for swimming pool maintenance and repair work be

incorporated, as this helps delineate the scope of the work among licensed trade persons. For example, swimming pool installers should be limited to work "where such work commences at an outlet, receptacle, connection, back flow preventer or fuel supply pipe previously installed by a person holding the proper license."

Basically, what we're saying is we don't want the license that would be created here to infringe or encroach on the work of a licensed trade person who currently does plumbing and heating work.

And while I'm also up here, the Plumbing, Heating, Contractors Association as well as the Connecticut Heating and Cooling Contractors Association would like to submit comment in regards to H.B. 5225, AN ACT CONCERNING SOLAR WORK.

Last session members of the PHVC as well as the CHVC supported similar legislation regarding solar-thermal systems. Just like last year's legislation, Connecticut PHVC and CHVC similarly feel that this bill is a common-sense, pro-consumer, positive measure. It, one, addresses safety concerns for workers. Two, protects consumers by ensuring the solar PV systems are safely installed by properly licensed contractors. Three, expands opportunities for Connecticut businesses and residents due to energy costs through the solar PV energy systems by eliminating unnecessary obstacles for Connecticut's licensed electricians to become certified installers under the Connecticut Clean Energy Fund. And four, it promotes green jobs by building confidence in the solar PV technologies through appropriate training and licensing requirements.

As Connecticut PHVC and CHVC contractors are trying to provide jobs for their workers, they are concerned about the increasing delays in the approval process for tradespersons wishing to become qualified installers.

What we're basically saying here is what passed last year for solar and thermal is starting to work within that industry as soon as the state adopts a curriculum for their certification, and we would support and be in favor of that for the electricians as well with regard to photo voltaic.

REP. SHAPIRO: Thank you for your testimony. And just so you know, I did speak with Deputy Commissioner (inaudible) yesterday about how the certification and education part is going. It is proceeding at pace. Are there questions from members of the committee? If not, thank you very much.

JENN JENNINGS: Thank you very much.

SENATOR COLAPIETRO: Time Phelan, followed by Tommy Cleveland.

TIMOTHY G. PHELAN: Good afternoon, welcome everyone, it's our first time this year for me so it's a pleasure to see everybody again. For the record, my name is Tim Phelan, I'm the President of the Connecticut Retail Merchants Association. As you know, CRMA is a statewide trade group representing some of the world's largest retailers and the state's main street merchants. CRMA also represents the state's jewelry industry with our affiliation with the Connecticut Jeweler's Association. I'm here today on two bills if I could, Mr. Chairman.

First, House Bill 5227, which -- I think the

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REP. SHAPIRO: We have Tommy Cleveland followed by Joe Freeman.

TOMMY CLEVELAND: Thank you all for being here. My name is Tommy Cleveland. I'm from Branford, Connecticut and I'm here to testify against House Bill 5225, AN ACT REGARDING SOLAR WORK.

I currently work for a solar -- a small solar installation company out of Old Saybrook. We are currently on the approved installer list from the Connecticut Clean Energy Fund, and my boss is a licensed E-1 electrical contractor.

I'm essentially one of those laborers who has been working under the exemption as far as being able to install solar panels or certain aspects of solar installations. It being a small company, I do have many other roles. We're only four people. So I am involved in certain sales and other aspects of the company itself. But assisting in the installations is a big part of my job. And if House Bill 5225 were to pass as is, I would essentially remove like 50 percent of what my overall job is and would no longer be eligible to do that.

The -- it's sort of been gone over before, but I basically work on all the mechanical and labor intensive work, the actual layout of the system, all the racking material that needs to be put on the roof and then actually bringing up the panels themselves.

It was said that the panels are live once they are exposed to sunlight and that is very true, but no real electrons are actually flowing in any direction, they're sort of contained within the panels themselves. And then once you actually connect them all together, bringing it down into the inverter is when I believe that

you begin to get into that electrical work. And that is the portion of the work that my boss, the licensed electrical contractor actually does. So my basic point is that if this bill were to pass I would not be allowed to do the job that I've basically been hired to do as of now and would most likely lose that position.

REP. SHAPIRO: Thank you for your testimony. A quick question. Did your employer provide you any safety training when handling the panels and carrying them up to the roofs? Since they're live, but they're not quite connected there is perhaps a measure of risk but not the full blown risk? How did -- what was your training process like?

TOMMY CLEVELAND: Well, no, essentially. I mean, the panels themselves are very expensive so you handle them very carefully. As far as actual exposure to the leads themselves, I'm not sure how familiar you are with them, but it's a clipped together system, which is pretty much standard on all panels industry-wide. Essentially, small variations here and there, but you wouldn't actually be able to ever sort of touch the two leads together, at least with your fingers or anything like that. You could certainly stick like some sort of metal object in there and create the current yourself and shock yourself if you wanted to do that. I don't know why you'd ever want to.

REP. SHAPIRO: But it's not likely to occur by accident?

TOMMY CLEVELAND: No, it's pretty much impossible. I mean, if one of the leads were damaged in shipment, that would be -- that could potentially be a case. The wires themselves are triple coated so much higher coating.

Triple coated as far as the encasing that before you actually get to the metal wire itself. And that's because -- in case one of the -- if one of the leads were to sort of rub on a roof, it would essentially fray at some point so they protect that by putting more layers of casing on that. So no more so than any sort of electrical cord that would be -- you know-- associated with any sort of outlet like a coffee -- or any sort of appliance like a coffeepot or something like that -- much, much more protection than something along those lines. But as far as actual training and -- I didn't receive any.

REP. SHAPIRO: Okay, thank you. I'm going to assume that Representative Reed has a question.

REP. REED: Thank you, Mr. Chairman. And welcome and say hello to your mom and dad for me. I just wanted to ask you, Mr. Cleveland, there was a suggestion that sometimes when the solar installers are in a hurry they allow people like yourself to do electrical work. And I'm wondering if you've had that experience or if you're discovering something else?

TOMMY CLEVELAND: You mean?

REP. REED: Actually plug it in. I think somebody testified that sometimes, you know, once you've brought it up and you've put it in place that you're encouraged to plug it in sometimes because they don't feel like bringing in an electrician or they don't have the time, that kind of thing.

TOMMY CLEVELAND: Yeah, my boss -- us being a pretty small company, my boss being the licensed electrical contractor is always pretty much there with me on the roof when that is all going on. He's working beneath when I'm

actually doing the L-brackets and the rail and everything like that. But as far as that's -- the actual connection he pretty much handles that right now.

REP. REED: Great, thank you very much.

REP. SHAPIRO: Thank you. Are there further questions? If not, thank you very much for your testimony.

Now, we have Joe Freeman followed by Dave Boomer.

JOSEPH FREEMAN: Senator Colapietro, Representative Shapiro, esteemed members of the committee, my name is Joe Freeman. I'm an attorney with Ticketmaster, now Live Nation. And I very much appreciate the opportunity to speak briefly in opposition to Bill Number 5228.

We view Bill 5228 as an extraordinary assault on Connecticut consumers' right to access tickets at face price. And in particular we view the bill as the reseller community's effort to prevent entertainment providers, venues, promoters, teams, artists from doing everything possible and with the latest technology available to try to get tickets into fan's hands at face price, particularly when the price that the event provider elected to charge is far below what the prevailing market price might be in a resell marketplace.

Let me provide a quick example to illustrate. As some of you may recall some two and a half years ago, Miley Cyrus did a nationwide tour that attracted a lot of attention and a certain amount of controversy because of the rampant after sale market activity and the very high prices that ensued. We were asked by the artist last year -- by her representatives and

it says the American Red Cross or American Heart Association, not just the Heart Association.

DAVID BOOMER: You're correct. And under the current law, the scenario I would use is if someone collapses out here and goes and gets the AED and uses it, they're protected from a lawsuit because of taking the risk of helping a stranger. If you adopt this language they don't have that protection unless they've gone through the training program and that's just is the opposite direction this state has been going in regard to immunity over the last few years.

SENATOR COLAPIETRO: So if you would, would you give us the language that you think that would be suitable and correct the problem and get it to be?

DAVID BOOMER: Absolutely.

SENATOR COLAPIETRO: Appreciate it, thank you. Any questions from the committee? Thank you for your testimony, sir. Robert Chew followed by Richard Dziadue.

ROBERT CHEW: Hi, I'm Bob Chew, C-H-E-W. I'm the founder of Alteris Renewables, a renewable energy company that has been installing projects since 1980. I've been a solar contractor since 1977. Current projects we've done are the Aetna project on 84, which is very visible on the highway and more recently, a couple of weeks ago we installed a wind turbine at Pine Point, at Phoenix Press in New Haven.

I'm here to give testimony about our experiences in the installation of over 75,000 photo voltaic modules and over 15 megawatts of PV installations throughout the northeast. We

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are currently the fastest growing private business in Connecticut according to this year's Inc 500 magazine and so I know something about growing jobs in the state.

If this law was passed it would require us to lay off workers, not hire workers. We currently have numerous PV-1s, PV-2s, E-1 people who do the electrical portion of the work and we also have apprentices, trainees that come on board, and they're the ones we use as laborers to bring modules up to the roof.

Some of the jobs like Aetna, very high, high work. Some of my electricians that are licensed in this state are 55, 60, 65 years old. To require them to go up on roofs would be something that we would not be comfortable with.

Regarding safety, in this legislation they're talking about installing towers and turbines. On the current wind turbine we just installed at Phoenix Press that you can see from the highway on route 95 in New Haven, a lot of that work is done by specialty tradespeople. You know, we're up 150 feet in the air. Every single one of our workers has gone through high tower safety training. None of my electricians do because all of the electrical work on our jobs is either done down on ground level for the most part or on residential roofs. Normally, we have the electrician in the basement doing the more complicated wiring, we have PV-1s up on the roof doing the grounding and the more simple plugging the plastic female and male plus together. I think I was involved in helping to create this exclusion for workers to be able to carry modules up to the roof.

Now, we're not expecting those people to do any electrical work whatsoever. Brief history,

Rhode Island, you know, closed down their program in 1996. In January, I moved into Connecticut as the only employee of the company in the state and we've grown very rapidly. And part of the reason we moved to Connecticut rather than Massachusetts is because I realized it fairly quickly someone with my experience -- and I had been doing solar installation since 1977, would be able to get my solar licenses, which I did. I was also able to bring some of our Rhode Island experienced installers into the state.

With this current legislation, that would have not happened and you would not have a fairly significant employer in the state today as a result of this legislation. Let me just go over some more notes.

Currently another thing -- you know, the reason I'm a Rhode Island resident -- but I was at our Wilton headquarters yesterday for a senior managers meeting, and part of what we decided is the package for employees that we're going to have to transfer down to New Jersey and Pennsylvania where we've just opened office because of the lack of funding as a result of the Connecticut Clean Energy Fund's situation. We also saw in Rhode Island 5 million dollars taken away from the restricted receipt entitlement. That also put Rhode Island in a very tough situation as far as trying to create a sustainable green job economy.

SENATOR COLAPIETRO: I just have one quick question. Could you furnish or do you know of someone who could furnish -- I'm sure the committee would be interested in what these panels look like when they come out of the package where we could actually get our hands on it and look at it because there's a lot of speculation like stabbing the wires or grabbing the wires -- I'm

sure we really don't know what you're talking about.

ROBERT CHEW: Sure, we'd be happy to deliver a sample panel and I can have it delivered to your office.

SENATOR COLAPIETRO: I'd appreciate that and if our clerk would -- just to make copies of that and give it to our committee members so we can see. Thank you. Any further questions from the committee? Thank you for your testimony, sir.

Richard Dziadul. Did I say it right this time? No? That's why he left, that's why my co-chair left.

RICHARD DZIADUL: Chairman Colapietro, Chairman Shapiro, committee members and staff, I'm here today to express my opposition to House Bill 5225. My name is Richard Dziadul, pronounced "shunnel" with a "j", although spelled differently.

I'm a board certified photo voltaic installer. I have been an installer in Connecticut since 2004. I have my PV-1 license. I have supervised the installation of over 500 kilowatts of photo voltaics on over approximately 60 projects. I was among the first of a dozen installers in the state to be licensed as a PV-1 solar contractor. As allowed by Connecticut law I am now training an apprentice solar installer who is with us here today, Mr. Seth Mellen.

My company, PV Squared, is an electrical contracting business specializing in solar energy installations. Based in New Briton, Connecticut, we have a staff of one E-1 electrician, 1 PV-1 professional and one PV-2 apprentice.

I would like to start my testimony with a few statements that may be useful as you consider House Bill 5225. 5225 seeks to make changes to the licensing and definitions that determine who can legally perform various aspects of solar photo voltaic systems. Under state regulations today, E-1 electrical contractors can install photo voltaic systems. Just as holders of the PV-1 contracting license can install a photo voltaic system. This means that a large portion of the reason why 5225 is seeking to address a problem where none exists.

There is no requirement to change the current law in order to allow E-1 electricians to undertake this work. If you look across the state, solar contractors are currently authorized to install photo voltaics in Connecticut today. You will find many whose work is supervised by PV-1 license holders, many whose work is supervised by an E-1 or E-2 electrician. Some such as PV Squared, the company for which I work, combine the talents and skill sets of both PV-1 and E-1 license holders.

As a solar contractor I install photo voltaic panels for modules that convert sunlight into electricity through the use of equipment we call inverters. This electricity is modified in such a way that it can match or interconnect with the electricity provided by the local utility. This ability to interconnect is part of what makes these systems simple and affordable for our customers and to provide the added benefit of supporting the stability of the electrical grid in our state. Connecticut Light and Power and the other power utilities in the state would not let us interconnect -- I'll be brief, I'll sum up. This bill would kill green jobs and raise the cost of photo

voltaic systems and it would make it difficult for us to train and more difficult to install these project. Any questions?

REP. SHAPIRO: Thank you for your testimony. I do have a question. You said it would make it more expensive to install and more difficult to install these projects. Can you explain how?

RICHARD DZIADUL: Sure. Right now an electrician generally bills out at \$100 an hour or so. A PV-1 apprentice, a PV-2 apprentice is about \$18 an hour. A photo voltaic -- or a PV-1 is maybe \$50 an hour. Typically we go \$55. Much of the work on the roof is just literally mounting feet, flashings, cutting shingles, installing aluminum rail, clamps. There's a lot of bulk work that is done right now by unlicensed or apprentices. So there's an awful lot of work. By a strict reading of what some of these electricians have said today, all of that work would have to be done by an E-1 or and E-2 or electrical apprentice.

REP. SHAPIRO: Are there further questions from the committee? If not, thank you for your testimony. We have next Paul Bartoo and Seth Mellen, the aforementioned. If you gentlemen are from the same company and have similar testimony I would like to -- you can join each other if you can. If you'd like to testify separately that's fine, too. And if each of you could state your name for the record when the time comes, thank you.

PAUL BARTOO: Chairman Colapietro, Chairman Shapiro, committee members, my name is Paul Bartoo and I'm an account manager at PV Squared and as my colleague said, an electrical contracting business that specializes in solar energy installations. I've been part of the leadership team that has been growing this

business and promoting also the growth of the photo voltaic industry in Connecticut. Members of my company have been in this field for 10 to 30 years. I wish to place my opposition to raised House Bill 5225.

As I see it it's a green jobs killer. It would negatively impact Connecticut residents who seek to install affordable reliable solar energy systems on their homes. I believe it would put hundreds of jobs at risk. As I look at the bill today, I'm going to depart from my written comments. I have a bill that's been described by those who introduced it as being poorly written and not addressing what they really wish to address.

It has -- it seeks to address two problems, the first of which has been established doesn't exist in that E-1s have in fact no licensure issue with installing photo voltaic systems. They're fully capable under Connecticut license to do those installations.

The second problem it's supposed to address has to do with the issue of safety and I would submit that, in fact, the licensure, the work practices that are currently in place for the photo voltaic industry in Connecticut are working. An additional regulation would be burdensome and would only serve to increase the cost of solar projects.

And as my colleague recently spoke to, we have a -- we've seen a lot of testimony today that I'm going to have to say often included presumptions of fact that aren't established or statements that seemed to paint a picture of a problem where, you know, I really see little proof that one exists. And I want to say that, you know, one of the speakers said that you know, we don't need to create a new subdivision

of installers for photo voltaics. We've got E-1 electricians. Well, this is not a bill that's creating a new position. This is one that was created specifically in 2005 to create a dedicated industry to photo voltaics so that you would build an industry in the state and not have one that would kind of come and go. If it's bad times and E-1s need extra work, they're going to group migrate to photo voltaics. If there's good times and there's other works, well, it doesn't get done. I would have more to say, but I see I'm out of time. Thank you. I'll welcome questions.

REP. SHAPIRO: I think we're largely questioned out on this issue. But thank you very much for your testimony.

SETH MELLEN: My name is Seth Mellen and I work for PV Squared. Currently, I'm an apprentice under Richard Dziadul's PV-1 license and I'm opposed to this House Bill 5225.

The bill is addressing a problem that doesn't exist for the reasons stated by my colleagues and others. And under the strict interpretation of the bill it would essentially reduce the license that I'm going for and the license that Richard already has. It would be rendered useless for grid interconnected systems, which are almost a hundred percent of what we install. Thank you.

SENATOR COLAPIETRO: I just have one question. Do you install these devices by yourself?

SETH MELLEN: No, that's -- there's multiple people on the job site.

SENATOR COLAPIETRO: And you have somebody that's qualified in your eyes -- with somebody or are you just installing by yourself?

SETH MELLEN: No, we have at all times a PV-1 or an E-1 on staff, excuse me, on the job site while I'm on the job site. And then we also have what would be considered laborers as well.

SENATOR COLAPIETRO: Well, I guess what I'm going to ask again is do you install these by yourself or do you have a supervisor with you installing these?

SETH MELLEN: I have a supervisor with me.

SENATOR COLAPIETRO: Thank you. David Chapman. Is that you? Thank you for your testimony. Robert Clermont, followed by Nora King.

ROBERT CLERMONT: Good afternoon, Mr. Chairman, members of the committee. My name is Robert Clermont, I am a certified real estate appraiser here in the state of Connecticut. I reside in Meriden, Connecticut. I own a company called Value Quest Appraisal and I also serve as the president for the Connecticut Association of Real Estate Appraisers. Before I begin I just wanted to thank Representative Reed for her efforts in putting this bill forward. We think that it's really a long time coming,. Many of you may remember we came up last year and testified before the committee on a different House bill, but it also -- Senate bill -- but it also pertained to management companies and escrow, a lot of the focus was.

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We've basically been working on , as John Galvin, the president from the Institute testified earlier, we've been working on Senate Bill 13. And this bill -- a lot of language in this bill mirrors the language in that bill. Some of the concerns that we have with this bill are the same concerns that we have with the other bill so. First of which is really

appraisers. They're going to be responsible for the review of that appraisal and they're going to be signing off on it. So there's certainly going to be a greater level of care and maybe that means something to you all. Maybe it doesn't, but I think that the thing that would really have meaning is that when you have that care then you're going to have a greater level of protection for the consumers of Connecticut, which doesn't exist today.

REP. SHAPIRO: Okay. Thank you very much. Further questions? If not, thank you for your testimony.

SENATOR COLAPIETRO: Yes, I just want to apologize to this gentlemen, John Chamberlain, because I missed you and I thought you were one of the three that were up there so I'll call you at this time here.

JOHN CHAMBERLAIN: Chairman, members of committee, thanks for giving me the opportunity to speak to you about this today. My name is John Chamberlain, I'm a resident of Trumbull, employed by Sunlight Solar Energy. I'm the office coordinator for Sunlight Solar and here today to speak to you guys on behalf of our 25 employees, residents of Connecticut, as well as our owner, Paul Israel, who is a licensed home improvement contractor and a PV-1 license holder here in the state. He couldn't be here with us today. But we operate out of an office in Milford.

Sunlight Solar was one of the first approved installers through the CCEF program here in the state and our success in Connecticut has helped us grow a business and given us the exciting opportunity to offer hardworking craftsmen positions that provides them a chance to be a part of not only a growing business, but

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Connecticut's green jobs industry.

Sunlight Solar is both a sort of small to medium sized business. We're not a four-person operation, but 25 is still not huge, as well, as a green business. And yet today we are looking back historically here in Connecticut we are one of the largest solar installers with over 400 installations on homes and businesses and two and a half megawatts of solar equipment installed, online and completed over the last five years.

We've been thrilled along the line to have the opportunity to hire some amazing electrical talent. Our staff boasts both an E-1 and a number of E-2 electricians alongside Paul Israel, our owner and a PV-1 holder, two PV-2 license holders and actually one of them is currently apprenticing to become an E-2. So he would be an unlimited electrician rather than holding a limited solar electrical license. We also employ a host of non-electrically licensed individuals who complete our installation staff bringing other talents and trades including construction, roofing and carpentry.

And to address some of the training questions, one of the things that we provide is the company -- beyond the individuals who have gone ahead and gotten personal OSHA 10 or OSHA 30 training and hold cards, we have a safety instructor, Rob Fitchner who is here with me today. He is also a resident of Milford and he conducts weekly training on safety with all of our installation staff.

So that's part of our weekly meeting with installers, talking through safety on rooftops, safety with ladders, as well as safely handling the equipment they install.

One small detail that I want to throw in before I go too much farther that was shared with me by Mike Trahan -- Sunlight Solar is a part of Solar Connecticut and a proud one -- is that the DCP has reviewed House Bill 5225 and does not support it. So I hope there will be an opportunity for you guys to verify that with the commission, but I did want to go ahead and share that now speaking with you.

I wanted to also sort of reiterate some of what you've heard on the front as far as saying -- looking at our work and only seeing the fact that we are required to think about electricity and handle it carefully limits the scope of what we do. I'll try to be brief as I wrap up.

But there is absolutely a concern on our companies part about what it would mean to our business to remove these exemptions from licensing for workers who hoist, place and anchor equipment. I know specifically one of our installers in Branford is looking up something in writing that we can get to you guys regarding his job as an unlicensed employee. He's been with the firm for three years, works hard every day to support his five year old daughter like many of our installers. And of the 15 staff members that we have doing solar installs on a daily basis, a good portion of those are folks that we would have to look at how we could manage to keep them on staff if that exemption were dropped. So I suppose I'll finish with that and ask for any questions.

REP. SHAPIRO: Thank you very much for your testimony. Nora King, followed by Glenn Marshall, who I think will be played by Jim Lohr for -- all right.

NORA KING: Hi, my name is Nora King. A few of you may remember me from last year when I addressed

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NORA KING: Thank you.

REP. SHAPIRO: Thank you for being so patient and waiting it out. All right. Glenn Marshall followed by Steve Guveyan will be our last speaker.

GLENN MARSHALL: Chairman Colapietro, Chairman Shapiro and members of the General Law Committee, my name is Glenn Marshall. I'm the district business manager for the Connecticut Carpenters, I'm president of Carpenters Local 210. I am here today to testify against Raised Bill 5225, AN ACT CONCERNING SOLAR WORK.

I strongly support the growth of solar power in efforts to improve energy efficiency. However, we strongly oppose the change in section three of this bill which would eliminate employees of or any contractor employed by and under the direction of properly licensed solar contractor performing work limited to the hoisting, placement and anchoring of all solar collectors, photo voltaic panels, towers and turbines. Eliminating this language in current law, which was carefully crafted and compromised several years ago would adversely impact not only carpenters, but other trades as well.

The technology is rapidly evolving to the point where solar membranes are included in many windows, roofing and exterior panel products. As nanotechnology continues to make photo voltaic membranes and receptacles smaller and smaller, I suspect all exterior building products, namely windows, roofing and siding will include photo voltaic membranes in one form or another in the very near future.

Let me give you just one example of why this change would be a problem for carpenters and

other trades. We have a window manufacture company that has a patented process called Thin Film Solar, where a photo voltaic membrane is included in the windows. Our members manufacture and install the windows. Under this proposal our concern is that it would require a licensed electrician to handle or install these windows on the job site. Under this proposal you would need a licensed electrician to install roof shingles that contain photo voltaic membranes.

We are not interested in doing any work that the electricians currently do, but we strongly oppose efforts to mandate an electrician's license to handle, place or install windows, siding or roofing because they now include solar membranes in products. Thank you for your consideration.

REP. SHAPIRO: Thank you, Glenn, before you go, just to clarify. This is work and the exemption is work that you guys and your members have been doing for years and years without incident; is that correct?

GLENN MARSHALL: That is correct. You know, it's just the advent of the technology today. More and more manufacturers are starting to install products that have solar in them. And there's demarcation lines between the crafts.

I mean, currently like in a powerhouse, our millwright carpenters may end up rigging because they're trained, certified to do the rigging of some of these motors that could be thousands of pounds. And they set them, align them and level them and at that point, then the electrician comes in and wires them up.

We're not looking to do any of the wiring or anything like that, but we do have a problem if

there's windows or roof skylights or things like that that we've been doing for years and trained to do. If we can't handle them any more or install them because they might have some kind of a membrane that's been incorporated in them. Thank you.

REP. SHAPIRO: Thank you. Questions? Thanks for your testimony. Thanks for hanging out so long. Steve Guveyan, wrap up.

STEVEN GUYEYAN: Good afternoon, Senator Colapietro, Representative Shapiro and members of the committee, I'm Steven Guveyan from the Connecticut Petroleum Council, testifying in opposition to House Bill 5220. I'll quickly summarize our points.

This bill looks like it's coming after the gasoline industry only. We've been through a number of investigations in this state with the attorney general. Those investigations have yielded nothing. We've come up clean every single time, after all the hurricanes, after all the price spikes. Every time we've been subpoenaed, we've complied. There's been no fighting subpoenas. The investigations have shown at least at the major oil company refiner or terminal operator level, no violations, no consent orders. So why is it that this bill appears to give the office of the attorney general extraordinary power over just the gasoline industry?

If passed, like many bills you get those unintended consequences. When we went through the hurricanes here there was real concern about getting gasoline. If this bill were to pass and the 50 percent trigger holds, any company close to that, if several refineries go down or some stations don't have gasoline, it's going to be very hesitant to sending gasoline

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COMMITTEE HEARING 2/25/10

Good afternoon ladies and gentlemen

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My name is Bill Mackey and I am General Manager for Woods Electric, an electrical contractor for commercial and industrial projects based in Farmington, CT. I have been in the electrical industry since 1980 and I hold an E-1 license.

I have three items of concern regarding the photovoltaic industry

1. The regulations for applying for and receiving Clean Energy funds are cumbersome and confusing. The issue of not being allowed to apply for funds until one becomes a certified PV installer can prevent a company from receiving fund reimbursement for 18 months.
2. I have made numerous attempts to become a provider and installer of PV solutions for industrial and commercial settings. I have continually been refused the ability to buy and install the PV product direct for suppliers. I have been told over and over that there are exclusive vendors in the state, and I must buy through them. I am not sure if this is due to licensing considerations, but as a fully qualified electrical contractor in the state, I feel I am being cut out of business opportunities.
3. The latest figures that I have heard regarding electrical unemployment in the state is 30%. I know that I have reduced my field staff substantially. There are many available E-2 and E-1 licensed people available for this industry that have already been trained for work in the electrical field. We are fully ready, willing and able to do this work, if given the opportunity.

Thank you

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**Testimony of the International Brotherhood of Electrical Workers
General Law Committee
Thursday February 25, 2010**

Senator Colapietro, Representative Shapiro, members of the General Law Committee, my name is Paul Costello, I am here to testify on behalf of the IBEW, the International Brotherhood of Electrical Workers and National Electrical Contractors Association Joint Apprenticeship Training Committee to express our Support of House Bill 5225, An Act Concerning Solar Work.

The JATC has been training apprentices for over seventy years to become electricians. A registered apprentice electrician receives 8,000 hours of on-the-job training (OJT) over a minimum of four years in addition to a minimum of 720 hours of related instructions. Apprentices in our JATC receive up to 10,000 hours of OJT and 1,200 hours of classroom training before they are eligible to take their state electrical license exam. The training includes AC and DC theory, technical math, rigging, conduit bending, wiring, bonding and grounding, blueprint reading, electronics, construction safety, CPR and first aid, and how to comply with and interpret the National Electrical Code. In addition to all this they are trained in the design and installation of photovoltaics (PV). Their OJT includes residential, commercial, and industrial applications. These are all components required for the installation of solar photovoltaics and wind generation.

Licensed electrical contractors and electricians have been installing PV for many years; this is not a new technology. PV installations have been under the scope of work for licensed E1 and E2 electricians since it was introduced. Information from the Connecticut Clean Energy Fund (CCFE) Eligible Installer List identifies 44 installers eligible for the rebate program and solar lease program. Of the 44 solar installers 17 of them are E1 unlimited electrical contractors while only 4 are PV1 license holders. The remaining installers do not make any reference to license status. This appears to be in line with overall numbers in state. There are over 12,800 E1 and E2 licenses in the state. There are another 1,762 apprentices registered to 1,800 programs. PV license holders and apprentices total .26% of the electrical industry in Connecticut. There are only 29 PV1 and PV2 license holders while 60% of them do not reside in the State of Connecticut. There are only 4 apprentices registered to 3 sponsors in the state. Those apprentices are only required to complete a two year 4,000 hour apprenticeship. This does not appear to be a sufficient amount of time to gain the experience required to perform electrical work on residential, commercial and industrial facilities.

HB 5225 defines "solar electricity work" and limits the work a limited licensed PV holder may perform. Presently there is much focus on residential PV installations because of the rebates available from the CCEF. We must not lose sight that many larger PV installations are on commercial and industrial establishments. These large arrays comprise of hundreds of modules capable of producing tens of thousands watts of power operating at high voltages. These arrays need to be connected and integrated with existing pieces of electrical equipment previously installed by licensed electricians. This work needs to be completed by licensed electricians.

The exemption to the licensing requirement should be deleted. In order to maintain a safe installation and protect persons and property all materials needs to be handled and installed by workers that have been properly trained. There are no exemptions to any of the other electrical limited or unlimited licenses. This is extremely important when handling PV equipment. PV modules when exposed to light produce a source of voltage and cannot be turned off. This poses a safety hazard to the unlicensed worker.

I urge you to support HB 5225 An Act Concerning Solar Work and leave the work to the unlimited E1 and E2 license holders that have been properly trained to install electrical equipment. There is no reason to create a new separate workforce when there is already one available that is facing unemployment.

Respectfully,

Paul Costello
Director of Apprenticeship and Training

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General Law Committee
Public Hearing – Thursday February 25, 2010
Raise Bill 5225 – An Act Concerning Solar Work

Good afternoon, Senator Colapietro, Representative Shapiro, committee members. My name is Michael Moconyi and I am the Executive Director for the Connecticut Chapter, National Electrical Contractors Association (CT Chapter, NECA). Thank you for allowing me to make some brief comments on Bill 5225 – An Act Concerning Solar Work.

CT NECA is here today to speak in favor of requiring the installation of "Solar Work" to be performed by E1 and E2 electrical license holders. Solar electric is loosely defined as the installation, erection, repair, replacement, alteration or maintenance of photovoltaic or wind generation equipment used to distribute power. This technology has been around for decades and the installations have been performed by E1 and E2 licensed electricians.

Historically, the State of Connecticut has issued E1 and E2 licenses that regulates the installation of electrical generated power systems. Solar work clearly falls under that definition. The photovoltaic panels once exposed to sunlight begin to produce power immediately. For any agency or group to **now** remotely claim that our E1 and E2 license holders are not sufficiently trained for this type of work is misguided in their claims. Our industry spends hundreds of thousands of private dollars annually on training our workforce for applications in the residential, commercial and industrial fields which includes training on Solar Work technologies.

Due to the state of our economy the electrical industry like so many other industries today is experiencing a significant downturn. By many accounts unemployment in the electrical construction industry is 30% and higher. Why create additional regulation to compete in the solar market? E1 and E2 license holders provide the infrastructure to perform solar installation work. Do not allow for any licensing exemptions to be included in the statute by allowing exemptions you raise the possibility of faulty installation by untrained or undertrained individuals that place the public at risk.

Thank you for your time and consideration.

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**TESTIMONY OPPOSING HB 5225 "AN ACT CONCERNING SOLAR WORK"**

March 1, 2010

My name is Michael Trahan and I am Executive Director of Solar Connecticut, Inc., a non-profit group supporting solar energy education in Connecticut whose members are mostly small businesses that install solar energy systems on a full-time basis.

While several CGA committees are entertaining "Green Jobs" legislation, this bill, HB5225 is an anti-Green Jobs bill because it will put solar installers out of work upon passage.

These installers created Connecticut's nationally renowned solar industry and are largely responsible for the safe and quality installation of nearly 1,500 residential and commercial solar energy systems in Connecticut in just the past couple years. They are also largely responsible for making Connecticut one of the top five states in America for solar power. Our members are also architects, electrical contractors, plumbing contractors, suppliers, academic institutions and manufacturers.

The individuals effected by HB 5225, those who've earned a state PV1 or PV2 (photovoltaic) license, and those who legislators exempted from needing a license to work on the job site, would effectively be out of a job if this legislation were to pass. It would be disastrous if the very individuals, who created the solar market in Connecticut, took the risk and opened businesses and employ between 250-300 workers, were told that the PV license now has no value. And that the families who are dependent on that license, and the license exemption for workers who do not come into contact with dangerous levels of electricity on the site, were told that the bread winner in that family no longer has a job.

Don't be persuaded by the erroneous claims that solar panels right out of the box present a hazard to trained handlers. This is false and misleading as anyone who has worked in the industry will tell you. I expect to have documentation to that effect in your hands soon.

I understand that the DCP has reviewed this bill and does not support it.

Please contact me if there are future discussions related to this bill.

Thank you.

Michael Trahan
Executive Director
Solar Connecticut, Inc.
P.O. Box 515
Higganum, CT 06441
[o] 860-345-7449
[c] 860-256-1698

(24)



**TESTIMONY OF
JENN JENNINGS
EXECUTIVE DIRECTOR
PLUMBING, HEATING & COOLING CONTRACTORS OF CONNECTICUT (CT-PHCC)
AND
CONNECTICUT HEATING & COOLING CONTRACTORS ASSOCIATION (CHCC)
BEFORE THE
GENERAL LAW COMMITTEE
FEBRUARY 25, 2010**

The Plumbing, Heating & Cooling Contractors of Connecticut (CT-PHCC) and the Connecticut Heating & Cooling Contractors Association (CHCC) submits the following joint comments supporting HB-5225, An Act Concerning Solar Work:

State law establishes a licensing system for several trades overseen by the Examining Boards for the Electrical Work; Heating, Piping, and Cooling Work; Plumbing and Piping Work; Elevator Installation, Repair, and Maintenance Work; Automotive Glass Work and Flat Glass Work; and Fire Protection Sprinkler Systems Boards. Each trade has different levels of expertise—apprentice, journeyman, and contractor. Workers must meet education, training, and experience requirements to qualify for each level. Members of the plumbing and heating trades who hold unlimited licenses are qualified to perform any and all work related to their trade.

Last session, members of the plumbing, heating and cooling industry strongly supported similar legislation regarding solar thermal systems. Just like last year's legislation, CT-PHCC and CHCC similarly feel that this bill is a common-sense, pro-consumer positive measure that 1) Address safety concerns for workers; 2) Protect consumers by ensuring that solar PV systems are safely installed by properly licensed contractors; 3) Expands opportunities for Connecticut businesses and residents to reduce energy costs through solar PV energy systems by eliminating unnecessary obstacles for Connecticut's licensed electricians to become certified installers under the Connecticut Clean Energy

Fund programs. 4) Promote "green jobs" by building confidence in solar PV technologies through appropriate training and licensing requirements.

As CT-PHCC and CHCC contractors are trying to provide jobs for their workers, they are concerned about the increasing delays in the approval process for tradespersons wishing to become "qualified installers" under the various Clean Energy Fund rebate or incentive programs. Members of the industry who hold unlimited licenses and who are more than sufficiently trained and technically competent to install and work on solar systems, whether they are solar PV or in the case of our industry, solar thermal, are increasingly concerned about the various impediments thrown up which serve only to shut out qualified members of the plumbing, heating and cooling industry from performing work to the detriment of the consumer.

Thank you for your consideration of our comments and we urge passage of the bill.

CT-PHCC is a not-for-profit trade association that represents the professional plumbing, heating and cooling contractors in the state of Connecticut. CT-PHCC and its members are committed to protecting the health and safety of the public. Contractors who belong to the association have demonstrated reliability and trustworthiness and are licensed by the state of Connecticut.

CHCC is a trade association whose objectives are to strengthen and further trade relations, attract, educate and train necessary manpower, represent members at all levels of government and review and establish quality standards and procedures. The association represents over 125 Heating & Cooling Companies in Connecticut.

BeFree Green Energy LLC
PO Box 8295
New Haven, CT 06510

February 23, 2010

RE: Raised Bill No. 5225 LCO No. 988 AN ACT CONCERNING SOLAR WORK.

I would like to put into the record our STRONG OBJECTION to bill 5225, AN ACT CONCERNING SOLAR WORK.

Solar PV and Thermal work was designed to be easy to understand and install. Many other states allow the homeowner to do this work themselves and still get the state rebate, something that Connecticut must also do if it wants to see solar spread to 5% of the population within 10 years. Limiting solar PV work and Thermal work when thousands of installations have been done perfectly in the last few years without any such requirements will further increase costs to CT residents who already are paying some of the highest costs for Solar work due to the large amount of paperwork and utility requirements placed on Solar Installations.

All the jobs created thus far and the companies installing solar thus far will shut down if this bill passes. This is the year that solar pv and thermal will be affordable to residents and this bill will shut down the businesses that exist today. You will be putting many people out of work and hundreds of new young workers looking for work will not have a job waiting for them.

Right now we hire E1's to perform the final hookup of a PV system. Not one E1 or E2 that I have encountered has wanted to go up on a roof to install solar panels nor has he had a apprentice that has wanted to go up on a roof and install solar panels. 100% of them have been scared of heights. There is no need for this bill nor its many new requirements. What the Solar industry needs is less requirements to grow, not more. Jobs will not be created in this state and businessmen who are here now creating solar companies will leave this state. New Jersey is only 2 hours away and has the best solar rebate program in the country along with a law that says any homeowner can install solar systems themselves. If a homeowner can do it as a weekend project then why should we here in Connecticut require only a E1 or E2 to be able to do it?

Solar panels were made to be easy to use and install. They have no moving parts. They have 2 plugs which are shock proof and which connect in only one manner to other solar panels. Electricity can easily be shut off by covering a solar panel. There is nothing complicated about it and that is what the state should be emphasizing. We need a law that allows homeowners to install solar themselves and still get the state rebate. A E1 or even a PV license should not be required for any part of a solar installation as it is very easy to do. Soon Home Depot will be carrying solar panels easily installable by anyone.

We must get 50% of residents to install solar by 2020 or we will have a serious problem facing us in the next 20 years, both environmental, economical, and social.

This bill is severely flawed and no lawmaker in this state should vote for it.

Sincerely,

Harsh Luthra



President

TESTIMONY ON RAISED BILL 5225

Carol Savery-Frederick
532 Mulberry Street
Windsor Locks, CT 06096
860-623-0869
Cell 860-212-1331
sizzle1st@aol.com

February 27, 2010

Chairman, Committee Members and Staff,

My name is Carol Savery-Frederick and I have been a member of PACE (PEOPLE'S ACTION FOR CLEAN ENERGY, INC) for a number of years. I have participated in the solar tours our organization puts together every year and have seen the growing enthusiasm and commitment of thousands who have taken a tour and seen what is possible with solar energy. When choosing the solar route to heat/cool our homes AND businesses and/or to heat our water, we are taking some very necessary and urgently needed steps to preserve this planet and our environment for future generations.

To quote Judi Friedman, Chairperson of PACE, "Beginning with solar hot water systems and passive solar homes, the solar movement has progressed in spite of political changes, poor economies and the advancement of polluting technologies. Over and over people have chosen to take the solar route...realizing that it is like money in the bank. The fuel is free!!!!"

Since 1985, our home has enjoyed the benefits of a solar hot water system. The emergence of the Clean Energy Fund and the Efficiency Fund has allowed many citizens to also embrace the solar option. However, without continued and increasing support for the solar movement and clean energy, it becomes more difficult for us to find companies to install and maintain our systems.

I urge you to oppose HB 5225 and to stop any raids of the CCEF ratepayer funds. If passed, this bill will prevent currently working solar installers who do not hold an E1 or E2 license. Critical green jobs will be lost. The goal of any legislative work should be to lessen the cost of alternative energy work - not to increase it! Connecticut has been a leader and needs to maintain its dedication to a cleaner and more affordable energy future for its residents. There are many thousands of us who are joining together in support of clean energy. We also need to support the businesses that make it possible AND affordable for us to install solar systems or other forms of clean energy. Please help us keep solar energy in Connecticut a growing and green business.

Our organization is also deeply opposed to any raid of the CT Clean Energy Fund or the CT Energy Efficiency Fund monies. These are ratepayer funds and needed to create jobs and help our economy.

Thank you,

Carol Savery-Frederick



LOCAL 90

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS

2 NORTH PLAINS INDUSTRIAL ROAD WALLINGFORD, CT 06492
203-265-9267 FAX 203-265-9312

SEAN W. DALY
REPRESENTATIVE

To the members of the General Law Committee,

My name is Sean Daly and I am submitting testimony on behalf of the IBEW (International Brotherhood of Electrical Workers). We are asking for your support of HB 5225 An Act Concerning Solar Work. We represent thousands of licensed electricians and indentured apprentices in Connecticut who work in the electrical industry.

We support this bill because we believe it will help to diminish some barriers we have experienced in our efforts to contribute to the growth of the Solar industry and overall job growth in our state. Solar panels are not a new invention, they were invented in 1953 and gained the most prominence in 1973, and we have been installing them from the beginning. New technologies now make them more affordable and efficient. You may be aware of the CT Clean Energy Fund's (CCEF) program to award rebates for the installation of Solar Photovoltaic panels. While we wholeheartedly appreciate the intent of the program and commend many of the CCEF's overall efforts to foster job growth in the "green" industry, we feel the requirements CCEF has set forth hinder the ability for our electricians to take advantage of the program. There are over 3,000 licensed electrical contractors with registered apprentice programs in the state of Connecticut who have all the licensing qualifications to perform these installations. There are already over 12,000 licensed people who can perform this work and over 1,760 registered apprentices learning this trade.

The IBEW feels the unlimited E1 and E2 licenses provide a more comprehensive background for those who are to perform the installation of Solar panels. The electricians go through a four-year training program, with annual continuing education, versus the PV apprentice program, which is only two years. We have been targeting Solar PV installations as a topic in our apprentice training courses for years. Therefore, not only are our electricians well versed in the techniques of Solar PV installations, they are also able to spot a related, though possibly unexpected, electrical mishap that may occur during the installation of the panels. We feel this is a matter of safety over anything else. In Connecticut, there is a 30% unemployment rate in the electrical industry both union and non-union at this time. There are only a total of 29 PV licensed individuals doing work in the state, and some of them come from out of state. We are concerned about this given the high unemployment rate in our industry; our electricians are more than qualified to do this work and we hope you can help support us by helping to relieve employment barriers we are facing.

We support removing the licensing exemption as stated in Section 3 of the bill. These systems have the potential to cause serious injury and death by electrocution. There should not be anyone attempting to do any type of installation who is not properly trained and licensed. Solar panels have no on and off switch. They store and provide electricity when light hits them. When put together there is a potential for high voltages of Direct Current. All installations of electrical equipment covered by law and the Department of Consumer Protection do not allow unlicensed individuals any handling or installation of any kind.

Again, we hope to resolve some of these issues so that we can better contribute to job growth in our state.

Thank you for your time and consideration in support of this bill.

Sean Daly

IBEW

Testimony Against House Bill 5225

2-27-2010

Chairmen of the General Assembly General Law Committee. Please oppose this bill that will halt almost all work in growing a clean energy economy.

This is an industry that is replacing fossil fuel dependence while relieving the grid of excess demand must be supported.

Darek

**Darek Shapiro, Architect, AIA _____
Environmental Architecture LLC
31 McClean Ave. Stamford, CT 06905
darek@envarch.com 203 329-9775**

128 Kent Road South
Cornwall Bridge, CT 06754-1210
February 24, 2010

To the Chair and Honorable Members of the General Law Committee:

I am Ronnie P. Lizana, a solar installer with 5 years experience in the field. This is a testimony of my opposition to the raised Bill No. 5225, "An Act Concerning Solar Work." What the bill calls "solar electricity work" is a very specialized type of work that should not be performed by an electrician who simply took an approved solar installation training course. I believe a specialized trade requires a specialized license and the work is best and most safely executed by those who have dedicated interest, experience, and knowledge in this specialized field.

This is not to exclude electricians, since many of them fall in this category, but so do many highly-trained and skilled solar installers who are not electricians and who do not wish to expand their activities to include all that electricians do. I have dedicated much of the past ten years of my life to learning the ins and outs of solar and other renewable energies, five of which have been in the field. This kind of knowledge and determination cannot be acquired through a simple installer's course.

Most solar installers I know have followed similar paths, and are consequently far more knowledgeable about and skilled in working with solar equipment than are electricians who lack that experience. The safest and most reliable solar installation is one completed by an experienced solar installer. As well, to require a solar installer to obtain an E-1 license makes no sense: a large portion of E1 training and work requirements will never apply in the dedicated PV installer's line of work. Specialized PV installers do not wish to wire an entire house. A PV installer's job is to design and assemble sun-powered generators. This is a specific installation procedure with specialize components. One does not require an electrician to design and assemble a diesel-powered generator, so why should it be required for PV? The E-1 does not build the generator; he connects the generator to the home via the meter. In similar fashion, the E-1 makes the connection from the PV "generator" to the home via the meter.

Asking an E-1 to take on PV responsibilities would require them to obtain a new set of tools, skills, and knowledge that are not a part of the standard E-1 repertoire. As experts in our field, PV installers understand scaffolding, roof structures, and penetrations, racking systems, construction of ground and pole-mount structures, and proper array sizing based on environmental factors and equipment efficiencies. Requiring E-1 licensing to work with PV systems would be akin to requiring a mechanic to obtain an E-1 license in order to fix the electrical system of a car. Similarly, it would be like requiring an E-1 to take a course on motor vehicle electrical systems and then ruling that they are the only ones licensed to perform this work.

I am not saying that E-1s should be excluded from performing solar work, only that people who do not wish to pursue careers as electricians should be able to pursue careers in solar electric work. As a separate field, the PV arena does not take work away from current electrical contractors. In all my installation experience, I have found it extremely beneficial to share the work with electricians as we both had very specific and complimentary knowledge sets. By law we are required to work with a licensed electrician to connect the systems to the grid.

2 of 2

This enables PV installers to focus on expanding their knowledge of the systems themselves and addressing installation problems, without having to acquire knowledge of a home's entire electrical system. Current law enables established E-1s to install PV systems. The changes in this proposal will be detrimental to the renewable energy work force in the State of Connecticut. By severely limiting the number of licensed installers, purchasers of PV will have to hire companies from further away, which would result in higher prices, and a decrease in local employment.

In closing, there is great economic value in maintaining separate licensing for PV. This creates a whole new area for jobs which will drive local economies. If this bill is passed, a large percent of PV installers in the state of CT will be out of business. This business could then potentially be in the hands of electrical installers with little to no experience.

I urge you to oppose this bill and re-evaluate the current licensing laws. I would also suggest creating a new, separate renewable energy licensing board made up of experienced individuals to oversee the quality of the renewable energy work force. Many groups already exist that would be well-qualified to do this. Despite the current economic hardships, I believe that the renewable energy field will continue to grow and its regulations may require more focused attention; however, this bill is step backwards, the wrong direction for Connecticut.

Sincerely,
Ronnie P. Lizana



750 EAST MAIN STREET, SUITE ONE *BRANFORD, CONNECTICUT 06405* TELEPHONE: (203) 483-3645 * FAX: (203) 483-3650

State Representative Jim Shapiro, Co-Chair
 State Senator Thomas A. Colapietro, Co-Chair
 General Law Committee
 Room 3500, Legislative Office Building
 Hartford, CT 06106-1591

Re: Opposition to HB5225 "An Act Concerning Solar Work"

February 26, 2010

Dear Representative Shapiro and Senator Colapietro

By way of introduction my name is Frank Sacramone Jr. and I serve Munger Construction in the capacity of General Counsel and Director of Business Development. Munger Construction is a design build commercial contracting firm with over 30 full time employees. Munger Construction has enjoyed a reputation of excellence in Connecticut for the entirety of its over 40 year history.

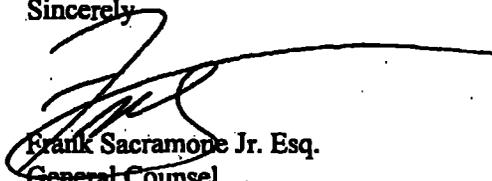
On behalf of Munger Construction I hereby voice the company's opposition to HB5225 "An Act Concerning Solar Work" with respect to the proposed changes in licensing. Under the current licensing structure Munger Construction, as a general contracting firm, has been able to add PV installations to its suite of offerings to customers. Interest from Munger Construction customers has been robust. Munger Construction has installed commercial PV systems on its building in Branford, Massey Glass in Branford and is about to begin an installation at North Haven Auto Body. Munger Construction has the ability to utilize its own highly skilled work force to perform the non-electrical portions of the installation such as roof modifications, rack mounting, hoisting and mounting the solar panels while at the same time engage its network of electrician subcontractors to address the electrical portions of the installation. This approach affords Munger Construction the ability to allocate skill and manpower resources to the appropriate phases of the installation and, importantly, arrive at pricing for the customer that reflects the benefit of this allocation. This coordinated approach in the field between the trades has resulted in high quality installations.

PAT MUNGER CONSTRUCTION COMPANY, INC.
 STATE OF CT DEPARTMENT OF CONSUMER PROTECTION LICENSE MCO.900273
 LEED ACCREDITED PROFESSIONALS ON STAFF
 PHILIP "PAT" MUNGER *FOUNDER* (1922-1992)
 WWW.MUNGERCONSTRUCTION.COM

These solar installations have played an important role in Munger Construction's efforts to diversify in a manner that helped the company retain valued employees in this challenging economic environment. Munger Construction is hopeful that solar will continue to provide this critical diversification opportunity and an opportunity for the company to expand its work force in the future. HB5225 creates licensing requirements that would prevent Munger Construction to continue its efforts to diversify and offer PV installations to its customers. Passage of the Bill would greatly harm the business development plans of Munger Construction, significantly marginalize the two year investment Munger Construction has made in enhancing its infrastructure to offer solar and limit our ability to advance the cause of on-site generation of solar energy.

Thank you for your consideration.

Sincerely



Frank Sacramone Jr. Esq.

General Counsel

Director of Business Development

LEED-AP

Member: Connecticut Green Building Council



Regarding HB 5225

Solar photovoltaic's (PV) is a niche in the electrical industry. The solar installation itself requires unique knowledge that is more specific than standard residential and commercial wiring.

Not every aspect of the installation requires the knowledge that I possess as a licensed E1. It is not practical to exclude skilled tradesman who have been working in the industry. When I hired my installers I called consumer protection and there was no protocol for PV apprenticeship. We were told to fly under the radar until it was time to take the PV2 exam.

Our installers are passionate about installing photovoltaic's. I have trained them to install systems in a way that maximize output of the system while being safe, neat and meeting the standards of the National Electric Code. While I am an electrical contractor the tradesmen that I employ are not electricians they are photovoltaic installers.

Thanks for your time.

Mark Waldo

Testimony Against House Bill 5225

2-28-2010

My husband and I urge you to oppose RB 5225. Such a bill will prevent currently working solar installers who do not hold an E1 or E2 license. Critical green jobs will be lost. The goal of any legislative work should be to lessen the cost of alternative energy work not to increase it! Our state has been a leader in this movement, let's keep moving forward!

Thank you,

Renee and Robert Slonaker
Canaan, CT

Members of the General Assembly General Law Committee**Testimony opposing HB 5225**

I strongly oppose HB 5225. I think that requiring an electrician to wire a solar system is absurd. The licensed PV installer already knows much more about the portions of the code and the practical wiring problems applying to PV systems than most electricians. The electricians that installed my system had to be told what kind of wire to use and left behind a system that filled with rainwater and rapidly corroded where they attached the copper ground wire to the conduit. Electricians are also totally unfamiliar with the special fire hazards that DC systems present.

I have a BS in electrical engineering and an amateur and commercial radio license and 35 years of experience with electrical power systems. I was not allowed to wire my PV system because of state rebate rules even though I had legally just replaced my service entrance cable myself and brought my main service entrance panel up to code. These were more difficult and dangerous operations than the PV wiring.

Philip Dooley
192 Goose Lane
Tolland, CT 06084
860-875-4455 PM only
KD1JK

From Central CT: Take I-84 West to Rte 4 West (Farmington) to Rte 118 West to Litchfield. Take left onto Rte 202 West to Rte 341 (right turn North). Follow Rte 341 through Warren towards Kent. At Kent (intersection Rte 341 and Rte 7) go through lights and continue on Rte 341 heading West. Once you cross the Housatonic River, stay on Rte 341 for an additional .2 miles and the rink will be on the left.

CONNECTICUT CONSTRUCTION INDUSTRIES ASSOCIATION, INC.



912 Silas Deane Highway
Wethersfield, CT 06109

Tel: 860.529.6855

Fax: 860.563.0616

ccia-info@ctconstruction.org

www.ctconstruction.org

House Bill 5225, An Act Concerning Solar Work
General Law Committee
February 25, 2010

CCIA/AGC of Connecticut Position: Oppose

The Connecticut Construction Industries Association, Inc. is the most diverse commercial construction industry trade association in Connecticut. Formed over 40 years ago, CCIA is an organization of associations, where all sectors of the commercial construction industry work together to advance and promote their shared interests. CCIA members have a long history of providing quality work for the public benefit.

CCIA is comprised of nine divisions, including the Associated General Contractors of Connecticut, Inc.; The Connecticut Road Builders Association, Inc.; Utility Contractors Association of Connecticut, Inc.; The Connecticut Ready Mixed Concrete Association, Inc.; and Connecticut Asphalt and Aggregate Producers Association. CCIA has more than 350 members statewide, including contractors, subcontractors, suppliers, and professional organizations that service the construction industry.

Associated General Contractors of Connecticut, a division of CCIA, represents commercial, industrial, and institutional construction contractors, subcontractors, material suppliers and professionals serving the construction industry. AGC of Connecticut is the Connecticut chapter of the Associated General Contractors of America, a national contractors trade association.

House Bill 5225, An Act Concerning Solar Work, would eliminate a licensing exemption for employees of or any contractor employed by and under the direction of a properly licensed solar contractor, performing work limited to the hoisting, placement and anchoring of solar collectors, photovoltaic panels, towers or turbines. The bill would also re-define the scope of solar electricity work and require the Commissioner of Consumer Protection to issue solar photovoltaic work certificates to licensed electricians.

CCIA and AGC of Connecticut are **opposed** to House Bill 5225 because employees of or any contractor employed by and under the direction of a properly licensed solar contractor should be able to hoist, place and anchor collectors. The work is not particularly specialized such that it should require a licensed electrician to perform it. Electrical connections are properly performed by licensed electricians—a trade whose workers should be familiar with the latest code requirements and who are trained and undergo continuing education.

House Bill 5225 presents another jurisdictional issue for the committee to resolve. Now is not the appropriate time to repeal a broad licensing exemption or change the licensing requirements at the suggestion of a particular trade without fully considering the work in



question, the trades performing the different aspects of the work and any other potential ramifications. The bill could have significant unintended consequences for the industry and consumers. Further, the bill would erode the authority of the Commissioner of Consumer Protection, requiring him to issue work certificates to people who are not otherwise qualified—or essential—to perform the work.

Please contact John Butts, Executive Director of AGC of Connecticut, or Matthew Hallisey, Director of Government Relations and Legislative Counsel for CCIA, at 860-529-6855, if you have any questions or if you need additional information.

(31)

Testimony on Raised Bill # 5225
AN ACT CONCERNING SOLAR WORK

Paul Bartoo
PV Squared
185 Main Street
New Britain CT 06051
860-827-8599

February 25, 2010

Chairman Colapietro, Chairman Shapiro, Committee members, my name is Paul Bartoo, and I am an account manager at PV Squared, an electrical contracting business specializing in solar energy installations, based in New Britain Connecticut. For the past five years, I have been part of the leadership team growing this small business, and promoting the growth of the photovoltaic industry in Connecticut. Others in my company have been active in the photovoltaic solar energy field for the past 10 years, or longer, including our General Manager, William Stillinger, a professional engineer who has been promoting renewable energy resources in the Northeast for over 30 years:

I wish to voice my opposition to RHB 5225, An Act Concerning Solar Work. As I see it, this bill is a "green jobs killer" that would negatively impact Connecticut residents who seek to install affordable, reliable solar energy systems on their homes, and which would put hundreds of Connecticut jobs at risk.

RHB 5225 is a flawed bill. It seeks to correct problems that do not exist.

The first "non-problem" is in regard to safety. In fact, the licensure and work practices currently in place for the photovoltaic industry in Connecticut are working, and additional regulation would be burdensome and would only serve to increase the cost of solar projects to the homeowner.

Solar electric projects are currently being safely installed throughout Connecticut under the supervision of licensed professionals under the existing rules. Section 3 of RHB 5225 seeks to displace the many employees and subcontractors working for companies such as mine, who have been trained to hoist, place and anchor solar modules as part of a properly and safely managed installation.

The second "non-problem" is in regard to authorization to do solar electric work. Currently, the state allows solar electric work to be conducted by E-1 and E-2 electricians, and by PV-1 and PV-2 "limited electric license" professionals. The PV-1 and PV-2 license was specifically created in 2005 by this Legislature in order to have an appropriate license for individuals who wished to specialize in solar installations.

The statement of purpose accompanying RHB 5225 says the proposal has been written to authorize E-1 and E-2 electricians to perform solar electric installations, and Section 2 appears to do just that. This is very strange, because in fact E-1 and E-2 electricians are currently authorized to conduct such work, according to Richard Hurlburt of the CT Department of Consumer Protection.

Unfortunately, the way that RHB 5225 is written, it appears that it would disenfranchise the current holders of the PV-1 and PV-2 license. I am convinced that my company would not survive, should this occur. Aside from the sheer disruption that would result, both the loss of talent and the increase in cost that would follow would be devastating. I believe this would be

true not only to my company but to the photovoltaic industry in Connecticut as a whole, which is already hurting due to our nation's economic downturn, and more locally, due to reductions in the incentives offered by the Connecticut Clean Energy Fund for solar installations in the state.

As many of you know, the solar installers in Connecticut have worked diligently to create a strong and thriving industry in the state. With the support of the state's Connecticut Clean Energy Fund, we have an industry association, Solar Connecticut.

Today, however, I see this industry threatened. I ask that you join me in opposing changes that would radically disrupt what we in this industry have taken so long to build.

Thank you for the opportunity to provide comment on this proposal, and for your thoughtful consideration of this matter.

(30)

**Testimony on Raised Bill # 5225
AAC Solar Work**

**Richard Dziadul
PV-1
NABCEP Certified Photovoltaic Installer
PV Squared
185 Main Street, Ste 202
New Britain CT 06051**

February 25, 2010

Chairman Colapietro, Chairman Shapiro, Committee Members and Staff, I am here today to express my opposition to RHB # 5225.

My name is Richard Dziadul. I am a Board Certified Solar Installer. ¹ I have been a solar installer in Connecticut since 2004. I have supervised the installation of over 500 kilowatts of photovoltaics, over approximately 60 projects. I was among the first dozen installers in the State of Connecticut to be licensed as a PV-1 Solar Contractor.

As allowed by Connecticut law, I am now training an apprentice Solar Installer, who is with us here today, Seth Mellen. My company, PV Squared, is an electrical contracting business specializing in solar energy installations, based in New Britain Connecticut. We have on staff one E-1 electrician, one PV-1 professional, and one PV-2 apprentice.

I would like to start my testimony with a few statements that may be useful as you consider RHB #5225:

1. RHB #5225 seeks to make changes to the licensing and definitions that determine who can legally perform various aspects of a solar photovoltaic system. Instead of the word photovoltaics, it is referred to as "solar electricity work" in state statutes.

Under state regulations today, E-1 electrical contractors can install photovoltaic systems, just as holders of the PV-1 Solar Contractor license can install photovoltaic systems. This means that a large portion of RHB # 5225 is seeking to address a problem where none exists: there is no requirement to change current law in order to allow E-1 electricians to undertake this work.

If you look across the Solar Contractors currently authorized to install photovoltaics in Connecticut today, you will find many whose work is supervised by a PV-1 license holder; many whose work is supervised by an E-1

or E-2 electrician. Some, such as PV Squared, the company for which I work, combine the talents and skills sets of both PV-1 and E-1 license holders.

2. As a Solar Contractor, I install photovoltaic panels, or modules, that convert sunlight into electricity. Through use of equipment we call inverters, this electricity is modified in such a way that it can match, or interconnect, with the electricity provided by the local electric utility to a home or school or business. This ability to interconnect is part of what makes these systems simple and affordable to our customers, and to provide the added benefit of supporting the stability of the electrical grid in our state.

3. Connecticut Light & Power, and the other power utilities in the state, would not let us interconnect if they were not convinced that the systems we install are safe and reliable.

4. The State of Connecticut, through the Connecticut Clean Energy Fund, has been providing incentives to communities, to commercial business, and to residents of Connecticut, to make the installation of photovoltaic systems more affordable. In the past five years, approximately 18,000 kilowatts of photovoltaic capacity have been installed in our State.

I contend that this has all been accomplished under current state law in a safe and orderly manner.

5. In 2005, the Connecticut Legislature enacted the legal framework for the PV-1, Solar Contractors license. A reading of the testimony given at that time shows that it was the Legislature's intent to establish a trained workforce in the state dedicated to installing solar energy, and the means to make such installations affordable to the consumer.

Here is why I am opposed to RHB #5225:

It would kill green jobs. It would force photovoltaic installers in Connecticut to lay off workers, to close their doors, or to pull out of the state.

In 2005, the Legislature enacted a provision that allows us to hire employees to hoist, place and anchor solar modules in place, regardless of whether they hold a trade license related to such work. This is a reasonable measure which helps our industry hold down the cost of installations. RHB #5225 would eliminate this provision, and force the photovoltaic industry to hire more expensive, licensed individuals for this purpose (presumably, E-1 and E-2 electricians).

But that is not all. RHB 5225, by changing the wording regarding this trade license, would make my PV-1 license useless, as I would be unable to install systems that interconnect to the power grid. This change would put renewable energy installers such as myself out of work.

In the plain language of Section 2, RHB-5225 would direct the Department of Consumer Protection to issue work certificates for E-1 and E-2 electricians to do solar electric work, while failing to confer a similar directive for holders of the PV-1 or PV-2 license. Unless I am mistaken, this would have the effect of rendering my PV-1 license meaningless, and I would no longer be able to carry out my job duties.

Some might argue that this may cause an unfortunate disruption for current employees in my industry, but that there would not be a net loss of jobs, as more individuals with higher-skill licenses would be hired in their place. This is not the case. As I know from my experience in this industry, the customer is extremely sensitive to price, and any factor which significantly increases the cost of installation will decrease the volume of installations taking place.

I appreciate the opportunity to speak with you today. Thank you for your consideration of this matter.

1. National Board of Certified Energy Practitioners (NABCEP). This is a national certification organization. There are about 400 NABCEP Certified Photovoltaic Installers in the United States.

36

NEW ENGLAND REGIONAL COUNCIL OF CARPENTERS

~~36~~
Pg 19, Line 9**United Brotherhood of Carpenters and Joiners of America**P.O. BOX 668
427 STILLSON ROAD
FAIRFIELD, CT 06824-0668TELEPHONE
(203) 334-4300
FAX (203) 334-4700GLENN MARSHALL
DISTRICT BUSINESS MANAGER
CONNECTICUT**STATEMENT OF GLENN MARSHALL, CONNECTICUT DISTRICT BUSINESS
MANAGER OF THE CARPENTER'S UNION, OPPOSING RAISED BILL 5225,
AN ACT CONCERNING SOLAR WORK****February 25, 2010**

Chairman Colapietro, Chairman Shapiro and members of the General Law Committee, my name is Glenn Marshall, District Business Manager for the Connecticut Carpenters and President of Carpenter's Local 210, and I am here today to testify against Raised Bill 5225, An Act Concerning Solar Work.

I strongly support the growth of solar power and efforts to improve energy efficiency. However, we strongly oppose the change in Section 3 of this bill which would eliminate:

[employees of or any contractor employed by and under the direction of a properly licensed solar contractor, performing work limited to the hoisting, placement and anchoring of solar collectors, photovoltaic panels, towers or turbines;]

Eliminating this language in current law—which was a carefully crafted compromise several years ago—would adversely impact not only the carpenters but other trades as well.

The technology is rapidly evolving to the point where solar membranes are included in many window, roofing and exterior panel products. As nanotechnology continues to make photovoltaic membranes and receptacles smaller and smaller, I suspect almost all exterior building products, namely windows, roofing and siding, will include photovoltaic membranes in one form or another in the very near future.

Let me give you just one example of why this change would be a problem for carpenters or other trades. We have a window manufacturing company that has a patented process where a photovoltaic membrane is included in the windows. Our members manufacture and install the windows. Under this proposal, our concern is that it would require a licensed electrician to handle or install these windows on a jobsite. Under this proposal, you would need a licensed electrician to install roof shingles that contain photovoltaic membranes.

We are not interested in doing any of the work that electricians currently do. But we strongly oppose efforts to mandate an electrician's license to handle, place or install windows, siding or roofing because they now include solar membranes.

Thank you for your consideration.

(16)

Testimony
Joseph P. Bonner
Bonner Electric, Inc.
Before the General Law Committee
February 25, 2010
Legislative Office Building

Sen. Colapietro, Rep. Shapiro and members of the committee, my name is Joseph P. Bonner of Bonner Electric and I am here to testify in support of the intent of HB-5225, An Act Concerning Solar Work.

I have been an E1 Unlimited Electrical Contractor, in the State of CT for the past thirty four (34) years. To become an Electrical Contractor I had to serve a four year apprenticeship, and two years as a Journeyman Electrician prior to sitting for the E1 exam. As part of the requirements to maintain my license in the State of CT, I am required to complete seven (7) hours of Continued Education every year. Also, each electrician working on a State of CT project is required to have completed an OSHA 10 hour certification.

In addition to being an Electrical Contractor, I am certified to perform solar Photovoltaic (PV) installations as part of the Connecticut Clean Energy Fund programs. PV installations consist of multiple Direct Current (DC) modules that tie back to a DC to AC inverter, the voltages involved with these DC circuits can be upwards of 600V; fifty (50) times more than the 12V DC system you would have in your automobile. These 600V DC circuits are run from the modules, through the structure of the customer's residence or business, back to the inverter, and then this AC power is connected into the main power system for the building. For the sake of consumer safety, it is critical that these circuits be installed by a licensed and experienced electrician that is up to date with the latest codes and safety requirements. By supporting HB-5225, you will be strengthening the training and experience requirements for individuals installing solar PV systems and ensuring the safety of the consumers and general public.

Thank you for the opportunity to present my point of view to you.



Traver Electric Motor Co., Inc.
 151-165 Homer St.
 Waterbury, CT 06704
 T 203.753.5103
 F 203.573.9352
 24 Hour 1.800.TE.MOTOR
 TraverIDC.com

Lic.# E1-123948

February 25, 2010

Energy and Technology Committee
 Legislative Office Building
 Hartford, CT 06106-1591

To Members of the Energy and Technology Committee:

My name is Jack Traver Jr., President of Traver IDC, a manufacturer, distributor, and electrical contractor located in Waterbury, CT. We have been doing business in Waterbury for 70 years.

I am writing to voice my support for HB-5225 which addresses concerns with the limited license in the state of Connecticut, specifically the PV-1 and PV-2 license.

I and many of the employees here at Traver IDC are proud and fortunate to have earned an E-1 unlimited electrical license in CT. The E-1 is an unlimited license that requires 12,000 hours of on the job training and hundreds of hours of classroom training.

In general, electrical limited licenses in CT have been applicable for either low voltage (up to 48 volts) or high voltage (over 600 volts) applications.

I am very concerned with the concept of a limited license for photovoltaic installations for two very important and inter-connected reasons.

The 1st and foremost reason is safety. Photo voltaic systems have dangerous voltages of up to 600 volts dc and 277 volts nominal AC to ground. By approving PV-1 and Pv-2 limited licenses with only 4000 hours of on the job training, these license holders will be working with these dangerous, often fatal voltages with clearly inadequate training.

The 2nd interconnected reason is that this new license would de-value the E-1 and E-2 licenses by allowing people with inadequate training to perform the work that should be reserved for the more experienced, well-trained E-1 and E-2 license holders.

A more logical approach would be to require E-1 and E-2 license holders to take some additional class room training specific to Article 690 of the National Electrical Code (Photo Voltaic) as a pre-requisite for performing this type of work. We are already required to do annual classroom training as a requirement to maintain our licenses and this approach would be a natural extension of the continuous education requirement.

Thank you for your consideration.

Very Truly Yours,

Jack Traver Jr.
 President

everything electrical

motor repair contracting supply engineering energy conservation



Independent Electrical Contractors of New England, Inc.

TO: Sen. Tom Colapietro and Rep. Jim Shapiro
Sen. Kevin Witkos and Rep. Penny Bacchiocci
Members of the General Law Committee

From: Lisa Hutner, Executive Director

Date: February 25, 2010

Thank you for the opportunity to comment in *support of HB-5225, An Act Concerning Solar Work*, which is intended to: 1) Address safety concerns for workers; 2) Protect consumers by ensuring that solar PV systems are safely installed by properly licensed contractors; 3) Expand opportunities for Connecticut businesses and residents to reduce energy costs through solar PV energy systems by eliminating unnecessary obstacles for Connecticut's licensed electricians to become certified installers under the Connecticut Clean Energy Fund programs. 4) Promote "green jobs" by building confidence in solar PV technologies through appropriate training and licensing requirements.

The Independent Electrical Contractors of New England (IEC-NE) is working with the International Brotherhood of Electrical Workers and the National Electrical Contractors Association to support legislation to achieve these goals, as follows:

1. WORKER SAFETY

Today's solar energy panels/modules are high voltage technologies and should only be installed by qualified licensed professionals. Any solar panel installation guide, see attached, includes clear and specific warnings that solar PV work should be performed by a qualified electrician according to the provisions of the National Electrical Code (NEC). Licensed electricians are trained on the NEC and are updated each and every year on the code as part of their continuing education requirements.

Recognizing the inherent danger in working with high voltage technologies, the vast majority of states require solar PV systems to be installed by a licensed electrician. Only a handful of states and Puerto Rico have solar PV licensing requirements separate from the electrical license. In those states that do have solar PV licensing, solar is a specialty classification under the general electrical license and all appropriately licensed contractors can install solar systems without the solar specialty license. Only a few states allow contractors to obtain a solar specialty license and

1800 Silas Deane Highway, Rear Building, Rocky Hill, CT 06067
(860) 563-4953 Fax (860) 563-5453 Toll Free (866) GO IEC NE
Email: lisa@iecne.org www.iecne.org

install systems without having the full electrical or plumbing license. In these states, the training requirements are substantially greater than the training requirements of Connecticut's limited solar licenses, creating very real safety concerns for workers and consumers.

Connecticut's occupational licensing laws authorize solar work to be performed by licensed electricians. In order to become a licensed electrician, an individual needs to complete a four-year apprenticeship training program of 8,000 hours as well as related classroom instruction. The apprenticeship training program includes training in solar photovoltaic and other energy systems. In addition, licensed electricians are required to take 7 hours per year of continuing education. Information relative to the installation of solar photovoltaic has been incorporated into the continuing education program.

However, the required training and related educational requirements needed to sit for the PV limited license examinations are not sufficient to protect the safety of workers or consumers. In Connecticut, an individual may obtain a PV-2 Limited Solar Electric Journey person license after the completion of a two year registered apprenticeship program or only one year equivalent experience and training, although they may perform work only in the employ of a licensed electrical contractor. A person may be eligible to sit for the PV-1 Limited Solar Electric Contractor license examination after two years (4,000 work hours) as a solar journey person (apprentice) and 144 hours of school/year or equivalent experience and training. These requirements may have been adequate when solar modules/panels were traditionally low voltage, however the new systems are considered high voltage. We therefore believe the PV licenses should be sunsetted to ensure that solar PV systems are only installed by qualified, licensed individuals.

We also support Section 3 of the bill which eliminates the existing exemption to the state's occupational licensing laws that allows workers who are not trained at all to hoist, place and anchor solar photovoltaic panels, connectors, towers and turbines. A PV panel generates DC electricity as soon as it is taken out of the box and exposed to sunlight or other light sources. In fact, product manufacturers recommend that the panel remains packed in the box until the time of installation and that when installing or working with module wiring, the panel face is covered completely with opaque material to halt production of electricity. Consequently, simply placing and securing the panel is tantamount to installing it since the panel is live right out of the box. In addition, many contractors have witnessed unsafe practices relative to the placement of these panels, including wires dangling in water pooled on the roof.

Contact with electrically active parts of the panel/module such as terminals can result in burns, sparks, and lethal shock whether the module is connected or disconnected. When modules are connected in series, voltages are additive. When modules are connected in parallel, current is additive. Consequently, a multi-module system can produce high voltages and current which constitute a potentially lethal hazard. We do not believe that individuals who are not licensed,

1800 Silas Deane Highway, Rear Building, Rocky Hill, CT 06067
(860) 563-4953 Fax (860) 563-5453 Toll Free (866) GO IEC NE
Email: lisa@iecne.org www.iecne.org

and who are untrained should be put in harm's-way-by-being-allowed to hoist, place or secure panels that generate significant electrical power.

2. CONSUMER SAFETY

As you know, states establish licensing requirements for contractors in order to protect consumers from unsafe practices and protect the reputation of the industry, as improper installation may create safety risks or result in poor system performance. In fact, during the 1970s when solar energy was first marketed to homeowners and business, there were no licensing requirements. Solar energy systems were therefore installed by individuals who lacked the training and experience to properly install and service the systems. As a result, consumers were very unhappy with the quality and performance of such installations. Many consumers continue to be wary of solar energy because it is very expensive and they have little experience with it. Requiring solar PV systems to be installed by licensed individuals who are fully trained in electrical wiring as well as photovoltaic systems, will go a long way toward protecting consumers and building confidence in solar PV systems.

3. EXPANDING ENERGY EFFICIENCY OPPORTUNITIES

In order to expand opportunities for Connecticut residents and businesses to take advantage of incentive programs under the Connecticut Clean Energy Fund Programs, we need to eliminate unnecessary obstacles for licensed electricians to participate in the program. Currently, Connecticut's energy efficiency programs create barriers for Connecticut's skilled tradespeople to become eligible as certified installers even though Connecticut's occupational licensing laws authorize E-1 and E-2 electrical license holders to perform solar photovoltaic work. However, the Connecticut Clean Energy Fund requires licensed electricians to meet unnecessary training and experience requirements which have severely limited their opportunity to compete for solar PV jobs in Connecticut.

Specifically, the program includes the following requirements in order to become a "Qualified Installer" or "Provisional Installer":

- 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. An individual can work on 10 installations as an apprentice and have very little knowledge regarding grounding and wiring electrical systems.
- "Provisional Installer" - A PV-1 or an E-1 licensed electrician must install 3 systems subject to review by CCEF, although one installations may include a grid-tied PV system to their home (or business). Inasmuch as licensed electricians are already authorized by the state Department of Consumer Protection to install solar PV systems, this requirement effectively shuts out the state's licensed electricians from participating in the program. Given the high cost

1800 Silas Deane Highway, Rear Building, Rocky Hill, CT 06067
(860) 563-4953 Fax (860) 563-5453 Toll Free (866) GO IEC NE
Email: lisa@iecne.org www.iecne.org

of solar PV systems, a homeowner is not going to choose to have a system installed without the advantage of a rebate.

- In addition, as of January 4, 2010, the CCEF will require all approved eligible PV contractors to have at least one permanent employee successfully complete and pass the NABCEP entry level PV exam. Current approved eligible PV contractors will have a grace period of one year (January 4, 2011) to complete this training requirement. 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.

Several of our members have pursued approval as a "Qualified Installer" or "Provisional Installer". The process has taken months and effectively shut them out of opportunities to install solar PV systems. The new requirement will further undermine the ability of licensed electricians to perform solar PV work in Connecticut even though licensed electricians can perform such work in almost every state in the country without additional licensure. **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 CT Clean Energy Fund program.**

4. PROMOTING GREEN JOBS

The American Recovery and Reinvestment Act of 2009 was enacted in an effort to stimulate economic recovery and ensure that hard-working Americans are given the opportunity to go back to work or continue to work in a dynamic and growing economy. The Act includes funding to spur investment in energy efficiency technologies, including \$3 million for rebates for residential and commercial solar photovoltaic (PV) systems.

However, given the lengthy and time-consuming process for licensed electricians to become certified installers under the CT Clean Energy Fund programs, many decide not to participate, undermining the effectiveness of such incentive programs. By removing these barriers and encouraging licensed electricians to participate in solar incentive programs, we will create more job opportunities for Connecticut residents.

Again, thank you for the opportunity comment. We are willing to work with committee members and other interested parties to develop legislation that achieves these important goals.

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.

1800 Silas Deane Highway, Rear Building, Rocky Hill, CT 06067
(860) 563-4953 Fax (860) 563-5453 Toll Free (866) GO IEC NE
Email: lisa@iecne.org www.iecne.org

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**Testimony
Bruce Angeloszek
CT Electrical.com
Before the General Law Committee
February 25, 2010
Legislative Office Building**

Sen. Colapietro, Rep. Shapiro and members of the committee, My name is Bruce Angeloszek, I am a self-employed electrical contractor from the town of Beacon Falls, providing Residential, Commercial, Industrial, and PV solar installations since 1994, and I am here today **in support of House Bill 5225. An Act Concerning Solar Work**, which will ensure that properly licensed electricians are eligible as qualified installers under the CT Clean Energy Program and address safety concerns regarding the limited PV 1 and PV 2 licenses in the State of Connecticut which we believe should be sunsetted. I would like to share you the highlights of this matter.

I have proudly earned an E-1 unlimited electrical license in Connecticut by getting 12,000 hours of on the job training, 720 hours of class room training, and have worked hard to start and sustain an electrical contracting company. If a company would like to install electrical work, according to the National Electrical Code about article 690 is electrical work then one needs to become an electrical contracting firm by following Connecticut law.

- We license holders in Connecticut work hard to earn our licenses and continue to with CEU courses mandated by our State.
- By introducing a limited PV license, an E-1 unlimited license holders, that earned a license loses value.
- By introducing the limited license for PV we in Connecticut are opening up other industries to do the same Example swimming pool companies will want a limited license for wiring swimming pools, Landscape companies will want a limited license to wire landscape lighting and so on how could we deny other industry and allow PV, and before we know it E-1 and E-2 licenses have no value.

The National Electrical Code states (NEC)

- The *National Electrical Code (NEC)* is written for persons who understand electrical terms, theory, safety procedures, and electrical trade practices. These individuals include electricians, electrical contractors, electrical inspectors, electrical engineers, designers, and other qualified persons. The *Code* was not written to serve as an instructive or teaching manual for untrained individuals [90.1(C)]

1. **The NEC contains approximately 140 Articles** of importance, and each of which covers a specific subject. For example:

- Article 110 General Requirements
- [Article 250 Grounding]
- Article 300 Wiring Methods
- Article 430 Motors
- Article 500 Hazardous (Classified) Locations
- [Article 680 Swimming Pools, Spas, Hot Tubs, and Fountains]
- **and [Article 690 Photo Voltaic]**

- Article 690 Photo voltaic was introduced in the National electrical code in 1984

- In general, electrical limited licenses in Connecticut work with low voltages up to 48 volts, or high voltage over 600 volts

- E-1 is Unlimited electrical work is 0 to 600 volts with 12,000 hours of on the job training, and 720 hours of related instruction

- (2) "Electrical work" means the installation, erection, maintenance, alteration or repair of any wire, cable, conduit, busway, raceway, support, insulator, conductor, appliance, apparatus, fixture or equipment that generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, but does not include low voltage wiring, not exceeding twenty-four volts, used within a lawn sprinkler system

- **Safety issues**

- Photo voltaic systems could have dangerous voltages of up to 600 volts dc and even more dangerous is voltages of 277 nominal AC volts to ground. This means limited licensed personnel with 4000 hours of on the job training could potentially come in contact with 480 volts AC line to line in an industrial environment and 240 AC volts line to line in a residential environment without the supervision of an E-1 electrician. Many hours of the E-1 and E-2 on the job training comes from normal trade practices that have been past down from journeyman to journeyman since the 1900's. An example of a trade practice is the color coding of conductors. The code does not specify blue, red, black for

120/240 or 120/208 electrical systems and brown, orange and yellow for the 277/480 volt systems. Get these wiring systems mixed up and you have an electrocution.

- When installing a line side tap of which is connecting the solar system ahead of the fuse protection for the building creates a real dangerous situation. The utility transformers have anywhere from 25 to 50 thousand fault amps before the utility fuse blows, if it blows at all. An example of this power is when you have a utility line down during a storm; it keeps arcing till the utility company shuts down the system. Imagine this within a building, eventually no more building because of the massive fire.

- By approving PV-1 and PV-2 limited license holders with only 4000 hours of on the job training, working with voltages over 48 volts could be fatal to the workers as well as to those around them. PV-1 and PV-2 limited license holders should not be able to come in contact with any electrical panel boards of any voltages because of all the dangers that a licensed electrician has learned to avoid during their apprenticeship and years in the trade.

The North East Utility information and guideline policy for electric supply below 600 volt -

- Section 2: residential cut and reconnect policy - Residential cut and reconnect policy restricted to two wire 120 volt three-wire 120/240 volt or three wire 120/208 volt or single-phase overhead residential services of 400 amps or less. The electrician shall cut the service entrance cable at the weather-head, replace or repair the service and reconnect it may only be performed by an E-2 journey person or apprentice working under the direct supervision of an E-1 or E- licensee. All applicable rules of the state of Connecticut Department of Consumer Protection - Occupational & Professional Licensing Division apply