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Testimony of the International Brotherhood of Electrical Workers
General Law Committee

Thursday February 24, 2011

Senator Doyle, Representative Taborsak, members of the General Law Committee, my name is Paul Costello; I am the Training Director for The International Brotherhood of Electrical Workers and Connecticut Chapter, National Electrical Contractors Association (CT Chapter NECA). My organization represents union electrical construction firms who employ nearly of 2,000 licensed electricians and 300 state registered apprentices throughout the state.

I am here today to express our opposition to H.B. 6337 An Act Clarifying The Scope Of Solar Electricity Work. Our reasons focus on two key issues, safety and training; the safety of the worker and the public. I am sure throughout this public hearing there will be much emphasis from the supporters placed on photovoltaic systems installed on homes and little if any on the large commercial and industrial establishments. This Bill does not distinguish between them. The statement of purpose of this Bill is to clarify the scope of solar electricity work permitted by PV-1 and PV-2 license holders. There are many reasons as to why there are limitations on this license. The first is the amount of on-the-job training and also the related instructions required to be permitted to sit for the PV-2 license exam. In my written testimony I have included the outlines for both the PV-2 and E-2 license which outline the schedule of work experience required to obtain the licenses.

The outline for the PV license does not contain any requirements for completing installations on various types of construction unlike the unlimited E license. An unlimited E licensed electrician needs to obtain a minimum of 1,400 hours in residential wiring, 2,512 hours in commercial installation, and an additional 2,212 hours in industrial installations. These requirements alone surpass the 4,000 hour total required for the work categories for a PV license. We must not lose sight of the scale of electrical energy that is contained in the equipment that needs to be connected to on these installations. These systems that need to be interconnected also contain life safety circuits that are critical to the safety of those that work and visit these establishments.

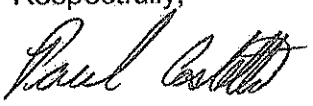
These are the same reasons why the other four limited license categories have the same limitations. I find it ironic that 2,271 limited licensed electricians recognize their limitations based on training, while others have pursued furthering their education and experience to obtain an unlimited license so they may expand their skill set. This group of limited licenses makeup 16% of the 13,847 licenses while the group we are discussing consists of a total of 23 or 0.16% of the electrical industry, and 40% of them are not even Connecticut residents.

One year ago we were discussing HB 5225 An Act Concerning Solar Work that would permit E1 license holders the same benefits of being eligible for photovoltaic rebate programs and to eliminate the licensing exemption relating to the hoisting, placement and anchoring of solar collectors, photovoltaic panels, towers and turbines. Opponents of that bill called it a "Green Jobs Killer" stating it would put 250 to 300 solar workers out of work. It was stated that this group completed nearly 1,500 installations placing Connecticut as one of the top five states in America for solar power. I find that hard to believe when there were only 29 licensed PV electricians and 4 registered apprentices at that time. One year later there are now only 23 licenses and 5 registered apprentices. One would have to think that a good portion of that work was being completed by unlimited licensed electricians. I do not understand how you can increase PV licenses when there is an exemption for a major portion of their work. That appears to be obvious by the limited number of apprentices in the photovoltaic electrician programs. I have heard the phrase "follow the money" spoken in this building many times before. Is another reason for the decline in PV licenses from last year because the incentive in Connecticut may not be as lucrative as its neighboring states, and these out-of-state license holders do not want to renew their license because of the fees or continuing education requirements?

Unlimited E1 and E2 electricians are trained and qualified to complete all aspects of photovoltaic installations. They complete a minimum of 8,000 hours of on-the-job training and a minimum of 720 hours of related instructions in addition to completing continuing education and safety training each year. Perhaps this is the time to consider eliminating the limited PV license and exemption of unlicensed workers on the installation of photovoltaic systems.

I urge you to oppose H.B. 6337 and support the position of the Electrical Examining Board for the State of Connecticut and decision of the Commissioner of Consumer Protection.

Respectfully,



Paul Costello
Director of Apprenticeship and Training

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC SAFETY
DIVISION OF FIRE, EMERGENCY AND BUILDING SERVICES
OFFICE OF THE STATE BUILDING INSPECTOR

Office of the State Building Inspector 2010 Code Enforcement Bulletin

To: Municipal Building Officials
Staff of the Office of the State Building Inspector

Copy: Commissioner of Consumer Protection Jerry Farrell

From: Lisa R. Humble. AIA, NCARB, State Building Inspector
Office of the State Building Inspector

Date: December 10, 2010

Bulletin: **Issue December #12-2010**

Subject: Information and Clarification issued by the
Commissioner of Consumer Protection & the Electrical Work Examining Board

The Commissioner of Consumer Protection and the Electrical Work Examining Board ask that I share the following licensing information with you:

Issue #1

Per Connecticut General Statutes, a PV-1 licensed contractors and properly licensed PV-2 journeyperson may perform only work limited to solar electricity systems; which means the installation, erection, repair, replacement, alteration or maintenance of photovoltaic or wind generation systems, including storage and distribution of such energy for heat, light, power or other purposes to a point immediately inside a structure or adjacent to an end use.

Clarification:

The Electrical Work Examining Board has clarified "to a point inside a structure or adjacent to an end use" by unanimous vote, that a PV-1 or PV-2 license holder is not permitted to connect to any existing panel, junction box, wiring or circuit(s) on the premises. They are limited to properly terminating their wiring into a junction box or controller of theirs that is not in any way connected to the building's existing electrical system or utility meter. Connection to the building's existing electrical system or utility meter can only be performed by a licensed E-1 or E-2 license holder.

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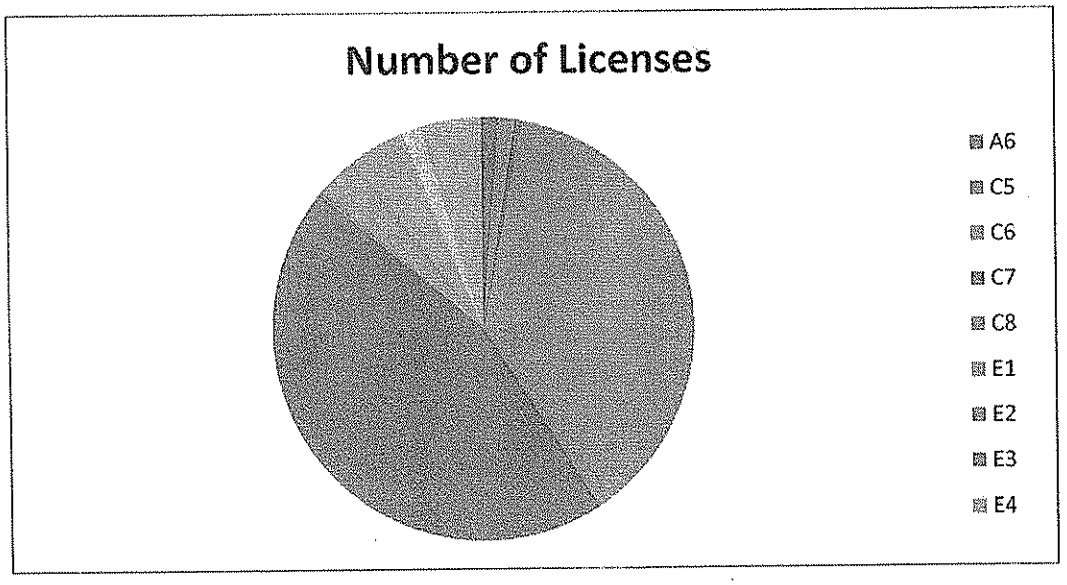
http://www.ct.gov/dps
An Equal Opportunity Employer

License Type	Number of Licenses	Percentage
A6	1	0.01%
C5	178	1.29%
C6	175	1.26%
C7	16	0.12%
C8	48	0.35%
E1	5,250	37.91%
E2	6,241	45.07%
E3	1	0.01%
E4	2	0.01%
E5	3	0.02%
E6	0	0.00%
E7	0	0.00%
E8	0	0.00%
E9	10	0.07%
L1	9	0.06%
L2	36	0.26%
L5	423	3.05%
L6	577	4.17%
PV1	13	0.09%
PV2	10	0.07%
T1	211	1.52%
T2	643	4.64%
Total Electrical Licenses	**13,847**	**100.00%**



REGULATIONS OF CONNECTICUT STATE AGENCIES
TITLE 20. PROFESSIONAL LICENSES
DEPARTMENT OF CONSUMER PROTECTION (4)
OCCUPATIONAL LICENSING

Current with material published in Conn.L.J. through 5/13/08

Sec. 20-332-1. Definitions

As used in Sections 20-332-1 to 20-332-20a, inclusive,

(a) "Journeyperson" means any person who has fulfilled all the state's requirements for training and experience as such in the trade and who is deemed competent to perform all the services included in the trade for which a license has been issued.

(b) "Limited contractor" means any person who has fulfilled all the state's requirements as a limited contractor as to a specific area or areas within a specific trade.

(c) "Limited journeyperson" means any person who has fulfilled all the state's requirements as a limited journeyperson as to a specific area or areas within a specific trade.

(d) "Electrician" means any licensed journeyperson employed by an electrical contractor or who is in fact a licensed contractor and is entitled to perform electrical work.

(e) "Elevator craftsman" means any licensed journeyperson performing elevator installation, repair and maintenance work in the employ of a contractor or who is in fact a licensed contractor and is entitled to perform elevator installation, repair and maintenance work.

(f) "Heating, piping and cooling craftsman" means any licensed journeyperson who is employed by a heating, piping and cooling contractor or who is in fact a licensed contractor and is entitled to perform heating, piping and cooling work.

(g) "Plumber" means any licensed journeyperson employed by a plumbing and piping contractor or who is in fact a licensed contractor and is entitled to perform plumbing and piping work.

(h) "Electrical maintenance" means the keeping in a state of repair or efficiency all types and classes of electrical equipment only as follows: The replacement of fuses or resetting of circuit breakers or similar over current protectors, devices and disconnect means on or from last branch circuits, provided replacement shall be made with equipment of equal capacity, type or size; the keeping in repair or function of an electrical system from a last branch circuit; the keeping in repair or function of circuit wiring relays, controls or other associated electrical equipment and the replacement of defective wiring, relays, controls or other associated equipment with equipment of equal capacities, types and sizes; the disconnecting of circuits in emergencies and installation of approved safety devices in last branch circuits, provided applicable code requirements are met.

(i) "Heating, piping and cooling maintenance" means the keeping in a state of repair or efficiency all types or classes of heating, piping and cooling equipment, and includes the replacement of existing equipment with equivalent materials, or materials substantially equal to existing materials, if identical equipment is not available, but excluding any alteration or additional work adversely affecting safety or change of original design. Change of original function or design is permitted as maintenance only where the existing equipment or system is in a dangerous condition and not in compliance with the present code provisions, provided that the maintenance performed will render the system or equipment safe and in compliance with applicable code provisions.

(j) "Plumbing and piping maintenance" means the keeping in a state of repair or efficiency all types or classes of plumbing and piping equipment. The replacement of existing equipment with equivalent materials, or materials substantially equal to existing materials if identical equipment is not available, but excluding any alteration or additional work adversely affecting safety, or change in original design. Change of original function or design is permitted as maintenance only where the existing equipment or system is in a dangerous condition and not in compliance with the present code provisions, provided that the maintenance performed will render the system or equipment safe and in compliance with applicable code provisions. Excluded from the definition of plumbing and piping maintenance is the removal and/or replacement of a vital element of gas, water, or soil pipes, cisterns, tanks, bathtubs, shower stalls, interior drains connected to soil pipes, water closets and fittings appurtenant thereto, or any sanitary or fire protecting apparatus, except the closing of valves to cut off a supply if a dangerous condition exists and the cutting off would render the condition safe and the removal or rendering safe of equipment in a dangerous condition.

(k) "Board" means the appropriate examining board for the occupation involved.

(*l*) "Health code" pertains to Sections 19-13-B20a to 19-13-B20r, inclusive, of the regulations established by the Connecticut State Department of Health.

(m) "Craftsman" refers to an Elevator journeyperson.

(n) "Apprentice" means any person in the employ of a licensed contractor and performing duties under the supervision of licensed persons from whom he shall learn the skills of the trade as defined in Section 20-330(6) of the Connecticut General Statutes.

(o) "Contractor" in accordance with Chapter 393, Section 20-330 of the Connecticut General Statutes means any person regularly offering to the general public services of his employees and/or himself in the trade in which he is licensed.

(p) "Department" means the Department of Consumer Protection.

(q) "Person" means any natural person or individual carrying on activities regulated by these rules.

(r) "Plumbing and piping" does not mean or include, and nothing in these regulations shall be held or construed to have any application to, the trade of drilling water wells or the business of selling or delivering plumbing fixtures, appliances, and materials. Nor shall it mean or include swimming pools and related equipment which do not connect directly to any water supply intended for human consumption and/or connect directly or indirectly to any piping which terminates in any area which is subject to receiving sewage and wastes or any other substances which may be dangerous to health.

(s) "Rules and regulations" means the regulations established by the State Boards of Occupational Licensing pursuant to Section 21a-9 of the Connecticut General Statutes.

(t) "Statute" means the law which was enacted by the General Assembly.

(u) "Water Spray" refers to the use of water in a special hazard system in a form having a predetermined pattern, particle size, velocity, and density discharged from specially designed nozzles or devices. Water Spray does not cover protection from portable nozzles, sprinkler systems, monitor nozzles, or other means of application.

(v) "Lawn Sprinkler System" A lawn sprinkler system is a network of tubing or pipes with lawn sprinkler heads or lawn nozzles attached for spraying water Over any and all areas which are ornamentally planted, including but not limited to turf, ground covers, flowers, shrubs, trees and similar plant materials. Control devices used in lawn sprinkler systems may consist of mechanically, hydraulically and/or electronically controlled valves and irrigation controllers. The installation, repair, replacement, alteration or maintenance of lawn sprinkler systems does not include (1) connections to a potable water supply; (2) the installation, repair and replacement of back-flow prevention devices; and (3) irrigation systems used for agricultural purposes.

The installation, repair, replacement, alteration or maintenance of lawn sprinkler systems does include (1) the connection made to a preexisting backflow prevention device; and (2) the installation, replacement or maintenance of low-voltage wiring used within the lawn sprinkler system not exceeding 24 volts, providing that such wiring shall be energized only from a plug-in type controller, or a hard wired 110 volt controller that is installed and serviced by a properly licensed electrician.

(w) "Commercial Vehicle" for the purpose of Section 20-334 of the Connecticut General Statutes, means any vehicle used by a contractor in his business that is leased or is registered in the name of the business or contractor with a motor vehicle licensing agency under a "commercial" or "combination" registration.

(x) "Incidental work" means the keeping in a state of repair or efficiency all types or classes of electrical, elevator, fire protection sprinkler system, heating, cooling and piping or plumbing and piping fixtures or equipment by the replacement of existing equipment or fixtures with equivalent materials, or materials substantially equal to existing materials if identical equipment is not available, but excluding any alteration or additional work adversely affecting safety, or change in original design.

(y) "Sheet metal work" means the installation, erection, replacement, repair or alteration of duct work-systems, both ferrous and nonferrous, and includes, but is not limited to, warm and cool air, ventilation, exhaust, and hood exhaust.

(Effective September 22, 1988; Amended effective August 22, 1991; Amended effective October 1, 1993; Amended effective February 11, 2003.)

Sec. 20-332-2. Licenses issued by the electrical work examining board

The following licenses shall be issued to qualified applicants by the electrical work examining board:

(a) Unlimited electrical contractor's license (E-1).

The holder of this license shall be permitted to do all electrical work as defined in section 20-330 of the Connecticut General Statutes. The requirements to qualify for this license examination shall be two (2) years as an unlimited licensed journeyperson or at least six (6) years of equivalent experience and training.

(b) Unlimited electrical journeyperson's license (E-2).

The holder of this license shall be permitted to do all electrical work as defined in section 20-330 of the Connecticut General Statutes, and only while in the employ of a properly licensed contractor. The requirements to qualify for this license examination shall be the completion of a registered apprenticeship program or at least four (4) years of equivalent experience and training.

(c) Limited electrical line contractor's license (L-1).

The holder of this license may perform only work limited to line construction, including distribution systems, and their allied work, for public and private companies; installation, maintenance and repair of all high-voltage cable splicing and pulling wire for all systems in excess of 2,400 volts; traffic signal and highway lighting installation, maintenance and repair. The requirements to qualify for this license examination shall be two (2) years as a properly licensed journeyperson or at least six (6) years of equivalent experience and training.

(d) Limited electrical line journeyperson's license (L-2). The holder of this license may perform only work limited to line construction, including distribution systems, and their allied work, for public and private companies; installation, maintenance and repair of all high-voltage cable splicing and pulling wire for all systems in excess of 2,400 volts; traffic signal and highway lighting installation, maintenance and repair, and only while in the employ of a contractor licensed for such work. The requirements to qualify for this license examination shall be the completion of a registered apprenticeship program or at least four (4) years of equivalent experience and training.

(e) Limited electrical contractor's license (L-5).

The holder of this license may perform only work limited to low voltage, alarm or signal work, audio and sound systems. The installation or repair of any telecommunication work is not authorized with the exception of the interface wiring from an alarm system to an existing telephone connection for monitoring purposes. The voltage of the system is not to exceed 25 volts or five amperes where such work commences at an outlet receptacle or connection previously installed by a person holding the proper electrical license. The requirements to qualify for this license examination shall be two (2) years as a properly licensed journeyperson or at least six (6) years of equivalent experience and training.

(f) Limited electrical journeyperson's license (L-6).

The holder of this license may perform only work limited to low voltage, alarm or signal work, audio and sound systems, and only while in the employ of a contractor licensed for such work. The installation or repair of any telecommunication work is not authorized with the exception of the interface wiring from an alarm system to an existing telephone connection for monitoring purposes. The voltage of the system is not to exceed 25 volts or five amperes where such work commences at an outlet receptacle or connection previously installed by a person holding the proper electrical license. The requirements to qualify for this license examination shall be the completion of a registered apprenticeship program or at least four (4) years of equivalent experience and training.

(g) Limited electrical contractor's license (C-5).

The holder of this license may perform only work limited to low voltage systems, and telephone-interconnect. The voltage of any system is not to exceed forty-eight (48) volts or eight (8) amperes where such work commences at an outlet receptacle or connection previously installed by a person holding the proper electrical license. The requirements to qualify for this license examination shall be two (2) years as a properly licensed journeyperson or at least six (6) years of equivalent experience and training.

(h) Limited electrical journeyperson's license (C-6).

The holder of this license may perform only work as defined for C-5 category and only while in the employ of a licensed electrical contractor. The requirements to qualify for this license examination shall be the completion of a registered apprenticeship program or at least four (4) years of equivalent experience and training.

(i) Limited electrical sign contractor's license (C-7).

The holder of this license may perform only work limited to installing, servicing, maintaining and testing electric signs where such work commences at a dedicated outlet receptacle or connection directly adjacent to such sign. The requirements to qualify for this license examination shall be two (2) years as a properly licensed journeyperson or equivalent experience and training.

(j) Limited electrical sign journeyperson's license (C-8).

The holder of this license may perform only work limited to installing, servicing, maintaining and testing electric signs where such work commences at a dedicated outlet receptacle or connection directly adjacent to such sign and only while in the employ of a contractor licensed for such work. The requirements to qualify for this license examination shall be the completion of a registered apprenticeship program or equivalent experience and training.

(k) Limited electrical contractor's license (T-1).

The holder of this license may perform only work limited to telephone-interconnect systems where such work commences at an outlet receptacle or connection previously installed by a person holding the proper electrical license. The requirements to qualify for this license examination shall be licensed journeyperson or at least six (6) years of equivalent experience and training.

(l)Limited electrical journeyperson's license (T-2).

The holder of this license may perform only work as defined for the T-1 category and only while in the employ of a licensed electrical contractor. The requirements to qualify for this license examination shall be the completion of a registered apprenticeship program or at least four (4) years of equivalent experience and training or five (5) years as a registered public service technician.

(m) Limited solar electric contractor license (PV-1).

The holder of this license may perform only work limited to solar electricity systems; which means the installation, erection, repair, replacement, alteration or maintenance of photovoltaic or wind generation systems, including storage and distribution of such energy for heat, light, power or other purposes to a point immediately inside a structure or adjacent to an end use. The requirements to qualify for this license examination shall be two (2) years as a properly licensed journeyperson or equivalent experience and training.

(n) Limited solar electric journeyperson's license (PV-2).

The holder of this license may perform only work as defined for the PV-1 category and only while in the employ of a contractor licensed for such work. The requirements to qualify for this license exam shall be the completion of a registered apprenticeship program or at least one (1) year of equivalent experience and training.

(Effective September 22, 1988; Amended effective October 1, 1993; July 29, 2003; June 28, 2004; September 7, 2007.)

PHOTOVOLTAIC ELECTRICIAN (PV-2) 821.381.018
Work Schedule "A"

The following schedule of work experience is intended as a guide. It need not be followed in any particular sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to become fully competent and use good workmanship in all work processes which are a part of the trade. The apprentice will be fully instructed in safety and OSHA requirements. PLEASE NOTE: Connecticut Occupational Licensing Regulations require a minimum number of O.J.T. years *(calendar time)* as expressed below.

A. Orientation and Safety (50 HOURS)

B. Tools - Equipment - Instruments (150 HOURS)

C. Array or Wind Turbine installation—Racking, Modules, Tower, Turbine (700 HOURS)

D. DC Wiring—Array or Wind Turbine to Inverter (1250 HOURS)

E. AC Wiring--Inverter to Tie in (1250 HOURS)

F. Trouble Shooting—Service, Maintenance (300 HOURS)

G. Basic Knowledge / Associated Trades (300 HOURS)

TOTAL = 4000 HOURS

H. Related Instruction = 288 Hours
Minimum O.J.T Years = 2

WAGE SCHEDULE

0-1000 Hours _____
1001-2000 Hours _____
2001-3000 Hours _____
3001-4000 Hours _____
Journeyperson's Rate _____

Electrician (E-2) 824.261.010

The following schedule of work experience is intended as a guide. It need not be followed in any particular sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to become fully competent and use good workmanship in all work processes which are a part of the trade. The apprentice will be fully instructed in safety and OSHA requirements. PLEASE NOTE: Connecticut Occupational Licensing Regulations require a minimum number of O.J.T. years *(calendar time)* as expressed below.

A. Orientation and Safety (100 HOURS)

B. Tools - Equipment - Instruments (300 HOURS)

C. Residential Wiring Installation, Maintenance, Repair (1400 HOURS)

D. Commercial Wiring Installation, Maintenance, Repair (2512 HOURS)

E. Industrial Wiring Installation, Maintenance, Repair (2212 HOURS)

F. Low Voltage Wiring Installation, Maintenance, Repair (876 HOURS)

G. Cable Installation / Splicing Installation, Maintenance, Repair (300 HOURS)

H. Basic Knowledge / Associated Trades (300 HOURS)

TOTAL = 8000 HOURS

I. RELATED INSTRUCTION = 720 HOURS
Minimum O.J.T Years = 4

WAGE SCHEDULE

0 - 1000 Hours	_____
1001 - 2000 Hours	_____
2001 - 3000 Hours	_____
3001 - 4000 Hours	_____
4001 - 5000 Hours	_____
5001 - 6000 Hours	_____
6001 - 7000 Hours	_____
7001 - 8000 Hours	_____
Journeyperson Rate	_____

Connecticut Electrical Licenses by Categories

License Type	Number of Licenses	Percentage
A6	1	0.01%
C5	178	1.29%
C6	175	1.26%
C7	16	0.12%
C8	48	0.35%
E1	5,250	37.91%
E2	6,241	45.07%
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E4	2	0.01%
E5	3	0.02%
E6	0	0.00%
E7	0	0.00%
E8	0	0.00%
E9	10	0.07%
L1	9	0.06%
L2	36	0.26%
L5	423	3.05%
L6	577	4.17%
PV1	13	0.09%
PV2	10	0.07%
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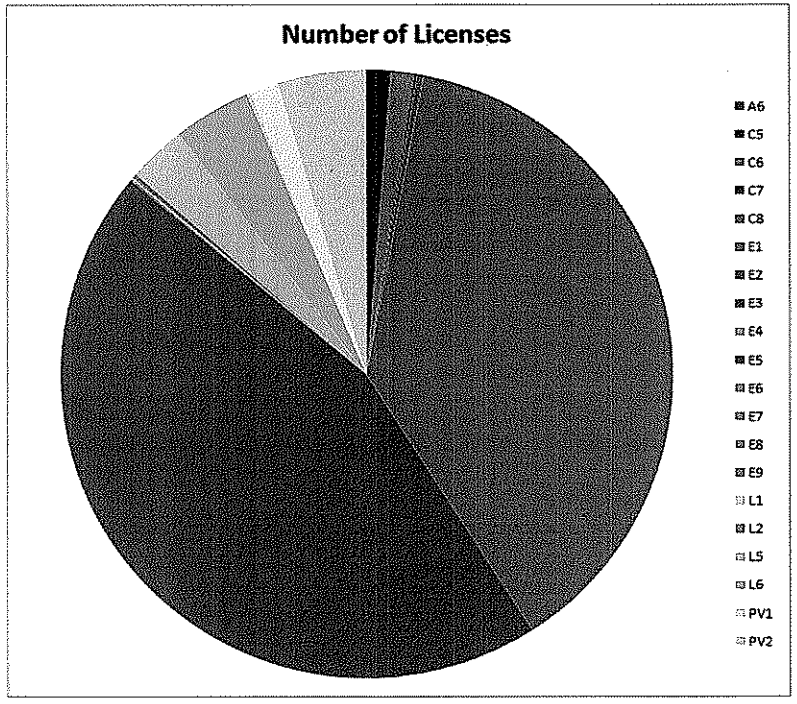
T2	643	4.64%
Total Electrical Licenses	**13,847**	**100.00%**



Information retrieved from The State of Connecticut eLicensing Website
https://www.elicense.ct.gov/Lookup/GenerateRoster.aspx , February 23, 2011