

LICENSING DIVISION

Staff Report for the Electrical Safety and Licensing Advisory Board
August 25, 2022

Statistics

MASTER ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	566	601
Renewed Licenses Issued	16,343	15,288
Online Renewals	16,244	15,238
% Renewed Online	99%	99%
Total Population	17,160	17,333

MASTER SIGN ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	10	19
Renewed Licenses Issued	491	444
Online Renewals	489	442
% Renewed Online	99%	99%
Total Population	510	510

JOURNEYMAN ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	4,412	2,070
Renewed Licenses Issued	33,697	31,340
Online Renewals	31,030	31,210
% Renewed Online	92%	99%
Total Population	36,852	37,310

JOURNEYMAN APPLIED BY 7,000 HOURS
2/1/21 – 7/31/22

Number of 7K applications received	781
Number of 7K applications in an apprenticeship training program	247
Number of 7K that are exam eligible	733
Number of 7K that have received their license	380

JOURNEYMAN SIGN ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	16	19
Renewed Licenses Issued	280	254
Online Renewals	280	253
% Renewed Online	100%	99%
Total Population	323	315

JOURNEYMAN LINEMAN ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	8	6
Renewed Licenses Issued	34	36
Online Renewals	34	36
% Renewed Online	100%	100%
Total Population	43	46

JOURNEYMAN INDUSTRIAL ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	98	134
Renewed Licenses Issued	210	257
Online Renewals	210	257
% Renewed Online	100%	100%
Total Population	309	417

MAINTENANCE ELECTRICIANS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	8	7
Renewed Licenses Issued	782	682
Online Renewals	776	678
% Renewed Online	99%	99%
Total Population	854	811

RESIDENTIAL WIREMEN

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	236	233
Renewed Licenses Issued	1,365	1,314
Online Renewals	1,355	1,311
% Renewed Online	99%	99%
Total Population	1,695	1,798

APPRENTICES

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	35,423	33,570
New Licenses Issued Online	34,992	33,059
Renewed Licenses Issued	43,906	40,306
Online Renewals	43,548	40,005
% Renewed Online	99%	99%
Total Population	88,930	92,162

SIGN APPRENTICES

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	1,028	999
New Licenses Issued Online	1,017	991
Renewed Licenses Issued	601	540
Online Renewals	599	537
% Renewed Online	99%	99%
Total Population	1,960	2,035

ELECTRICAL CONTRACTORS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	966	1,018
Renewed Licenses Issued	9,841	9,181
Online Renewals	9,780	8,882
% Renewed Online	99%	97%
Total Population	10,858	11,360

ELECTRICAL SIGN CONTRACTORS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	27	36
Renewed Licenses Issued	518	470
Online Renewals	513	467
% Renewed Online	99%	99%
Total Population	555	558

RESIDENTIAL APPLIANCE INSTALLERS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	125	112
Renewed Licenses Issued	1,894	1,748
Online Renewals	1,888	1,743
% Renewed Online	99%	99%
Total Population	2,033	2,035

RESIDENTIAL APPLIANCE INSTALLATION CONTRACTORS

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Licenses Issued	49	48
Renewed Licenses Issued	632	594
Online Renewals	628	592
% Renewed Online	99%	99%
Total Population	697	703

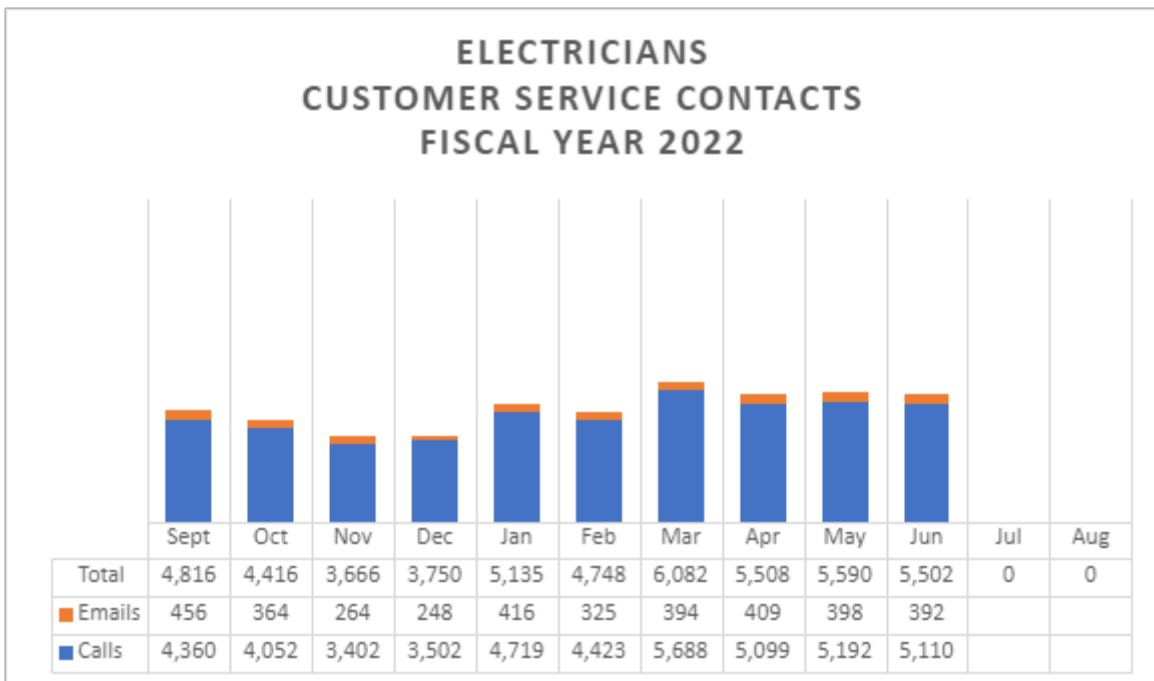
COMBINED

	TOTAL FY 2021	Sept 2021 – July 2022 FY 22
New Facility Licenses Issued	1,042	1,102
Renewed Facility Licenses Issued	10,991	10,245
Online Renewals	10,921	9,941
% Renewed Online	99%	97%
New Individual Licenses Issued	41,930	37,770
Renewed Individual Licenses Issued	99,603	92,209
Online Renewals	96,453	91,710
% Renewed Online	97%	99%
Total Population (Individuals)	150,669	154,772
Total Population (Facilities)	12,110	12,621
Total COMBINED Licenses	162,779	167,393

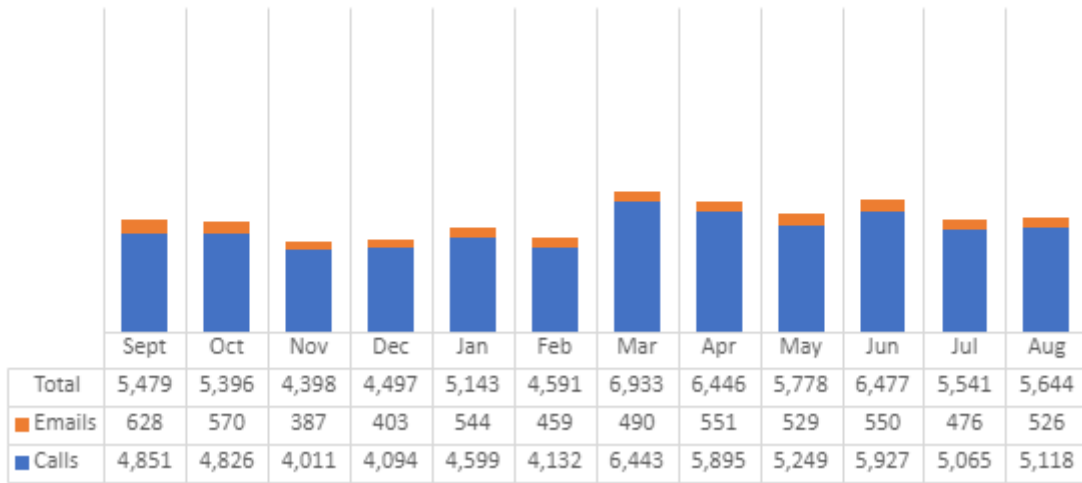
Customer Service Division

Staff Report for the Electrical Safety and Licensing Advisory Board
 August 25, 2022

Statistics



**ELECTRICIANS
CUSTOMER SERVICE CONTACTS
FISCAL YEAR 2021**



Enforcement Division

Staff Report for Electrical Safety and Licensing Advisory Board August 25, 2022

Personnel Updates:

- On May 1, 2022, Jessica Hurtado was promoted to Senior Prosecutor. Jessica has been with TDLR for over 4 years and has experience with a number of our programs including all the Health Related Programs, Transportation Programs, and most recently with our Criminal History Evaluation Team. Prior to joining TDLR, she spent time with the Texas Ethics Commission, Texas Workforce Commission, as well as some time in private practice.
- On May 15, 2022, Jack Phillips was promoted to the Investigations Team Lead Supervisor position for the North Region. Jack has worked for TDLR for over 7 years, previously serving as an Inspector. Jack has served Texans for over 28 years, including working for the Attorney General's and Texas Department of Criminal Justice. Jack is also a proud United States Veteran, serving 6 years in the United States Army and as a Reserve in the Texas National Guard as both a Combat Engineer and a Legal Specialist.

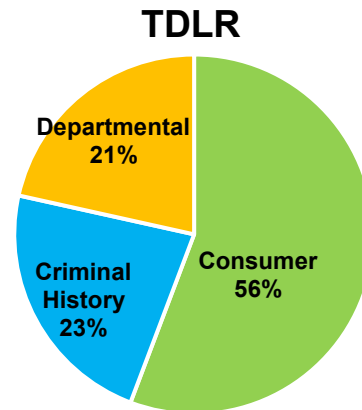
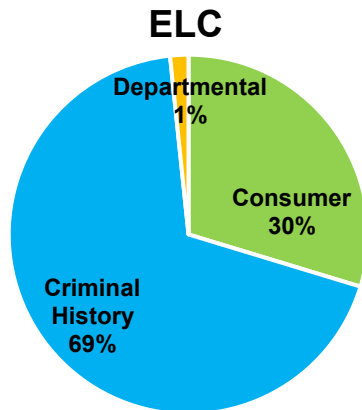
Statistics:

Shown below are the Complaints Received, Enforcement Performance Measures, and key statistics for the Electrical (ELC) program and for all TDLR programs combined **through June of Fiscal Year 2022:**

Complaints Received Break Down	ELC	TDLR
Consumer	838	11,505
Criminal History	17,783	33,600
Departmental	25	1,928
Total Complaints Received	18,646	47,033

Key Statistics	ELC	TDLR
Cases opened	1,519	9,628
Cases closed	1,692	9,485
Average time to close (days)	173.80	218.77
% of cases resolved within 6 months	70.45%	56.77%
% of cases resulting in disciplinary action	8.57%	11.02%
Cases pending at end of June	724	6,787

Source of Cases Opened through June of Fiscal Year 2022



Case Outcomes

	ELC	TDLR
Commission Orders	6	18
Default Orders	84	325
Agreed Orders	26	614
Penalties Assessed	\$222,625.00	\$2,126,260.00
Penalties Collected	\$36,128.00	\$1,133,683.00
Licenses Revoked (Disciplinary)	4	44
Licenses Suspended	2	4
Licenses Denied/Revoked (Criminal History)	66	148
Cease & Desist Orders	3	13
Informally Resolved	1,543	8,439

Top ELC Alleged Violations at Opening through June of Fiscal Year 2022

Violation:	Count
Criminal History	1051
Contracted without license	305
Evaded responsibility to client	50
Performed in violation of code	33
Dishonesty, misrepresentation, or fraud	27
Unlicensed electrical work	19
Did not have TDLR information on proposal invoice	14
Failed to display TECL in advertising	14
Performed in negligent manner	11
No name or TECL on proposal or invoice	9
Failed to ensure licensed work	9

Top ELC Violations Resulting in Disciplinary Action through June of Fiscal Year 2022

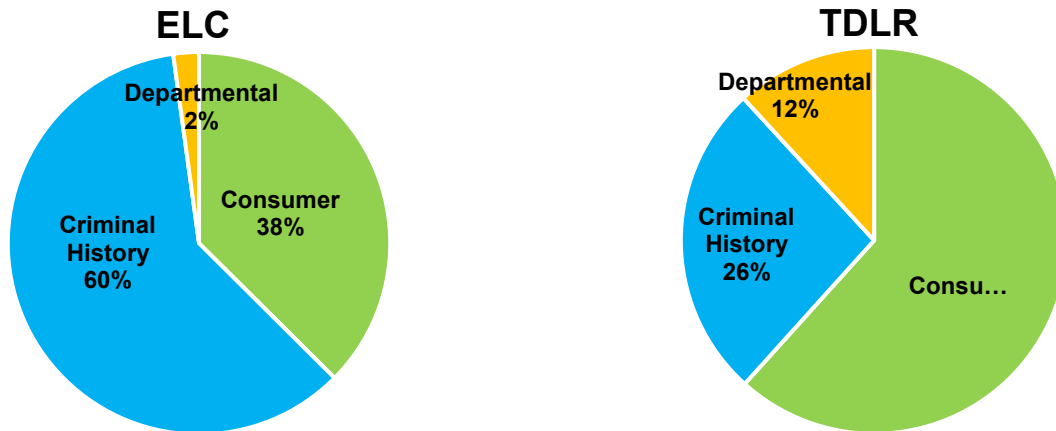
Violation:	Count
Criminal History	71
Contracted without license	58
Evaded responsibility to client	8
Failed to ensure licensed work	5
Using another's license	5
Did not have TDLR information on proposal or invoice	2
Failed to pay dishonored check	2
No name or TECL on proposal or invoice	2
Failed to comply with an order	1

Shown below are the Complaints Received, Enforcement Performance Measures, and key statistics for the Electrical (ELC) program and for all TDLR programs combined for **Fiscal Year 2021:**

Complaints Received Break Down	ELC	TDLR
Consumer	1,010	12,463
Criminal History	7,288	18,896
Departmental	11	1,296
Total Complaints Received	8,309	32,655

Key Statistic	ELC	TDLR
Cases opened	1,757	10,121
Cases closed	1,745	9,335
Average time to close (days)	171.74	209.86
% of cases resolved within 6 months	72.84%	60.00%
% of cases resulting in disciplinary action	11.00%	13.41%
Cases pending at end of FY2021	895	6,627

Source of Cases Opened Fiscal Year 2021



Case Outcomes	ELC	TDLR
Commission Orders	12	44
Default Orders	91	455
Agreed Orders	50	711
Penalties Assessed	\$337,200.00	\$2,570,716.00
Penalties Collected	\$79,275.00	\$1,140,068.95
Licenses Revoked (Disciplinary)	3	103
Licenses Suspended	1	8
Licenses Denied/Revoked (Criminal History)	92	240
Cease & Desist Orders	0	19
Informally Resolved	1,545	7,976

Top 10 ELC Alleged Violations at Opening for Fiscal Year 2021

Violation:	Count
Criminal History	1048
Contracted without license	424
Unlicensed electrical work	71
Failed to display TECL in advertising	46
Evaded responsibility to client	43
Performed in violation of code	24
Using another's license	19
Performed in negligent manner	18
Dishonesty, misrepresentation, or fraud	17
Did not have TDLR information on proposal or invoice	12

ELC Violations Resulting in Disciplinary Action for Fiscal Year 2021

Violation:	Count
Criminal History	83
Contracted without license	80
Lacks honesty, trustworthiness, and integrity	6
Evaded responsibility to client	4
Used another's license	4
Unlicensed electrical work	3
Failed to ensure licensed work	3
Failed to comply with an order	3
Allowed unlicensed person to subcontractor	1
Leased license to another	1
Performed in negligent manner	1
Performed in violation of NEC	1
Did not have TDLR information on proposal or invoice	1
Dishonesty, misrepresentation, or fraud	1

Case Highlights:

- **Roberto Martinez Cid – ELC20210008237**

On April 5, 2022, the Commission of the Texas Department of Licensing and Regulation signed an order denying Respondent Roberto Martinez Cid's renewal application for an apprentice electrician license and revoking his license. While attempting to renew his license on March 2, 2021, Respondent answered "No" to the criminal history question. It was found by the Commission that Respondent pled guilty to a felony offense on November 30, 2020. The Commission concluded that the offense for which Respondent pled guilty was directly related to the occupation of an apprentice electrician, that Respondent was not fit to hold a license and, therefore, should not hold a license. No pecuniary penalty was ordered.

- **Zachary J. Knerr – ELC20210003465**

On April 22, 2022, a default order regarding Respondent Zachary J. Knerr was signed and issued by Deputy Executive Director David Gonzales on behalf of the Executive Director. Respondent was found to have contracted to perform non-exempt electrical work without the appropriate licensure. Evidence showed Respondent held himself out as an electrician capable of performing non-exempt electrical contracting work and was paid \$850.00 to perform the work contracted. At the time of the violation, Respondent did not hold an electrical contractor license. The default order included an administrative penalty of \$4,000.00. As of July 24, 2022, Respondent had not made any payment toward the penalty.

- **Juan B. Mireles – ELC20200013174**

On April 25, 2022, an agreed order regarding Respondent Juan B. Mireles was signed and issued on behalf of the Executive Director. Respondent Mireles agreed that he had allowed other individuals to use his license for the purpose of those individuals performing non-exempt electrical work. The agreed order provided for an administrative penalty of \$1,000.00, which Respondent paid in full on March 1, 2022.

- **Brandon K. Garner – ELC20210013618**

On April 28, 2022, a default order regarding Respondent Brandon K. Garner was signed and issued by Deputy Executive Director David Gonzales on behalf of the Executive Director. Respondent was found to have entered into a contract on March 12, 2021, to perform non-exempt electrical work without the appropriate licensure. Evidence shows Respondent was paid substantial amounts of funds to perform the work. At the time of the violation, Respondent did not hold an electrical contractor license, or any other license, issued by the Department. The default order provided for an administrative penalty of \$4,000.00. As of July 24, 2022, Respondent had not made any payment toward the penalty.

- **Ron Dean Rodgers – ELC20220007820 (RESTRICTED LICENSE AFTER RENEWAL APP)**

On June 3, 2022, a Restricted License Agreement for a Restricted Journeyman Electrician license was signed and issued in favor of Ron Dean Rodgers. Licensee Rodgers was the subject of a criminal history investigation after he applied for a renewal of his Journeyman Electrician license. The investigation discovered that, before submitting his January 5, 2022, renewal application, Mr. Rodgers pled guilty to, and was placed on community supervision for, a felony offense that is directly related to the duties and responsibilities of an electrician as reflected in the criminal conviction guidelines for the Electricians program.

As part of the investigation, the prosecuting attorney interviewed the individual who would be directly supervising Mr. Rodgers. The Department received documentation supporting Mr. Rodgers and his bid for licensure. The information received by the prosecuting attorney led to a recommendation that a restricted license be granted to Mr. Rodgers. Deputy Executive Director David Gonzales, for Executive Director Mike Arismendez, signed the agreement that includes the terms of the restrictive license.

Under the terms of the restricted license, licensee Rodgers may only work under the direct supervision of the named supervisor. Additionally, the licensee may work only on new construction, industrial job sites, commercial buildings, or vacant facilities. Residences or facilities at which Licensee Rodgers may not work are clearly itemized in the Agreement. Licensee Rodgers must carry or have access to a legible, paper copy of the Restricted License Agreement at all times he is on a jobsite and must present it upon the request of any person. The restricted license is valid for a period of one year as of the date of issuance.



Education and Examination Division

Staff Report for the Electrical Safety and Licensing Advisory Board August 25, 2022

Statistics

Examination Statistics

(As of June 30, 2022)

FY 2022	SEP	OCT	NOV	Q1	DEC	JAN	FEB	Q2	MAR	APR	MAY	Q3	JUN	JUL	AUG	Q4	TOT
PASS	289	314	262	865	249	300	317	866	351	291	353	995	375	0	0	375	3,101
FAIL	719	892	722	2,333	582	779	728	2,089	867	913	862	2,642	942	0	0	942	8,006
TOTAL	1008	1206	984	3,198	831	1079	1045	2,955	1218	1204	1215	3,637	1317	0	0	1,317	11,107
RATE	28.7%	26.0%	26.6%	27.0%	30.0%	27.8%	30.3%	29.3%	28.8%	24.2%	29.1%	27.4%	28.5%	0.0%	0.0%	28.5%	27.9%

FY 2021	SEP	OCT	NOV	Q1	DEC	JAN	FEB	Q2	MAR	APR	MAY	Q3	JUN	JUL	AUG	Q4	TOT
PASS	306	419	238	963	178	188	139	505	265	268	305	838	332	304	296	932	3,238
FAIL	953	1,129	716	2,798	586	496	339	1,421	610	654	700	1,964	767	727	730	2,224	8,407
TOTAL	1259	1548	954	3,761	764	684	478	1,926	875	922	1005	2,802	1099	1031	1026	3,156	11,645
RATE	24.3%	27.1%	24.9%	25.6%	23.3%	0%	0%	26.2%	30.3%	29.1%	30.3%	29.9%	30.2%	29.5%	28.8%	29.5%	27.8%

Examination by License Type

(As of June 30, 2022)

1 ST QUARTER					2 ND QUARTER				
SEPTEMBER					DECEMBER				
OCTOBER					JANUARY				
NOVEMBER					FEBRUARY				
LICENSE TYPE	PASS	FAIL	TOT	RATE	LICENSE TYPE	PASS	FAIL	TOT	RATE
MASTER CALCULATIONS	129	550	679	19.00%	MASTER CALCULATIONS	142	473	615	23.09%
MASTER NEC	157	475	632	24.84%	MASTER NEC	148	360	508	29.13%
JOURNEYMAN LINEMAN	1	13	14	7.14%	JOURNEYMAN LINEMAN	4	7	11	36.36%
JOURNEYMAN	473	1,116	1,589	29.77%	JOURNEYMAN	476	1,078	1,554	30.63%
MAINTENANCE	3	0	3	100.00%	MAINTENANCE	2	0	2	100.00%
RESIDENTIAL WIREMAN	62	119	181	34.25%	RESIDENTIAL WIREMAN	56	112	168	33.33%
MASTER SIGN	3	14	17	17.65%	MASTER SIGN	8	7	15	53.33%
JOURNEYMAN SIGN	5	12	17	29.41%	JOURNEYMAN SIGN	5	7	12	41.67%
APPLIANCE INSTALLER	32	34	66	48.48%	APPLIANCE INSTALLER	25	43	68	36.76%
JOURNEYMAN INDUSTRIAL ELE*	0	0	0	0.00%	JOURNEYMAN INDUSTRIAL ELE*	0	2	2	0.00%
TOTAL (ALL)	865	2,333	3,198	27.05%	TOTAL (ALL)	866	2,089	2,955	29.31%
3 RD QUARTER					4 TH QUARTER				
MARCH					JUNE				
APRIL					JULY				
MAY					AUGUST				
LICENSE TYPE	PASS	FAIL	TOT	RATE	LICENSE TYPE	PASS	FAIL	TOT	RATE
MASTER CALCULATIONS	166	609	775	21.42%	MASTER CALCULATIONS	41	213	254	16.14%
MASTER NEC	170	486	656	25.91%	MASTER NEC	48	168	216	22.22%
JOURNEYMAN LINEMAN	1	6	7	14.29%	JOURNEYMAN LINEMAN	0	3	3	0.00%
JOURNEYMAN	545	1,365	1,910	28.53%	JOURNEYMAN	245	486	731	33.52%
MAINTENANCE	2	1	3	66.67%	MAINTENANCE	0	0	0	0.00%
RESIDENTIAL WIREMAN	69	112	181	38.12%	RESIDENTIAL WIREMAN	23	54	77	29.87%
MASTER SIGN	6	6	12	50.00%	MASTER SIGN	0	1	1	0.00%
JOURNEYMAN SIGN	2	9	11	18.18%	JOURNEYMAN SIGN	4	4	8	50.00%
APPLIANCE INSTALLER	34	46	80	42.50%	APPLIANCE INSTALLER	14	12	26	53.85%
JOURNEYMAN INDUSTRIAL ELE*	0	2	2	0.00%	JOURNEYMAN INDUSTRIAL ELE*	0	1	1	0.00%
TOTAL (ALL)	644	1,776	2,420	26.61%	TOTAL (ALL)	375	942	1,317	28.47%

Continuing Education Course, Provider, and Curriculum

(As of June 30, 2022)

FY 2022	SEP	OCT	NOV	Q1	DEC	JAN	FEB	Q2	MAR	APR	MAY	Q3	JUN	JUL	AUG	Q4	TOT
NEW COURSE APPROVAL ISSUES	14	9	4	27	21	16	17	54	26	11	11	48	16	-	-	16	145
TOTAL COURSES	169	174	178	178	192	180	167	167	177	171	170	170	179	-	-	179	179

FY 2021	SEP	OCT	NOV	Q1	DEC	JAN	FEB	Q2	MAR	APR	MAY	Q3	JUN	JUL	AUG	Q4	TOT
NEW COURSE APPROVAL ISSUES	9	11	1	21	15	18	33	66	21	15	12	48	12	8	12	32	167
TOTAL COURSES	166	159	148	148	143	145	165	165	162	163	166	166	173	164	164	164	164

Electrician Apprentice Programs

(As of June 30, 2022)

FY 2022	SEP	OCT	NOV	Q1	DEC	JAN	FEB	Q2	MAR	APR	MAY	Q3	JUN	JUL	AUG	Q4	TOT
NEW PROGRAM REGISTRATIONS ISSUED	0	0	1	1	0	0	0	0	0	0	0	0	0	-	-	0	1
PROGRAM RENEWAL LICENSES ISSUED	29	7	4	40	1	1	5	7	2	5	8	15	1	-	-	1	63
TOTAL PROGRAM PROVIDER LICENSE COUNT (END OF MONTH)	57	57	58	58	58	58	59	59	59	59	60	60	60	-	-	60	60
TOTAL NEW PROGRAM COURSE APPROVALS ISSUED	0	0	1	1	0	0	0	0	0	0	0	0	0	-	-	0	1
TOTAL PROGRAM COURSE COUNT (END OF MONTH)	57	57	58	58	58	58	59	59	59	59	60	60	60	-	-	60	60

FY 2021	SEP	OCT	NOV	Q1	DEC	JAN	FEB	Q2	MAR	APR	MAY	Q3	JUN	JUL	AUG	Q4	TOT
NEW PROGRAM REGISTRATIONS ISSUED	2	0	0	2	1	0	3	4	1	0	2	3	0	0	0	0	9
PROGRAM RENEWAL LICENSES ISSUED	0	39	3	42	1	0	0	1	2	3	2	7	5	0	0	5	55
TOTAL PROGRAM PROVIDER LICENSE COUNT (END OF MONTH)	31	54	55	55	56	56	56	56	57	57	59	59	59	59	59	59	59
TOTAL NEW PROGRAM COURSE APPROVALS ISSUED	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
TOTAL PROGRAM COURSE COUNT (END OF MONTH)	31	54	55	55	56	56	56	56	57	57	59	59	59	59	59	59	59

Early Journeyman Exam Statistics

Journeyman Electrician 7K Exam Pass Rate by Total numbers of Exams Between 05/01/2022 and 08/05/2022

7K 1st Time Exam Pass Rate			7K Repeat Time Exam Pass Rate			7K Average Exam Pass Rate		
Total Pass 1st Time	Total Exams 1st Time	Pass Rate 1st Time	Total Pass Repeat	Total Exams Repeat	Pass Rate Repeat	Total Exams Pass	Total Exams	Avg Pass Rate
79	107	73.83	39	135	28.89	118	242	48.76

Journeyman Electrician 7K Exam Pass Rate in Apprenticeship Pgm by Total numbers of Exams Between 05/01/2022 and 08/05/2022

7K 1st Time Exam Pass Rate			7K Repeat Time Exam Pass Rate			7K Average Exam Pass Rate		
Total Pass 1st Time	Total Exams 1st Time	Pass Rate 1st Time	Total Pass Repeat	Total Exams Repeat	Pass Rate Repeat	Total Exams Pass	Total Exams	Avg Pass Rate
27	30	90.00	5	29	17.24	32	59	54.24

Journeyman Electrician 8K Exam Pass Rate by Total numbers of Exams Between 05/01/2022 and 08/05/2022

8K 1st Time Exam Pass Rate			8K Repeat Time Exam Pass Rate			8K Average Exam Pass Rate		
Total Pass 1st Time	Total Exams 1st Time	Pass Rate 1st Time	Total Pass Repeat	Total Exams Repeat	Pass Rate Repeat	Total Exams Pass	Total Exams	Avg Pass Rate
274	553	49.55	272	1,286	21.15	546	1,839	29.69

Regulatory Program Management Division

Staff Report for the Electrical Safety and Licensing Advisory Board

August 25, 2022

Outreach

TDLR RPM Meetings, Sweeps and Other Notable Activities

- 06/05-10 – National Fire Protection Association (NFPA), National Electrical Code (NEC 70) Convention & Expo. Final Vote on 2023 NEC 70.
- 06/21 – Job sweeps/inspections in East Texas.
- 06/23 – Job sweeps/inspections in South Texas.
- 07/11-14 - Building Professional Institute (BPI) – Irving
- 07/27 – Texas Industrial Vocational Association (TIVA) - Houston
- 08/16 – NFPA 78 & 1078 Electrical Inspector practice and standers second draft meeting.
- 08/16-18 - Texas Electrician examination Development.



2020 & 2023 National Electrical Code Proposed TIA for 210.8(F)

2020 Edition of NEC - **FAILED**

210.8(F) Outdoor Outlets.

All outdoor outlets for dwellings, other than those covered in 210.8(A)(3), Exception to (3), that are supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, shall have ground-fault circuit-interrupter protection for personnel.

Exception No. 1: Ground-fault circuit-interrupter protection shall not be required on lighting outlets other than those covered in 210.8(C).

Exception No. 2: Ground-fault circuit-interrupter protection shall not be required for listed HVAC equipment. This provision shall expire September 1, 2026.

2023 Edition of NEC - **FAILED**

210.8(F) Outdoor Outlets.

For dwellings, all outdoor outlets rated 125 volts through 250 volts, other than those covered in 210.8(A), Exception No. 1, including outlets installed in the following locations, and supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, shall be provided with GFCI protection:

- (1) Garages that have floors located at or below grade level
- (2) Accessory buildings
- (3) Boathouses

If equipment supplied by an outlet covered under the requirements of this section is replaced, the outlet shall be supplied with GFCI protection.

Exception No. 1: GFCI protection shall not be required on lighting outlets other than those covered in 210.8(C).

Exception No. 2: GFCI protection shall not be required for listed HVAC equipment. This provision shall expire September 1, 2026.

Technical Merit

When the Standards Council issued TIA 1593, the Council acknowledged “the concerted and sustained effort by numerous stakeholders to find a mutually agreeable solution to the technical issues at hand.” The Council directed that a Task Group of affected stakeholders be formed to evaluate and reach an informed, technically substantiated resolution to the issues raised. The Council further encouraged the Task Group to submit a TIA for processing to the current edition and in parallel to the work being done within the next edition of the NEC, if appropriate. This TIA is in response to the direction given to the Task Group. The Task Group consisted of representatives from home builder organizations, contractors, HVAC manufacturers, GFCI manufacturers, CMP2, electrical inspectors, CPSC, and testing laboratories.

Based upon the information submitted to and reviewed by the Task Group, the proposed TIA extends the date when the requirement for GFCI protection will be required and expands the application of the exemption for GFCI protection to all listed HVAC equipment. If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. The issue of GFCI protection not being compatible with listed HVAC equipment was known at the time SR 7676-NFPA 70-2018 was approved by CMP-2. Three of the four negative ballots specifically mentioned the concern with incompatibility associated with requiring GFCI protection for listed HVAC equipment.

Data was submitted to the Task Group showing that listed HVAC equipment typically can have a leakage current higher than what would trip a Class A GFCI, but the touch current is well below levels that would injure or harm an individual. The number of potential deaths from electrocution involving HVAC equipment may be as high as four per year. However, the number of fatalities (no cooling during a heat wave period) due to nuisance trips associated with GFCI protection of HVAC equipment where no hazard exists may be as high as 750 per year. (See Table 1)

Estimates of HVAC Units and US At-Risk Populations	Estimates		References
Number of homes with HVAC systems in the US:	75,000,000	Approx	https://www.energy.gov/articles/history-air-conditioning
% of HVAC Fixed appliances that are Variable Speed:	50	%	https://www.achrnews.com/articles/134406-variable-speeds-impact-on-hvac#:~:text=For%20heat%20pumps%20alone%2C%2065%20percent%20of%20the,the%20mini%20splits%20we%20sold%20were%20variable%20speed.
Total number of variable speed HVAC Units	37,500,000	households	
Number of Households with people 65+	20.00	%	https://www.yardeni.com/pub/hseholdform.pdf
Number of Households with people 65+ with HVAC?	7,500,000		
Temperature at which injury can occur from heat exahustion/Stroke	104	F	
If only 10% of these homes are in climates with high heat:	750,000		
If Only 10% have compatibility issues:	75,000		
If 1% contain high risk occupants:	750	per year	estimated rate of annual deaths due to nusiance trips where no hazard existed to the end user.
Number of annual deaths from electrocution, without specific details, involving HVAC equipment	4	per year	

Table 1: Loss of HVAC Operation – Potential Impact

With respect to the extension of the date, the Task Group understands that there may not be a resolution to the incompatibility associated with listed Class A GFCIs and the leakage current permitted for listed HVAC equipment. However, the Task Group has included the date so that the exemption is not continued for an undefined period of time and to encourage the affected parties to continue to work together to resolve the incompatibility issue. The Task Group acknowledges that the date may need to be re-evaluated in the future if the incompatibility issues are not resolved.

AHRI has developed a testing program to clarify the cause of interoperability issues. The causes need to be defined before solutions can be proposed and tested. Product design and testing must follow. Industry standard revisions and related standardized test procedures are needed. Production tooling and supply chain modifications require additional time after the earlier steps are completed.

With respect to the expansion to all listed HVAC equipment, industry standards for power conversion equipment allow leakage currents above the trip current of Class A GFCI's. Residential air-conditioning (AC) and heat pump (HP) power conversion equipment for compressors have demonstrated leakage currents above Class A GFCI trip currents in lab measurements. Residential AC and HP electronically commutated outdoor fan motors have demonstrated leakage currents above the trip current of Class A GFCI's in lab measurements. Data was submitted based upon actual nuisance trips and a survey of air-conditioning contractors indicating that nuisance trips also occur with single-stage units. (Also see Source 3 listed below)

Q3 If you answered yes to question #2, please indicate which type of unit(s) for which you experienced the nuisance trips. Choose as many as apply.

Answered: 26 Skipped: 85

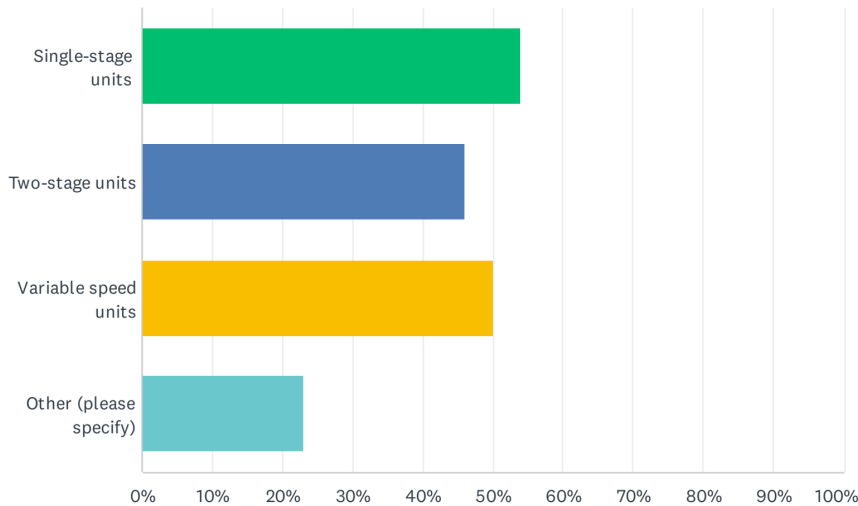


Figure 1: Texas Air Conditioning Contractor Association (TACCA) Survey

There are multiple reports of interoperability issues ('nuisance tripping') from AC and HP units that do not have power conversion equipment for the unit compressor which is the only current TIA exception. The cause(s) of this nuisance tripping remain unknown at this time. Furthermore, the presence of electronically commutated motors (ECM) is not currently documented on AC and HP nameplates or consumer/installer documents readily available to the code official. Therefore, an exception limited to ECM motors and/or other power conversion is not practical for the code official, builder or electrical contractor.

Conditions that affect interoperability include the following issues which have yet to be fully examined.

1) Residential AC and HP starting conditions distort circuit power supply conditions to such a great extent that other separate circuits in the building, such as lighting, experience power distortion that is well known to be noticed by occupants (through lights dimming). The appliances identified as comparable to AC and HP do not display and create distortion of this magnitude. There is no study to date to document that interoperability issues do not result from this startup power distortion.

2) A Class A GFCI's trip level amperage is based on the effects on humans of 60 hertz current. The higher frequency currents that create interoperability issues may not affect humans at the same current level. Evidence of safe use in Japan with a different means of protection has been documented.

3) AC and HP units include refrigeration devices that cause the direct drive compressor to start under conditions of existing high-pressure differential. This condition does not exist or is much less common in the refrigeration equipment that was cited in the 2020 code deliberations as a similar load.

4) AC and HP units operate under a much wider range of temperature conditions than the refrigeration equipment cited as similar in the 2020 code deliberations. The conductivity of the fluids

surrounding the motor windings may increase as a result. The net result has not yet been tested to confirm this is not an interoperability issue.

5) Higher federal minimum energy standards have increased the use of power conversion equipment for compressors and high efficiency ECM fan motors. Standards again increase January 1, 2023, further increasing the portion of equipment that will contain features that have demonstrated measured interoperability problems.

In addition to some of the information sources cited above, the Task Group was presented with a significant amount of technical information that was considered in developing this TIA. The following is a bibliography of that information:

2020 NEC Adoption/210.8(F)

AHRI Experts GFCI TG April 4, 2022, PowerPoint Presentation

AHRI 2020 NEC GFCI Summary Data Only 02-08-21

Assessment of Incompatibility of HVAC Equipment and GFCI Breakers, AHRI Project 8029
PowerPoint Presentation

GFCI Survey by TACCA

Minnesota April through September 2021 AC/HP Mini Split – Non GFCI Forms

Emergency Nature

Almost every state that has adopted the 2020 Edition of the NEC have modified or deleted Section 210.8(F). NFPA is aware of at least six states that have deleted Section 210.8(F) in its entirety GFCI protection is also lost for outdoor outlets that do not serve listed HVAC equipment. As such, GFCI protection for equipment for which there is not a compatibility issue is lost (see source listed as 1 above).

The equipment incompatibility issues identified above will not be resolved by January 1, 2023. If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. Data was submitted to the task group showing that listed HVAC equipment typically can have a leakage current higher than what would trip a Class A GFCI but the touch current is well below levels that would injure or harm an individual.