

COLORADO DEPARTMENT OF REGULATORY AGENCIES
OFFICE OF POLICY AND RESEARCH

COLORADO STATE ELECTRICAL BOARD

1997 SUNSET REVIEW



Table of Contents

<i>EXECUTIVE SUMMARY</i>	1
<i>BACKGROUND</i>	2
SUNSET PROCESS/METHODOLOGY	2
HISTORY	2
<i>SUMMARY OF STATUTE</i>	4
STATE ELECTRICAL BOARD	4
LICENSING	5
INSPECTIONS & PERMITTING	10
ENFORCEMENT	11
<i>REGULATION IN OTHER STATES</i>	13
<i>SUNSET ANALYSIS</i>	14
POTENTIAL HARM TO THE PUBLIC	14
BOARD COMPOSITION AND ACTIVITIES	16
LICENSING	19
COMPLAINTS AND ENFORCEMENT	22
PERMITS AND INSPECTIONS	25
INSPECTION OPTIONS	30
ISSUES	35
<i>RECOMMENDATIONS</i>	39
<i>APPENDICES</i>	45
SUNSET STATUTORY EVALUATION CRITERIA	46
STATUTE	47
CITATION REPORT	72
ELECTRICAL PERMIT APPLICATION	74

EXECUTIVE SUMMARY

The Department of Regulatory Agencies (DORA) has concluded its 1997 Sunset Review of the regulation of electricians by the State Electrical Board (Board). DORA found there is a need for continued regulation of the industry and recommends continuing the regulation of electricians and electrical contractors by the Board until the year 2005. In evaluating the operation of the Board against the Sunset Evaluation Criteria in §24-34-104 (9)(b), C.R.S., DORA found that regulation by a board was necessary to protect the public health, safety, or welfare. The report contains a total of 6 statutory recommendations.

Each recommendation is followed by a brief summary and an expanded discussion of the analysis and issues surrounding the recommendation. A single discussion section is used when several recommendations are on a single topic. The recommendation section begins on page 39 of the report.

Besides continuing the regulation by the Board, the report recommends the General Assembly require the continuance of electrical inspections by licensed electricians. The Electrical Statute contains many exemptions to the requirement that electrical work be performed by licensed electricians. It is essential that such work be inspected by licensed inspectors. The report found that inspectors find code violations requiring corrections even in work performed by licensees. The inspection program is necessary to protect the public.

The report recommends an expansion of the property owner exemption. Currently, homeowners may perform electrical work on their own property, provided it is not for sale or rent. The report finds that there is minimal potential harm to the public for property owners to perform electrical work on any one-or two-family dwellings, provided the work is permitted and inspected.

The General Assembly has authorized the Board to accept a bachelors degree in electrical engineering as credit towards the experience requirement for a master licenses. The Board has no expertise in evaluating the equivalency of degrees issued by foreign colleges and universities. The report recommends the General Assembly require the Board to use the services of an agency with this expertise.

The report recommends encouraging the creation of regional building departments in rural areas of the state to reduce the area inspected by state inspectors. Qualified regional departments should be authorized to charge an increased fee to cover the expenses associated with an inspection program.

The report recommends eliminating some outdated or unnecessary language from the statute.

BACKGROUND

Sunset Process/Methodology

The regulation of electricians and electrical contractors by the State Electrical Board shall be terminated effective July 1, 1998, unless continued by the General Assembly. Pursuant to §24-34-104(9)(b) of the Colorado Revised Statutes (C.R.S.), the Department of Regulatory Agencies (DORA) is required to conduct a review of the Colorado State Electrical Board's (Board) performance in the operation of this program. In accordance with the Sunset Evaluation Criteria, found in Appendix A., the Board must demonstrate there is a need for the program to continue, and that the existing regulation is the least restrictive form of regulation consistent with the public interest.

The sunset review process includes an analysis of the statute and regulations promulgated under its authority, interviews with DORA staff, other departments, and interested parties affected by the provision of the law. Research of current literature, related statutes, and the procedures in other states is also conducted.

History

At the beginning of this century, the electrical industry was regulated completely at the discretion of local jurisdictions. Legislation requiring the licensing requirements of journeyman and master electricians by a state board was not passed by the Colorado General Assembly until 1959. The licensing program was implemented in response to industry requests for relief from multiple licenses and regulatory programs enforced by local governments.

The original licensing requirements were administered by the Department of State. In 1965, legislation was passed adopting the National Electrical Code (NEC) and requiring the Secretary of State to establish an inspection and enforcement program for local jurisdictions choosing not to regulate electrical installations.

In 1968, the Board was transferred to the Department of Labor and Employment as a type 1 agency under the Administrative Organization Act of 1968. In 1975, the Board was transferred to DORA by the General Assembly. The Examining Board of Plumbers was transferred by executive order to be co-administered with the Electrical Board by DORA in 1977.

This is the third sunset review undergone by the Board. The first review, in 1978, found:

“There was no data available to support the assertion that the regulation of the electrical industry is or is not in the public interest. There is no evidence that local regulation does or does not reduce the likelihood of electrical fires and accidents. Because of the lack of adequate data, the public need for electrical regulation in Colorado and the necessary relationship to public health safety and welfare must be based on a hypothetical reduction of electrically caused fires and accidents.”

The 1978 report recommended continuing the regulation of electricians by the Board. The recommendation was based on the technical nature of the work and the inability of the average consumer to make a judgment concerning the safety and quality of electrical installations. The report made a total of 26 recommendations, several of which were enacted into law in the reauthorization bill. Recommendations included consolidating electrical inspection responsibilities of the Office of State Planning and Budget and the Department of Local Affairs into the Board’s program.

One major criticism of the program was the lack of resources devoted to inspections, and a lack of adequate enforcement of code violation. In 1978, a significant number of inspections were being performed by contract employees. The report found discrepancies in the quality of inspections between contract and state employees. The report noted that DORA paid lower than prevailing wages for inspectors, and as a result, had difficulty recruiting and retaining inspectors.

The second sunset review was published in 1987. The report made a total of 64 recommendations. Besides continuing the Board, the most significant recommendations adopted were those which permitted the Board to adopt and amend, with a two thirds majority of the Board, a state electrical code. This eliminated the need to have the legislature adopt a new code every three years, and allowed the Board to modify the NEC to address Colorado specific conditions.

SUMMARY OF STATUTE

The State Electrical Board (the “Board”) is responsible for licensing three classifications of electricians, registering electrical apprentices and electrical contractors, enforcing the state’s electrical code and for conducting inspections of electrical installations. Section 12-23-100.2, *et. seq.*, C.R.S., can be divided into four primary areas: the composition and duties of the Board, licensing, enforcement, and inspections. The electrical statute is included as Appendix B.

State Electrical Board

The Board is comprised of nine Governor-appointed members who serve staggered three-year terms. Appointments must be approved by the Senate and Board members are limited to two full terms each. Two members of the Board are electrical contractors with master’s licenses; two members are either journeyman or master licensees who are not electrical contractors; two members are representatives of private, municipal or cooperative electric utilities; one member is a building official from a political subdivision of the state that performs electrical inspections; one member is an active general contractor; and one member is a public representative. §12-23-102, C.R.S.

The Board is required to meet at least once per month and may meet more often as circumstances require. Each July, the Board elects a president, vice-president and a secretary-treasurer. The duties of these officers are not defined in the statute. §12-23-104(1)(a), C.R.S.

Pursuant to its duties to register apprentices, license electricians, perform inspections and institute enforcement actions, the Board is authorized to promulgate rules and regulations pursuant to the Administrative Procedure Act (APA).

While the Board is required to adhere to the standards of the most recent edition of the National Electrical Code (NEC), such standards are minimum standards. The Board may, by an affirmative vote of two-thirds of appointed members, set standards that are different than those of the NEC. The NEC and Board approved alterations are collectively referred to as the “code.” Code standards govern planning, laying out and installing or the making of additions, alterations and repairs in the installation of wiring apparatus and equipment for electric light, heat and power. §12-23-104(2)(a), C.R.S.

In conjunction with the Board's authority to require higher standards, the Board is also charged with granting exceptions to the code for "unique construction situations where a strict interpretation of the code would result in unreasonable operational conditions or unreasonable economic burdens, as long as public safety is not compromised." §12-23-104(2)(g), C.R.S.

In order to assist the Board in performing its duties, the Director of the Division of Registrations (Division) is authorized to appoint a Program Administrator. §12-23-104.5, C.R.S.

In conjunction with its licensing and inspection programs, the Board is authorized to assess and collect fees for the various licenses, permits and registrations it issues. §12-23-112, C.R.S. These fees are transmitted to the state treasurer and the General Assembly makes annual appropriations for the expenditures of the Board. §12-23-113, C.R.S.

Licensing

No person, firm, partnership, corporation or association may advertise or use the title or designation of licensed master electrician, licensed journeyman electrician or licensed residential wireman unless licensed by the Board. §12-23-107, C.R.S. Thus, the Board issues licenses to master and journeyman electricians and residential wireman, and registers electrical apprentices and electrical contractors.

The licensing procedure for obtaining a master, journeyman or residential wireman license is a two-step process. First, a license applicant must submit a Board-prescribed application detailing the applicant's educational background and work experience. The Board must notify the applicant not less than 30 days before a scheduled written examination that the information provided by the applicant is insufficient and that the application is rejected.¹ The second step in the licensing process is to take the written, open book examination. After the Board has approved an application and the applicant receives a satisfactory score on the examination, a license is issued.

¹ While the Board currently contracts with a private testing agency that offers the written examination several times per week, the Board is not statutorily required to offer the required examination this often.

The Board may also issue licenses to individuals who are licensed in other jurisdictions if such individuals can present proof that they possess credentials and qualifications which are substantially equivalent to Colorado's requirements for licensure by examination. This process is known as "license by endorsement." §12-23-109, C.R.S.

In addition, the Board may, under certain circumstances, issue temporary permits which allow individuals to work as master or journeyman electricians and residential wireman before such individuals have taken the required examinations. §12-23-110, C.R.S. In order to obtain a temporary permit, an individual must pay a fee and demonstrate that he or she has the required experience to qualify for the examination. Temporary permits continue in effect only until the next examination is given and may be revoked by the Board at any time.

Apprentice Electrician Registration

While any person, regardless of education and experience, may work as an electrical apprentice, an apprentice must be supervised by a licensed residential wireman, journeyman or master electrician. The degree of supervision is no more than one licensed electrician to supervise no more than one apprentice at a job site. §12-23-110.5(1), C.R.S. The apprentice's supervisor is responsible for the work performed by the apprentice. §12-23-110.5(2), C.R.S.

Upon employing an individual as an apprentice, the employer must register the apprentice with the Board within 30 days of initial employment. Likewise, the employer must notify the Board within 30 days after the termination of such employment. §12-23-110.5(3)(a), C.R.S.

Residential Wireman License

Residential wireman are restricted to wiring for and installing electrical apparatus and equipment for wiring one-, two-, three-, and four-family dwellings. §12-23-101(4), C.R.S. Before the Board will approve an application to take the residential wireman's examination, the applicant must possess at least two years of accredited training or at least two years of practical experience in wiring such dwellings. §12-23-106(3)(a), C.R.S.

These work experience requirements may be substituted by certain educational experiences. One year of experience may be substituted by an electrical engineering degree from an accredited college or university, or if the applicant is a graduate of an electrical trade school or community college. In addition, the Board may allow, by a uniform ratio established by rule, the substitution of other academic or military training for the work experience requirements. §12-23-106(3)(b), C.R.S.

Journeyman Electrician License

Journeyman electricians may wire for, install and repair electrical apparatus and equipment for light, heat, power and other purposes. §12-23-101(2), C.R.S. Before the Board will approve an application to take the written examination, the applicant must have served as an electrical apprentice for at least four years. Alternatively, the Board will accept four years of practical experience, two of which must have been in commercial or industrial work, in wiring, installing, and repairing electrical apparatus and equipment for light, heat and power. §12-23-106(2)(a), C.R.S.

These work experience requirements may be substituted by certain educational experiences. One year of experience may be substituted by an electrical engineering degree from an accredited college or university, or if the applicant is a graduate of an electrical trade school or community college. In addition, the Board may allow, by a uniform ratio established by rule, the substitution of other academic or military training for the work experience requirements. §12-23-106(2)(b), C.R.S.

Master Electrician License

A master electrician may plan, lay out and supervise the installation and repair of wiring apparatus and equipment for electric light, heat, power and other purposes. §12-23-101(3), C.R.S. Thus, the primary difference between a journeyman and master electrician is that the master electrician may plan and supervise such activities, while the journeyman is limited to following the master's plans.

The educational and experience requirements for obtaining a master electrician's license follow three basic tracks. §12-23-106(1), C.R.S. The first track consists of graduates in electrical engineering from accredited colleges or universities. These individuals must possess at least one year of practical electrical experience in the construction industry before the Board will approve their applications to take the written examination.

The second track consists of graduates from electrical trade schools and community colleges. These individuals must obtain at least four years of practical experience in electrical work before the Board will approve their applications to take the written examination.

The third track consists of licensed journeymen electricians attempting to become master electricians. In addition to the practical experience requirements for a journeyman's license, these individuals must possess at least one year of practical experience in planning, laying out, supervising, and installing wiring, apparatus or equipment for electrical light, heat and power before the Board will approve their applications to take the written examination.

Electrical Contractor Registration

An electrical contractor is any person, firm, partnership, corporation, association or combination thereof that undertakes or offers to undertake for another, the planning, laying out, supervising and installing or the making of additions, alterations and repairs in the installation of wiring apparatus and equipment for electric light, heat and power. §12-23-101(1.5), C.R.S. All electrical contractors must be registered with the Board.

Exemptions From Licensure and Registration

Section 12-23-111, C.R.S., enumerates several circumstances under which individuals may conduct electrical work, but for which licensure or registration is not necessary. The following are examples of individuals and projects that are exempt from licensure:

- Employees of public service corporations, rural electrification associations and municipal utilities, including cable television companies;
- Individuals performing limited electrical work on their residences or property that is not open to the public, intended for resale, or offered for rent to tenants unless such work is properly inspected;

- Regular employees of any firm or corporation performing electrical work on the property of such firm or corporation so long as such property is not generally held open to the public and it is properly inspected;
- The installation, maintenance, repair or alteration of elevators, escalators, moving walks, etc.;
- The installation, maintenance, repair or alteration of security systems, lawn sprinkler systems, and environmental control systems;
- The installation, maintenance, repair, or alteration of data processing equipment and systems, communications systems and radio and television receiving and transmitting equipment and stations;
- The installation, maintenance, repair, or alteration of electric signs, cranes, hoists, electroplating, industrial machinery and irrigation machinery;
- The installation, maintenance, repair, or alteration of equipment and wiring for sound recording and reproduction systems, centralized distribution of sound systems, public address systems and electric organs;
- The installation, maintenance, repair, or alteration of fire alarm systems operating at 50 volts or less;
- Individuals selling, delivering and connecting any electrical appliance if the connection of the appliance does not require the installation of electrical wiring in the structure to which the appliance is connected;
- Any surface or subsurface operation or property used in or in conjunction with any mine which is inspected pursuant to the Federal Mine Safety and Health Amendments Act of 1977; and
- Individuals performing electrical work on federal property.

Inspections & Permitting

In addition to licensing electricians and registering apprentices and contractors, the Board is also the state agency responsible for conducting many of the electrical inspections performed throughout the state. Typically, a permit is obtained from the Board. Depending on the complexity of the construction, inspections are conducted at various stages of construction or upon completion of construction. This process involves the issuance of permits, the employment of electrical inspectors, and conducting the inspections.

All electrical inspection permits, with limited exceptions, are valid for 12 months. The cost of the permit, which essentially covers the cost of the inspections, depends upon the type and value of work being performed. §12-23-117, C.R.S. While the Board is only empowered to establish the permit fees for the permits it issues, the permit fees for those permits issued by local governments which have adopted their own codes and inspection programs may not exceed 15% above those fees established by the Board. §12-23-117(2), C.R.S.

Any electrical installation in any new construction or remodeling or repair, other than manufactured units certified by the Division of Housing must be inspected by an electrical inspector. A state electrical inspector must perform the inspection within three working days of the request for inspection. If the inspection is not performed within five working days, construction may continue without an inspection. §12-23-116(2), C.R.S.

However, a state inspection is not necessary where, in addition to the exemptions enumerated above, the local government has adopted its own electrical code and inspection program which is equal to, or more stringent than, the minimum standards established by the Board. §12-23-116(2), C.R.S. Regardless of whether a local government has adopted an alternative code, all public schools must be inspected by a state electrical inspector. §12-23-116(7), C.R.S.

State electrical inspectors are hired by the Director of the Division. In general, inspectors must be licensed journeyman or master electricians. However, the Division Director may also employ inspectors for the specific purpose of inspecting one-, two-, three, or four-family dwellings. These inspectors must have passed the written residential wireman's examination or have been certified as residential electrical inspectors by a national certification authority approved by the Board and have at least two years practical experience in the inspection of residential dwellings. §12-23-115(1)(a)(I), C.R.S.

If the inspected work meets the minimum requirements, the inspector will issue a certificate of approval. However, if the work is disapproved, written notice and an explanation is given by the inspector to the permittee. If the work is hazardous to life or property, the inspector may order the electrical service to the job site disconnected until such time as the work is rendered safe. §12-23-116(3), C.R.S.

If the work is disapproved, the permittee must take corrective action to bring the work up to code so that it may be approved. However, permittees may appeal a disapproval to the Board. The Board must hold a hearing within seven days after the notice of appeal is filed. §12-23-116(3), C.R.S.

Enforcement

The Board is authorized to take disciplinary action against licensed electricians, registered apprentices and electrical inspectors. Pursuant to §12-23-118(1), C.R.S., the Board may, after investigation and hearing, deny, suspend, revoke or refuse to renew any license or registration, or issue a citation or impose a fine upon a licensee, registrant or applicant for licensure for a variety of reasons, including:

- Violation of the rules and regulations of the Board;
- Failure or refusal to remove, within a reasonable amount of time, the cause of a disapproval of any electrical installation;
- Failure or refusal to maintain or adhere to the minimum electrical code standards established by the Board;
- Any cause for which the issuance of the license could have been refused had it then existed and been known to the Board;
- Commitment of one or more acts or omissions that do not meet generally accepted standards of electrical practice;

- Conviction of or acceptance of a plea of guilty or *nolo contendere* by a court to a felony;
- False or misleading advertising;
- Deception, misrepresentation or fraud in obtaining or attempting to obtain a license;
- Failure of a master electrician who is charged with supervising all electrical work performed by a contractor to adequately supervise such work;
- Failure of any licensee who is charged with supervising the work of an apprentice to adequately supervise such work;
- Employment of any person required to be licensed or registered or to obtain a permit who has not obtained such license, registration or permit; and
- Disciplinary action against a license in another jurisdiction.

When taking disciplinary action against licensees and registrants, the Board must adhere to §24-4-105, C.R.S., of the APA. The Board can either hold hearings itself or appoint an administrative law judge. §12-23-104(h), C.R.S. Appeals of citations and fines are similarly handled by the Board.

Disciplinary proceedings against state electrical inspectors are typically limited to those situations in which the inspector failed to perform an inspection or for disapproving a project without stating the justifications for such disapproval. Upon the filing of such a complaint, the Program Administrator must allow the complained of inspector to answer the allegations. If the complaint is not acted upon by the Program Administrator, the complaint is deemed rejected. If the complaining party wishes to appeal the rejection of the complaint, the complaining party must file a notice of appeal with the Board. The Board then holds a hearing in accordance with §24-4-105, C.R.S., of the APA. §12-23-116(9), C.R.S.

REGULATION IN OTHER STATES

The practice of the electrical trade is regulated at some level in all 50 states. As part of the Sunset Review, a telephone survey was conducted to determine the level of regulation in other states. Of the 25 states completing the survey, seven license electricians on the local level only, nine have licensing programs using the board model with wide variations in board compositions, and nine use an administrative model to issue state licenses. Licensing categories varied from a low of two, to a high of seventeen in Oregon. Local licensing jurisdictions were not surveyed to determine licensing categories or qualifications.

The states also varied on inspections programs. Some states conducted all inspections using state inspectors, seven used a mix of local government and local inspectors. A few states left inspections up to the discretion of the local jurisdiction. One state, Delaware, contracted all inspections with licensed electrical companies.

SUNSET ANALYSIS

Potential Harm to the Public

Every year fires claim the lives of people in Colorado and across the country. According to information compiled by the National Fire Incident Report System (NFIRS) approximately 5% of these fires are electrical based. The Colorado Division of Fire Safety (DFS) reports that in Colorado, electrical fires are slightly higher than the national average. According the DFS, approximately 1,400 electrical fires cause injuries, death, and property damage annually in Colorado. Table A details electrical fires in Colorado. These figures are for electrical fires caused by electrical distribution equipment and do not include fires caused by faulty appliances.

TABLE A
ELECTRICAL FIRES IN COLORADO

	1993	1994	1995	1996	Total
Total fires	20,070	24,041	24,571	27,074	95,756
Electrical fires	1,295	1,200	1,375	1,653	5,505
Percentage of electrical fires	6.5	5.0	5.5	6.1	5.7
Civilian injuries	10	13	10	16	49
Civilian deaths	0	3	0	0	3
Property damage	\$3,851,800	\$11,177,846	\$2,420,607	\$3,807,726	\$21,257,979

The cause of all fires, both nationally and in Colorado, is not always determined, or reported to NFIRS. In Colorado, approximately 30% of the fires have a specific causal factor reported. Therefore, it can be assumed that the data contained in the table underreports the impact of electrical fires. The DFS was able to further narrow the cause of some electrical fires in Colorado. This information is contained in Table B.

TABLE B
ELECTRICAL DISTRIBUTION EQUIPMENT AS A SOURCE OF FIRE IGNITION

Equipment	1993	1994	1995	1996
Electric distribution, unclassified	469	405	631	678
Fixed wiring	449	402	365	493
Transformer or associated equipment	68	42	47	76
Meter/meter box	14	6	5	22
Power switch gear	24	26	26	16
Switch/receptacle/outlet	31	45	47	33
Light fixture/holder/ballast/sign	109	118	68	119
Cord/plug	48	51	42	54
Lamp/lightbulb	61	48	78	92
Other	222	57	46	70
TOTAL	1,295	1,200	1,375	1,653

The DFS has determined that mechanical failures, faulty design, construction, or installation, and operational deficiencies account for about 27% of electrical fires. The most graphic presentation on the potential harm to the public by electricity is probably electrical fires. Other potentials include electrocution, property damage caused by power interruptions or improper installations, or, lost productivity, and excess electrical expenses due to improper equipment or installation.

Data is not available to compare electrical fires in Colorado prior to the implementation of the regulation of electricians. Even if such data was available, due to the increase in the use of electricity in modern society, and changes in electrical standards, the figures may not be meaningful. Although incidents still occur even though the state regulates electricians. It could be assumed that incidents would be more frequent, and more damaging without a regulatory program.

The electrical program is one of the few professional or occupational licensing programs in the state that contains three regulatory components. The Board grants licenses to electricians who meet the appropriate experience requirements and perform satisfactorily on an examination. Before electrical work can be performed, the Board or local government agency, must issue a permit. The work must then be inspected, to verify that it was performed in compliance with the code adopted by the Board or local government.

It is unusual for a regulatory program to contain licensing, permitting, and inspection components. Permitting and inspections are generally considered lesser forms of government regulation. These forms of regulation are usually associated with activity, such as the use of a park, or an occupancy permit for a building, not with a profession or occupation. When the unregulated practice of an occupation is deemed to present a significant potential harm to the public, licensing usually replaces lesser forms of regulation instead of supplementing them.

The electrical statute provides many exemptions from the requirement that work shall be performed by a licensed electrician. The permitting process is used to establish who is performing what work. It is also used to trigger an inspection to verify that the work was performed to the code adopted by the Board.

Board Composition and Activities

The Board is required to adopt a nationally recognized electrical code for use throughout the state. The Board may amend or modify provisions of the national code for use in Colorado. The current code adopted by the Board is the 1996 edition of the National Electrical Code (NEC). The NEC is a 1,000 page document that details materials, installation methods, approved wiring options, and specialized guidelines and requirements for a wide variety of electrical applications.

The NEC is the most popular code used by state and local electrical code enforcement agencies. It is developed and published by the National Fire Protection Association (NFPA) and is updated every three years. The NFPA membership consists of electricians, contractors, electrical suppliers, fire fighting officials, fire marshals, and various construction related trades and regulatory authorities. The cost of the code book is approximately \$80.00.

The Board meets once each month for one half to one full day. Meetings are well attended by Board members. Attendance by parties not having a specific issue before the Board is rare. There is negligible participation in Board meetings or rule making hearings by members of the general public.

Board meetings follow a fairly standardized format. Each meeting starts with a report by the Program Administrator of license applications and examination results. Any comments received from applicants during the examination process are distributed and discussed. Any license applications that have questionable experience, or documentation of experience, are referred by the Program Administrator to a review committee of the Board. The review committee reports to the Board with a recommendation for each application that has some question as to the qualifications of the applicant. The Board may approve the applicant to sit for the examination, deny the application, or request more information.

The Board may request applicants to provide additional information in person. When the Board denies an application, the applicant may request a personal appearance before the Board to provide additional information or ask for reconsideration. A portion of each Board meeting is set aside for personal appearances by license applicants. The most common reason for an application to be denied is for lack of documentation of experience. Another common reason is determining the equivalency of education, particularly for graduates of foreign schools. Frequently, applicants are able to provide sufficient information during a personal appearance before the Board to satisfy concerns and be allowed to sit for the examination in question.

The Board then considers variance requests. The Board has the ability to approve variances to the electrical code when requested by a permit holder. The party requesting the variance must submit the request as well as the justification and any supporting documentation in writing to the Board. The requesting party is not required to appear before the Board personally, but may make a presentation if he or she believes it is necessary to explain the variance. It is not uncommon for the electrician members of the Board to personally visit a construction site requesting a variance and make a personal report to the Board. The Board also relies on the personal observations of state inspectors on those projects permitted and inspected under the state program.

A portion of each Board meeting is devoted to reviewing complaints. Complaints can be generated by a consumer, a licensee, or an inspector. In reviewing complaints, the Board first determines if it has jurisdiction over the actions alleged in the complaint. Once jurisdiction is established, the Board determines whether the allegation in the complaint would be a regulatory violation if true.

When the Board determines a complaint, if verified, would be a violation, it may either open a formal investigation, by referring the complaint to the Complaints and Investigations (C&I) unit of the Division, or request a response from the respondent. In extreme cases, where the Board believes there may be imminent harm to the public, the Board may request the Attorney General to seek a cease and desist order or injunction.

The Board has adopted a field citation program for inspections. The Board has identified several typical violations discovered during an inspection and established standard fines for those offenses. Inspectors discovering a violation during an inspection issue the citation to the electrician in charge. The Board has established an appeals procedure for citations that will be discussed further in the disciplinary section of this report. The Board receives regular reports on citations issued and appeals to the fines assessed.

The Division currently employs 35.6 full time employees (FTE) to assist the Board in administration and inspection activities. The program is supervised by a .5 FTE Program Administrator. The C&I unit of the Division provides investigatory support. The Department of Law provides legal support to the Board and the Program Administrator as necessary.

The Board is required to adopt fees for registrations, licensing, permitting and inspections. All fees are submitted to the Division Cash Fund to be credited to the Board. All fees are subject to the appropriations process of the General Assembly. Fees are reviewed and adjusted annually. Historically, the fund has operated at a surplus. However, the recent increase in construction in Colorado has resulted in an increase in the number of inspections. The program has operated at a slight deficit for the past several years. Table C details the fund for the past five fiscal years.

TABLE C
ELECTRICAL BOARD FISCAL INFORMATION

Fiscal Year	Revenue	Expenditures	Allocation
1992/93	\$2,171,512	\$2,047,037	\$2,094,137
1993/94	\$2,524,111	\$2,111,504	\$2,136,052
1994/95	\$2,248,522	\$2,269,484	\$2,279,697
1995/96	\$2,434,240	\$2,494,090	\$2,506,222
1996/97	\$2,652,224	\$2,598,568	\$2,568,471

Licensing

The Electrical Act (Act) defines the term electrical contractor and requires the registration of contractors with the Board. The Act specifies that electrical work must be performed by a electrician. A registered apprentice may perform electrical work under the supervision and control of a licensee. Licensees are limited by statute to the supervision of one apprentice at any one time. The registration of apprentices is the responsibility of the licensee. The licensee assumes responsibility for any work performed by the apprentice.

Apprentices are not required to participate in a formal training or education program. Many contractors and unions require participation in formal classroom training as a condition of employment. The Board does not review or approve training programs. There are no requirements beyond licensure of the electrician for the supervision of an apprentice.

A registered apprentice must document four years of experience under a licensee before being qualified to take the journeyman examination. The experience must be in a variety of settings and include at least two years of commercial experience. An apprentice has the option of obtaining a residential wireman license with only two years of experience. Residential electricians are limited to installation, alteration and maintenance of residential electrical systems on one-, two-, three-, and four family dwellings.

Once an apprentice's experience meets the qualifications to take the master, journeyman, or residential examination, he or she must submit an application with the appropriate fees to the Board for approval. Once approved, the applicant submits an additional fee and is scheduled for the examination. The Board has privatized the administration of the examinations with a company that has sites situated in various cities around the state. The Board has developed a computerized examination with a large pool of questions that are randomly inserted into an individual examination. Once an application has been received and approved by the Board an authorization notice is sent to the private company. The applicant may then schedule time to take the exam at his or her convenience. Examinations are graded immediately. If a passing score is achieved, a license is issued at the exam site. In fiscal year 1992/93, the Board had a total of 11,409 licensees. This number has steadily increased every year. The licensing activity of the Board is detailed in Table D below.

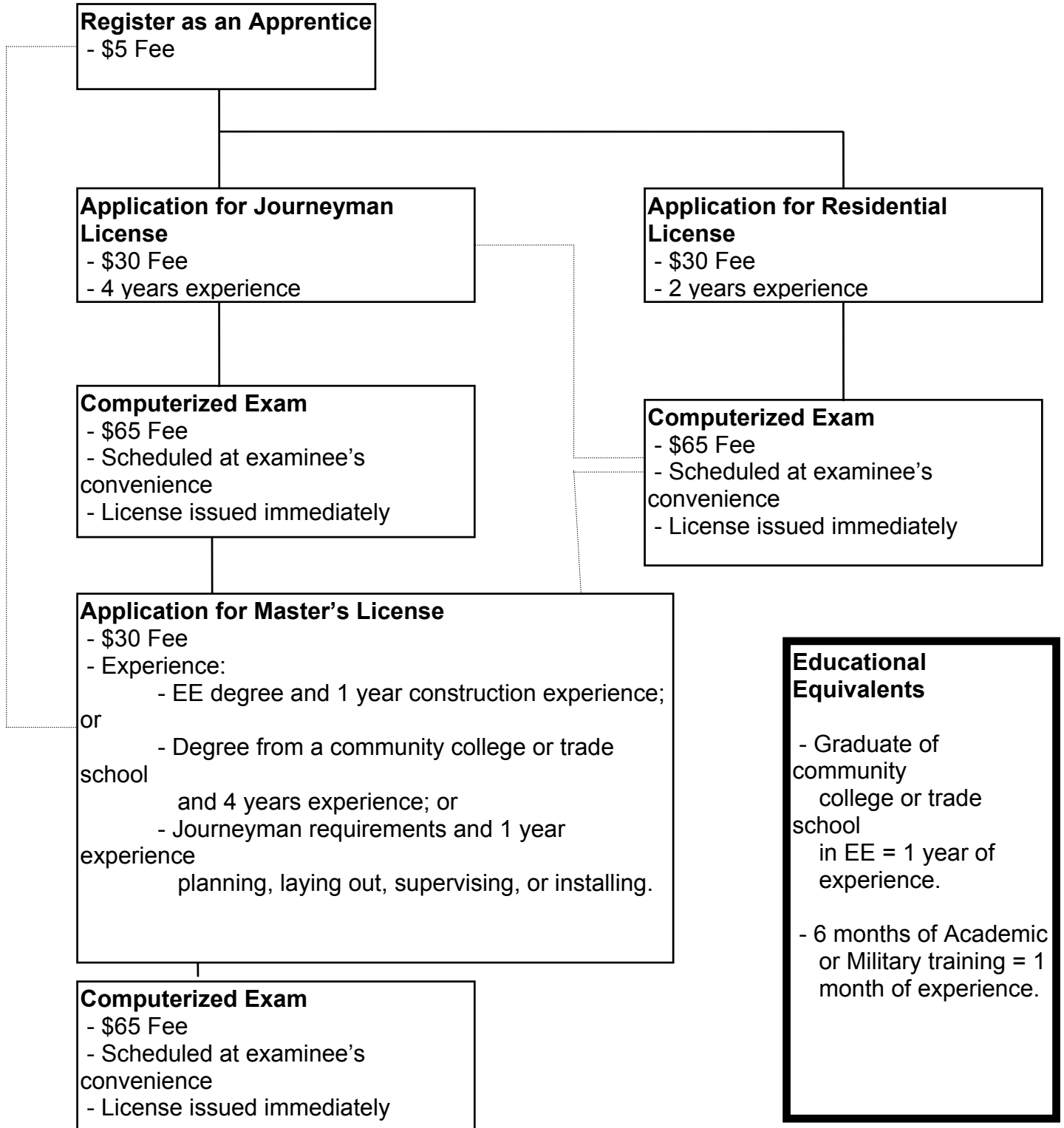
TABLE D
ELECTRICAL BOARD LICENSING STATISTICS

Fiscal Year	Contractors	Master	Journeyman	Residential	Total
1994/95	1,909	3,608	6,493	378	12,388
1995/96	2,204	3,976	7,029	552	13,761
1996/97	2,233	4,013	6,784	551	13,581

Licenses expire every two years and license holders are required by statute to complete an open book examination, which is enclosed with the renewal notice, before a license will be renewed. Questions on the examination are drawn from changes in the NEC or Board modifications, to ensure licensees are familiar with current code requirements.

The Board is required by statute to grant one year of experience toward the residential or journeyman license for a degree in electrical engineering, or graduation from an approved program from a recognized community college or trade school. The Board is required to promulgate regulations for the approval of experience not received under the supervision of a licensee. Alternative experience is limited to one half of the credit necessary for licensure. Board Regulation 5.1 (d) currently allows for one month of experience credit for each six months of experience not obtained under licensed supervision, up to a maximum of one year of experience. Some organizations and individuals interviewed for this report that indicated the credit granted by the Board for alternative experience, including military service, is unnecessarily restrictive.

The licensing procedures of the Board are detailed in the following flow chart:



Complaints and Enforcement

The Board receives approximately 70 complaints each year. Complaints can be generated from consumers, inspectors, or licensees. Of these, some, such as fee disputes or contractual disputes, are dismissed for lack of jurisdiction. Others are dismissed because the Board determines no violation of the Act or regulations exists.

When the Board receives a complaint, it is first reviewed for jurisdiction, once jurisdiction is established, the Board must determine if the allegation contained in the complaint is a violation. If the Board determines a potential violation exists, it has several options. The Board may request a response from the licensee, refer the complaint to the investigations unit, refer to a district attorney, issue a warning letter and dismiss the complaint, refer the complaint to the Attorney General for disciplinary action, or issue a letter of admonition (LOA).

The Board rarely implements any kind of disciplinary action without requesting a response, or initiating an investigation. Licensees are allowed to request a hearing before any disciplinary action is finalized. Disciplinary options available to the Board include LOAs, fines, suspensions, and revocations. The Board and the respondent occasionally agree to disciplinary terms ahead of time that may include conditions outside of normal disciplinary options, such as mandatory education classes. These stipulations are an efficient use of alternative dispute resolution. Table E details complaint dispositions by the Board for the past five fiscal years.

TABLE E
ELECTRICAL BOARD COMPLAINTS AND DISPOSITIONS

Fiscal year	Complaints	Refer AG	LOA	Refer DA	Refer C&I	Stips	Revoke	Close Caution	Dismiss	No Jurisdiction
1992/93	58	5	6	4	5	0	0	7	30	1
1993/94	53	3	14	5	7	1	0	8	11	4
1994/95	75	8	28	5	7	0	1	14	9	3
1995/96	86	7	12	10	2	4	2	14	21	9
1996/97	44	1	0	5	7	0	3	14	4	10

Under the provisions of §12-23-116 and §12-23-118(4), C.R.S., inspectors may issue citations for violations of the statute or regulations to licensees during an inspection or investigation. The Board has established specific guidelines for fines associated with the citation program and has authorized the Program Administrator to negotiate stipulated settlements and hear appeals. This provision was established by the General Assembly in 1994 and was implemented during fiscal year 1995/96. In fiscal year 1995/96, 32 citations were issued totaling \$3,785 in fines, and 120 citations totaling \$15,185 were issued in fiscal year 1996/97. A copy of the citation form and fine schedule is attached as Appendix C.

A major concern in the electrical industry is the practice of electrical work by unlicensed individuals. The Act exempts most low voltage work, such as security system installation, from the licensing requirements as well as some specific projects that could be considered electrical work. Homeowners may perform electrical work on their own property, without a license, provided the work is inspected. Employees of companies may perform electrical work without a license on company property, owned or leased, provided the property is not open to the public. Work performed by company employees, on company property not open to the public, is also exempt from permitting and inspection requirements.

Some industry representatives argue that these exemptions are too broad and more electrical work should come under the requirements of the Act. Not all industry representatives agree, and data was not provided that would support any changes to the exemptions.

It is not uncommon for a homeowner to obtain a permit and hire a handyperson to perform the work. If the work is inspected and done according to code, there is no life safety issue involved. However, the homeowner exemption was created for homeowners to do their own work, not hire it out. There is also a concern about the possibility that an inspector may overlook something. When the work is performed by a licensed professional, there is less likelihood of this being an issue.

A homeowner may perform any electrical work on his or her private property, provided a permit is obtained and an inspection performed. If the property is intended for rental or resale, the owner may only perform routine maintenance. The owner of an industrial building may perform, or have an employee perform, any electrical work on the property, provided it is not regularly open to the public, without obtaining a license, a permit, or having the work inspected.

These permitting and licensing requirements, and associated exemptions, create some scenarios that seem to be inequitable. The owner of a

warehouse may enclose an area for cold storage, and install all of the electrical systems using his/her own employees. If the same employee who wired the cold storage area wanted to convert his house into a duplex, he or she could not obtain a second electrical meter unless he or she hired a licensed contractor to wire the service box, even if everything exceeded code standards.

The homeowner exemption was intended to allow homeowners to make their own decisions regarding electrical work, putting only themselves at risk from improper work. Tenants depend on landlords to make decisions for them. Electrical contractors may argue that landlords will perform substandard work to maintain profits in rental units, therefore requiring work to be performed by licensed electricians is reasonable public protection.

From a practical standpoint, a property owner does not want to put property or tenants at risk. An ethical landlord would not deliberately perform substandard work on a property. In the event of an error, an inspection by a competent electrical inspector will prevent harm to the public. An unethical landlord will perform the work without obtaining a permit or requesting an inspection, even under the current statute.

There are many situations where an individual buys property to repair and sell, either as a hobby or a part-time job. These individuals can and do obtain homeowner permits by listing the property as a residence while the electrical work is being performed. Once the work is complete, building departments have no way to prevent the sale of the property. However, if the property owner is honest, and admits when applying for the permit that the property is intended for sale or rent, the permit will be denied.

The intent of requiring electrical work in public buildings to be performed by licensed electricians is to protect the public. The purpose of inspections is to ensure electrical permitted work is performed to a code that contains standards designed to protect the public. The General Assembly may want to consider expanding the statutory exemptions to allow more flexibility to property owners provided they obtain permits and have all work inspected.

Occasionally, the Board receives a complaint concerning a general contractor obtaining a permit and performing electrical work using unlicensed employees of the construction company. This is a violation of the Act that could potentially put the public at risk. Since the Board is limited to disciplining licensees, these cases are referred to local district attorneys. However, the prosecutions in these situations are very rare.

Permits and Inspections

Because of the many exemptions to the Act and the complexity of the code, industry representatives maintain that inspections are necessary. It is clear that improper installation or design of electrical work can result in public harm. Information previously discussed showed that 2% of the fires in Colorado are caused by faulty installations. It is not known how many of those fires were in buildings wired by licensed professionals. It is the opinion of those in the industry that most electrical fires caused by improper design were not installed or inspected by licensed individuals.

Most electrical work in public places must be permitted and inspected. Colorado allows local jurisdictions to control permitting and inspections, provided they adopt a code at least as restrictive as the state code. According to records of the state inspection program, 29% of the inspections performed on homeowner permits reveal code violations that need to be corrected prior to approval. This compares to a 16% failure rate for projects using licensed electricians. If the correction requires an additional visit by the inspector for a reinspection prior to approval, a \$30 reinspection fee is assessed.

Common deficiencies found during an inspection include: boxes for light fixtures, incorrect receptacle placing, receptacle wired incorrectly, no ground fault circuit interruption protection near sinks, improper grounding, improper receptacle for appliances, unsupported boxes, unapproved materials or methods, and improper working clearances. Inspectors use discretion in either rejecting a job for a deficiency, or requiring it to be corrected while the inspector waits in order to reduce trips. On large projects, it is sometimes possible for an inspector to revisit a portion of the job before leaving the job site.

Permit fees vary according to the cost of the project. Permits are valid for 12 months and may be extended by requesting an extension prior to the expiration of the permit. A copy of the permit application is included as Appendix D. If a project does not receive a final inspection prior to the expiration of the permit, an additional permit may be required. Permit applications may be requested by mail or phone, picked up in person at any state inspection office, and some local building departments that do not perform inspections also stock permit applications. Permit applications are generally processed and mailed within 24 hours of being received. Walk in applications are also accepted at the Denver office of the Board. Table F details permit related fees for the past two fiscal years.

TABLE F
ELECTRICAL PERMIT FEES

Fiscal Year	Permits	Permit fees	Reinspections	Reinspection fees
1995/96	27,323	\$1,962,260	1,630	\$40,750
1996/97	26,219	\$2,197,214	1,295	\$38,850

Large or complex projects require multiple inspections, and a corresponding increase in expenses to the program. A small project will require at least one final inspection and possibly a rough-in and one or more additional inspections. A large commercial project or school is usually completed in stages. It is common for an inspector to combine a rough-in inspection on one portion of the project with another inspection on a portion of the project further along. A project such as a large high school or a mid-sized hospital will require several inspections before the project is completed.

The electrical inspection portion of the program employs three supervising and 30 FTE inspectors. Inspectors are strategically located throughout the state to reduce travel time on inspections. Even by decentralizing the inspectors, some areas of the state argue they are underserved. To minimize delays and inspection expenses, inspectors designate specific days of the week that they will be in certain geographic areas. These days are communicated to contractors in an attempt to consolidate a number of inspections into one trip. Homeowners are informed of the inspection days when they obtain their permit. Regional inspection offices are located in: Alamosa, Bailey, Denver, Canon City, Craig, Durango, Ft. Collins, Glenwood Springs, Grand Junction, Gunnison, La Junta, Montrose, Rifle, Sterling, and Walsenburg. In addition, part-time satellite offices are staffed at regular intervals to provide service to other areas of the state in an efficient manner.

The Division has experienced a dramatic increase in the number of permits issued and inspections performed. As larger and more complex projects are begun, more inspections will be required. Resources devoted to inspections are a concern of the General Assembly, even though the inspection program is cash funded. Table G below details the Electrical Board Permit and Inspection activities for the past five years.

TABLE G
ELECTRICAL PERMIT AND INSPECTION DATA

Fiscal year	Permits	Inspections	Ratio
1992/93	18,642	33,420	1.8
1993/94	23,721	41,789	1.8
1994/95	25,820	46,477	1.8
1995/96	27,323	51,153	1.9
1996/97	26,219	48,586	1.9

The Board recently tested a hand held computer system to report inspection results to the Denver office by modem. This pilot project was conducted during the summer and fall of 1997 by five inspectors. The test inspectors reduced administrative time by an average of three hours per week per inspector, allowing more time in the field to conduct inspections. The remaining inspectors are expected to be trained and using the hand held units by January of 1998.

The efficiency of the inspection program has been called into question in recent years. The Act requires inspections to be performed within three days of being requested. In most cases, this is not a problem. However, there are occasions when this does not occur, usually in more remote areas of the state. In 1994, the General Assembly authorized three additional inspectors to alleviate some of the delays, during the 1997 session, an additional 1.5 FTE inspectors were authorized. Complaints about inspection delays have declined since the additional inspectors assumed duties.

The Office of State Planning and Budgeting has expressed concern about the expenses associated with the inspection program. A major issue is the number of vehicle miles traveled by state inspectors. When a state vehicle is purchased, it has an expected life of six years, or 100,000 miles. Most state vehicles do not exceed the 100,000 mile criterion prior to the six year limit. Electrical inspector vehicles regularly exceed the 100,000 miles in less than four years. The identification and discussion of options to reduce vehicle miles traveled by state electrical inspectors is therefor an additional requirement in this review.

Local jurisdictions have the option of adopting an electrical code, issuing permits, and conducting inspections. Fees for permits are capped by the Act at 15% above the fee established by the Board for state permits. State inspectors inspect public schools regardless of whether there is a local inspection program. In areas of the state with large populations and high rates of construction activity, local governments have opted to implement local permit and inspection programs. Less populated areas of the state use the state program.

State inspectors are responsible for inspecting only public schools in nine counties: Chaffee, Denver, Douglas, Mesa, Otero, Pueblo, Routt, Summit, and Teller, all other inspections are performed by the local jurisdiction. These areas represent the most amount of local control and few state resources are devoted to inspections. Six counties have local inspection in the entire county and most municipalities, state inspectors inspect the remaining municipalities, and all public schools. These counties are Arapahoe, Boulder, Eagle, Jefferson, Pitken and Weld counties. Adams, El Paso, Larimer, and Morgan counties have zoned some of the county for local inspection and some municipalities have local programs. The remaining portions of these counties and municipalities are inspected by state inspectors. Forty four counties in the state do not have any local inspection programs so all inspection must be performed by state inspectors.

Electrical inspections involve a physical observation of a construction project. To be effective, the observation must occur prior at the appropriate stage of the construction process. On small projects, such as a single room remodel in a residence, one inspection may be all that is required. On a large project, inspections must be completed in stages.

One way to improve the inspection process is to reduce travel time. It has been proposed that relocating inspectors to different geographical areas could result in improved efficiency. Electrical inspections are necessitated by the demands of the construction industry. Some areas of the state have historical consistencies in construction activities. However, construction in most areas is not consistent.

Construction permits and inspections are generally cyclical in nature. The overall trend in the state has been an increase in construction. However, specific geographical areas of the state have had periodic booms and busts within the overall increase statewide. Regional offices have been moved to accommodate changes in construction cycles. However, these moves are not without costs, both financial and political. When an office is moved, new facilities must be located and secured. Occasionally, office space is co-located with another state office but this is not always possible depending on where the most central location for the new site is.

Local governments, developers, economic development offices, and building officials usually apply pressure to maintain a regional office in a specific area. Removing an office reduces service to an area, and no person interested in maintaining a high level of service promotes moving an office out of his or her region. While moving a regional office is not always easy, it is done when necessary to address changes in the construction industry.

Another method to reduce travel is to delay inspections in remote areas of the state to consolidate inspections into a single trip. This prevents repeated trips to remote area for a single inspection. This strategy reduces travel, but at a cost to the public.

If inspections are not completed in a timely fashion, the next phase of the construction project could be delayed. These delays ultimately cost the consumer. A good project manager schedules subcontractors to arrive and work in the most efficient order to complete the project within the budget and time frame agreed upon with the client. If an inspection is delayed, the construction schedule could be altered to the point that the budget and/or completion date is impacted.

In point of fact, certain areas of the state are limited to specific time periods for inspections. Contractors in these areas are aware that inspectors will only be available on specific days of the week. These contractors adjust schedules to be prepared for inspections when the inspectors are regularly in the area. Homeowners doing exempt work on a homeowner permit are informed when the permit is issued that inspection service is limited to specific days of the week. This system is not always convenient to the permit holder, but most contractors indicate it is seldom a significant problem.

Inspection Options

Local Control:

One option to reduce state resources devoted to electrical inspections is to eliminate the state electrical inspection program. As part of the Sunset Review, states were surveyed to compare regulatory programs. Eleven of the 25 surveyed do not have any type of a state inspection program. Local inspection programs are implemented in other states using one of two scenarios. The first is to completely eliminate all state inspections and give local jurisdictions the option of adopting an inspection program. The second is to leave inspections to the discretion of the local jurisdiction.

Elimination of the state inspection program would also eliminate the local cap on permit fees. Given the financial incentive offered by unlimited fees, it is reasonable to assume that some jurisdictions would implement an inspection program. However, due to the low volume of construction in some areas of the state, permit fees would have to be established at an exorbitantly high level to cover the costs associated with an inspection program. Therefore, some areas of the state would undoubtedly go without electrical inspections.

The plumbing program is a valid comparison for what could occur if the General Assembly eliminated state inspections and allowed local jurisdictions the option of implementing an electrical program. Colorado has an optional plumbing inspection program. Local jurisdictions may implement their own inspection program or request the state to inspect using state inspectors, at no cost to the local jurisdiction. Because the Plumbing Act does not require inspections to be performed by licensed plumbers, plumbing inspection programs can be less expensive to operate for local jurisdictions. In spite of the lower costs, many jurisdictions use the state program instead of a local program. Fourteen counties have opted not to have any inspection program.

Consideration must also be given to the inspection of public schools. Currently, schools are exempt from local building permit requirements. If the state electrical inspection program is eliminated, no agency will be authorized to inspect schools unless the exemption from local permitting is repealed. Even if the exemption is repealed, unless a local jurisdiction implements a program, schools in these jurisdictions will not be inspected.

Another scenario would be to require local jurisdictions to implement local inspection programs. This would address concerns regarding lack of public protection in areas without programs. However, it is not cost effective to implement a program in some areas of the state because of the low amount of permitting in these areas. This option would be viewed as an unfunded state mandate and would be difficult to implement.

Privatize:

One state in the survey has privatized the inspection process. The State of Delaware contracts with private electrical contractors and engineers to conduct electrical inspections. In the past, Colorado used a combination of state and private contract inspectors. The 1978 Sunset Review of the Board found several problems with this practice and it was discontinued.

Privatizing the inspections could be done for the entire state, or just the remote portions. Privatizing remote areas does not eliminate state expenses or responsibility, it shifts the source of the expense from civil service employees to private contractors.

The 1978 report revealed discrepancies in the quality of inspections performed by contract inspectors. Contract inspectors were found to be inconsistent in the application of inspection procedures and in code interpretation. A comparison of inspections revealed a 3.7 % rejection rate for contract inspectors compared to a 11% rate for civil service inspectors. Several factors were cited in the report as possible causes for the inconsistencies, including poor supervision in remote areas and lower than prevailing wages for inspectors.

One possible option that may allow privatization would be to eliminate the state inspection program completely, and require contractors and homeowners to contract with qualified private inspectors to inspect electrical work. The state would test and certify inspectors, but not be involved in contracting the inspection process. This option would be subject to legal challenges. Since the entire state inspection program is being eliminated, and the state is not contracting for services, the challenge may not be successful.

There are other factors to be considered before implementing a private inspection program. Some centralized agency would still have to issue permits and track inspections. Without a centralized inspection program, consistency of inspections will become an issue. An appeals procedure would have to be implemented to address variations in code interpretations. The cost of the appeals process would have to be passed on to licensees through the renewal fees. It is very likely this scenario will increase costs to consumers in many parts of the state.

Because of the low volume of inspections in some parts of the state, inspections could become cost prohibitive because of travel expenses. Many areas could not support a full-time inspector. It is possible that a local electrical contractor could be qualified as an inspector. This possibility presents some ethical questions regarding conflict of interest. An inspector who is also an electrical contractor in a local area will be inspecting his or her own work, or that of a competitor. This possibility raises questions about impartiality and objectivity.

Risk-Based Inspections:

The current inspection program requires an inspection on all permitted jobs. There is no analysis of the risk associated with the electrical work, or the historical rejection rate of the contractor. Risk-based inspections could be implemented using project size, past performance of the permit holder, or likelihood of detecting a code violation. Any criteria used to evaluate the risk of not inspecting an electrical installation is going to have some drawbacks.

If risk is defined in terms of those projects that could impact the highest number of people, then large projects would be subject to the highest level of scrutiny. Projects such as large hotels, and office or apartment complexes, which serve large concentrations of people, would be subject to inspections. However, most large projects are in metropolitan areas with local inspection programs, so this approach would leave most of the state with the same inspection dilemma currently being discussed. In addition, most large projects have internal quality control programs, so code violations are not as common as those in smaller projects.

Large projects also generate the highest permit fees and the most number of inspections. Eliminating or reducing the inspections on large projects could allow inspectors to perform more inspections at other sites, possibly reducing construction delays in remote areas of the state. However, because these large projects are usually in areas that are easily accessible to inspectors, significant reductions in miles traveled will not be achieved.

Inspections could be based on some criteria used to identify those projects with the greatest possibility of being rejected for code violations, instead of the highest number of people exposed to potential harm. A review of the inspection rejections revealed that 29% of the projects permitted by nonlicensed homeowners were found to require corrections, compared to 16% for permits issued to licensed electricians. It was also revealed that these projects required more travel time in relation to inspection time than commercial inspection projects.

It could be argued that large projects need fewer inspections, because of the smaller percentage of rejections, and that the public would be better protected by devoting more resources to inspecting smaller projects. Implementation of this type of an inspection policy would probably result in an increase in the expenses associated with inspections, since smaller projects are the most resource intensive.

A innovative approach may be to base inspections on past history of the permit holder. A licensee with a history of inspections could be granted the ability to self-certify code compliance in some circumstances. This option has been used in other programs, but not in association with a construction project that has many variables. Usually, self-certification programs contain substantial penalties for inaccurate reporting or false certifying. It is unlikely that electricians would be willing to accept the responsibility for certifying that an installation is completely performed according to code.

A major concern with this option is the quality assurance aspect. Inspectors are the final quality assurance check to verify installations are performed in accordance with the code. There is a risk in assuming that since a electrical contractor has performed to code in the past, the contractor will continue to do so without oversight in the future. There is also the possibility of the general contractor or developer applying pressure on the electrical contractor to cut corners if there was no possibility of a failed inspection.

Some type of periodic inspections would have to be conducted to ensure the contractor is maintaining high standards of compliance with the code. Accountability becomes an issue. If an error goes undetected until the job is completed, who is responsible? If the error results in injury or death at some point in the future, is there liability on the contractor?

Encourage more voluntary local programs.

An increase in the areas of the state with local electrical programs results in a corresponding decrease in the area that the state has to inspect. The less area the state inspects, the fewer miles traveled.

The major impediment to local programs is the cost associated with operating a permit and inspection program. Fees associated with the program must be sufficient to cover the cost of developing permit procedures, maintaining records, clerical and professional personnel, vehicles, office space and equipment. In small jurisdictions, the number of permits issued on an annual basis does not justify the expense associated with the program.

If several small areas grouped together to form a regional building or electrical inspection department, economies of scale may justify the creation of a local program. Regional building departments have been created in some areas of the state. There are advantages to both the local governments and to contractors in the area. Local governments have greater control over the inspection process. When service is based locally, response times are generally quicker. Construction delays resulting from untimely inspections should be fewer in areas with local programs.

However, if the area the regional program inspects becomes too large, the same travel issues that plague the state program will become an issue.

Local jurisdictions frequently cite the 15% restriction on permit fees as a barrier to operating a program. The Board establishes permit fees annually at the lowest level necessary to fund the anticipated program expenses. Local jurisdictions may charge less than the state fee (and some do), but may not charge more than 15% above the state fee. If the 15% fee cap were raised, some jurisdictions may be able to justify a local program. However, some jurisdictions may use this as an excuse to increase fees. Ultimately, higher fees are paid by the consumer. In fact, many contractors invoice fees directly to the customer as a pass through expense.

The General Assembly should consider some type of incentive to encourage local jurisdictions to form regional building departments. The formation of regional building departments in urban areas of the state would not reduce the travel expenses for state inspectors. In order for regional departments to qualify for the incentives, they would have to be based in counties with smaller populations.

Issues

In conducting the Sunset Review, interviews were conducted with Board members, Division staff, state and local inspectors, local government representatives and various trade organizations. Issues identified by individuals and organizations are identified by statutory citation and summarized below:

§12-23-106, C.R.S.

Definition of electrical engineering degree. The Board is required to give experience credit for degrees from a college or university in electrical engineering. There is no requirement that the applicant be registered as a professional engineer in Colorado. The Board routinely grants credit for degrees earned at colleges accredited by recognized United States accreditation organizations.

The Board is not qualified to evaluate the equivalency of a foreign degree. Unless the applicant applies to the Board of Engineers and Land Surveyors for licensing, that board has no jurisdiction to make an equivalency evaluation. The General Assembly should clarify its intent in allowing experience credit for an electrical engineering degree and either limit the credit to a degree from a United States program, or require the Engineering Board to make an equivalency determination.

§12-23-109, C.R.S.

The Board is now authorized to issue a license by endorsement to licensees of another jurisdiction, provided the license is in good standing and the jurisdiction has licensing requirements as least as restrictive as Colorado's. Some industry representatives believe the Board should be authorized to enter into reciprocity agreements.

A reciprocity agreement is an agreement between two or more licensing jurisdictions to accept each jurisdiction's licenses. Licensees in one jurisdiction could work in another jurisdiction without complying with all

procedures for a new license in the reciprocating jurisdiction. Reciprocal agreements have some benefit to licensees. An individual licensed in one jurisdiction does not have the expense of applying for multiple licenses and tracking different renewal dates. Reciprocal agreements depend upon the cooperation of other jurisdictions in enforcement concerns.

Endorsement does not depend upon a formal agreement. If an applicant is qualified for licensure, the applicant is licensed as soon as possible, regardless of the acceptance of the Colorado license in another jurisdiction. This report does not recommend changes to the current standard of recognizing licenses from another jurisdiction.

§12-23-110, C.R.S.

Eliminate the provision for temporary master licenses. This provision was implemented when the Board offered the examination on a monthly bases. The intent was to allow applicants who met all the qualifications for licensure to practice as a licensee until the examination was completed. The examination is now offered six days per week at various sites statewide. The temporary license is no longer necessary except in rare situations when a contractor losses the services of the registered master. In these situations, the contractor should be allowed to complete permitted work using the services of licensed journeyman. However, until a new master licensee is registered, no new permits should be issued to the contractor.

§12-23-110.5, C.R.S.

This is one of the more controversial areas of the electricians licensing program. This section of the statute requires contractors to register an apprentice within 30 days of initial employment. It prohibits apprentices from performing work that would require a license except under the direct supervision of a licensed professional. Any licensed journeyman or master may supervise one apprentice. A licensed residential wireman may supervise one apprentice only on one-, two-, three-, and four family dwellings.

The one to one apprentice to journeyman ratio is considered to be overly restrictive by some members of the industry. In the last legislative session the General Assembly considered a bill to increase the ratio. Arguments on both side of the issues were considered. Debate on the issue resembled a labor and management dispute. Union electricians and contractors opposed the bill, non-union contractors supported the bill. The bill did not pass.

Proponents of increasing the ratio argue that the demand for trained electricians in Colorado and nationally has created a labor shortage. A survey conducted for the National Center for Construction Education and Research in 1996 showed a shortage in skilled construction workers in a variety of trades. Electricians were shown to be one of the trades with the most severe shortages. One factor in the shortage, according to proponents is the restrictive one to one ratio. In August of 1996 Colorado had a total of 11,545 licensed electricians and 5,963 registered apprentices. By January of 1997, those numbers had increased to 11,852 licensed electricians and 6,666 registered apprentices. Industry representatives maintain the demand for skilled tradespeople is still not being met.

Opponents of the ratio change do not disagree that there is shortage of licensed electricians. It is the responsibility of a journeyman supervising an apprentice to train the apprentice in the trade and be responsible for all work performed by the apprentice. Increasing the ratio will decrease the training time and supervision devoted to an individual apprentice.

To support their argument for increasing the ratio, proponents point out that other states have higher ratios than Colorado, allowing more apprentices into the workforce. They cite lower worker's compensation premiums in states with higher ratios as an indicator that higher ratios are safe. Colorado has had one of the highest worker's compensation insurance rates in the country. In 1992, the General Assembly addressed this issue by passing SB 92-108. This major worker's compensation legislation has resulted in significant declines in Colorado's worker's compensation rates.

However, it was discussed during the debate for SB92-108 that it would take years for the full impact of the cost reduction measures to be realized. It was also learned during the bill debate that Colorado had one of the more generous compensation packages in the nation, a major factor in calculating a premium rate. Statistics comparing worker's compensation insurance rates for states with various apprenticeship ratios are meaningless without detailed analysis of the benefits package, claims history, worker days lost to injury, and other claims information. This data was requested, from proponents of the ratio change, but was not supplied for this review.

Opponents of the ratio assert that many contractors use apprentices as a source of inexpensive labor. Increasing the apprenticeship ratio will allow these contractors to underbid contractors who maintain higher standards, thus compromising public safety. If the ratio is increased, the journeyman will still be responsible for all work performed by an apprentice. All work performed by both the apprentice and the journeyman are subject to an inspection. While inspectors do occasionally miss a code violation, the inspection process in Colorado has a history of protecting the public.

Apprentices are not required to participate in a formal training program. When apprentices apply for the journeyman license, they sometimes have difficulty documenting experience in the required practice settings. Apprentices working for contractors or unions with formal training programs generally have less problems documenting experience. Applicants who have experience combined with formal training programs generally have a higher success rate on the examination also.

Most formal training programs require classroom training in addition to on the job training. Apprentices are usually required to attend classes in the evenings. Some contractors make provisions for apprentices to attend classes during normal working hours.

This review attempted to obtain data related to electrical fires in states with higher ratios for apprentice supervision. The NFRS has fire data for most states, however, does not separate data for fires caused by electrical installations. Individual state fire marshals were contacted, however, data obtained could not be considered reliable.

If reliable data is obtained, and the General Assembly does support an increased apprentice ratio, care must be given to ensure supervision is adequate. Factors to consider are: the experience of the licensee, the type of job being supervised, the experience of the apprentices, and the disciplinary history of the contractor. Formal training for both the licensee supervising the apprentices and the apprentices should be mandatory.

RECOMMENDATIONS

Recommendation 1: Continue the regulation of electricians and electrical contractors by the Electrical Board.

Summary: Improperly installed and maintained electrical work poses a potential danger to the health, safety, and welfare of the public. The regulation of those individuals and firms responsible for design, installation, alteration, and maintenance of electrical systems will serve to reduce the likelihood of electrical fires, electrical shocks, and loss of productivity or property damage due to substandard electrical work.

Discussion: Each year in Colorado, electrical fires account for dozens of injuries and can be blamed for at least one death. Property damage directly attributable to electrical fires exceeds \$2 million each year. Colorado is slightly higher than the national average for the ratio of electrical fires to total fires at 6.5%. However, the percentage of electrical fires resulting from improper design or installation is less than 2% of the total number of electrical fires.

It is clear from the evidence reviewed for this report that there are dangers associated with electricity. The high potential for public harm and the apparent success of the current licensing program in protecting the public support a recommendation for licensing, the highest level of regulation.

A comparison with other states found that there is very little consistency in regulatory programs. Oregon has 17 classifications for licensed electricians, Kansas does not even license electricians at the state level. Some states require formal education, experience and testing to be licensed as an electrical contractor. California does not require any experience or education to obtain a electrician license, but devotes excessive resources to inspection programs.

The next issue concerns the way in which the licensing program should be administered. The current licensing authority is a nine member board representing the regulated industry, the public, building officials, contractors, and electric utilities.

Many states operate licensing programs using an administrative model, either with or without an advisory board. A single decision maker in an administrative model can be more efficient than a board representing a variety of interests. Unlike some professions or occupations, national standards are lacking in the electrical field. It is difficult to compare licensing standards from state to state in order to grant licenses by endorsement. Because of the variety of methods in which experience can be obtained, it is also difficult to standardize experience requirements. The expertise and experience that the members of the board can draw upon are valuable in ensuring that licensing standards are established at levels sufficient to protect the public, but not to restrict entry to the market.

Recommendation 2: Continue the inspections of electrical work by licensed inspectors.

Summary: The inspection of electrical work, particularly at the initial installation stage, is a cost effective regulatory measure. Electrical installations are complex. Having a formal quality control program is a proactive measure to reduce the risk inadvertent errors in workmanship.

Discussion: Actual data on electrical fires was difficult to obtain on a state by state basis. However, interviews with various state fire marshals, or their equivalent, provided a consensus opinion that states with both licensing and inspection programs have lower risks of public harm.

The Insurance Information Service (ISO) is an organization that provides actuarial services to the insurance industry. ISO in the process of implementing a program to evaluate municipalities nationwide for the purpose of establishing a property damage risk factor. This risk factor will be used by insurance company actuaries to estimate potential losses and calculate insurance premiums.

The risk factor is arrived at by evaluating a number of variables. Two of the variables that are relevant to this discussion are the licensing of electricians and the qualifications of electrical inspectors. High standards for licensure, combined with high qualifications for inspectors will result in a lower risk factor. This low risk factor will result in lower insurance premiums. The lower premiums have a direct correlation to the lower potential for loss associated with an effective regulatory program.

Continuing inspections, particularly by licensed inspectors, is a more expensive option than other states have chosen. The state inspection program, while it is cash funded, has been a source of controversy in the legislature for several years.

Areas of the state that are efficient to serve are being covered by local programs. Areas of the state that have low population bases and low construction levels are served by the state program. This results in state inspectors devoting valuable inspection time to travel to remote areas of the state. Options should be explored to shift responsibility for inspections.

Recommendation 3: Expand the property owner exemption to allow property owners to perform electrical work on any one or two family dwelling provided it is permitted and inspected.

Summary: The limitation on the amount of electrical work a property owner may perform on his or her private property is unnecessarily restrictive. Many property owners, while unlicensed, are competent to perform a variety of types of electrical work, up to and including setting up a single family residence for initial electrical service. The inspection process provides an adequate safeguard for the public.

Discussion: The issue to consider when property owners perform their own work, is not the person performing the work, but whether the work is safe. Industry representatives may argue that homeowners do not always follow the state electrical code when performing electrical work. Homeowner permits are allowed under current law. It is a fact that homeowner permits are almost twice as likely to be rejected upon inspection as are contractor permits. However, the purpose of the inspection is to ensure compliance with the state electrical code, and most homeowner permits pass when reinspected.

Electrical work on property that is for rent or sale by a private party can also be performed in compliance with the state electrical code. As long as the work is inspected and is found to be in compliance with the state electrical code, safety is not an issue. It is self-serving and unnecessarily restrictive to maintain that only licensed electricians can perform electrical services to the standards of the state electrical code.

According to a recent real estate report single family residences resell every seven years. This means that the house having electrical work performed under a homeowner permit today is more than likely going to be sold in the future. The idea that work performed under a homeowner permit is only going to impact the current homeowner is, therefore, not valid.

Recommendation 4: The General Assembly should clarify how the Board grants experience credit for education.

Summary: The Board is required to credit one year of experience toward qualification for a residential, journeyman, or master license for a degree from a recognized trade school or community college program. The Board is required to credit one year of experience towards a residential or journeyman license, or four years of experience toward a master license for a degree in electrical engineering from an accredited school. The Board does not have the expertise to evaluate foreign equivalents for electrical engineering degrees.

Discussion: It is inconsistent that the statute requires a graduate from a college or university with a degree in electrical engineering to obtain three years of experience to qualify for the journeyman examination but only one year of experience to qualify for the master examination. Since the master license is a higher level, it is unlikely that an electrical engineer would ever apply for the journeyman examination.

Two larger issues involve education credits for electrical experience. The Board is required to give credit for a degree in electrical engineering if it is obtained from an accredited college or university. The statute does not define which accrediting agency a school must be accredited through. The Board has accepted accreditation by many nationally recognized accrediting agencies. However, these agencies do not generally accredit schools in foreign countries.

Equivalent degrees are accepted in other licensing programs requiring degrees in higher education. The Board of Engineers and Land Surveyors reviews transcripts and course descriptions to evaluate foreign degrees for equivalency when considering an application for registration as a professional engineer. The Electrical Board does not have the expertise to evaluate foreign degree equivalencies.

In dealing with the foreign school accreditation issue, the Board will approve an application for a master electrician license if the applicant has a degree from a foreign country and one year of documented experience. There is some question about whether this was the intent of the General Assembly when the education alternative was established. If it was, then the language in §12-23-106 (1) C.R.S., should be amended to read "...graduate electrical engineer from a college or university..." deleting the term "accredited". If this was not the intent, then the General Assembly should require the Board to use the services of a recognized agency to establish equivalency. Any fees associated with establishing equivalency should be paid by the applicant.

The second issue related to education credit for experience, is for those individuals who attend a college or university and do not receive a degree. An individual who is forced to leave college before obtaining a degree in electrical engineering cannot receive any experience credit. However, a graduate of an approved trade school can receive one year of experience credit.

A case can also be made that some educational programs may provide education and experience that could be equivalent to more than one year of electrical experience. The Board should be allowed greater flexibility to grant equivalent experience for a broader range of formal education options.

Recommendation 5: Repeal the provision in §12-23-110, C.R.S., for the issuance of a temporary residential, journeyman, or master permit.

Summary: The provision for temporary permits is no longer necessary because of changes in the testing procedure for license applicants.

Discussion: The statute allows the Board to issue a temporary permit to an applicant who provides sufficient evidence to the Board that he or she has the experience required to take the journeyman or master examination. These temporary permits are valid for 30 days.

The provision for a temporary permit was intended to allow qualified applicants to practice at the licensed level while waiting for the next opportunity to take the appropriate examination. The Board currently contracts with a private vendor to offer the examination six days per week at various locations around the state. The examination is computerized and results are available immediately.

Issuing a temporary permit could allow someone who has failed the licensing examination to practice at as a licensee when he or she is not qualified. There is some concern that eliminating temporary permits will impair the

ability of an electrical contractor to continue projects if the registered master terminates employment for some reason. An exemption to the requirement that a contractor employ a master electrician should be included to complete projects permitted at the time the registered master terminated employment. However, the contractor should not be authorized to obtain new permits until a master is registered to the company.

Recommendation 6: Allow qualified regional building departments that perform electrical inspections to exceed the 15% cap on permit fees.

Summary: Local jurisdictions that adopt a local electrical code and implement a permit and inspection program may charge no more than 15% above the permit fee established by the Board. If the local jurisdictions were allowed to charge more for the permit fee, it is possible that more jurisdictions would adopt programs, decreasing the large geographic area covered by state inspectors.

Discussion: The state inspection program covers large areas of the state, requiring an inefficient use of state resources to travel to job sites. Local jurisdictions have the option of adopting local programs, but it is not cost effective for most smaller jurisdictions to do so.

One deterrent to local jurisdictions is the statutory restriction on permit fees. In order for a local program to be cost effective, permit fees must be established at a level sufficient to recover all costs associated with the program.

Regional building departments in some areas of the state have been able to achieve economies of scale, thus establishing fees that are below the level established by the Board. These departments, in Pueblo and El Paso Counties, are in areas with relatively large populations and corresponding high levels of construction activity.

If an increase in the fee cap to 30% of the Board fee was permitted for rural areas of the state, some jurisdictions with marginal construction activity may be encouraged to implement a local program. If the fee cap increase was limited to areas encompassing more than one jurisdiction, larger areas of the state would be eliminated from the state program. This would result in a decrease in the amount of travel by state inspectors.

APPENDICES

Sunset Statutory Evaluation Criteria

- (I) Whether regulation by the agency is necessary to protect the public health, safety and welfare; whether the conditions which led to the initial regulation have changed; and whether other conditions have arisen which would warrant more, less or the same degree of regulation;
- (II) If regulation is necessary, whether the existing statutes and regulations establish the least restrictive form of regulation consistent with the public interest, considering other available regulatory mechanisms and whether agency rules enhance the public interest and are within the scope of legislative intent;
- (III) Whether the agency operates in the public interest and whether its operation is impeded or enhanced by existing statutes, rules, procedures and practices and any other circumstances, including budgetary, resource and personnel matters;
- (IV) Whether an analysis of agency operations indicates that the agency performs its statutory duties efficiently and effectively;
- (V) Whether the composition of the agency's board or commission adequately represents the public interest and whether the agency encourages public participation in its decisions rather than participation only by the people it regulates;
- (VI) The economic impact of regulation and, if national economic information is available, whether the agency stimulates or restricts competition;
- (VII) Whether complaint, investigation and disciplinary procedures adequately protect the public and whether final dispositions of complaints are in the public interest or self-serving to the profession;
- (VIII) Whether the scope of practice of the regulated occupation contributes to the optimum utilization of personnel and whether entry requirements encourage affirmative action;
- (IX) Whether administrative and statutory changes are necessary to improve agency operations to enhance public interest.

Statute

12-23-100.2. Legislative declaration.

The general assembly hereby declares that the state electrical board shall be specifically involved in the testing and licensing of electricians and shall provide for inspections of electrical installations where local inspection authorities are not providing such service.

12-23-101. Definitions.

As used in this article, unless the context otherwise requires:

(1) "Apprentice" means a person who is required to be registered as such under section 12-23-110.5 (3) (a), who is in compliance with the provisions of this article, and who is working at the trade in the employment of a registered electrical contractor and is under the direct supervision of a licensed master electrician, journeyman electrician, or residential wireman.

(1.2) "Board" means the state electrical board.

(1.5) "Electrical contractor" means any person, firm, copartnership, corporation, association, or combination thereof who undertakes or offers to undertake for another the planning, laying out, supervising, and installing or the making of additions, alterations, and repairs in the installation of wiring apparatus and equipment for electric light, heat, and power. A registered professional engineer who plans or designs electrical installation shall not be classed as an electrical contractor.

(1.7) "Electrical work" means wiring for, installing, and repairing electrical apparatus and equipment for light, heat, and power.

(2) "Journeyman electrician" means a person having the necessary qualifications, training, experience, and technical knowledge to wire for, install, and repair electrical apparatus and equipment for light, heat, power, and other purposes, in accordance with standard rules and regulations governing such work.

(3) "Master electrician" means a person having the necessary qualifications, training, experience, and technical knowledge to properly plan, lay out, and supervise the installation and repair of wiring apparatus and equipment for electric light, heat, power, and other purposes in accordance with standard rules and regulations governing such work, such as the national electrical code.

(3.5) "Permanent state highway tunnel facilities" means all permanent state highway tunnels, shafts, ventilation systems, and structures and includes all structures, materials, and equipment appurtenant to such facilities. Said term includes all electrical equipment, materials, and systems to be constructed, furnished, and installed as part of the final construction features specified by the applicable contract plans and specifications or by the national electrical code. For the purposes of this article and article 20 of title 34, C.R.S., such state highway tunnel facilities shall be deemed to be mines during the construction of such facilities.

(4) "Residential wireman" means a person having the necessary qualifications, training, experience, and technical knowledge to wire for, and install, electrical apparatus and equipment for wiring one-, two-, three-, and four-family dwellings.

(5) Repealed.

12-23-102. State electrical board.

There is hereby established a state electrical board, which shall consist of nine members appointed by the governor, with the consent of the senate, who shall be residents of the state of Colorado. Two of said members shall be electrical contractors who have masters' licenses, two shall be master or journeymen electricians who are not electrical contractors, two shall be representatives of private, municipal, or cooperative electric utilities rendering electric service to the ultimate public, one shall be a building official from a political subdivision of the state performing electrical inspections, one shall be a general contractor actively engaged in the building industry, and one shall be appointed from the public at large. Effective July 1, 1975, all members shall serve for three-year terms, but, of the appointments to be made effective July 1, 1975, one master or journeyman electrician shall be appointed for a three-year term, one electric utility member shall be appointed for a three-year term and one for a two-year term, and one new at-large member shall be appointed for a three-year term. All other present members shall serve the terms for which originally appointed, but their successors shall be appointed for three-year terms. All appointees shall be limited to two full terms each. Any vacancy occurring in the membership of the board shall be filled by the governor by appointment for the unexpired term of such member. The governor may remove any member of the board for misconduct, incompetence, or neglect of duty.

12-23-102.5. Repeal of article.

This article is repealed, effective July 1, 1998. Prior to such repeal, the state electrical board shall be reviewed as provided for in section 24-34-104, C.R.S.

12-23-103. Board under department of regulatory agencies.

The state electrical board and its powers, duties, and functions are transferred, effective July 1, 1978, by a type 1 transfer, as such transfer is defined in the "Administrative Organization Act of 1968", article 1 of title 24, C.R.S., to the department of regulatory agencies and allocated to the division of registrations.

12-23-104. Oath - meetings - powers.

(1) (a) The board, annually in the month of July, shall elect from the membership thereof a president, vice-president, and secretary-treasurer. The board shall meet at least once a month and at such other times as it deems necessary.

(b) A majority of the board shall constitute a quorum for the transaction of all business.

(2) In addition to all other powers and duties conferred or imposed upon the board by this article, the board is authorized to:

(a) Adopt, and from time to time revise, such rules and regulations not inconsistent with the law as may be necessary to enable it to carry into effect the provisions of this article. In adopting such rules and regulations, the board shall be governed when appropriate by the standards in the most current edition of the national electrical code or by any modifications to such standards made by the board after a hearing is held pursuant to the provisions of article 4 of title 24, C.R.S. These standards are adopted as the minimum standards governing the planning, laying out, and installing or the making of additions, alterations, and repairs in the installation of wiring apparatus and equipment for electric light, heat, and power in this state. A copy of such code shall be kept in the office of the board and open to public inspection. Nothing contained in this section shall prohibit any city, town, county, or city and county from making and enforcing any such standards that are more stringent than the minimum standards adopted by the board, and any city, town, county, or city and county which adopts such more stringent standards shall furnish a copy thereof to the board. The standards adopted by the board shall be prima facie evidence of minimum approved methods of construction for safety to life and property. The affirmative vote of two-thirds of all appointed members of the board shall be required to set any standards that are different from those set forth in the national electrical code. If requested in writing, the board shall send a copy of newly adopted standards and rules and regulations to any interested party at least thirty days before the implementation and enforcement of such standards or rules and regulations. Such copies may be furnished for a fee established pursuant to section 24-34-105, C.R.S.

(b) Adopt a seal, and the secretary shall have the care and custody thereof;

(c) Register and renew the registration of apprentices and qualified electrical contractors and examine, license, and renew licenses of journeymen electricians, master electricians, and residential wiremen as provided in this article;

(d) Subpoena records and documents and compel the attendance and testimony of witnesses pursuant to an investigation or a hearing of the board;

(e) Cause the prosecution and enjoinder, in any court of competent jurisdiction, of all persons violating this article and incur necessary expenses therefor. When seeking an injunction, the board shall not be required to prove that an adequate remedy at law does not exist or that substantial or irreparable damages would result if an injunction is not granted.

(f) Inspect and approve or disapprove the installation within this state of electrical wiring, apparatus, or equipment for electrical light, heat, or power according to the minimum standards in the national electrical code or prescribed in this article;

(g) Review and approve or disapprove requests for exceptions to the national electrical code in unique construction situations where a strict interpretation of the code would result in unreasonable operational conditions or unreasonable economic burdens, as long as public safety is not compromised;

(h) Conduct hearings in accordance with the provisions of section 24-4-105, C.R.S.; except that the board may appoint an administrative law judge pursuant to part 10 of article 30 of title 24, C.R.S., to conduct such hearings;

(i) Examine persons regulated by the board pursuant to this article for the renewal of a license or registration. Examination shall be by a brief multiple choice exam to be included in the renewal notice process and shall be an open book exam.

12-23-104.5. Program administrator.

The director of the division of registrations may appoint a program administrator pursuant to section 13 of article XII of the state constitution to work with the board in carrying out its duties under this article.

12-23-105. Electrician must have license - control and supervision.

(1) No person shall engage in or work at the business, trade, or calling of a journeyman electrician, master electrician, or residential wireman in this state until he has received a license from the division of registrations upon written notice from the board or the program administrator, acting as the agent thereof, or a temporary permit from the board, the program administrator, or his agent.

(2) A residential wireman shall not perform electrical work of a type which is beyond the authorization of the license held.

12-23-106. License requirements.

(1) An applicant for a master electrician's license shall furnish written evidence that he is a graduate electrical engineer of an accredited college or university and has one year of practical electrical experience in the construction industry, or that he is a graduate of an electrical trade school or community college and has at least four years of practical experience in electrical work, or that he has had at least one year of practical experience in planning, laying out, supervising, and installing wiring, apparatus, or equipment for electrical light, heat, and power beyond the practical experience requirements for the journeyman's license. Each applicant for a license as a master electrician shall file an application on forms prepared and furnished by the board, together with the examination fee provided in section 12-23-112 (1). The board, not less than thirty days prior to a scheduled written examination, shall notify each applicant that the evidence submitted with his application is sufficient to qualify him to take such written examination or that such evidence is insufficient and the application is rejected. In the event that the application is rejected, the board shall set forth the reasons therefor in the notice to the applicant and shall forthwith return such applicant's examination fee. The place of examination shall be designated in advance by the board, and examinations shall be held not less often than twice a year and at such other times as, in the opinion of the board, the number of applicants warrants.

(2) (a) An applicant for a journeyman electrician's license shall furnish written evidence that he has had at least four years' apprenticeship in the electrical trade or four years' practical experience in wiring for, installing, and repairing electrical apparatus and equipment for light, heat, and power and shall further establish that at least two of such years' experience has been in commercial or industrial work.

(b) Any applicant for such license shall be permitted to substitute for required practical experience evidence of academic training in the electrical field which shall be credited as follows:

(I) If he is a graduate electrical engineer of an accredited college or university or the graduate of a community college or trade school program approved by the board, he shall receive one year of work experience credit.

(II) If he has academic training, including military training, which is not sufficient to qualify under subparagraph (I) of this paragraph (b), the board shall provide work experience credit for such training according to a uniform ratio established by rule and regulation.

(c) Any application for a license and notice to the applicant shall be made and given as provided for in the case of a master electrician's license.

(3) (a) An applicant for a residential wireman's license shall furnish written evidence that he has at least two years of accredited training or two years of practical experience in wiring one-, two-, three-, and four-family dwellings.

(b) Any applicant for such license shall be permitted to substitute for required practical experience evidence of academic training in the electrical field which shall be credited as follows:

(I) If he is a graduate electrical engineer of an accredited college or university or the graduate of a community college or trade school program approved by the board, he shall receive one year of work experience credit.

(II) If he has academic training, including military training, which is not sufficient to qualify under subparagraph (I) of this paragraph (b), the board shall provide work experience credit for such training according to a uniform ratio established by rule and regulation.

(c) Any residential wireman's license issued under this section shall be clearly marked as such across its face.

(4) (a) Any examination which is given for master electricians, journeymen electricians, and residential wiremen shall be subject to board approval. The board, or its designee, shall conduct and grade the examination and shall set the passing score to reflect a minimum level of competency. If it is determined that the applicant has passed the examination, the division of registrations, upon written notice from the board or the program administrator, acting as an agent thereof, and upon payment by the applicant of the fee provided in section 12-23-112, shall issue to the applicant a license which shall authorize him to engage in the business, trade, or calling of a master electrician, journeyman electrician, or residential wireman.

(b) All license and registration expiration and renewal schedules shall be in accord with the provisions of section 24-34-102, C.R.S. Successful completion of an examination as authorized in section 12-23-104 (2) (i) is required as a prerequisite for renewal of a license or registration. Fees in regard to such renewals shall be those set forth in section 12-23-112.

(c) Any license that has lapsed shall be deemed to have expired. In such instances, the board is authorized to require the licensee to demonstrate competency after two years if the board determines that such a showing is necessary and to require the payment of the appropriate fee.

(5) (a) No person, firm, copartnership, association, or combination thereof shall engage in the business of an electrical contractor without having first registered with the board. The board shall register such contractor upon payment of the fee as provided in section 12-23-112, presentation of evidence that the applicant has complied with the applicable workers' compensation and unemployment compensation laws of this state, and satisfaction of the requirements of paragraph (b) or (c) of this subsection (5).

(b) If either the owner or the part owner of any firm, copartnership, corporation, association, or combination thereof has been issued a master electrician's license by the division of registrations and is in charge of the supervision of all electrical work performed by such contractor, upon written notice from the board or the program administrator, acting as the agent thereof, the division shall promptly, upon payment of the fee as provided in section 12-23-112, register such licensee as an electrical contractor.

(c) If any person, firm, copartnership, corporation, association, or combination thereof engages in the business of an electrical contractor and does not comply with paragraph (b) of this subsection (5), it shall employ at least one licensed master electrician, who shall be in charge of the supervision of all electrical work performed by such contractor.

(d) No holder of a master's license shall be named as the master electrician, under the provisions of paragraphs (b) and (c) of this subsection (5), for more than one contractor, and a master name shall be actively engaged in a full-time capacity with that contracting company. The qualifying master license holder shall be required to notify the state electrical board within fifteen days after his termination as a qualifying master holder. The master license holder is responsible for all electrical work performed by the electrical contracting company. Failure to comply with a notification may lead to suspension or revocation of the master license as provided in section 12-23-118.

12-23-106.5. Credit for experience not subject to supervision of a licensed electrician.

For all applicants seeking work experience credit toward licensure, the board shall give credit for electrical work that is not required to be performed by or under the supervision of a licensed electrician if the applicant can show that the particular experience received or the supervision under which the work has been performed is adequate. Work experience credit awarded under this section shall not exceed one-half of the applicable experience requirement for any license issued under this article.

12-23-107. *Unauthorized use of title.*

No person, firm, partnership, corporation, or association shall advertise in any manner or use the title or designation of licensed master electrician, licensed journeyman electrician, or licensed residential wireman unless qualified and licensed under this article.

12-23-108. *License without written examination. (Repealed)*

(Repealed)

12-23-109. *License by endorsement.*

The board may issue an electrical license by endorsement in this state to any person who is licensed to practice in another jurisdiction if such person presents proof satisfactory to the board that, at the time of application for a Colorado license by endorsement, the person possesses credentials and qualifications which are substantially equivalent to requirements in Colorado for licensure by examination. The board may specify by rule and regulation what shall constitute substantially equivalent credentials and qualifications, and may further require a waiting period of six months after the issuance of a license in another state before issuing a license in Colorado.

12-23-110. *Temporary permits.*

The board or the program administrator or his agent, as provided in the rules and regulations promulgated by the board, shall issue temporary permits to engage in the work of a master electrician in cases where an electrical contractor no longer has the services of any master electrician as required under this article and shall issue temporary permits to engage in the work of a journeyman electrician or residential wireman to any applicant who furnishes evidence satisfactory to the board that he has the required experience to qualify for the examination provided in this article and who pays the fee provided in section 12-23-112 for such permits. In addition, and in a similar manner, the board or the program administrator or his agent shall issue temporary permits to any applicant who furnishes evidence satisfactory to the board that he qualifies for a master electrician's license and who pays the required fee. Temporary permits shall continue in effect only until the next examination is given and may be revoked by the board at any time. If the applicant is granted a license, any fee paid for the temporary permit shall be applied to the fee required for a license.

12-23-110.5. Apprentices - supervision - registration - discipline.

(1) Any person may work as an apprentice but shall not do any electrical wiring for the installation of electrical apparatus or equipment for light, heat, or power except under the supervision of a licensed electrician. The degree of supervision required shall be no more than one licensed electrician to supervise no more than one apprentice at the jobsite.

(2) Any electrical contractor, journeyman electrician, master electrician, or residential wireman who is the employer or supervisor of any electrical apprentice working at the trade shall be responsible for the work performed by such apprentice. The board may take disciplinary action against any such contractor or any such electrician or residential wireman under the provisions of section 12-23-118 for any improper work performed by an electrical apprentice working at the trade during the time of his employment while under the supervision of such person. The registration of such apprentice may also be subject to disciplinary action under the provisions of section 12-23-118.

(3) (a) Upon employing an electrical apprentice to work at the trade, the electrical contractor, within thirty days after such initial employment, shall register such apprentice with the board. The employer shall also notify the board within thirty days after the termination of such employment.

(b) Such apprentice shall be under the supervision of either a licensed electrician or a residential wireman as set forth in subsection (1) of this section.

12-23-111. Exemptions.

(1) Employees of public service corporations, rural electrification associations, or municipal utilities generating, distributing, or selling electrical energy for light, heat, or power or for operating street railway systems, or telephone or telegraph systems, or their corporate affiliates and their employees or employees of railroad corporations, or lawfully permitted or franchised cable television companies and their employees shall not be required to hold licenses while doing electrical work for such purposes.

(2) Nothing in this article shall be construed to require any individual to hold a license before doing electrical work on his own property or residence if all such electrical work, except for maintenance, repair, or alteration of existing facilities, is inspected as provided in this article; if, however, such property or residence is intended for sale or resale by a person engaged in the business of constructing or remodeling such facilities or structures or is rental property which is occupied or is to be occupied by tenants for lodging, either transient or permanent, or is generally open to the public, the owner shall be responsible for, and the property shall be subject to, all of the provisions of this article pertaining to inspection and licensing, unless specifically exempted therein.

(3) Nothing in this article shall be construed to require any regular employee of any firm or corporation to hold a license before doing any electrical work on the property of such firm or corporation, whether or not such property is owned, leased, or rented: If the firm or corporation employing any employee performing such work has all such electrical work installed in conformity with the minimum standards as set forth in this article and all such

work is subject to inspection by the board or its inspectors by request in writing in accordance with subsection (14) of this section; and if the property of any such firm or corporation is not generally open to the public. No license for such firm or corporation, nor inspection by the board or its inspectors, nor the payment of any fees thereon shall be required, with the exception of inspection by the board or its inspectors when performed by written request. Nothing contained in this article shall be construed to require any license, any inspection by the board or its inspectors, or the payment of any fees for any electrical work performed for maintenance, repair, or alteration of existing facilities which shall be exempt as provided in this section.

(4) If the property of any person, firm, or corporation is rental property or is developed for sale, lease, or rental, or is occupied or is to be occupied by tenants for lodging, either transient or permanent, or is generally open to the public, then such property of any such person, firm, or corporation shall be subject to all the provisions of this article pertaining to inspection and licensing, except for the maintenance, repair, or alteration of existing facilities which shall be exempt as provided in this section.

(5) Nothing in this article shall be construed to cover the installation, maintenance, repair, or alteration of vertical transportation or passenger conveyors, elevators, escalators, moving walks, dumbwaiters, stagelifts, man lifts, or appurtenances thereto beyond the terminals of the controllers. Furthermore, elevator contractors or constructors performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article.

(6) Nothing in this article shall be construed to require any individual to hold a license before doing any maintenance, repair, or alteration of existing facilities on his own property or residence, nor to require inspection by the board or its inspectors, nor to pay any fees connected therewith. Likewise, nothing in this article shall be construed to require any firm or corporation or its regular employees to be required to hold a license before doing maintenance, repair, or alteration of existing facilities on the property of any such firm or corporation whether or not any such property is generally open to the public; nor shall inspection by the board or its inspectors nor the payment of any fees connected therewith be required.

(7) to (9) Repealed.

(10) An individual, firm, copartnership, or corporation may engage in business as an electrical contractor without an electrician's license if all electrical work performed by such individual, firm, copartnership, or corporation is under the direction and control of a licensed master electrician.

(11) Any person who plugs in any electrical appliance where approved electrical outlet is already installed shall not be considered an installer.

(12) No provision of this article shall in any manner interfere with, hamper, preclude, or prohibit any vendor of any electrical appliance from selling, delivering, and connecting any electrical appliance, if the connection of said appliance does not necessitate the installation of electrical wiring of the structure where said appliance is connected.

(13) The provisions of this article shall not be applicable to the installation or laying of metal or plastic electrical conduits in bridge or highway projects where such conduits must be laid according to specifications complying with applicable electrical codes.

(13.5) Repealed.

(14) Nothing in this article shall be construed to exempt any electrical work from inspection under the provisions of this article except that which is specifically exempted in this article, and nothing in this article shall be construed to exempt any electrical work from inspection by the board or its inspectors upon order of the board or from any required corrections connected therewith. However, no fees or charges may be charged for any such inspection except as set forth in this article, unless request for inspection has been made to the board or its inspectors in writing, in which case, unless otherwise covered in this article, the actual expenses of the board and its inspectors of the inspection involved shall be charged by and be paid to the board. The board is directed to make available and mail minimum standards pertaining to specific electrical installations on request and to charge a fee for the same, such fee not to exceed the actual cost involved, and in no case more than one dollar. Requests for copies of the national electrical code shall be filled when available, costs thereof not to exceed the actual cost to the board.

(15) Inasmuch as electrical licensing and the examination of persons performing electrical work is a matter of statewide concern, no examination, certification, licensing, or registration of electrical contractors, master electricians, journeymen electricians, residential wiremen, or apprentices who are licensed, registered, or certified under this article shall be required by any city, town, county, or city and county; however, any such local governmental authority may impose reasonable registration requirements on any electrical contractor as a condition of performing services within the jurisdiction of such authority. No fee shall be charged for such registration.

(16) The provisions of this article shall not be applicable to any surface or subsurface operation or property used in, around, or in conjunction with any mine which is inspected pursuant to the "Federal Mine Safety and Health Amendments Act of 1977", P.L. 95-164, except permanent state highway tunnel facilities, which shall conform to standards based on the national electrical code. Nothing contained in this subsection (16) shall prohibit the department of transportation from adopting more stringent standards or

requirements than those provided by the minimum standards specified in the national electrical code, and the department of transportation shall furnish a copy of such more stringent standards to the board.

(17) The permit and inspection provisions of this article shall not be applicable to installations under the exclusive control of electric utilities for the purpose of communication or metering or for the generation, control, transformation, transmission, or distribution of electric energy: Located in buildings used exclusively for utilities for such purposes; or located outdoors on property owned or leased by the utility or on public highways, streets, or roads or outdoors by virtue of established rights on private property. This subsection (17) does not exempt any premises wiring on buildings, structures, or other premises not owned by or under the exclusive control of the utility nor wiring in buildings used by the utility for purposes other than those listed in this subsection (17), such as office buildings, garages, warehouses, machine shops, and recreation buildings. This subsection (17) exempts all of the facilities, buildings, and the like inside the security fence of a generating station, substation, control center, or communication facility.

(18) Nothing in this article shall be construed to cover the installation, maintenance, repair, or alteration of security systems, lawn sprinkler systems, environmental controls, or remote radio-controlled systems beyond the terminals of the controllers. Furthermore, the contractors performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article.

(19) Nothing in this article shall be construed to cover the installation, maintenance, repair, or alteration of electronic computer data processing equipment and systems beyond the terminals of the controllers. Furthermore, the contractors performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article.

(20) Nothing in this article shall be construed to cover the installation, maintenance, repair, or alteration of communications systems, including telephone and telegraph systems not exempted as utilities in subsection (1) of this section, radio and television receiving and transmitting equipment and stations, and antenna systems other than community antenna television systems beyond the terminals of the controllers. Furthermore, the contractors performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article.

(21) Nothing in this article shall be construed to cover the installation, maintenance, repair, or alteration of electric signs, cranes, hoists, electroplating, industrial machinery, and irrigation machinery beyond the terminals of the controllers. Furthermore, the contractors performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article.

(22) Nothing in this article shall be construed to cover the installation, maintenance, repair, or alteration of equipment and wiring for sound recording and reproduction systems, centralized distribution of sound systems, public address and speech-input systems, or electronic organs beyond the terminals of the controllers. Furthermore, the contractors

performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article.

(23) Nothing in this article shall be construed to require either that employees of the federal government who perform electrical work on federal property shall be required to be licensed before doing electrical work on such property or that the electrical work performed on such property shall be regulated pursuant to this article.

(24) Nothing in this article shall be construed to require licensing that covers the installation, maintenance, repair, or alteration of fire alarm systems operating at fifty volts or less. Furthermore, the contractors performing any installation, maintenance, repair, or alteration under this exemption, or their employees, shall not be covered by the licensing requirements of this article but shall be subject to all provisions of this article pertaining to inspections and permitting.

12-23-112. Fees.

(1) As established pursuant to section 24-34-105, C.R.S., fees shall be charged by the state electrical board for the following:

- (a) Master electrician's license or permit;
- (b) Annual renewal of master electrician's license;
- (c) Journeyman electrician's license or permit;
- (d) Annual renewal of journeyman electrician's license;
- (e) Examination for master electrician;
- (f) Examination for journeyman electrician;
- (g) Electrical contractor registration;
- (h) Annual renewal of electrical contractor registration;
- (i) Residential wireman's license or permit;
- (j) Annual renewal of residential wireman's license;
- (k) Examination for residential wireman;
- (l) Apprentice registration;
- (m) Annual renewal of apprentice registration.

12-23-113. Disposition of fees and expenses of board.

All moneys collected under this article, except for fines collected pursuant to section 12-23-118 (7) (a), shall be transmitted to the state treasurer, who shall credit the same pursuant to section 24-34-105, C.R.S., and the general assembly shall make annual appropriations pursuant to said section for expenditures of the board incurred in the performance of its duties under this article, which expenditures shall be made from such appropriations upon vouchers and warrants drawn pursuant to law.

12-23-114. Publications.

(1) Repealed.

(2) Publications of the board circulated in quantity outside the executive branch shall be issued in accordance with the provisions of section 24-1-136, C.R.S.

Editor's note: Subsection (1) was in an act that was passed without a safety clause. It will take effect at 12:01 a.m. on the day following the expiration of the ninety-day period after final adjournment of the general assembly unless a referendum petition is filed pursuant to section 1 (3) of article V of the state constitution. In that event, it will take effect on the date of the official declaration of the vote by proclamation of the governor if it is approved by the voters at the 1996 election.

12-23-115. Inspectors - qualifications.

(1) (a) (I) The director of the division of registrations is hereby authorized to appoint or employ, with the power of removal, competent persons licensed under this article as journeymen or master electricians as state electrical inspectors. The division director is also authorized to appoint or employ, with the power of removal, for the purpose of inspecting one-, two-, three-, or four-family dwellings, competent persons with the following qualifications:

(A) Persons who have passed the written residential wireman's examination described in section 12-23-106; or

(B) Persons who have been certified as residential electrical inspectors by a national certification authority approved by the board and who have furnished satisfactory evidence of at least two years' practical experience in the inspection of residential dwellings.

(II) Such inspectors may be employed either on a full-time or on a part-time basis as the circumstances in each case shall warrant; except that the division director may contract with any electrical inspector regularly engaged as such and certify him to make inspections in a designated area at such compensation as shall be fixed by the division director. State electrical inspectors have the right of ingress and egress to and from all public and private premises during reasonable working hours where this law applies for the purpose of making electrical inspections or otherwise determining compliance with the provisions of this article. In order to avoid conflicts of interest, a state electrical inspector hired under this section shall not inspect any electrical work in which such inspector has any financial or other personal interest and shall not be engaged in the electrical business by contracting, supplying material, or performing electrical work as defined in this article.

(b) Any employee of a private, municipal, or cooperative electric utility rendering service to the ultimate public shall be prohibited from employment as an electrical inspector only when in the performance of any electrical work as defined in this article. Electrical inspectors performing electrical inspections who are employed by any city, town, county, or city and county shall possess the same qualifications required of state electrical inspectors under this section, shall be registered with the board prior to the assumption of their duties, shall not inspect any electrical work in which such inspector has any financial or other personal interest, and shall not be engaged, within the jurisdiction employing such inspector, in the electrical business by contracting, supplying material, or performing electrical work as defined in this article.

(c) Nothing in this article shall be construed to limit any inspector from qualifying as an inspector in other construction specialties.

(2) Repealed.

(3) State electrical inspectors appointed or employed pursuant to subsection (1) of this section may:

(a) Conduct inspections and investigations pursuant to section 12-23-118 (4) on behalf of the program administrator;

(b) Provide service of process for a citation served pursuant to section 12-23-118 (6) (b) in compliance with rule 4 of the Colorado rules of civil procedure.

12-23-116. Inspection - application - standards.

(1) Any individual required to have electrical inspection under this article may apply through any private, municipal, or cooperative electric utility rendering service to the ultimate public for an application for inspection, except where any incorporated town or city, any county, or any city and county of this state has an established building department where applications for building permits and inspections are processed, in which case such individual shall apply to such building department. Such utility shall provide forms furnished by the board to the applicant, who shall remit the application for inspection to such board on such forms. Upon payment by the applicant of the applicable fee to the board, the board shall issue a temporary permit to the applicant and shall remit a copy of such permit to the utility and the state inspector responsible for such inspection and retain one copy in its office. Upon final inspection and approval by the state electrical inspector, written notice shall be issued by the board to the applicant, the utility, and the state inspector responsible for such inspection, and one copy shall be retained in the office of the board. No utility shall provide service to any person required to have electrical inspection under this article without proof of final approval as provided in this subsection (1); except that such service shall be provided in those situations determined by the local electrical inspection authority, or by the board, whichever shall have jurisdiction, to be emergency situations for a maximum period of seven days or until such inspection has been made.

(2) Any electrical installation in any new construction or remodeling or repair, other than manufactured units certified by the division of housing pursuant to section 24-32-715, C.R.S., except in any incorporated town or city, any county, or any city and county having its own electrical code and inspection equal to the minimum standards as are provided in this article, shall be inspected by a state electrical inspector. A state electrical inspector shall inspect any new construction, remodeling, or repair subject to the provisions of this subsection (2) within three working days after the receipt of the application for inspection. If the inspection is not performed within five working days, work may resume on any such construction, repair, or remodeling. Prior to the commencement of any such electrical installation, the person making such installation shall make application for inspection and pay the required fee therefor. Every mobile home or movable structure owner shall have the electric utility hookup for such mobile home or movable structure inspected prior to obtaining new or different utility service; except that nothing in this subsection (2) shall require a reinspection of electrical hookup facilities of any mobile home park or any mobile home or other movable structure by reason of the relocation of a mobile home or other movable structure within the park where a previous inspection has been performed, unless construction or remodeling or repair of such mobile home park hookup facilities or of the mobile home or other movable structure involving the electrical system has been performed, and except that, if the wiring thereof has not been altered and either such mobile home or movable structure has a valid state electrical board approval sticker in the panel of the mobile home or movable structure with the number of the unit listed, the date inspected, and the inspector's signature or if such mobile home or movable structure has been certified by the division of housing in the department of local affairs after June 30, 1988, the occupant of the mobile home or movable structure may call the board with this information, and the board will authorize the reinstallation of the meter by the utility company.

(3) A state electrical inspector shall inspect the work performed, and, if such work meets the minimum standards set forth in the national electrical code referred to in section 12-23-104 (3) (a), a certificate of approval shall be issued by the inspector. If such installation is disapproved, written notice thereof together with the reasons for such disapproval shall be given by the inspector to the applicant. If such installation is hazardous to life or property, the inspector disapproving it may order the electrical service thereto discontinued until such installation is rendered safe, and shall send a copy of the notice of disapproval and order for discontinuance of service to the supplier of electricity. The applicant may appeal such disapproval to the board and shall be granted a hearing by the board within seven days after notice of appeal is filed with the board. After removal of the cause of such disapproval, the applicant shall make application for reinspection in the same manner as for the original inspection, and pay the required reinspection fee.

(4) Each application, certificate of approval, and notice of disapproval shall contain the name of the property owner, if known, the location and a brief description of the installation, the name of the general contractor if any, the name of the electrical contractor or licensed electrician and state license number, the state electrical inspector, and the inspection fee charged for the inspection. The original of a notice of disapproval and written reasons for disapproval and corrective actions to be taken shall be mailed to the board, and a copy of such notice shall be mailed to the electrical contractor, within two working days after the date of inspection, and a copy of the notice shall be posted at the installation site. Such forms shall be furnished by the board, and a copy of each application, certificate, and notice made or issued shall be filed with the board.

(5) Nothing in this section shall be construed to require any utility as defined in this article to collect or enforce collection or in any way handle the payment of any fee connected with such application.

(6) (a) All inspection permits issued by the board shall be valid for a period of twelve months, and the board shall cancel the permit and remove it from its files at the end of the twelve-month period, except in the following circumstances:

(I) If an applicant makes a showing at the time of application for a permit that the electrical work is substantial and is likely to take longer than twelve months, the board may issue a permit to be valid for a period longer than twelve months, but not exceeding three years.

(II) If the applicant notifies the board prior to the expiration of the twelve-month period of extenuating circumstances, as determined by the board, during the twelve-month period, the board may extend the validity of the permit for a period not to exceed six months.

(b) If an inspection is requested by an applicant after a permit has expired or has been cancelled, a new permit must be applied for and granted before an inspection is performed.

(7) Notwithstanding the fact that any incorporated town or city, any county, or any city and county in which a public school is located or is to be located has its own electrical code and inspection authority, any electrical installation in any new construction or remodeling or repair of a public school shall be inspected by a state electrical inspector.

(8) In the event that any incorporated town or city, any county, or any city and county intends to commence or cease performing electrical inspections in its respective jurisdiction, it shall commence or cease the same only as of July 1 of any year, and written notice of such intent shall be given to the board on or before October 1 of the preceding calendar year. If such notice is not given and the use of state electrical inspectors is required within such notice requirement, the respective local government of the jurisdiction requiring such inspections shall reimburse the state electrical board for any expenses incurred in performing such inspections, in addition to transmitting the required permit fees.

(9) (a) Any person claiming to be aggrieved by the failure of a state electrical inspector to inspect his property after proper application or by notice of disapproval without setting forth the reasons for denying the inspection permit may request the program administrator to review the actions of the state electrical inspector or the manner of the inspection. Such request may be made by his authorized representative and shall be in writing.

(b) Upon the filing of such a request, the program administrator shall cause a copy thereof to be served upon the state electrical inspector complained of, together with an order requiring such inspector to answer the allegations of said request within a time fixed by the program administrator.

(c) If the request is not granted within ten days after it is filed, it may be treated as rejected. Any person aggrieved by the action of the program administrator in refusing the review requested or in failing or refusing to grant all or part of the relief requested may file a written complaint and request for a hearing with the board, specifying the grounds relied upon.

(d) Any hearing before the board shall be held pursuant to the provisions of section 24-4-105, C.R.S.

12-23-117. Inspection fees.

(1) As established pursuant to section 24-34-105, C.R.S., inspection fees shall be charged by the state electrical board for the following categories:

(a) Residential: Construction and extensive remodeling (based on enclosed living area) but not to include extensions to or minor remodeling of existing installations, which shall be governed by paragraph (b) of this subsection (1), and not, in any instance, to include any maintenance, repair, or alteration of existing facilities which are exempt as set forth in this article:

Not more than 1,000 square feet

More than 1,000 square feet but not more than 1,500 square feet

More than 1,500 square feet but not more than 2,000 square feet

Per 100 square feet in excess of 2,000 square feet

Reinspections

(b) All other fees, except for inspections in mobile home and travel trailer parks or any new or different utility service for a mobile home or movable structure, shall be computed on the dollar value of the electrical installation, including electrical materials and items, and the total cost to the consumer. Fee categories shall be as follows:

Valuation of work

Not more than \$300

More than \$300 but not more than \$2,000

More than \$2,000 but not more than \$50,000

More than \$50,000 but not more than \$500,000

More than \$500,000

Mobile home and travel trailer parks, or new or different utility services

for mobile homes or movable structures, per space

(2) Because electrical inspections are matters of statewide concern, the maximum fees, established annually, chargeable for electrical inspections by any city, town, county, or city and county shall not be more than fifteen percent above those provided for in this section, and no such local government shall impose or collect any other fee or charge related to electrical inspections or permits.

(3) If an application is not filed in advance of the commencement of an installation, the inspection fee shall be twice the amount prescribed therefor in this section.

12-23-118. Violations - citations - settlement agreements - hearings - fines.

(1) The board may deny, suspend, revoke, or refuse to renew any license or registration issued or applied for under the provisions of this article, may place a licensee or registrant on probation, or may issue a citation to a licensee, registrant, or applicant for licensure for any of the following reasons:

(a) Violation of or aiding or abetting in the violation of any of the provisions of this article;

(b) Violation of the rules and regulations or orders promulgated by the board in conformity with the provisions of this article or aiding or abetting in such violation;

(c) Failure or refusal to remove within a reasonable time the cause of the disapproval of any electrical installation as reported on the notice of disapproval, but such reasonable time shall include time for appeal to and a hearing before the board;

(d) Failure or refusal to maintain or adhere to the minimum standards set forth in rules and regulations adopted by the board pursuant to section 12-23-104 (2) (a);

(e) Any cause for which the issuance of the license could have been refused had it then existed and been known to the board;

(f) Commitment of one or more acts or omissions that do not meet generally accepted standards of electrical practice;

(g) Conviction of or acceptance of a plea of guilty or nolo contendere by a court to a felony. In considering the disciplinary action, the board shall be governed by the provisions of section 24-5-101, C.R.S.

(h) Advertising by any licensee or registrant which is false or misleading;

(i) Deception, misrepresentation, or fraud in obtaining or attempting to obtain a license;

(j) Failure of a master electrician who is charged with supervising all electrical work performed by a contractor pursuant to section 12-23-106 (5) (c) to adequately supervise such work or failure of any licensee to adequately supervise an apprentice who is working at the trade pursuant to section 12-23-110.5;

(k) Employment of any person required by this article to be licensed or registered or to obtain a permit who has not obtained such license, registration, or permit;

(l) Disciplinary action against an electrician's license in another jurisdiction. Evidence of such disciplinary action shall be prima facie evidence for denial of licensure or other disciplinary action if the violation would be grounds for such disciplinary action in this state.

(2) and (3) (Deleted by amendment, L. 94, p. 36, 3, effective July 1, 1994.)

(4) (a) If pursuant to an inspection or investigation by a state electrical inspector the board concludes that any licensee, registrant, or applicant for licensure has violated any provision of subsection (1) of this section and that disciplinary action is appropriate, the program administrator or the program administrator's designee may issue a citation in accordance with subsection (6) of this section to such licensee, registrant, or applicant.

(b) (I) The licensee, registrant, or applicant to whom a citation has been issued may make a request to negotiate a stipulated settlement agreement with the program administrator or the program administrator's designee, if such request is made in writing within ten working days after issuance of the citation which is the subject of the settlement agreement.

(II) All stipulated settlement agreements shall be conducted pursuant to rules adopted by the board pursuant to section 12-23-104 (2) (a). The board shall adopt a rule to allow any licensee, registrant, or applicant unable, in good faith, to settle with the program administrator to request an administrative hearing pursuant to paragraph (c) of this subsection (4).

(c) (I) The licensee, registrant, or applicant to whom a citation has been issued may request an administrative hearing to determine the propriety of such citation if such request is made in writing within ten working days after issuance of the citation which is the subject of the hearing or within a reasonable period after negotiations for a stipulated settlement agreement pursuant to paragraph (b) of this subsection (4) have been deemed futile by the program administrator.

(II) For good cause the board may extend the period of time in which a person who has been cited may request a hearing.

(III) All hearings conducted pursuant to subparagraph (I) of this paragraph (c) shall be conducted in compliance with section 24-4-105, C.R.S.

(d) Any action taken by the board pursuant to this section shall be deemed final after the period of time extended to the licensee, registrant, or applicant to contest such action pursuant to this subsection (4) has expired.

(5) (a) The board shall adopt a schedule of fines pursuant to paragraph (b) of this subsection (5) as penalties for violating subsection (1) of this section. Such fines shall be assessed in conjunction with the issuance of a citation, pursuant to a stipulated settlement agreement, or following an administrative hearing. Such schedule shall be adopted by rule in accordance with section 12-23-104 (2) (a).

(b) In developing the schedule of fines, the board shall:

(I) Provide that a first offense may carry a fine of up to one thousand dollars;

(II) Provide that a second offense may carry a fine of up to two thousand dollars;

(III) Provide that any subsequent offense may carry a fine of up to two thousand dollars for each day that subsection (1) of this section is violated;

(IV) Consider how the violation impacts the public, including any health and safety considerations;

(V) Consider whether to provide for a range of fines for any particular violation or type of violation; and

(VI) Provide uniformity in the fine schedule.

(c) Any person who does not comply with a citation, a stipulated settlement agreement, or an order issued pursuant to an administrative hearing and who has exhausted any remedy available pursuant to this section or section 12-23-120 commits a class 1 misdemeanor and shall pay a fine as provided in section 18-1-106, C.R.S.

(6) (a) (I) Any citation issued pursuant to this section shall be in writing, shall adequately describe the nature of the violation, and shall reference the statutory or regulatory provision or order alleged to have been violated.

(II) Any citation issued pursuant to this section shall clearly state whether a fine is imposed, the amount of such fine, and that payment for such fine must be remitted within the time specified in such citation if such citation is not contested pursuant to subsection (4) of this section.

(III) Any citation issued pursuant to this section shall clearly set forth how such citation may be contested pursuant to subsection (4) of this section, including any time limitations.

(b) A citation or copy of a citation issued pursuant to this section may be served by certified mail or in person by a state electrical inspector or the administrator's designee upon a person or the person's agent in accordance with rule 4 of the Colorado rules of civil procedure.

(c) If the recipient fails to give written notice to the board that the recipient intends to contest such citation or to negotiate a stipulated settlement agreement within ten working days after service of a citation by the board, such citation shall be deemed a final order of the board.

(d) The board may suspend or revoke a license or registration or may refuse to renew any license or registration issued or may place on probation any licensee or registrant if the licensee or registrant fails to comply with the requirements set forth in a citation deemed final pursuant to paragraph (c) of this subsection (6).

(e) The failure of an applicant for licensure to comply with a citation deemed final pursuant to paragraph (c) of this subsection (6) is grounds for denial of a license.

(f) No citation may be issued under this section unless the citation is issued within the six-month period following the occurrence of the violation.

(7) (a) Any fine collected pursuant to this section shall be transmitted to the state treasurer, who shall credit one-half of the amount of any such fine to the general fund, and one-half of the amount of any such fine shall be shared with the appropriate city, town, county, or city and county, which amounts shall be transmitted to any such entity on an annual basis.

(b) Any fine assessed in a citation or an administrative hearing or any amount due pursuant to a stipulated settlement agreement that is not paid may be collected by the program administrator through a collection agency or in an action in the district court of the county in which the person against whom the fine is imposed resides or in the county in which the office of the program administrator is located.

(c) The attorney general shall provide legal assistance and advice to the program administrator in any action to collect an unpaid fine.

(d) In any action brought to enforce this subsection (7), reasonable attorney fees and costs shall be awarded.

12-23-118.1. *Reapplication after revocation of licensure.*

No person whose license has been revoked shall be allowed to reapply for licensure earlier than two years from the effective date of the revocation.

12-23-118.2. *Reconsideration and review of board action. (Repealed)*

(Repealed)

12-23-118.3. *Immunity.*

Any member of the board shall be immune from suit in any civil action based upon any disciplinary proceedings or other official actions performed in good faith. Any witness, consultant, or complainant participating in good faith in the making of a complaint or report or participating in good faith in any investigative or administrative proceeding pursuant to this article shall also be immune from suit in any civil action.

12-23-119. *Unlawful acts.*

(1) It is unlawful for any person:

(a) To violate the provisions of section 12-23-105, except for those practicing pursuant to section 12-23-107 or 12-23-111;

(b) To practice as a residential wireman, journeyman, master, contractor, or apprentice during a period when the licensee's license or the registrant's registration has been suspended or revoked;

(c) To sell or fraudulently obtain or furnish a license to practice as a residential wireman, journeyman, or master or to aid or abet therein;

(d) In conjunction with any construction or building project requiring the services of any person regulated by this article, to willfully disregard or violate:

(I) Any building or construction law of this state or any of its political subdivisions;

(II) Any safety or labor law;

(III) Any health law;

(IV) Any workers' compensation insurance law;

(V) Any state or federal law governing withholdings from employee income including but not limited to income taxes, unemployment taxes, or social security taxes; or

(VI) Any reporting, notification, or filing law of this state or the federal government.

(2) Any person who violates any provision of this section commits a class 1 misdemeanor and shall pay a fine as provided in section 18-1-106, C.R.S.

12-23-120. Judicial review.

The court of appeals shall have initial jurisdiction to review all final actions and orders of the board that are subject to judicial review. Such proceedings shall be conducted in accordance with section 24-4-106 (11), C.R.S.

Appendix C
Citation Report

Appendix D

Electrical Permit Application

