



**Dora**  
Department of Regulatory Agencies

**Office of Policy, Research and Regulatory Reform**

# **2009 Sunset Review: State Electrical Board**

October 15, 2009





**Executive Director's Office**  
D. Rico Munn  
Executive Director

Bill Ritter, Jr.  
Governor

October 15, 2009

Members of the Colorado General Assembly  
c/o the Office of Legislative Legal Services  
State Capitol Building  
Denver, Colorado 80203

Dear Members of the General Assembly:

The mission of the Department of Regulatory Agencies (DORA) is consumer protection. As a part of the Executive Director's Office within DORA, the Office of Policy, Research and Regulatory Reform seeks to fulfill its statutorily mandated responsibility to conduct sunset reviews with a focus on protecting the health, safety and welfare of all Coloradans.

DORA has completed the evaluation of the Colorado State Electrical Board. I am pleased to submit this written report, which will be the basis for my office's oral testimony before the 2010 legislative committee of reference. The report is submitted pursuant to section 24-34-104(8)(a), of the Colorado Revised Statutes (C.R.S.), which states in part:

The department of regulatory agencies shall conduct an analysis of the performance of each division, board or agency or each function scheduled for termination under this section...

The department of regulatory agencies shall submit a report and supporting materials to the office of legislative legal services no later than October 15 of the year preceding the date established for termination....

The report discusses the question of whether there is a need for the regulation provided under Article 23 of Title 12, C.R.S. The report also discusses the effectiveness of the Board and staff in carrying out the intent of the statutes and makes recommendations for statutory and administrative changes in the event this regulatory program is continued by the General Assembly.

Sincerely,

D. Rico Munn  
Executive Director





Bill Ritter, Jr.  
Governor

D. Rico Munn  
Executive Director

## **2009 Sunset Review: Colorado State Electrical Board**

### **Summary**

#### ***What Is Regulated?***

The Colorado State Electrical Board (Board) regulates the electrical profession by adopting the National Electrical Code (NEC) as the state code, licensing and registering electrical practitioners, and permitting and inspecting electrical installations where a regional inspection program does not exist.

#### ***Why Is It Regulated?***

There is a built in hazard in using electricity; U.S. fire departments responded to an estimated 52,500 home fires involving electrical failure or malfunction in 2006. These fires resulted in 340 civilian deaths, 1,400 injuries, and \$1.4 billion in direct property damage. Regulating electrical installations and installers reduces the likelihood of harm.

#### ***Who Is Regulated?***

During fiscal year 07-08, the Board regulated 1,094 residential wiremen, 9,730 journeymen electricians, and 5,802 master electricians. It also registered 11,935 electrical apprentices and 3,476 electrical contractors.

#### ***How Is It Regulated?***

The NEC is the foundation of electrical regulation in Colorado. Once the Board adopts the NEC as the state code, it is the standard applied to measure the qualifications of licensed professionals and it is the template applied by electrical inspectors examining electrical installations.

#### ***What Does It Cost?***

From fiscal year 03-04 through 07-08, program expenditures averaged \$3.8 million per fiscal year.

#### ***What Disciplinary Activity Is There?***

Between fiscal years 03-04 and 07-08, the Board's disciplinary activities included 328 total actions and 177 fines, totaling \$59,353.

#### ***Where Do I Get the Full Report?***

The full sunset review can be found on the Internet at: [www.dora.state.co.us/opr/oprpublications.htm](http://www.dora.state.co.us/opr/oprpublications.htm).

## Key Recommendations

### ***Continue the Electrical Practice Act for nine years, until 2019.***

Because of the extreme danger to the public from unqualified installers and faulty electrical installations, continuation of the Electrical Practice Act (Act) is vital. Deregulation of the electrical profession could result in a proliferation of electricity-related fires, injuries, and deaths. The Board, and the Board staff ensures that licensees are aware of and follow the most current code thereby protecting consumers' health, safety, and welfare.

### ***Confer enforcement authority to the Board concerning regional compliance with state electrical code updates.***

The ultimate authority for regulating the electrical industry in Colorado lies with the Board. The Board licenses and disciplines licensees and is mandated by the Act to adopt minimum standards for performing electric related work using the NEC as its guide.

While the Board is the clear oversight authority in these matters, the Act does not confer enforcement power to the Board over noncompliant, regional, permit and inspection jurisdictions. Therefore, no action can be taken when regional jurisdictions choose to ignore the mandates in the Act, disregard the will of the General Assembly, and provide less protection to the public it is obligated to protect. The General Assembly should give the Board power to act and protect the public.

## Major Contacts Made During This Review

Colorado Attorney Generals Office  
Colorado Building and Construction Trades Council  
Colorado Counties Incorporated  
Colorado Division of Registrations  
Colorado State Electrical Board  
Colorado Municipal League  
International Brotherhood of Electrical Workers  
International Code Council  
Jefferson County Division of Building Safety  
National Electrical Contractors Association  
Pikes Peak Regional Building Department  
Teller County Building Department

## What is a Sunset Review?

A sunset review is a periodic assessment of state boards, programs, and functions to determine whether or not they should be continued by the legislature. Sunset reviews focus on creating the least restrictive form of regulation consistent with protecting the public. In formulating recommendations, sunset reviews consider the public's right to consistent, high quality professional or occupational services and the ability of businesses to exist and thrive in a competitive market, free from unnecessary regulation.

Sunset Reviews are Prepared by:  
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## Background

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### ***Introduction***

Enacted in 1976, Colorado's sunset law was the first of its kind in the United States. A sunset provision repeals all or part of a law after a specific date, unless the legislature affirmatively acts to extend it. During the sunset review process, the Department of Regulatory Agencies (DORA) conducts a thorough evaluation of such programs based upon specific statutory criteria<sup>1</sup> and solicits diverse input from a broad spectrum of stakeholders including consumers, government agencies, public advocacy groups, and professional associations.

Sunset reviews are based on the following statutory criteria:

- 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;
- 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;
- 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;
- Whether an analysis of agency operations indicates that the agency performs its statutory duties efficiently and effectively;
- 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;
- The economic impact of regulation and, if national economic information is not available, whether the agency stimulates or restricts competition;
- 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;
- Whether the scope of practice of the regulated occupation contributes to the optimum utilization of personnel and whether entry requirements encourage affirmative action;
- Whether administrative and statutory changes are necessary to improve agency operations to enhance the public interest.

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<sup>1</sup> Criteria may be found at § 24-34-104, C.R.S.

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## ***Types of Regulation***

Consistent, flexible, and fair regulatory oversight assures consumers, professionals and businesses an equitable playing field. All Coloradans share a long-term, common interest in a fair marketplace where consumers are protected. Regulation, if done appropriately, should protect consumers. If consumers are not better protected and competition is hindered, then regulation may not be the answer.

As regulatory programs relate to individual professionals, such programs typically entail the establishment of minimum standards for initial entry and continued participation in a given profession or occupation. This serves to protect the public from incompetent practitioners. Similarly, such programs provide a vehicle for limiting or removing from practice those practitioners deemed to have harmed the public.

From a practitioner perspective, regulation can lead to increased prestige and higher income. Accordingly, regulatory programs are often championed by those who will be the subject of regulation.

On the other hand, by erecting barriers to entry into a given profession or occupation, even when justified, regulation can serve to restrict the supply of practitioners. This not only limits consumer choice, but can also lead to an increase in the cost of services.

Regulation, then, has many positive and potentially negative consequences.

There are also several levels of regulation.

### Licensure

Licensure is the most restrictive form of regulation, yet it provides the greatest level of public protection. Licensing programs typically involve the completion of a prescribed educational program (usually college level or higher) and the passage of an examination that is designed to measure a minimal level of competency. These types of programs usually entail title protection – only those individuals who are properly licensed may use a particular title(s) – and practice exclusivity – only those individuals who are properly licensed may engage in the particular practice. While these requirements can be viewed as barriers to entry, they also afford the highest level of consumer protection in that they ensure that only those who are deemed competent may practice and the public is alerted to those who may practice by the title(s) used.

### Certification

Certification programs offer a level of consumer protection similar to licensing programs, but the barriers to entry are generally lower. The required educational program may be more vocational in nature, but the required examination should still measure a minimal level of competency. Additionally, certification programs typically involve a non-governmental entity that establishes the training requirements and owns and administers the examination. State certification is made conditional upon the individual practitioner obtaining and maintaining the relevant private credential. These types of programs also usually entail title protection and practice exclusivity.



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While the aforementioned requirements can still be viewed as barriers to entry, they afford a level of consumer protection that is lower than a licensing program. They ensure that only those who are deemed competent may practice and the public is alerted to those who may practice by the title(s) used.

### Registration

Registration programs can serve to protect the public with minimal barriers to entry. A typical registration program involves an individual satisfying certain prescribed requirements – typically non-practice related items, such as insurance or the use of a disclosure form – and the state, in turn, placing that individual on the pertinent registry. These types of programs can entail title protection and practice exclusivity. Since the barriers to entry in registration programs are relatively low, registration programs are generally best suited to those professions and occupations where the risk of public harm is relatively low, but nevertheless present. In short, registration programs serve to notify the state of which individuals are engaging in the relevant practice and to notify the public of those who may practice by the title(s) used.

### Title Protection

Finally, title protection programs represent one of the lowest levels of regulation. Only those who satisfy certain prescribed requirements may use the relevant prescribed title(s). Practitioners need not register or otherwise notify the state that they are engaging in the relevant practice, and practice exclusivity does not attach. In other words, anyone may engage in the particular practice, but only those who satisfy the prescribed requirements may use the enumerated title(s). This serves to indirectly ensure a minimal level of competency – depending upon the prescribed preconditions for use of the protected title(s) – and the public is alerted to the qualifications of those who may use the particular title(s).

Licensing, certification and registration programs also typically involve some kind of mechanism for removing individuals from practice when such individuals engage in enumerated proscribed activities. This is generally not the case with title protection programs.

### Regulation of Businesses

Regulatory programs involving businesses are typically in place to enhance public safety, as with a salon or pharmacy. These programs also help to ensure financial solvency and reliability of continued service for consumers, such as with a public utility, a bank or an insurance company.

Activities can involve auditing of certain capital, bookkeeping and other recordkeeping requirements, such as filing quarterly financial statements with the regulator. Other programs may require onsite examinations of financial records, safety features or service records.

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Although these programs are intended to enhance public protection and reliability of service for consumers, costs of compliance are a factor. These administrative costs, if too burdensome, may be passed on to consumers.

### ***Sunset Process***

Regulatory programs scheduled for sunset review receive a comprehensive analysis. The review includes a thorough dialogue with agency officials, representatives of the regulated profession and other stakeholders. To facilitate input from interested parties, anyone can submit input on any upcoming sunrise or sunset review via DORA's website at: [www.dora.state.co.us/pls/real/OPR\\_Review\\_Comments.Main](http://www.dora.state.co.us/pls/real/OPR_Review_Comments.Main).

The regulatory functions of the Colorado State Electrical Board (Board) relating to Article 33 of Title 12, Colorado Revised Statutes (C.R.S.), shall terminate on July 1, 2010, unless continued by the General Assembly. During the year prior to this date, it is the duty of DORA to conduct an analysis and evaluation of the Board pursuant to section 24-34-104, C.R.S.

The purpose of this review is to determine whether the currently prescribed regulation of electricians and electrical installations should be continued for the protection of the public and to evaluate the performance of the Board and staff of the Division of Registrations (Division). During this review, the Board and the Division must demonstrate that the regulation serves to protect the public health, safety or welfare, and that the regulation is the least restrictive regulation consistent with protecting the public. DORA's findings and recommendations are submitted via this report to the legislative committee of reference of the Colorado General Assembly.

### ***Methodology***

As part of this review, DORA staff attended Board meetings; interviewed Division staff; reviewed Board records and minutes including complaint and disciplinary actions; interviewed Board members, officials with state and national professional associations, state electrical inspectors, and building officials from regional jurisdictions, observed field electrical inspections; reviewed Colorado statutes and Board rules; and reviewed the laws of other states.

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## **Profile of the Profession**

The National Electrical Code (NEC) is the foundation of electrical regulation in Colorado. The Colorado State Electrical Board (Board) adopts the NEC and uses it as the state electrical code. The code is the standard applied to measure the abilities of licensed professionals and it is the template applied by electrical inspectors examining electrical installations.

The NEC is developed by the nonprofit National Fire Prevention Association (NFPA) and is updated every three years. The NEC updating process employs a five-step system that encourages input from interested parties.<sup>2</sup>

1. Call for Proposals
  - a. When the development process begins, public notice requests interested parties submit suggestions.
2. Report on Proposals
  - a. The Technical Committee discusses the suggestions and cannot report out any suggestion unless a consensus is reached.
  - b. When consensus is reached, a report is issued for public review and comment.
3. Report on Comments
  - a. The Technical Committee meets to act on public comments concerning suggestions and cannot report out any suggestion unless a consensus is reached.
  - b. When consensus is reached, a report with proposals is issued for public review.
4. Action at the Technical Meeting
  - a. NFPA membership meets in June of each year and discusses any proposals. The Technical Committee votes on any changes and amendments made at the meeting.
5. Decision by the Standards Council
  - a. Standards Council decides whether to adopt changes.

Once the new NEC is adopted by the NFPA, the Board reviews it and decides whether to adopt it as the state code. When the Board approves the code, it becomes the standard for more than 16,500 licensed electricians, who execute more than 25,000 electrical installations annually in Colorado.

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<sup>2</sup> National Fire Prevention Association. *How Codes and Standards are Developed*. Retrieved May 19, 2009, from <http://www.nfpa.org/categoryList.asp?categoryID=162&URL=Codes%20%26%20Standards/Code%20development%20process/How%20codes%20and%20standards%20are%20developed>

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There are roughly 25,000 people in Colorado employed at some level of the electrical profession as licensed practitioners, registered apprentices, and/or registered electrical contractors. To become one of the more than 16,500 licensed practitioners including: residential wiremen, journeymen electricians, or master electricians, one must demonstrate a combination of code knowledge, through examination, and proven practical ability, through on-the-job electrical experience, all of which is based on the code. The Board determines the specific qualifications for licensure and enforces industry and statutory norms through the Department of Regulatory Agencies, Division of Registrations.

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## Legal Framework

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The General Assembly states in the Electrical Practice Act (Act) that the State Electrical Board (Board) is to be specifically involved in testing and licensing electricians, and the inspection of electrical installations where local jurisdictions do not perform them.<sup>3</sup> However, even where there is a local inspection authority, the Board is responsible for inspecting all installations at public schools.<sup>4</sup>

The Board is a Governor-appointed, Senate-approved, nine-member, Type 1 board. It is made up of four electricians, two who are master electricians that are also contractors and two who are either master or journeyman electricians who are not contractors; two members who represent electrical utilities which render service to the public; one county- or municipality-employed building official; one active general contractor; and one member of the public at large.<sup>5</sup>

The Board independently governs the electrician profession in Colorado. Though the Board's functions and policies are administered and enforced by the Department of Regulatory Agencies' (DORA), Division of Registrations (Division),<sup>6</sup> because it is a Type 1 board, statute grants it a large degree of autonomy. Section 105 of Title 24, Article 1, Colorado Revised Statutes (C.R.S.), which authorized the placement of the Board into DORA reads, in part:

(A type 1 board transfer) ... shall exercise its prescribed statutory powers, duties, and functions, including rule-making, regulation, licensing, and registration, the promulgation of rules, rates, regulations, and standards, and the rendering of findings, orders, and adjudications, independently of the head of the principal department.

The Act enumerates prescribed Board powers and duties, including:

- Meet at least monthly;<sup>7</sup>
- Adopt a state electrical code using the National Electrical Code as the minimum standard,<sup>8</sup> and allow or disallow exemptions to the code;<sup>9</sup>
- Adopt rules and regulations to enforce the Act and the code;<sup>10</sup>
- Register apprentice electricians and qualified electrical contractors;<sup>11</sup>
- License, through examination, endorsement, or reciprocity, master electricians, journeymen electricians, and residential wiremen;<sup>12</sup>
- Establish fees for licenses, permits, and examinations;<sup>13</sup>

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<sup>3</sup> § 12-23-100.2, C.R.S.

<sup>4</sup> § 12-23-116(7), C.R.S.

<sup>5</sup> § 12-23-102, C.R.S.

<sup>6</sup> § 12-23-103, C.R.S.

<sup>7</sup> § 12-23-104(1)(a), C.R.S.

<sup>8</sup> § 12-23-104(2)(a), C.R.S.

<sup>9</sup> § 12-23-104(2)(g), C.R.S.

<sup>10</sup> § 12-23-104(2)(a), C.R.S.

<sup>11</sup> § 12-23-104(2)(c), C.R.S.

<sup>12</sup> §§ 12-23-104(2)(c), 12-23-104(2)(j), and 12-23-109, C.R.S.

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- Conduct hearings according to the provisions of the Act;<sup>14</sup> and
  - Establish inspection fees in accordance with Act specifications<sup>15</sup> and inspect electrical installations for code compliance.<sup>16</sup>

Any staff, witness, consultant, or member of the Board, or complainant under the Act, is immune from civil and criminal liability under the Act, when acting in an official capacity and in good faith, on matters and concerns covered by the Act.<sup>17</sup>

## **Licensing**

Prior to working as an electrician or referring to oneself as a master electrician, journeyman electrician, or residential wireman, one must be issued a license or a temporary permit by the Board.<sup>18</sup> Practicing without a valid license is a Class 2 misdemeanor for the first offense, and a Class 6 felony for any subsequent offense.<sup>19</sup> A fee is charged for each examination and license category.<sup>20</sup> When working as an electrician, every person must carry a license, permit, or registration with them.<sup>21</sup> No political subdivision of state government may require a separate examination, certification, or license beyond what is required by the Act. However, a local government may require a free-of-charge registration for a contractor practicing within its jurisdiction.<sup>22</sup>

To test for a master electrician's license, a candidate must document:<sup>23</sup>

- An electrical engineering degree from an accredited college or university and have one year of construction-related electrical experience;
- An electrical trade school or community college degree and have four years of practical experience in electrical work; or
- One year of practical experience in planning, laying out, supervising, and installing wiring, apparatus, or equipment for electrical light, heat, and power beyond the requirements for a journeymen's license.

To test for a journeyman electrician's license, a candidate must document:<sup>24</sup> four years, including two years commercial or industrial electrical work, as an apprentice electrician or four years of practical experience wiring, installing, and repairing electrical apparatus and equipment for light, heat, and power.

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<sup>13</sup> § 12-23-112, C.R.S.

<sup>14</sup> §§ 12-23-104(2)(d), 12-23-104(2)(e), and 12-23-104(2)(h), C.R.S.

<sup>15</sup> § 12-23-117, C.R.S.

<sup>16</sup> § 12-23-104(2)(f), C.R.S.

<sup>17</sup> § 12-23-118.3, C.R.S.

<sup>18</sup> §§ 12-23-105 and 12-23-107, C.R.S.

<sup>19</sup> § 12-23-119, C.R.S.

<sup>20</sup> § 12-23-112, C.R.S.

<sup>21</sup> Colorado State Electrical Board Rules, 10.2.

<sup>22</sup> § 12-23-111(15), C.R.S.

<sup>23</sup> § 12-23-106(1), C.R.S.

<sup>24</sup> § 12-23-106(2), C.R.S.

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A residential wireman candidate must document to the Board, two years of accredited training or two years practical experience wiring one-, two-, three-, and four-family dwellings.<sup>25</sup>

The Act allows academic experience to substitute for the practical work experience requirements for both journeymen and residential wiremen candidates. A candidate with a degree in electrical engineering from an accredited college or university, or a graduate of an electrical trade school or community college shall be credited with one year of practical experience toward the license requirements. The Board is also directed by the Act, to credit substantially equivalent military training as a substitute for portions of the required practical work experience.<sup>26</sup>

Electrical apprentices must be registered with the Board within 30 days of employment and the Board must be notified within 30 days of employment termination. An apprentice must work under the supervision of an electrical contractor and/or a licensed master electrician who is responsible for both Act and code compliance by the apprentice. One licensed supervisor may not supervise more than three apprentices at any given time on the jobsite.<sup>27</sup>

The Board will issue a temporary working permit to a person who has met the requirements for a license examination, at that level of licensure for which the applicant will test. The permit is good only until the next examination is given and may be revoked at any time by the Board.<sup>28</sup> Notwithstanding, a temporary permit is not valid for more than 30 days.<sup>29</sup>

A license by endorsement is issued to an electrician licensed in another state with substantially equivalent licensing requirements, once the electrician proves he or she has met the Colorado requirements.<sup>30</sup>

A Colorado journeyman's license is issued to a license holder, in good standing, from another state but only if a reciprocal agreement exists between Colorado and the other state.<sup>31</sup>

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<sup>25</sup> § 12-23-106(3)(a), C.R.S.

<sup>26</sup> §§ 12-23-106(2)(b) and 12-23-106(3)(b), C.R.S.

<sup>27</sup> § 12-23-110.5, C.R.S.

<sup>28</sup> § 12-23-110, C.R.S.

<sup>29</sup> Colorado State Electrical Board Rules, 4.1.

<sup>30</sup> § 12-23-109(1), C.R.S.

<sup>31</sup> § 12-23-109(2), C.R.S. and *Reciprocal Agreement/Letter of Intent Regarding Journeyman Electrical Qualifications*, May 9, 2000.

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## License Exemptions

The Act includes several exemptions from the licensing requirements. Employees of electrical utilities, telephone, cable television, telegraph, and railroad entities are exempt from license requirements while carrying out work related to those businesses.<sup>32</sup> Property owners may perform electrical work on their own property or residence provided the work is permitted and inspected. However, no exemption applies to rental, lodging, or property intended for resale.<sup>33</sup> Employees of any firm or corporation may work on property owned, leased, or rented by the firm or corporation, if the work is permitted and inspected according to the provisions of the Act.<sup>34</sup> However, this exemption is not allowed if the firm or corporate owned property is rented to another party, is used for long or short-term lodging, or is open to the public. Routine maintenance, repair, or alteration of existing facilities is exempt from the licensing, permitting and inspection provisions of the statute.<sup>35</sup>

The Act also specifically delineates some narrow exemptions:

- Electrical work performed in, around, or in conjunction with a mine covered by the Federal Mine Safety and Health Amendments Act of 1977;
- Electrical systems in manufactured homes certified by the Division of Housing pursuant to section 24-34-715, C.R.S.;
- Electrical installations under the exclusive control of an electric utility;
- Low voltage installations, such as sprinkler systems, security systems, environmental controls, and sound systems;
- The installation, maintenance, repair, and alteration of communication systems; and
- Electrical work performed on federal property by federal employees.

## ***Inspections***

All State electrical inspectors must be licensed journeyman or master electricians<sup>36</sup> or, in some cases, have passed the residential wireman's examination<sup>37</sup> or hold a Board-approved national certification and have two years practical inspection experience.<sup>38</sup> Local governments may perform inspections within their jurisdictions, provided the inspectors possess the same qualifications as state inspectors and are registered with the Board.<sup>39</sup>

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<sup>32</sup> § 12-23-111(1), C.R.S.

<sup>33</sup> § 12-23-111(2), C.R.S.

<sup>34</sup> § 12-23-111(3), C.R.S.

<sup>35</sup> §§ 12-23-111(4) and 12-23-111(6), C.R.S.

<sup>36</sup> § 12-23-115(1)(a)(I), C.R.S.

<sup>37</sup> § 12-23-115(1)(a)(I)(A), C.R.S.

<sup>38</sup> § 12-23-115(1)(a)(I)(B), C.R.S.

<sup>39</sup> § 12-23-115(1)(b), C.R.S.



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Regulated electrical work requires that a permit be issued by either the Board, through the electrical utility that provides service to the permit location, or a local building department when applicable.<sup>40</sup> Permits are generally issued for one year but may be issued for up to three years.<sup>41</sup>

The Act establishes several permit categories. Residential permits and the associated fees are determined by the square footage of the project.<sup>42</sup> Nonresidential permit fees are based on the dollar value of the work.<sup>43</sup> Local governments may not charge fees in excess of 15 percent of those established by the state.<sup>44</sup> If electrical installations begin prior to filing a permit application, then the fee is doubled.<sup>45</sup>

State inspectors must make inspections within three days of an application for inspection. If an inspection is not made within five working days from the date of the request, work may continue on the project without penalty from the Board.<sup>46</sup> If an inspector finds that the installation is noncompliant, then a notice of disapproval, including needed corrective actions, must be sent to both the Board and the contractor within two days.<sup>47</sup> If an inspector determines that the situation warrants it, he or she can order that all electrical service be discontinued until a situation is corrected. Any applicant may appeal a disapproval notice to the Board and a hearing must be granted within seven days.<sup>48</sup>

### Inspection Exemptions

There are exemptions provided in the Act for installations performed under the exclusive control of electric utilities for generation, control, transformation, or distribution of electric energy<sup>49</sup> and all buildings and facilities inside a fenced generating station, substation, control center, or communication facility.<sup>50</sup>

Property used in, around, or in conjunction with any mine inspected pursuant to the Federal Mine Safety and Health Amendments Act of 1977 is not inspected or subject to the provisions of the Act.<sup>51</sup>

Installations of systems that use the electricity supplied through the wiring from an inspected facility are exempt from inspection, i.e., the installation of sprinkler, sound, communications, alarm, or computer systems.<sup>52</sup>

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<sup>40</sup> § 12-23-116(1), C.R.S.

<sup>41</sup> § 12-23-116(6), C.R.S.

<sup>42</sup> § 12-23-117(1)(a), C.R.S.

<sup>43</sup> § 12-23-117(1)(b), C.R.S.

<sup>44</sup> § 12-23-117(2), C.R.S.

<sup>45</sup> § 12-23-117(3), C.R.S.

<sup>46</sup> §§ 12-23-116(2) and 12-23-116(3), C.R.S.

<sup>47</sup> § 12-23-116(4), C.R.S.

<sup>48</sup> § 12-23-116(3), C.R.S.

<sup>49</sup> § 12-23-111(17)a), C.R.S.

<sup>50</sup> § 12-23-111(17)(b), C.R.S.

<sup>51</sup> § 12-23-111(16), C.R.S.

<sup>52</sup> § 12-23-111(18-24), C.R.S.

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## **Discipline**

The Board may deny, suspend, revoke, refuse to renew, any license or registration issued or applied for under the provisions of the Act, may place a licensee or registrant on probation, or may issue a letter of admonition or a written citation to a licensee, registrant, or applicant for licensure for any of the following reasons:<sup>53</sup>

- Violating the Act, Board rules, any construction law enacted by a political subdivision, any labor law, any health law, any workers' compensation law, or any Colorado or federal tax law;
- Failing to adhere to occupational standards;
- Misrepresenting oneself to the Board or the public;
- Failing to adequately supervise employees according to the Act;
- Being subject to disciplinary action in another jurisdiction for an action which is also a violation of Colorado legal provisions; and
- Pleading guilty, *nolo contendere*, or being convicted of a felony.

If the Board issues a citation to a licensee, the licensee may request a negotiated settlement, conducted under Board rules, or an administrative hearing to appeal the citation.<sup>54</sup>

The Board must adopt a uniform fining schedule to be used in conjunction with, and in addition to the aforementioned disciplinary actions. The Act stipulates that first offenses are capped at \$1,000, second offenses are capped at \$2,000, and subsequent violations are capped at \$2,000 per day that a violation occurs.<sup>55</sup> Half of all fines collected under the Act are sent to the State Treasurer who credits the money to the General Fund and the Division sends the remaining funds to the local jurisdiction where the violation occurred.<sup>56</sup>

If a license is revoked pursuant to the Act, the licensee may not apply for a new license for two years from the date of revocation.<sup>57</sup>

All final actions and orders of the Board are subject to judicial review by the Court of Appeals.<sup>58</sup>

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## **Board Rules**

Pursuant to section 104(1)(a), of the Act, the Board generates rules necessary for the Division to administer the Act. The rules delineate standards for installation, by adopting the 2008 edition of the National Electrical Code. The Board rules also address the management of license applications and examinations, temporary work permits, and the enforcement and adjudication systems written in the statute.

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<sup>53</sup> § 12-23-118(1), C.R.S.

<sup>54</sup> § 12-23-118(4), C.R.S.

<sup>55</sup> § 12-23-118(5), C.R.S.

<sup>56</sup> § 12-23-118(7)(a), C.R.S.

<sup>57</sup> § 12-23-118.1, C.R.S.

<sup>58</sup> § 12-23-120, C.R.S.

## Program Description and Administration

The State Electrical Board (Board) is a Governor-appointed, Senate-approved, nine-member, Type 1 board charged with the implementation of the Electrical Practice Act (Act). It is made up of four electricians, two who are master electricians that are also contractors and two who are either master or journeyman electricians who are not contractors; two members who represent electrical utilities which render service to the public; one county- or municipality-employed building official; one active general contractor; and one member of the public at large.<sup>59</sup> The Board independently governs the electrical profession in Colorado. The Board adopts and uses the National Electrical Code as its standard for licensing and installations.

The Act requires the Board to meet monthly. To fulfill the statutory requirement, Board meetings are face-to-face every other month and by conference call every other month. All Board proceedings, with the exception of licensee discipline discussions, are open to the public. The Colorado Attorney General's office has determined disciplinary discussions to be a matter of attorney-client privilege and are held in a closed executive session. However, all actions taken by the Board as a result of the discussions must be taken in an open session.

The program is cash funded. Its full-time equivalent (FTE) employees and expenditures vary only slightly from year to year. Average annual expenditures increased approximately 2.6 percent per year over the sunset review period. However, there was a decrease from fiscal year 05-06 to 06-07, which corresponds with a decrease in the number of licenses issued. Of the roughly 35 FTE utilized by the program annually, approximately 30 are allocated to inspector positions throughout Colorado and the remaining positions are allocated to the support staff such as the Program Director, Chief Inspector, Enforcement Unit Supervisor, two program assistants, and other administrative personnel.

**Table 1  
Electrical Board  
Fiscal Information<sup>60</sup>**

Fiscal Year	Total Program Expenditure	FTE
03-04	\$3,703,579	35.5
04-05	\$3,712,446	35.5
05-06	\$3,994,290	37.0
06-07	\$3,984,206	34.2
07-08	\$4,178,684	34.6

<sup>59</sup> § 12-23-102, C.R.S.

<sup>60</sup> FTE in Table 1 does not include staffing in the centralized offices of the Division. Centralized offices include the Director's Office, Office of Investigations, Office of Expedited Settlement, Office of Examination Services, Office of Licensing, and Office of Support Services. However, the cost of those FTE is reflected in the Total Program Expenditures. The Board pays for those FTE through a cost allocation methodology developed by the Division and the Executive Director's Office of the Department.

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Act implementation is concentrated into two areas: the licensing and registration of electrical tradespersons and contractors, and the permitting and inspecting of electrical installations. Though there is overlap in administering the concentrations, the majority of the Board's time is spent on issues surrounding the licensing, registering, and/or disciplining of individual electricians and electrical contractors, while the Board staff, employed by the Department of Regulatory Agencies', Division of Registrations (Division), acts as the administrative arm of the Board, expends the majority of its manpower and time on installation inspections. Analysis of Board revenues during fiscal year 07-08, further illustrates the distribution of labor: 88 percent of revenues came from inspection fees while licensing fees accounted for 12 percent of the money brought in to the Board.<sup>61</sup>

## **Licensing**

### Application

An application for license or registration may be obtained at the Division office or on the Board website. Once completed, it must be returned to the Division's Office of Licensing with the application fee. Currently the fee for a master electrician, journeyman electrician, or a residential wireman license is \$20, the fee for an apprentice registration is \$10, and a contractor's registration is \$30. The application and all supporting documentation is kept on file for one year from date of receipt. If the application process is not completed during that year, all information is purged and a new application, fee, and required information must be submitted before a license is issued.<sup>62</sup>

If a license applicant wishes to work as an electrician prior to obtaining a license, he or she must request a temporary work permit when applying for a license. Only one temporary work permit can be issued per applicant and only at the time of original application. Temporary work permits are good up to 30 days. If, for any reason, an applicant fails to qualify for licensing, the applicant must cease and desist from working at the level of licensure granted by the temporary permit until passing the appropriate exam. If the applicant is not licensed in another category and wishes to work, the applicant must register as an apprentice and work with supervision.

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<sup>61</sup> Department of Regulatory Agencies, Electrical Board, Retrieved December 16, 2008, from <http://www.dora.state.co.us/electrical/about.htm#funding>

<sup>62</sup> Colorado Division of Registrations, Application for Original License by Examination. Retrieved January 16, 2009, from <http://www.dora.state.co.us/electrical/forms/ELEOriginal.pdf>

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## Examination

The electrical licensing examination is administered by Pearson Vue, a private testing agency, for qualified applicants who wish to obtain a residential wireman, journeyman, or master electrician license. Once an application has been approved, the applicant is provided information needed to acquire a candidate handbook which explains the required fee and advises how to schedule the examination. The examinations are offered several times every month in the various sites around the state including: Colorado Springs, Denver, Durango, Grand Junction, Greeley, Pueblo, and Wheat Ridge.<sup>63</sup> A \$76 examination fee is charged at the time the applicant registers for the examination and it covers the cost of the license, if the applicant passes the examination.<sup>64</sup>

Table 2 outlines the number of examinations administered and the percentage of examinations passed by each license category during the sunset review period. Considering the entire timeframe, fiscal years 03-04 through 07-08, the overall pass rate for all license categories is approximately four of every ten candidates, 42 percent. The passing percentages for journeymen and master electricians are slightly higher, approximately 45 percent, while residential wiremen have a rate of only 36 percent. These numbers indicate that the examination is rigorous but that more experience positively correlates to better performance.

**Table 2**  
**Electrician Examinations**  
**Fiscal Year 03-04 through 07-08b**

<b>Fiscal Year</b>	<b>Number of Examinations</b>	<b>Pass Rate</b>
03-04	Residential Wireman – 331	37%
	Journeyman – 869	60%
	Master- 457	35%
04-05	Residential Wireman – 341	41%
	Journeyman – 1144	56%
	Master – 636	45%
05-06	Residential Wireman – 332	30%
	Journeyman – 978	34%
	Master – 465	50%
06-07	Residential Wireman – 254	34%
	Journeyman – 1,151	34%
	Master – 435	51%
07-08	Residential Wireman – 334	36%
	Journeyman – 1,309	33%
	Master – 486	51%

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<sup>63</sup> *Ibid.*

<sup>64</sup> The examination fee was \$74 dollars prior to March 2005.

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There are different license requirements depending for which grade license an applicant applies.<sup>65</sup>

After December 31, 2005, the Board began mandating an *Affidavit of Experience* form, instead of work verification letters on company letterhead for all license types. No other format is accepted by the Board to document workplace experience.

### *Residential Wireman*

A candidate must provide verification of two years of electrical construction wiring experience, for lights, heat, and power of one, two, three, and four family dwellings. Below, Table 3 outlines the residential wireman licensing activity during the review period. During the review period, there was an annual average of 1,061 active, licensed residential wiremen in Colorado with approximately an 80 percent renewal rate.

**Table 3**  
**Residential Wireman Licensure**  
**Fiscal Year 03-04 through 07-08**

Fiscal Year	Exam	Endorsement	Reinstatement	Renewal	Total
03-04	123	0	21	0	1,128
04-05	141	1	9	913	1,006
05-06	97	0	21	0	1,123
06-07	86	1	7	889	955
07-08	120	1	16	0	1,094

\*Concerning the tables included in this licensing section of the sunset review, the figures for the various types of license acquisition do not equal the figures in the "total" column due to a number of circumstances, including computer system anomalies. Many of these anomalies can be attributed to the date on which various reports are pulled, as well as when data is entered into the system.

### *Journeyman Electrician*

A candidate must provide verification of four years electrical construction wiring experience for lights, heat, and power. At minimum, two years of that experience must be commercial and/or industrial work. Verification of experience must differentiate between the percentage of time spent installing commercial/industrial wiring and the percentage of time spent installing residential wiring. Table 4 depicts the licensing activity for journeymen during the review period. During that time, there was an annual average of 9,440 journeymen licensed and the renewal rate was approximately 90 percent.

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<sup>65</sup> DORA, *Electrical Board Licensing Requirements*. Retrieved January 16, 2009, from <http://www.dora.state.co.us/electrical/requirements.htm>

**Table 4**  
**Journeyman Electrician Licensure**  
**Fiscal Year 03-04 through 07-08**

Fiscal Year	Exam	Endorsement / Reciprocity	Reinstatement	Renewal	Total Active
03-04	526	7 / 62	101	0	9,448
04-05	646	11 / 85	64	8,703	9,245
05-06	324	5 / 86	96	0	9,748
06-07	382	6 / 77	38	8,678	9,028
07-08	423	17 / 131	119	0	9,730

*Master Electrician*

A candidate must provide verification of five years of electrical experience; four years of that time must be electrical construction wiring for lights, heat, and power. At minimum, two years of that experience must be commercial and/or industrial work. One additional year must be in planning, laying-out, supervising, and installing wiring, apparatus, and equipment for electrical light, heat, and power.

A master electrician applicant, who holds a Colorado journeyman electrician's license, is required to provide verification of one full year of planning and lay-out experience, in addition to the time previously verified. Table 5 depicts the licensing activity for master electricians during the review period. During that time, there was an annual average of 5,466 active masters' licenses and those licensees renewed at approximately a 95 percent rate.

**Table 5**  
**Master Electrician Licensure**  
**Fiscal Year 03-04 through 07-08**

Fiscal Year	Exam	Endorsement	Reinstatement	Renewal	Total
03-04	204	13	63	0	5,231
04-05	288	17	35	5,024	5,270
05-06	224	24	38	0	5,558
06-07	218	37	32	5,257	5,471
07-08	243	33	54	0	5,802

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## ***License by Endorsement or Reciprocity***

Colorado has reciprocal licensing agreements, for journeymen only, with Alaska, Arkansas, Minnesota, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, and Wyoming. If a candidate wishes to obtain a license via reciprocity, he or she must submit an application, a \$30 fee, and a copy of the state-issued license used to qualify under the reciprocal agreement.<sup>66</sup> Unlike the endorsement process, the license is issued without further documentation based solely on the strength of a license in good standing and the reciprocal agreement.

If a person wishes to get a residential wireman, journeyman, or master electrician license by endorsement, he or she must pay a \$20 fee and be able to document the following:<sup>67</sup>

- A current license issued by another state;
- A passing grade on an examination based on the current, or immediately previous, edition of the National Electrical Code in effect in Colorado at the time of application;
- The completion of the required years and type of experience for the comparable license or completion of a state or federally approved apprenticeship program; and
- A record of experience and work history on an *Affidavit of Experience* form.

## ***Renewals***

Licenses are renewed during odd numbered years regardless of when they are issued. During the sunset review examination period, fiscal years 03-04 through 07-08, an average of 15,967 electrical practitioners held a license annually. During that time, more than 90 percent of the active licenses were renewed.

## ***Registration***

The Act requires that two classes of electrical professionals be registered with the Board: apprentice electricians and electrical contractors.<sup>68</sup>

In Colorado, an individual employed in the electrical trade as an apprentice must be registered as an apprentice until obtaining a journeyman electrician's license. Though licensed, a residential wireman must also be registered as an apprentice if he or she chooses to work on nonresidential jobs. If an electrician fails to register as an apprentice as provided in the Act, the failure may result in disallowance of work experience.<sup>69</sup> An employing electrical contractor is responsible for notifying the Division of an apprentice's employment status within 30 days of both the hiring and the termination.<sup>70</sup>

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<sup>66</sup> *ibid.*

<sup>67</sup> Division of Registrations, Application for License by Endorsement or Reciprocity-Electrician. Retrieved January 20, 2009, from <http://www.dora.state.co.us/electrical/forms/ELECEndorsement.pdf>

<sup>68</sup> §§ 12-23-104(2)(c), 12-23-110.5(3)(a), and 12-23-106(5)(a), C.R.S.

<sup>69</sup> DORA, *Electrical Board Licensing Requirements*. Retrieved January 16, 2009, from <http://www.dora.state.co.us/electrical/requirements.htm>

<sup>70</sup> DORA, *Electrical Board Apprentice Information*. Retrieved January 20, 2009, from <http://www.dora.state.co.us/electrical/apprentice.htm>



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Table 6 depicts the apprentice registration activity during the review period. During the first three fiscal years of the review period, fiscal year 03-04 through 05-06, the average number of electrical apprentices working in Colorado was 15,955. However, that number decreased to an annual average of 12,399, representing a decline of more than 22 percent, during the final two years of the review, fiscal years 06-07 and 07-08. The Board staff attributes the decline, in part, to a reporting system policy change. Currently, an employing contractor is responsible for reporting on-line. The new reporting system updates and terminates non-working apprentices often, so the actual number of practicing apprentices may not have dropped as radically as the data imply. Other possible explanations are a drop in the number of construction projects across Colorado and laws requiring U.S. residency for tradespeople.

**Table 6**  
**Electrical Apprentice Registration**  
**Fiscal Year 03-04 through 07-08**

Fiscal Year	Original	Total
03-04	1,681	15,939
04-05	2,026	16,541
05-06	2,519	15,386
06-07	2,243	12,862
07-08	2,029	11,935

Becoming a registered electrical contractor, calls for a completed Colorado Electrical Contractor's application, payment of the registration fee, and meeting the following criteria:<sup>71</sup>

- Be, or employ, a Colorado licensed master electrician who is a full-time employee and is the responsible party for all electrical work performed by the company. The designated master electrician must sign an *Acknowledgment of Responsibility* form and may be the responsible party for only one company at a time;
- Submit evidence of compliance with the workers' compensation and unemployment compensation laws; and
- Obtain an authority to conduct business in the State of Colorado from the Colorado Secretary of State's office if the applicant is not a Colorado-based corporation. Limited liability companies and partnerships must also contact the Secretary of State's office.

A contractor's application is good for one year from date of receipt. After that time, if all supporting documentation required to complete an application is not received, the file is purged. Subsequently, an applicant must resubmit a new application packet and fee if he or she desires to become a registered contractor.<sup>72</sup>

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<sup>71</sup> Colorado Division of Registrations, *Application for Original License-Electrical Contractor*. Retrieved January 20, 2009, from <http://www.dora.state.co.us/electrical/ec/ECapplication.pdf>

<sup>72</sup> *ibid.*

There is also a registration expiration grace period for new applicants. If an applicant is issued a license within 120 days of the upcoming renewal expiration date, he or she will be issued a license with the subsequent expiration date. For example, licenses issued between November 1, 2008 and February 28, 2009 reflected a license expiration date of February 28, 2011. Licenses issued prior to November 1, 2008 reflected an expiration date of February 28, 2009<sup>73</sup> and must renew during the upcoming renewal period.<sup>74</sup>

Table 7 below, shows contractor registration activity during the sunset review period. The average number of electrical contractors registered to work in Colorado was 3,304. The renewal rate in fiscal year 04-05 was 90 percent falling to 81 percent in fiscal year 06-07.

**Table 7**  
**Electrical Contractor Registration**  
**Fiscal Year 03-04 through 07-08**

Fiscal Year	Original	Reinstatement	Renewal	Total
03-04	278	69	0	3,276
04-05	296	56	2,934	3,182
05-06	257	65	0	3,453
06-07	242	98	2,886	3,133
07-08	256	100	0	3,476

### ***Inspections***

Electrical installation inspections are performed by Board staff in areas that do not have a regionally-based permit and inspection program. The majority of Colorado counties have at least some geographical portion under the jurisdiction of the state inspection program. The exceptions to this general rule are: Boulder, Broomfield, Chaffee, Denver, Douglas, Eagle, El Paso, Jefferson, Mesa, Pitkin, Pueblo, Routt, Summit, Teller, and Weld. However, even in these counties, the state program is responsible for the installation inspections in all public schools.

<sup>73</sup> All Electrical Contractor licenses expire on February 28 in odd numbered years and must be renewed to continue practicing.

<sup>74</sup> Colorado Division of Registrations, *Application for Original License-Electrical Contractor*. Retrieved January 20, 2009, from <http://www.dora.state.co.us/electrical/ec/ECApplication.pdf>

All public school electrical installations throughout the state are permitted and inspected by the state program, regardless of the presence of a regional program. However, permits, as issued in most cases, do not distinguish between schools and any other kind of project. Because they are not tracked separately, the number of public school-related permits and inspections can only be estimated. Conservative estimates show that there was an average of 738 permits, requiring 2,319 inspections from fiscal year 03-04 through 07-08. However, the number steadily increased during that period and the estimates for fiscal year 07-08 were 1,046 permits and 3,363 inspections.

Table 8, below, delineates the total number of permits, of all kinds, issued and inspections performed by the state inspection program during the sunset review period.

**Table 8  
Permits and Inspections  
Fiscal Year 03-04 through 07-08**

<b>Fiscal Year</b>	<b>Number of Inspections</b>	<b>Number of Permits</b>
03-04	43,661	24,555
04-05	46,257	25,662
05-06	49,215	27,056
06-07	48,680	26,190
07-08	46,973	24,779
<b>TOTAL</b>	<b>234,786</b>	<b>128,242</b>

Regional jurisdictions may opt in or out of the state inspection program for a variety of reasons. According to Board staff, there are no definitive reasons that explain when or why a change is made, but generally changes are couched in manpower/workload issues. The following table shows the local jurisdictions changing the locus of inspection authority from calendar years 2005 through the beginning of 2009. One entire county, Lake, was added to the state permit and inspection program. The remaining jurisdictions are smaller political subdivisions that chose to be removed from the state program in favor of local permit and inspection programs.

**Table 9**  
**Electrical Board**  
**Jurisdictional Inspection Changes**

Jurisdiction	2005		2006		2007		2008		2009	
	Added	Removed	Added	Removed	Added	Removed	Added	Removed	Added	Removed
Red Cliff						x				
Elizabeth								x		
Idaho Springs								x		
Lake County									x	
Fraser										x
Granby										x
Winter Park										x

Regardless of which jurisdiction performs an inspection, the state code, as adopted by the Board, is supposed to be the minimum standard used to inspect installations,<sup>75</sup> every inspector in Colorado must have the same qualifications as the state inspectors, and every inspector must be registered with the Board.<sup>76</sup> Once registered, an inspector's registration form is filed with the Board and no effort is made to find out if an inspector is actively employed. The form is kept in case an inquiry concerning an inspector's qualifications comes to the Board.

### ***Complaints/Disciplinary Actions***

Complaints come into the Board from several sources: other licensed professionals, local or state inspectors, and consumers.

Table 10 shows the number and type of complaints filed with the Board during the review period. The overwhelming majority of the complaints involve practicing without a license or not performing electrical work up to the expected standards. The spike in the number of felony conviction complaints during fiscal year 06-07 is due to a change in Division practices recommended by a Colorado State Auditor's report. That report advocated increased monitoring of felons by the Board.

<sup>75</sup> §§ 12-23-104(2)(a), and 12-23-116(2), C.R.S.

<sup>76</sup> § 12-23-115(1)(b), C.R.S.

**Table 10**  
**Complaint Information**  
**Fiscal Year 03-04 through 07-08**

<b>Nature of Complaints</b>	<b>FY 03-04</b>	<b>FY 04-05</b>	<b>FY 05-06</b>	<b>FY 06-07</b>	<b>FY 07-08</b>
Practicing w/o a License	31	44	67	54	49
Standard of Practice	40	73	52	76	50
Fee Dispute	0	0	0	0	0
Scope of Practice	1	1	0	0	2
Sexual Misconduct	0	0	0	0	0
Substance Abuse	0	0	0	0	0
Theft	0	0	0	0	0
Felony Conviction	0	1	12	41	51
License Application Fraud	1	0	0	2	2
<b>TOTAL</b>	<b>73</b>	<b>119</b>	<b>131</b>	<b>173</b>	<b>154</b>

Though there is variation, as Chart 1 on page 24 illustrates, complaints follow the same general path(s). After receiving a complaint, the Board sends a packet to the licensee complained against, with the evidence presented by the complainant, and instructions on how to respond and proceed. In rare cases that are deemed threatening, or if the complaint is filed against a habitual offender, the Board will send a complaint directly to the Division's Office of Investigations (OI) for closer scrutiny. In most cases, following a reply made within 30 days, the complaint is sent to the Board for review at its monthly meeting. The Board first chooses whether to pursue the issue. If the Board deems that other action is warranted, it has several options to choose from: dismiss the charge and issue a confidential letter of concern (LOC); issue a letter of admonition (LOA) or a citation, which the licensee may choose to accept, ending the process, or contest in a hearing; direct staff to pursue a recommended disciplinary action, or refer the complaint to the OI for further inquiry.

The cases the Board directs staff to pursue generally have Board-recommended disciplinary action attached, i.e., LOA, fine, probation, suspension, or revocation. Subsequently, depending on the gravity of the situation and the nature of the recommendation, the Board may forward the issue to the Attorney General's Office (AGO), for prosecution. Still, most every issue goes to the Division's Office of Expedited Settlement (ESP), which will confer with the licensee to resolve the issue with a stipulated settlement, i.e., disciplinary agreement. A stipulated settlement may contain one or more of the disciplinary actions available to the Board such as a probationary period, a fine, a practice limitation, or an LOA. If ESP and the licensee cannot come to a stipulated settlement, the issue is then forwarded to the AGO for prosecution.

When a complaint is sent to OI, it will include a comment from the Board, to facilitate the investigation. The comment explains why the case is being sent and a direction opening as to what it expects OI will find. Upon completion of the investigation, OI returns the case file to the Board with its findings. The Board decides to either dismiss or commence the disciplinary process through ESP, as noted above.

**Chart 1  
Electrical Board  
Disciplinary Action  
Flow Chart**

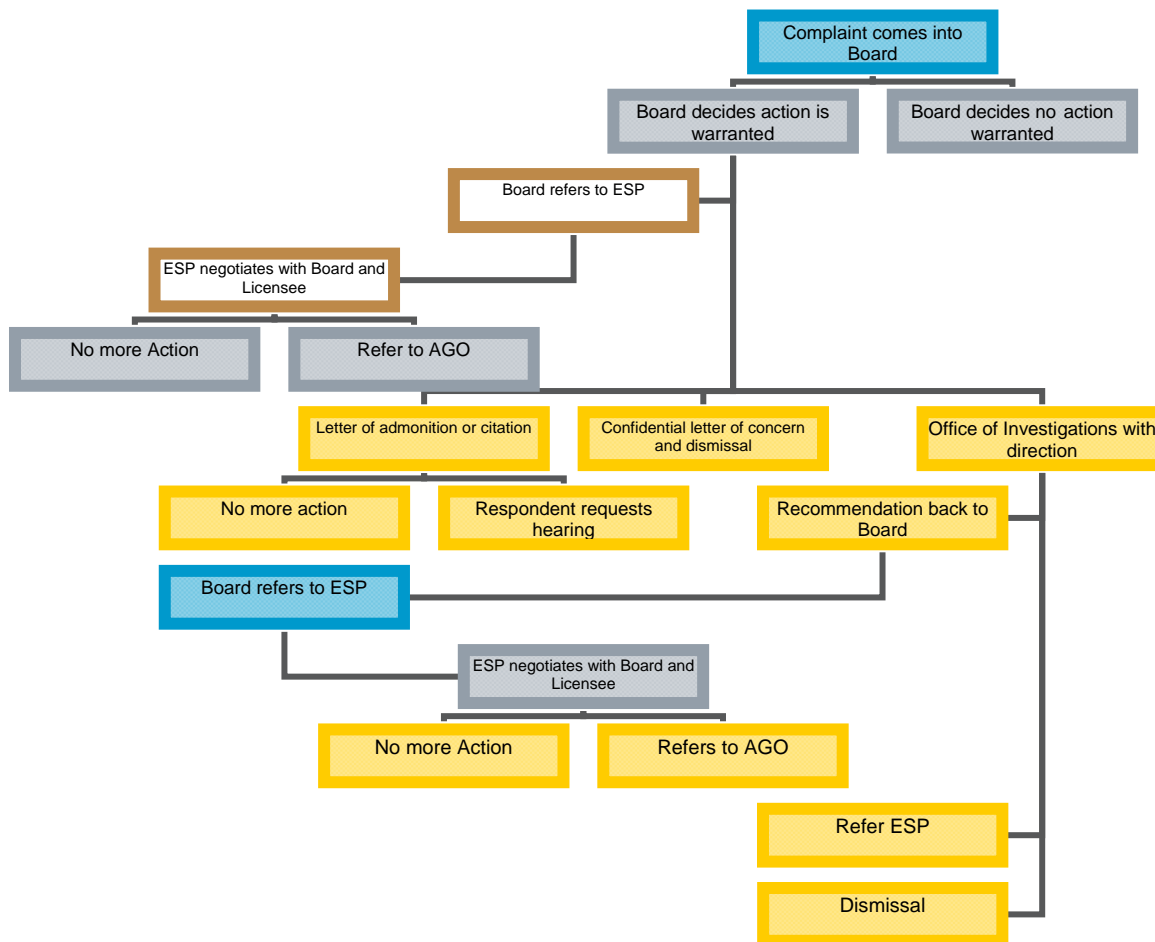


Table 11 outlines the actions available to the Board to discipline licensees and the number of occurrences for each during the review period. During fiscal year 06-07, the number of revocations/surrenders/voluntary relinquishments, letters of admonition, and total disciplinary actions all had dramatic increases. These increases are attributable to the State Auditor's report calling for closer scrutiny of convicted felons.

**Table 11**  
**Final Agency Actions**  
**Fiscal Year 03-04 through 07-08**

Type of Action	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08
Revocation / Surrender / Voluntary Relinquishment	0	0	0	13	4
Suspension	0	0	0	0	1
Probation / Practice Limitation	6	13	22	33	43
Letter of Admonition	0	10	7	23	13
License Denied	0	0	0	0	0
Citation with Fine	24	21	22	23	21
Other	0	1 Agreement	0	7 Cease & Desist 1 Injunction	21 Cease & Desist
<b>TOTAL DISCIPLINARY ACTIONS</b>	<b>30</b>	<b>45</b>	<b>51</b>	<b>99</b>	<b>103</b>
<b><i>Dismissals</i></b>	<b>45</b>	<b>73</b>	<b>75</b>	<b>61</b>	<b>39</b>
Letter of Concern	0	1	3	9	5
<b>TOTAL DISMISSALS</b>	<b>45</b>	<b>74</b>	<b>78</b>	<b>70</b>	<b>44</b>

The Act demands that the Board develop a uniform schedule for fines.<sup>77</sup> Table 12 lists the amounts available to be charged for each statutory violation.

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<sup>77</sup> § 12-23-118(5)(a), C.R.S.

**Table 12**  
**Board Fines Schedule**  
**Effective 8-1-2008**

Violation	Colorado Revised Statute Citation	Offense		
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
Failure of a journeyman to be licensed while engaging in electrical work	§ 12-23-105 (1)	\$225	\$600	Up to \$2,000 per day
Failure of a master electrician to be licensed while engaging in electrical work	§ 12-23-105 (1)	\$300	\$600	Up to \$2,000 per day
Failure of a residential wireman to be licensed while engaging in electrical work	§ 12-23-105 (1)	\$150	\$375	Up to \$2,000 per day
Failure of an electrical contractor to register apprentice	§ 12-23-110.5 (3)	\$225	\$600	Up to \$2,000 per day
Failure of an apprentice to work under the supervision of a licensed electrician	§ 12-23-110.5 (1)	\$50	\$200	Up to \$2,000 per day
Employment by an electrical contractor of unlicensed persons doing electrical work	§ 12-23-118 (1)(k)	\$300	\$600	Up to \$2,000 per day
Failure of an electrical contractor to register	§ 12-23-106 (5)(a)	\$750	\$1,500	Up to \$2,000 per day
Failure to supervise an apprentice	§ 12-23-110.5 (1), (3)(b) § 12-23-118 (1)(j)	\$375	\$600	Up to \$2,000 per day
Failure of an electrical contractor to maintain a supervisory ratio of one licensed electrician to three apprentices	§ 12-23-110.5 (1)	\$375	\$600	Up to \$2,000 per day
Performing electrical work beyond the authorization of the electrical license or registration	§ 12-23-105 (1)	\$375	\$750	Up to \$2,000 per day
Failure to obtain a permit and/or failure to obtain an inspection	§ 12-23-116	\$375	\$900	Up to \$2,000 per day
Failure to correct electrical code violations within a reasonable time (30 days)	§ 12-23-116	\$450	\$900	Up to \$2,000 per day
Providing false or misleading advertising	§ 12-23-118 (1)(h)	\$375	\$750	Up to \$2,000 per day
Deception, misrepresentation or fraud in obtaining or attempting to obtain a license (includes loaning a license)	§ 12-23-118 (1)(i)	\$1,000	\$2,000	Up to \$2,000 per day
Failure to comply with other state or federal law (safety, health, insurance, tax)	§ 12-23-118 (1)(p)	\$375	\$750	Up to \$2,000 per day
Other violations of the state electrical statute	§ 12-23-118 (1)	Up to \$1,000	Up to \$2,000	Up to \$2,000 per day



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Table 13 shows the number of fines actually collected pursuant to the Act versus the total number of fines issued in Table 11. The reduction from the previous quantity is attributable to stipulated agreements negotiated between the Board and the offender.

**Table 13**  
**Fines Collected**  
**Fiscal Year 03-04 through 07-08**

<b>Fiscal Year</b>	<b>Number of Fines Collected</b>	<b>Total Value of Fines Collected</b>
03-04	26	\$10,358
04-05	43	\$10,418
05-06	36	\$12,028
06-07	38	\$11,700
07-08	34	\$14,850

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## Analysis and Recommendations

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### ***Recommendation 1 – Continue the Electrical Practice Act nine years, until 2019.***

Fire departments across the U.S. responded to an estimated 52,500 U.S. home fires involving electrical failure or malfunction in 2006. These fires resulted in 340 civilian deaths, 1,400 injuries, and \$1.4 billion in direct property damage.<sup>78</sup> The National Electrical Code (NEC) is the most widely adopted safety code in the world. The charge of the NEC is to provide practical safeguards from the hazards of using electricity<sup>79</sup> by adopting standards for electrical system installation.

The Electrical Practice Act (Act), directs the State Electrical Board (Board) to adopt the NEC as the state electrical code,<sup>80</sup> be specifically involved in the testing and licensing of electricians, and provide for inspections of electrical installations where local inspection authorities are not providing such service.<sup>81</sup> The Board is also responsible for policing the profession.<sup>82</sup>

Because of the extreme danger to the public from unqualified installers and faulty electrical installations, continuation of the Act is vital. Deregulation of the electrical profession could result in a proliferation of electricity-related fires, injuries, and deaths. The Board and its staff ensure that licensees are aware of and follow the most current code, thereby protecting consumers' health, safety, and welfare.

### ***Recommendation 2 – Confer enforcement authority to the Board concerning regional compliance with state electrical code updates.***

During the course of this sunset review, research uncovered multiple regional permit and inspection jurisdictions that had not adopted the state electrical code as the minimum standard for their programs as they are required by statute to do. There are several problems associated with this inaction; the regional jurisdictions are clearly defying the directives of the General Assembly laid out in the Act, but most importantly, the health, safety, and welfare of the citizens who live in those jurisdictions is compromised.

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<sup>78</sup> National Fire Protection Association, Electrical Safety. Retrieved July 31, 2009, from <http://www.nfpa.org/categoryList.asp?categoryID=1201&URL=Research%20&%20Rep%85&cookie%5Ftest=1>

<sup>79</sup> National Fire Protection Association, *Fact Sheet: Tamper-Resistant Receptacles*.

<sup>80</sup> § 12-23-104(2)(a), C.R.S.

<sup>81</sup> § 12-23-100.2, C.R.S.

<sup>82</sup> § 12-23-118, C.R.S.

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In adopting the Act, the General Assembly was unambiguous in expressing that the ultimate authority for regulating the electrical industry in Colorado lies with the Board. The Board licenses and disciplines licensees and is mandated by the Act to adopt minimum standards for performing electric-related work using the NEC as its guide. If a regional jurisdiction chooses to provide its own permitting and inspection program it may use a stricter code than the state code, but must use, at minimum, the standards in the state code. The Board powers and duties section of the Act reads, in part:<sup>83</sup>

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.

This section of the Act is quite clear that the state code is the minimum standard to be used by any political subdivision. The inspection – application – standards section of the Act is also unambiguous in stating that any regional program must use the state code as its minimum standard:<sup>84</sup>

Any electrical installation in any new construction or remodeling or repair ... 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...

Moreover, the Act states that any electrical inspector employed by a regional jurisdiction, “shall possess the same qualifications required of state inspectors under this section...”<sup>85</sup> In other words, a regional inspector shall inspect installations, at minimum, according to the state code.

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<sup>83</sup> § 12-23-104(2)(a), C.R.S.

<sup>84</sup> § 12-23-116(2), C.R.S.

<sup>85</sup> § 12-23-115(1)(b), C.R.S.

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Changes to the NEC, and subsequently to the state code, are not made in a vacuum. There are several steps in the process that amends the NEC that encourages both professional and public access. The state code adoption process also involves public hearing and input. The driving forces for any code change are the health, safety, and welfare of the general public and protecting consumers from electric-related harm.

The most recent edition of the NEC, and state code, had three significant changes that improve safety. The expansion of arc-fault circuit-interrupter (AFCI) protection, the expansion of ground-fault circuit-interrupter (GFCI) protection, and the addition of tamper-resistant receptacles in certain areas were adopted.<sup>86</sup>

The U.S. Consumer Product Safety Commission (USPSC) estimates that each year from 1990-1998 residential electrical distribution system fires caused an average of 326 deaths, 1,481 injuries and \$646 million in lost property. The USPSC also states that inclusion of AFCIs could have prevented 50 percent or more of the fires.<sup>87</sup>

GFCIs have long been recognized as an essential component to an electrical system. GFCIs prevent electrocutions, some electrical fires, and reduce the severity of others by interrupting the flow of electricity.<sup>88</sup> The 2008 NEC expanded the use of GFCIs in residences to basements, garages, and accessory buildings, eliminating most of the previous exemptions.

Unlike receptacle (plug-outlet) caps, which can be lost, tamper-resistant receptacles have spring-loaded shutters that close the contact openings. Both springs must be compressed at the same time or the shutters do not open. Each year approximately 2,400 children suffer severe shock and burns when they stick items into the slots of electrical receptacles. Adding the tamper-resistant receptacles to the 2008 NEC provides security against insertion of objects other than cord plugs into an outlet.<sup>89</sup>

The protection of the public is enhanced by the addition of these provisions to both the NEC and the state code. If a regional permitting and inspection jurisdiction does not adopt the most recently approved state code as the minimum installation standard, as is demanded by statute, the public is in greater danger of harm.

While the Board is the clear oversight authority in these matters, the Act does not confer any enforcement power to the Board. Therefore, no action can be taken against regional jurisdictions that choose to ignore the mandates in the Act, disregard the will of the General Assembly, and provide less protection to the public it is obligated to protect. The General Assembly should give the Board power to act and protect the consuming public.

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<sup>86</sup> Johnston, Michael, "At Risk Below the Minimum" *IAEI News*, November-December, 2007. p56.

<sup>87</sup> U.S. Consumer Product Safety Commission, Memorandum: Economic Considerations – AFCI Replacements. March 10, 2003, Retrieved July 28, 2009, from <http://www.cpsc.gov/LIBRARY/FOIA/FOIA03/os/ecafci.pdf>

<sup>88</sup> U.S. Consumer Product Safety Commission, GFCIs Fact Sheet. Retrieved July 28, 2009, from <http://www.cpsc.gov/cpscpub/pubs/99.html>

<sup>89</sup> National Fire Protection Association, *Fact Sheet: Tamper-Resistant Receptacles*.

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The Board should have the ability to strip the permit and inspection authority of any jurisdiction that does not adopt the state code as its minimum standard, within 12 months from the day a new edition of the code is adopted by the Board. As stated, the adoption of the code does not occur in a vacuum. It is open and takes place over time, as does any new addition to the NEC. Every regional jurisdiction is well aware of all proposed changes long before adoption and has the ability to affect the adoption process from several access points.

For those regional jurisdictions that choose to not conform to the statutory mandate and have permitting and inspection authority stripped, the state permitting and inspection program will take over as is provided in the Act.

The end results of granting the Board greater enforcement authority over code adoption will be more jurisdictions complying with both the most current edition of the code and the Act, and a higher level of protection for more of Colorado's citizens.

***Recommendation 3 – Grant the Board more discretion in determining disciplinary action against a contractor's designated master electrician.***

The Act requires that every contractor name a full-time supervising master electrician to supervise and be responsible for all work performed by the contractor. The qualifying master licensee must notify the Board within 15 days of termination as the qualifying master for the contractor.

Under section 12-23-106(5)(d), C.R.S., the only options the Board has in cases when the master does not comply with the notification requirement are to do nothing, or suspend or revoke the master's license. The Board has a plethora of other disciplinary tools available to discipline licensees that are less severe than taking away a person's livelihood. The Board also looks at every case that comes before it for discipline individually. Therefore, it should be able to examine circumstances surrounding the incident and use a punishment if that is deemed appropriate on an incident by incident basis.

***Recommendation 4 – Strike confusing language regarding inspection procedures.***

Section 12-23-116(2), C.R.S., provides that if an electrical inspection is not performed within five days after the receipt of an application for inspection, work may resume on the job:

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.

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This provision of the Act is both confusing and misleading.

All types of work on a construction site are not stopped prior to an electrical inspection; typically there are many facets of the job that are ongoing and are not affected by an electrical inspection. Therefore, the assumption is that this section pertains only to electrical work which may be resumed, even though the Act is not clear. Despite the statutory declaration that work may resume, whenever the next inspection does occur, all electrical work must be code-compliant and accessible to the inspector. So if the contractor does resume working, it does so at its own peril.

A passing, overall, final, building inspection cannot come about without an electrical inspection, and an electrical inspection cannot be performed without inspection of every aspect of the electrical installation, regardless of what the installer infers from the statutory provision. Also, without a final inspection a building cannot be occupied and most lenders will not fund a loan.

To reduce confusion, protect both the installer from unneeded expense, and shield the consumer from harm, the General Assembly should repeal the following confusing language regarding inspections: “If the inspection is not performed within five working days, work may resume on any such construction, repair, or remodeling.” Subsequent to the change, inspectors will still have the requirement to inspect an installation within three days and contractors will not make an erroneous assumption that no inspection is needed.

***Recommendation 5 – Strike the word “alteration” from the exemptions in section 12-23-111(2), C.R.S., and specifically define the phrase, “maintenance and repair.”***

Currently, the “Exemption” section of the Act provides a license and inspection exemption “for maintenance, repair, or alteration of existing facilities” to a person’s own property or residence.<sup>90</sup>

There have been problems due to the subjective nature and interpretation of the word alteration. Specifically, there are instances when owners have claimed the exemption from regulation asserting that an entire building addition is an alteration to an existing system. This provision was never meant to exempt a building owner from obtaining a permit and inspection for any work beyond replacing or repairing, lawfully-installed components. Erroneously invoking the exemption in these cases incurs costs for discipline and possible litigation by the Board, and may leave building occupants exposed to greater risk from electricity-related problems.

Not inspecting any installation or modification beyond the most basic maintenance and repair poses a threat to public safety.

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<sup>90</sup> § 12-23-111(2), C.R.S.

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Eliminating the ambiguous word “alteration” and specifically defining what is meant by the phrase “maintenance and repair,” will eliminate confusion and protect the public by demanding that all qualifying installations are permitted and inspected.

***Recommendation 6 – Require the Board to meet at least annually, rather than monthly.***

The requirement, in section 12-23-104(1)(a), C.R.S., that the Board meet monthly is excessive based on the current caseload. Typically, a Type 1 board meets for most of an entire day when it discusses board business. An all day meeting for the Board is rare and every other month the meeting is telephonic, usually lasting one to three hours.

Eliminating unnecessary Board meetings and scheduling future meetings to reflect deadlines and caseloads is a good way to reduce expenses and increase staff efficiency.

Despite the rationale for statutorily modifying the schedule, the section also states that the Board may meet “...at other times it deems necessary.” Therefore, if the workload does increase, the Board has the ability to convene more often. Flexibility is key to efficiently administering the caseload.

***Recommendation 7 – Replace one of the Board seats allotted to a utility representative with a seat for a public, at-large representative.***

The majority of the issues that the Board considers are licensee concerns. While it is valid to include one utility representative for the expertise it may provide with the occasional electrical supply issue, having two representatives of an industry the focus of which has nothing to do with regulating the profession or electrical installations according to the state electrical code is excessive. The Board would be better served with another public, at-large member whom the Governor could appoint from any segment of the population deemed appropriate.

***Recommendation 8 – Validate licensee title protection.***

Title protection is important because only those who satisfy certain prescribed requirements may use the relevant prescribed title. Titles serve to indirectly ensure a minimal level of competency for the consumer because the public assumes qualifications are satisfied by those that use the title.

Section 12-23-107, C.R.S., conveys title protection to “licensed” electricians.

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In common practice the terms master electrician, journeyman electrician, and residential wireman are rarely prefaced by the word licensed. If an advertisement states, “John Doe, Master Electrician,” the common inference is that John Doe is licensed. However, based on interpretations of current statute, if John Doe is not licensed, he has done nothing legally wrong by advertising himself as a master electrician without using the modifier “licensed.”

To validate title protection, the General Assembly should strike the word “licensed” from section 12-23-107, C.R.S., and confer title protection to master electricians, journeyman electricians, and residential wiremen.

***Recommendation 9 – Repeal the size and valuation criteria in section 12-23-117, C.R.S., and allow the Division to establish permitting criteria administratively.***

Board administrative functions are cash funded by licenses and fees. The Division needs the flexibility to evaluate expenses directly related to the permitting and inspection process. Removing the size and monetary requirements in the Act for setting permit fees, will enable the Division to establish uniform rates based on actual expenses regardless of the square footage or dollar value of a job.

Currently, the Division is forced by the Act to set fees based on criteria that are not linked with the internal market-based expenses incurred during permitting and inspection processes. Inserting flexibility into the process will produce efficiencies for the consumer, the contractor, and the Division.

***Recommendation 10 – Repeal section 12-23-117(2), C.R.S., tying local inspection and permit fees to state fees.***

Section 12-23-117(2), C.R.S., states that regional programs may not charge more than 15 percent above the fees the state program charges. Local permitting and inspection fees have little to do with state fees and this provision is burdensome to local governments.

This section forces a local jurisdiction to wait to establish its fees until after state fees are set, as well as live with a decision which may not be compatible with the local budget.

This section should be repealed by the General Assembly to allow a regional jurisdiction to set fees based on its own expenses and be accountable to the local citizenry and construction professionals it serves.



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***Administrative Recommendation 1 – Seek to amend the sunset review bill to include any technical changes necessary to the Act.***

During the course of the sunset review, both the Division and researchers found several places in the Act that need to be updated and clarified to reflect current practices, conventions, and technology. Issues such as the Act being made gender neutral; changing the title Program Administrator to Program Director; having permits issued by local utilities; changing inspection fees to permit fees; among several other technical issues, all should be addressed.

Recommendations of this nature do not rise to the level of protecting the health, safety, and welfare of the public, but an unambiguous law makes for more efficient implementation. The entire Act, including every one of its provisions, is commonly only examined by the General Assembly during a sunset review. Therefore, the Board and the Division should review the whole Act and prepare an omnibus amendment to the sunset review bill which will rectify all identified technical problems.

***Administrative Recommendation 2 – Adopt a Board regulation requiring all trade-named businesses to be listed with the Board.***

The Board has regulatory authority over “entities” that operate an electrical business. Every person, firm, copartnership, association, or combination thereof must be registered with the Board<sup>91</sup> and employ a master electrician who is responsible for all electrical work performed by the entity.<sup>92</sup> Furthermore, no master electrician may be named as the responsible licensee for more than one entity and the master, “shall be actively engaged in a full-time capacity with that contracting company.”<sup>93</sup>

If a Colorado corporation registers a trade name with the Secretary of State’s Office, the trade-named operation is not considered a separate business but the same corporate entity operating under the corporate umbrella. In other words, XYZ Corporation has John Doe as its master electrician. The XYZ Corporation uses three trade names all registered with the Secretary of State, companies X, Y, and Z. Because these are merely trade names and not separate companies, John Doe can be the responsible party for all electrical work performed by Company X, Company Y, and Company Z.

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<sup>91</sup> §12-23-106(5)(a), C.R.S.

<sup>92</sup> §§ 12-23-106(5)(b), and 12-23-106(5)(c), C.R.S.

<sup>93</sup> § 12-23-106(5)(d), C.R.S.

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A problem arises when a consumer has a problem with an installation executed by company Y. Because the Board has no record of trade names, it is forced to expend resources to find company Y and issue a cease and desist order (C&D) for contracting without being a Board-registered person, firm, copartnership, association, or combination thereof. Only after serving the C&D, does the Board learn that company Y is, in reality XYZ Corporation, and John Doe is the responsible master electrician. Once it is made aware that Company Y is simply a trade name, the Board can, at last, review the original complaint against master electrician John Doe.

The extra steps cost in resources expended, but there is also a cost in consumer protection. The Board is the General Assembly-created body charged with regulating the electrical industry and acting on complaints. If a company operates under a trade name, in order to expeditiously act on a consumer complaint, the Board must know who the responsible master electrician is to hold him or her responsible. If the process is delayed there is a possibility that more consumers could be harmed.

To solve these problems, the Board should require all trade names issued to a person, firm, copartnership, association, or combination thereof that is operating as a registered electrical contractor, to be listed with the Board.

***Administrative Recommendation 3 – Define one year of on-the-job experience as one calendar year with a minimum of 2,000 hours on-the-job.***

There are several places in the Act that require years of verifiable work experience as a condition for licensure. According to Board staff, a problem arises when a person applies for licensure who has worked a full calendar year on a part-time basis. The Board and the staff interpret a qualifying year as a person working at the trade on a full-time basis. Defining a year as a calendar year with a minimum of 2,000 hours in the Board rules codifies current policy and may avert future problems.

***Administrative Recommendation 4 – Maintain permit and inspection records for a longer, Division-determined time using a technology-based system.***

The policy has been to keep hardcopy electrical permit and inspection records for a period of time determined by the state archivist and then purge them. There have been problems based on this policy. For example: a homeowner starts to finish the basement of his or her home, gets a rough electrical inspection so the work can be covered, but then gets sidetracked and doesn't finish the job. Five years later the homeowner decides to finish the job but he or she misplaced the paperwork and the inspection record is kept by the state for only three years. Because there is no record of the rough electrical inspection, the homeowner will be forced to tear off the wall covering, expose the once inspected electrical work, and get another inspection, simply to finish the job. If there was a record of the previous inspection there would be no problem.

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Why should the state be the backup for a consumer who misplaces vital records? Why should a state agency incur the expense of keeping records longer than the current policy dictates? First, the electrical permit and inspection program is all about customer service. The main reason inspections are performed is to serve and protect consumers from potentially dangerous problems. Keeping a record longer is an action in that same vein of public service. Second, information storage technology is typically inexpensive.

Keeping hardcopy paper records for long periods of time is problematic for several reasons. However, the technology is available to keep records for a longer period of time than is the current practice without much problem or expense. If the government has the ability to change an internal policy and help consumers avoid harm from an out-of-date policy, then it should.

The Division should determine a period of time that is practical, based on program experience and need, and use technology to store permit and inspection records, rather than hardcopy records, for a longer period than is the current practice.