

SUNSET EVALUATION REPORT
ELECTRICIANS AND PLUMBERS
Chapter 448E, Hawaii Revised Statutes

A Report to the Governor and the Legislature of the State of Hawaii

Submitted by the
Legislative Auditor of the State of Hawaii

Report No. 83-2
January 1983

FOREWORD

Under the "sunset law," licensing boards and commissions and regulated programs are terminated at specified times unless they are reestablished by the Legislature. Nationally, the first sunset law was passed in 1976. Within three years, 30 more states had enacted similar legislation. The rapid spread of sunset legislation reflects increasing public concern with what it sees as unwarranted government interference in everyday activities.

Hawaii's Sunset Law, or the Hawaii Regulatory Licensing Reform Act of 1977, scheduled for termination 38 occupational licensing programs over a six-year period. These programs are repealed unless they are specifically reestablished by the Legislature. In 1979, the Legislature assigned the Office of the Legislative Auditor responsibility for evaluating each program prior to its repeal.

This report evaluates the regulation of electricians, plumbers, and motion picture operators under Chapter 448E, Hawaii Revised Statutes. It presents our findings as to whether the program complies with the Sunset Law and whether there is a reasonable need to regulate electricians, plumbers, and motion picture operators to protect public health, safety, or welfare. It includes our recommendation on whether the program should be continued, modified, or repealed.

Our approach to the evaluation of the regulation of electricians, plumbers, and motion picture operators is described in Chapter 1 of this report under "Framework for Evaluation." That framework is also used for all our other sunset evaluation reports. It is based on the policies enunciated by the Legislature in the Sunset Law. The first and basic test we applied was whether an identifiable danger to public health, safety, or welfare could result from the conduct of the occupation or profession being regulated. Then the other criteria for the evaluation were applied.

We acknowledge the cooperation and assistance extended to our staff by the Board of Electricians and Plumbers, the Department of Commerce and Consumer Affairs, and other officials contacted during the course of our examination.

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January 1983

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Chapter 1

INTRODUCTION

The Hawaii Regulatory Licensing Reform Act of 1977, or Sunset Law, repeals statutes concerning 38 state licensing boards and commissions over a six-year period. Each year, six to eight licensing statutes are scheduled to be repealed unless specifically reenacted by the Legislature.

In 1979, the Legislature amended the law to make the Legislative Auditor responsible for evaluating each licensing program prior to its repeal and to recommend to the Legislature whether the statute should be reenacted, modified, or permitted to expire as scheduled. In 1980, the Legislature further amended the law to require the Legislative Auditor to evaluate the effectiveness and efficiency of the licensing program, even if he determines that the program should not be reenacted.

Objective of the Evaluation

The objective of the evaluation is: To determine whether, in light of the policies set forth in the Sunset Law, the public interest is best served by reenactment, modification, or repeal of Chapter 448E, Hawaii Revised Statutes.

Scope of the Evaluation

This report examines the history of the statute on licensing of electricians, plumbers, and motion picture operators and the public health, safety, or welfare that the statute was designed to protect. It then assesses the effectiveness of the statute in preventing public injury and the continuing need for the statute.

Organization of the Report

This report consists of three chapters: Chapter 1, this introduction and the framework developed for evaluating the licensing program; Chapter 2, background information on the regulated industry and the enabling legislation; and Chapter 3, our evaluation and recommendation.

*NOTE: Originals for pages 2-5 are filed with Report No. 83-7,
Sunset Evaluation Report, Real Estate Brokers and Salesmen,
Chapter 467, Hawaii Revised Statutes.*

Chapter 2

BACKGROUND

Chapter 448E, Hawaii Revised Statutes, makes it unlawful for any person to practice as an electrician, plumber or motion picture operator without a license from the Board of Electricians and Plumbers. This chapter provides background information on the characteristics of the three occupations, the legislative history and current status of regulation in Hawaii, and other regulations which affect two of the trades (electrical work and plumbing).

Occupational Characteristics

Characteristics of the electrical trade. Electricians are among the most skilled and highly paid in the building trades. While there are numerous electrical specialties, electricians can be divided into two basic categories: construction and maintenance. Construction electricians number more than 290,000 in the United States. These electricians may be self-employed or work for contractors, commercial establishments, or government agencies. They assemble, install, and wire electrical machinery, electronic equipment and controls, and signal and communication systems. There are about 270,000 maintenance electricians in the U.S. Most of them work in particular industries and the specific jobs that they perform is determined by the particular industry that employs them, e.g., manufacturing, retail, etc. While their skills are similar to those of the construction electricians, the focus of their work is on maintenance rather than installation.¹

As of 1979, 44 states had some form of statewide regulation of electrical work. Of these 44, seven states regulated only through inspection and enforcement of a state electrical code. Thirty-seven states regulated electrical contractors. Twenty-one of these 37 states also regulated electricians while 16 did not.²

1. U.S. Bureau of Labor Statistics, *Occupational Outlook Handbook*, 1982-83.

2. *A Review of the Need for State Licensure of Electrical Occupations*, Research Report No. 166, Legislative Research Commission, Frankfort, Kentucky, December 1979, p. 4.

In Hawaii, the Board of Electricians and Plumbers has defined electrical work as “the installation, alteration, reconstruction, or repair of electrical wiring.”³ The law recognizes four main occupational categories: electricians, maintenance electricians, specialty electricians, and industrial electricians. *Electricians* install, alter, and repair electrical equipment, wires and apparatus. *Maintenance electricians* maintain electrical equipment. *Specialty electricians* install, repair, alter, and maintain a wide range of specialized electrical equipment, including electronic equipment; certain sound public address and communications systems; master or community radio and television receiving antennae systems; certain sound recording systems; burglar and fire alarm systems; and certain low voltage remote control and communication signal systems. *Industrial electricians* perform electrical work and maintain industrial electrical equipment, such as substation, switchgear and automatic controls.

Depending on the extent of their experience or authority, electricians are further categorized by law as journeyman electricians, supervising electricians, journeyman specialty electricians, and supervising specialty electricians; The records of the Department of Commerce and Consumer Affairs (DCCA) show the following breakdown of licensees in each category:

Table 2.1
Categories and Numbers of Electrician Licensees

<i>Type of License*</i>	<i>Number of Licensees</i>
Journeyman electrician	1,185
Maintenance electrician	61
Supervising electrician	963
Journeyman specialty electrician	57
Supervising specialty electrician	74

*Does not include industrial electricians, a new category established in 1982 for which no licenses have been issued.

Source: Department of Commerce and Consumer Affairs, *Geographic Report*, September 1982.

Characteristics of the plumbing trade. Plumbers install, maintain, extend, and alter various pipe systems, such as water, fuel, and waste disposal systems. They may be self-employed, or they may work for contractors, commercial establishments or government

3. Title 16, Department of Regulatory Agencies, Chapter 80, Rules of the Board of Electricians and Plumbers, Chapter 448E, Hawaii Revised Statutes, Section 16-80-3.

agencies. Plumbers are classified in the trade as apprentices or trainees, journeymen, and master plumbers. As with electricians, their classification is determined by the experience and responsibility of the individual.

There are 22 states that license journeyman plumbers. The data also show that there are four states that license plumbing inspectors.⁴

Hawaii regulates two categories of plumbers, the journeyman plumber and the master plumber. A journeyman plumber is any person who has been licensed by the board as a journeyman plumber to direct and supervise plumbing work. A master plumber is anyone licensed by the board as a master plumber to direct and supervise the performance of plumbing work and to provide overall supervision and general direction. Master plumbers are required to be registered with the board for two years as a journeyman before they can qualify to become a master plumber.

Nationally, there were about 407,000 plumbers and pipefitters in 1980. Most work for mechanical or plumbing contractors in new construction or in repair, alteration, or modernization work.⁵ According to the records of the DCCA, there were in Hawaii 718 licensed journeyman plumbers and 469 licensed master plumbers as of September 1982.⁶

The board defines plumbing work in its rules as the “business, trade, or work having to do with the installation, maintenance, extension, and alteration of all piping, fixtures, appliances, and appurtenances (accessory objects) in connection with any of the following: sanitary drainage or storm drain facilities, the venting systems, the potable water supply system and fuel system within or adjacent to any building or conveyance; also the practice and materials used in installation, maintenance, extension of storm-waste, liquid-waste or sewage, and potable water-supply systems of any premises to their connection with any point of public disposal or other accepted terminal.”⁷

Characteristics of motion picture operators. Chapter 448E, HRS, defines a motion picture operator as “any person who has been licensed by the board for the purpose of operating a movie projector using 16 mm, 35 mm film or larger or video tape solely for commercial theater purposes.” There are six states that regulate motion picture

4. U. S. Department of Labor statistics from the Clearinghouse on Licensure, Enforcement and Regulation, August 1982.

5. U. S. Bureau of Labor Statistics, *Occupational Outlook Handbook 1982-83*, p. 381.

6. Department of Commerce and Consumer Affairs, *Geographic Report*, September 1982.

7. Title 16, Department of Commerce and Consumer Affairs, Chapter 80, Rules of the Board of Electricians and Plumbers, Chapter 448E, Hawaii Revised Statutes, Section 16-80-3.

projectionists. There are also four states that regulate motion picture projectionist apprentices.⁸ According to DCCA records, there were 110 licensed motion picture operators as of September 1982.⁹

Training of electricians and plumbers. Most of those wishing to become electricians or plumbers undergo the state apprenticeship program. (There is no apprenticeship program for motion picture operators.) This program was established in 1941 to encourage voluntary agreements of apprenticeship between apprentices and employers. The program is administered by the Department of Labor and Industrial Relations (DLIR) under Chapter 372, HRS.

The DLIR has specific rules governing the apprenticeship program. Some of the items covered by the regulation are eligibility requirements, registration procedures, criteria for apprenticeable occupations, apprenticeship standards, procedures for cancellation or suspension of an apprenticeship agreement, procedures for deregistration of an apprenticeship program, the hearing process, procedures for the reinstatement of a program registration, and the procedures for processing of complaints.

There is an apprenticeship program for each trade which is under the general direction of a Joint Apprenticeship Committee (JAC) for that trade. The JACs are established with the approval of the director of the DLIR. The JACs consist of an equal number of representatives from both employee and employer interests. The JACs develop standards for apprenticeship agreements and assist in the operations and development of apprenticeships within their particular trade.

Apprenticeship agreements are entered into by each electrical or plumbing apprentice and either the respective JAC or the employer. The DLIR monitors the progress of each apprentice to ensure that participants receive training in accordance with their contracts and JAC standards.

The JAC for the Electrical Industry of Hawaii has developed apprenticeship standards for wirepersons under an agreement signed by the International Brotherhood of Electrical Workers (IBEW), the Pacific Electrical Contractors Association of Hawaii, and the director of DLIR.¹⁰ These standards require that an apprentice have not less

8. U. S. Department of Labor statistics from the Clearinghouse on Licensure, Enforcement and Regulation, August 1982.

9. Department of Commerce and Consumer Affairs, *Geographic Report*, September 1982.

10. Wireperson Apprenticeship Standards of Joint Apprenticeship Committee for the Electrical Industry of Hawaii, August 1, 1979.

than 8,000 hours of on-the-job experience including 2,000 hours of residential electrical installation work, 3,500 hours of commercial installation work, 1,500 hours of work covering industrial electrical installation, 500 hours of specialized work including temperature and refrigeration controls, and 500 hours of general experience. In addition to work experience, each apprentice must complete a prescribed four-year course of related instruction at the Community College System of the University of Hawaii. The instruction must consist of 160 hours per year. Apprentices are examined on their progress periodically. The DLIR awards a Certificate of Completion of Apprenticeship when all requirements are fulfilled satisfactorily.

Local 1186 of the IBEW administers a journeyman qualifying test to those who wish to become journeyman electrician but have not gone through the State apprenticeship program. It consists of a written and a practical portion. A Local 1186 official stated that the combination of a written and practical examination is important in the electrical trade since the written portion tests whether the individual has the knowledge and the practical portion tests whether the individual is able to apply the knowledge. The written portion covers the electrical code, diagrams, and transformer hook-ups. Of a possible 100 points on the written portion, the minimum passing score is 75 points. There are four areas to the practical examination: basic/switch control, blueprint reading and symbols, conduit bending, and transformer and motor connections. Each of the four areas is worth 25 points with a minimum passing score of 75 points. The materials covered in the examination are similar to those covered in the apprenticeship program.

Experience and examination standards have also been established for plumbing and pipefitting apprentices by the Joint Apprenticeship Training Committee composed of members of the Plumbing and Mechanical Contractors Association of Hawaii and the United Association of Plumbers and Pipefitters, Local 675.¹¹

The standards set out minimum qualifications for apprenticeship such as high school graduation and passing an industry test. Apprentices must have a total of 10,000 hours of work experience supplemented by 10 semesters of related classroom instruction consisting of 80 hours each. Examinations are given at the end of each semester of

11. Apprenticeship Standards Joint Apprenticeship and Training Committee for the Plumbing and Pipefitting (Refrigerator-Air Condition) Industry, June 8, 1981.

classes and apprentices must have a passing grade before advancing to the next semester. As with the electricians' apprenticeship program, specified hours of work experience are required for particular kinds of work. For example, plumbing apprentices must have approximately 3,600 hours of installing piping for soil, waste vents and drainage, 3,000 hours of installing potable water systems, 1,000 hours of finish work, 500 hours of maintenance, 1,000 hours of pipefitting and 900 hours of general experience. During this time, apprentices work with journeymen or supervisors so that they might gain experience in all branches of the trade.

To actually work as union journeyman plumbers, apprentices must complete the apprenticeship program. They then must pass the state licensing exam before they can take the union exam. Local 675 of the United Association of Plumbers and Pipefitters administers its own written examination. The examination consists of approximately 100 questions covering such areas as plumbing codes, plumbing activities, and diagramming. Apprentices must score 50 percent or more to pass the examination and qualify as a union journeyman plumber.

Legislative History of Regulation

In 1905, the Legislature made the Board of Supervisors of the respective counties of the Territory of Hawaii generally responsible for developing and enforcing the ordinances pertaining to sanitation and other related health matters.¹² In 1909, the statute was revised to give the counties the responsibility for developing and enforcing specific ordinances concerning "sanitation, inspection of buildings, condemnation of unsafe structures, plumbing, (and) sewers . . ."¹³ Subsequently, each county developed its own ordinances regulating electricians and plumbers. County jurisdiction continued until 1971 when the State took over the regulatory functions for these trades. Act 183, SLH 1971, established the Board of Electricians and Plumbers. The officially stated purpose of the law was to establish statewide jurisdiction over electricians and plumbers to insure the safety and welfare of the general public.¹⁴

12. Section 62, Act 39, SLH 1905.

13. Section 1, Act 98, SLH 1909.

14. Standing Committee Report 547 on Senate Bill No. 500, 1971.

Other historical data indicate, however, that this had been preceded by a long dispute over the licensing of electricians and plumbers by individual counties, culminating in a 1969 suit filed by Halfhill Electric Company against the Hawaii County Board of Electrical Examiners. In that suit, Halfhill alleged that the county board restricted outside competition. Halfhill also argued that the counties had no inherent right to license occupations unless that right was specifically conferred by the State. The State and the court agreed with Halfhill's arguments, and, as a result, the county was ordered to suspend licensing and turn the responsibility over to the State.

Since 1971, the law has been amended several times, primarily to clarify the scope of regulation. In 1972, the maintenance electrician category was added as a licensing category. In 1973, 16 mm film and video tape operations were added to the scope of work for motion picture operators, who had been brought under licensing requirements in the 1971 law. In 1974, the category of master plumbers was broadened to define the degree of supervision and responsibility.

In 1976, apprentice and trainee electricians, plumbers, and motion picture operators were exempted from licensure. The amendment also delineated more clearly what might be considered unlicensed acts. In 1979, certain home repairs made by owners were exempted from regulation. The most recent amendment was in 1982 when journeyman industrial electricians and supervising industrial electricians became specific licensing categories.

Current Regulation of Electricians, Plumbers, and Motion Picture Operators

Under Chapter 448E, the Board of Electricians and Plumbers is responsible for regulating electricians, plumbers, and motion picture operators. The board consists of seven members with four members being required to be in the regulated trades: two in electrical and two in plumbing. The remaining three members are to be members of the general public with no connection with the trades. The board designates a chairman from among its members. Board members receive no compensation but are reimbursed for travel expenses incurred in performing their duties.

The board is empowered to grant, deny, suspend, or revoke licenses for electricians, plumbers, and motion picture operators; establish rules and regulations; and examine applicants and determine qualifications prior to issuance of licenses.

Regulated practices. Licenses are required for persons involved in electrical, plumbing or motion picture work as defined by the board's rules and regulations. Certain persons are exempt from the licensing requirements of Chapter 448E. These are:

- . Properly licensed contractors performing certain exterior work without licensed plumbers.
- . Individuals repairing or maintaining electrical appliances.
- . Individuals attaching lighting or power circuits to electronic equipment, public address systems, communication systems, master or community radio and television receiving antenna system, sound recording systems, burglar and fire alarm systems, low voltage remote control and low voltage communication signal systems.
- . Individuals installing, repairing, altering or maintaining the systems described above, except for low voltage communication signal systems, which are designed for single or two family dwellings.
- . Individuals performing emergency plumbing repairs to their principal place of residence when such repairs do not require the rearrangement of valves, pipes, or fixtures and are not made on lines that are served by backflow devices.
- . Employees of franchised or chartered public utilities companies regulated by the Public Utilities Commission and community antenna television companies.
- . Apprentices or trainees learning the trade under the supervision of a licensed electrician, plumber, or motion picture operator.

The licensing requirements. A prospective electrician, plumber, or motion picture operator is required to submit a written application for examination and license. Information required with the application includes: experience in the trade with supporting notarized verification by the applicant's previous employer, dates and hours of employment, description of duties and position title, and the employer's name, address, and telephone number. If the applicant is applying for a supervisory or master license, additional experience is required, information is requested on prior licenses acquired by the applicant and photocopies of any out-of-state licenses. Nonrefundable application and examination fees are required upon submission of the application to the board.

The applicant must also meet minimum age and experience requirements before being allowed to sit for the examination. These requirements are listed in Table 2.2 for each of the licensing categories.

Table 2.2
Minimum Requirements for Examination
Board of Electricians & Plumbers

<i>License Type</i>	<i>Minimum Age</i>	<i>Years of Experience in Trade</i>	<i>Registration with the Board at Next Lowest License Level</i>	<i>Apprentice or Trainee Requirement</i>
Journeyman electrician	18 years	4 years		8,000 hours
Journeyman specialty electrician	18 years	4 years		
Supervising electrician			2 years*	
Supervising specialty electrician			2 years*	
Motion picture operator	18 years			1 year
Journeyman plumber		5 years*		10,000 hours
Master plumber			2 years*	
Maintenance electrician	18 years			
Journeyman industrial electrician	18 years	4 years*		8,000 hours
Supervising industrial electrician	18 years		2 years*	

*Equivalent experience accepted.

The applicant must then pass the written examination to obtain a license. The examination is based upon national electrical and plumbing codes.

The board has no rules and regulations setting out grounds for the denial, revocation, or suspension of a license. It does provide for other penalties however. The penalty for an individual who violates any provision of Chapter 448E is a fine up to \$1,000. The statutes also allow the board to seek a temporary restraining, preliminary or permanent injunction through the Circuit Court against persons operating without a license.

Other Regulations Affecting Electrical Work and Plumbing

Electrical and plumbing work comes under numerous other regulations by various state and county agencies. These regulations seek to insure that any work done by these two trades will not result in any danger to public health and safety from electrical shock, fire hazards and contaminated water supplies.

Electrical code. The National Electrical Code was developed by the National Fire Protection Association. The latest edition was introduced in 1981, and the City and County of Honolulu and Maui County have adopted this edition. Both Kauai and Hawaii counties utilize the 1978 edition of the National Electrical Code. The purpose of the National Electrical Code is to provide, "practical safeguarding of persons and property from hazards arising from the use of electricity."¹⁵

All counties require that electrical work be inspected prior to the supply of electrical energy. All counties also have the authority to take punitive actions against individuals who violate the provisions of the code.

Fire codes. In 1978, Act 241 transferred all state responsibilities relating to establishing and enforcing fire protection standards to the counties. The law also provided for a state fire council that would adopt a model state fire code setting minimum requirements for protecting persons and property from fire loss. The model state fire code augments other county codes.

All of the counties have adopted the Uniform Fire Code developed by the International Conference of Building Officials and the Western Fire Chiefs Association. The intent of the Uniform Fire Code is to "prescribe regulations consistent with nationally recognized good practice for the safeguarding to a reasonable degree of life and property from the hazards of fire and explosion arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the use or occupancy of buildings or premises."¹⁶

One provision of the Uniform Fire Codes makes it unlawful to maintain any electrical wiring appliance, apparatus or device which is in violation of the Electrical Code. Another provision authorizes the fire chief to order the immediate discontinuance of any hazardous electrical installation.

Plumbing code. The Uniform Plumbing Code was developed by the International Association of Plumbing and Mechanical Officials. The latest edition was introduced in 1979 and has been adopted by all counties except for the County of Hawaii, which still uses the 1976 edition. The purpose of the Uniform Plumbing Code is to provide "minimum requirements and standards for the protection of the public health, safety and welfare."¹⁷

15. National Fire Protection Association, *National Electrical Code*, 1981 edition, p. 70-1.

16. International Conference of Building Officials and the Western Fire Chiefs Association, *Uniform Fire Code*, 1979 edition, p. 27.

17. International Association of Plumbing and Mechanical Officials, *Uniform Plumbing Code*, 1979 edition, p. 1a.

All counties now require that plumbing and drainage systems be inspected by county officials to insure compliance with the requirements of the code. All are empowered with the authority to take punitive action if warranted. The counties also inspect and test gas lines to insure compliance. In addition, all amendments to the codes require the installation of approved backflow devices in circumstances where water contamination could result. In three of the counties the builder is directed to contact the water department for specifications prior to developing preliminary plans, specifications, and drawings.

Department of Health regulations. Under the general health provisions of the Hawaii Revised Laws of 1945 the Department of Health (DOH) established regulations governing cross-connections and backflow control to prevent contamination of the potable water supply. The regulation specified the type of fixtures and connections that were allowable by the State. The regulation also specified the right of the DOH to inspect and to take punitive action if an individual is not in compliance.

In 1976 the Legislature enacted Act 84 which establishes the DOH director's prerogative to develop and enforce regulations relating to cross-connections and backflow control. As a result, the earlier regulation was replaced by a more definitive regulation. Chapter 21 of the DOH's regulations defines the backflow devices that are approved for installation, the method of installation, location of installation, and maintenance requirements. As with the earlier regulation, the DOH has the right to make inspections and take punitive actions against violators.

Water Department regulations. The water departments of each of the counties have established regulations governing the conditions which require backflow devices. The City and County of Honolulu has established standards for the different types of devices and the circumstances in which they should be installed.

The Contractors License Board. Under Chapter 444, HRS, and the related rules and regulations, electrical and plumbing work can be done only by electrical and plumbing contractors licensed as specialty contractors by the Contractors License Board.

To acquire a contractor's license in either of the two specialties, applicants have to be qualified in the trade itself and meet additional requirements of the board. These include four years of supervisory experience and proof that the applicant has workers compensation insurance and liability and property damage insurance.

Chapter 3

EVALUATION OF THE REGULATION OF ELECTRICIANS, PLUMBERS, AND MOTION PICTURE OPERATORS

This chapter contains our evaluation of the need to regulate electricians, plumbers, and motion picture operators; our assessment of present regulatory operations by the Board of Electricians and Plumbers; and our recommendations on these matters.

Summary of Findings

We find that:

1. Incompetent work by electricians and plumbers can result in danger to public safety and health, such as fire, in the case of electrical work, and contaminated water supplies, in the case of plumbing. However, there is no danger in the work of motion picture operators.

2. County agencies, through code requirements and enforcement, and the Department of Labor and Industrial Relations (DLIR), through its apprenticeship programs with the unions and employers, and the Department of Health (DOH) are the principal agencies providing public protection against the danger of incompetent electrical work and plumbing. Regulation by the Board of Electricians and Plumbers provides little additional protection to the public.

3. The examinations for electricians and plumbers have not been validated, and especially in the case of the examinations for journeyman electricians and supervising electricians, they are characterized by high failure rates, which may unduly be restricting or delaying entry or advancement in the trade.

The Need for Regulation

The three different occupations regulated by Chapter 448E, Hawaii Revised Statutes, present different kinds and different levels of danger to public health and safety. This section summarizes the dangers posed by electrical work, plumbing, and motion picture operations.

Dangers from electrical work. The most common dangers from faulty electrical work are fire and electrical shock. In the aggregate, the toll from fires of electrical origin is quite significant, in terms of both human and economic losses. From national fire data for 1978, it is estimated that there were 53,000 residential fires related to electrical causes, 310 deaths and 1,300 injuries from those fires, and property losses amounting to nearly \$215 million.¹

In Hawaii, there were 133 fires in 1981 that were reported to be due to electrical causes, about 15 percent of all fires reported.² According to the research and statistics office of the DOH, there were eight deaths as a result of electrical shock in 1980 and two deaths in 1981.³

This is not to say that all of the losses which are identified with electricity are the result of faulty or incompetent electrical work. Human error and deteriorated or outmoded equipment are, perhaps, even more significant factors. Nonetheless, a reasonable conclusion is that electricity poses a danger which would be exacerbated if its installation, repair, and maintenance were being performed by incompetent persons.

Dangers from plumbing work. The main danger from improper plumbing work is reported to be the potential contamination of the potable water system through improper cross-connections. A cross-connection is an actual or potential connection between the potable water supply and any source of contamination or pollution. (Cross-connections may be either direct or indirect. A direct connection joins the potable water system to the system containing the pollution or contaminant. An indirect connection occurs when the contaminant or pollution is blown, sucked, or diverted into the potable water supply). Contamination by cross-connections can occur for a number of reasons, such as defective plumbing, human error, or back siphonage, or back pressure when pressure is lost or reduced in the main water line.

1. Federal Emergency Management Agency, *Fire in the United States*, 2nd ed., U.S. Government Printing Office, July 1982. (Death and injury numbers do not include firefighters.)

2. Interview with Captain Francis Aiu, Shift Supervisor, Fire Alarm Bureau, Honolulu Fire Department, City and County of Honolulu.

3. Interview with Marie Vile, Research and Statistics Office, Department of Health.

Nationwide, there have been a number of instances where cross-connections resulted in the contamination of the potable water system. In some of these cases, serious illness or death resulted from the contamination. A study conducted by the National Foundation for Cross-Connections Control and Hydraulic Research found that of the 226 reported cross-connection cases within the past 60 years, there were 3,934 cases of typhoid fever resulting in 292 deaths, 55,738 cases of dysentery and diarrhea resulting in 98 deaths, and 26 cases of poliomyelitis resulting in two deaths.⁴ The study pointed out that the cases documented in the report represented only a small percentage of the total cases that actually occurred. Within the State, the DOH can recall only one case within the recent past in which illness occurred as a result of improper cross-connections.

Another potential problem raised by the plumbing tradespeople is the danger of improperly installed water heaters and the possibility of explosion or fire. The Honolulu Fire Department reports that in 1981, there were four fires in Hawaii in which water heaters were the source of ignition.⁵

Some in the plumbing trades are also concerned about hazards associated with gas installation. They point out that plumbers are responsible for the installation of gas lines within a structure and that there is a danger of explosion or fire if the lines are not installed correctly. However, there have been no reports of fires due to improper installation of either gas or liquid propane gas lines. Furthermore, gas company officials state that it is the company's standard procedure to check all lines prior to connecting them to the main gas line.

Dangers from motion picture operations. City and County fire and building department officials say that the use of nitrate film in the past was a major reason for licensing motion picture operators. The nitrate based film was so flammable that it could ignite while still in its storage container. The film industry has now changed to acetate or polyester based film which, although it will burn, is not as flammable as the old nitrate based film.

4. E. Kent Springer, *Manual of Cross-Connection Control*, Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, August 1979, p. 131.

5. Interview with Captain Francis Aiu, Honolulu Fire Department, City and County of Honolulu.

Another potential danger is said to be the explosion of the xenon lamp in the projector if it is improperly handled. However, the danger here is confined to the projectionist and the projection room. Moreover, the lamp is enclosed in a metal casing and presents no danger while it is in the machine. When replacing the lamp, the operator is supposed to wear a protective mask.

Most of the fire officials who were interviewed did not see any particular danger in present motion picture theater operations. Many felt that theaters are safe due to the continual upgrading of the fire codes governing theater construction and the change from the flammable nitrate based film to the acetate based film. None of the fire officials interviewed could recall a theater fire within the past 10 years.

Because of changes that have been made to the nature of film within the past several years, officials in the fire and building departments of the City and County of Honolulu say that the danger of fire no longer exists and that there is no need to license motion picture operators.

Public Protection by State and County Agencies

It is evident from the foregoing that the work of motion picture operators does not endanger public safety. However, faulty electrical work and plumbing work can be potentially dangerous to the public: electrical shock and fire in the cases of electrical work, and contamination of the potable water supply in the case of plumbing. Aside from licensing by the Board of Electricians and Plumbers, there are several programs and measures under state and county agencies which are intended to provide public protection against the dangers arising from incompetent electrical work and plumbing. These include the state apprenticeship programs for electricians and plumbers, the licensing of electrical and plumbing contractors and the requirement that electrical and plumbing services be provided only through such licensed contractors, county code requirements and enforcement over electrical and plumbing installations, fire code requirements and inspections, and requirements to protect the potable water supply. In this section, we assess whether these programs and measures provide reasonable protection to the public.

Protection against incompetency. Preparatory training to ensure the competency of electricians and plumbers rests primarily with the DLIR through its apprenticeship programs. The DLIR works with the unions and employers in developing and implementing the apprenticeship programs.

As described earlier, the Joint Apprenticeship Committee (JAC) for electricians and the JAC for plumbers and pipefitters have each developed extensive training standards for their respective apprenticeship programs, including on-the-job training and classroom work. During the apprenticeship period, apprentices are monitored and examined periodically on their progress. In addition, the plumbers union also requires apprentices to pass the union examination in order to become journeymen. The unions estimate that about 80 percent of all electricians and 90 percent of all plumbers belong to the two unions.

In addition to the apprenticeship programs and union requirements, competency is promoted through state regulations governing electrical and plumbing contracting. The rules of the Contractors License Board prohibit anyone from installing, erecting, or connecting any electrical wires, fixtures, appliances, apparatus, or conduits and lines which transmit or utilize electrical energy without a specialty contractor's license from the Contractors License Board. The rules also prohibit anyone from installing, repairing or altering water piping systems and fuel gas piping systems, and the fixtures and venting for these systems without a specialty license from the Contractors License Board. This includes any vacuum, air, and medical gas systems, lawn sprinkler systems, irrigation systems, sewer lines and related sewer disposal work, and solar water heating systems.⁶ In effect, except for work specifically exempted by statute, the rules require all electrical and plumbing work to be provided by licensed contractors.

In order to acquire a license as an electrical contractor or as a plumbing contractor, applicants have to meet experience and other requirements of the Contractors License Board. Union officials estimate that about 95 percent of the electrical contractors hire only union electricians and 85 percent of the plumbing contractors hire only union plumbers. These contractors are responsible for ensuring that their workers perform satisfactory work for customers. As employers, they are liable for the work of their employees, and consequently, they have a vested interest in employing qualified personnel.

6. Title 16, Department of Regulatory Agencies, Chapter 77, Rules Relating to Contractors, Chapter 444, Hawaii Revised Statutes, Section 16-77-28.

Thus, even if there were no licensing requirements for electricians and plumbers, the programs designed to develop apprentices to journeyman competency and the requirement that services are to be furnished only through licensed specialty contractors combine to provide the public with reasonable protection against incompetent electricians and plumbers. If additional protection is deemed necessary, the state apprenticeship program could be expanded and strengthened. In addition, the Contractors License Board could require electrical and plumbing specialty contractors to be held responsible for ensuring that their employees are properly qualified by undergoing such programs as the state apprenticeship program or any other comparable program such as that provided by the Honolulu Community College.

Protection against electrical shock and fires. As reported in Chapter 2, all of the counties have adopted the uniform code for electrical installation. The code establishes the recommended standards that experts in the trade feel are necessary to protect the public from electrical hazards, fires, and other dangers. Each county has also enacted amendments to the uniform code to fit the needs of the respective county.

All counties have established procedures to insure compliance with the code. For example, every county reviews the building plans prior to issuing a building permit. Some counties have a multitiered system in which certain portions of the plans are reviewed further by other departments. After the permits are issued, building inspectors visit the sites to insure that the builders comply with the code. Some of the counties follow a system in which the site is visited at different phases of construction. County inspectors check for potential dangers from electrical installation and connections.

The fire departments of the various counties are also involved in assuring that construction and maintenance of structures are in accordance with the fire codes of their respective counties. All of the county fire departments review commercial building plans for compliance with fire codes, often as a cooperative effort with the building department. The fire departments are also involved in the inspection of the structures while they are under construction. After the buildings are completed, the fire departments inspect the structures periodically.

For those consumers who abide by code requirements and deal with licensed contractors, there is reasonable assurance that the efforts of the counties in reviewing and enforcing code compliance provide protection against the danger of electrical shock and

fire in a direct way. There is, of course, no such assurance if consumers, or the people they hire, choose to evade permit and code requirements.

Protection of the water system. Procedures in the counties to enforce the uniform plumbing code are similar to those used to enforce the electrical code. These include building plans review and approval and onsite inspections. In addition, the DOH has a specific responsibility to protect drinking water. As part of its authority to ensure safe drinking water, the DOH has adopted rules which provide specific guidelines concerning cross-connection and backflow control. The rules provide for the type of device to be installed, how it is supposed to be installed, when it is supposed to be installed, and the periodic testing and inspection of the devices.⁷

Each county's water department has also established procedures to protect the quality of the potable water system. Checks consist of reviewing plans to insure that potential cross-connections are covered by backflow devices. In cases where the water department does not conduct onsite visits to ensure proper installation, county building inspectors check the construction site for compliance.

Thus, against what is reported to be the greatest potential danger of faulty plumbing work—i.e., the contamination of the potable water supply—both the State and the counties have procedures in place to minimize that danger. This is an area beyond the purview of the Board of Electricians and Plumbers.

Relationship of Licensure to Public Protection

The Board of Electricians and Plumbers is empowered under Chapter 448E, HRS, to grant licenses for various categories of electricians and plumbers and motion picture operators; examine all applicants and evaluate their qualifications; adopt such rules as are necessary to protect public safety and welfare; and enforce the chapter through the denial, suspension, or revocation of licenses. As we discuss in this section of the report, our evaluation is that the board's licensing activities, and particularly its examinations, add little protection to that provided to the public by other agencies.

7. Title 11, Department of Health, Chapter 21, Cross-Connection and Backflow Control, December 1981.

Questionable examinations and high failure rates. Leaving aside motion picture operators, of whom we find no basis for regulating, the rationale for having applicants for electrician and plumber licenses pass an examination by the board as a prerequisite for licensing is that the examination can discriminate between those who are competent and those who are not competent.

We find nothing to support the validity of the examinations being administered. None of the examinations have been tested for content validity, reliability, or item difficulty. The tests for electricians were developed by a board member, but the Department of Commerce and Consumer Affairs could provide us with no information on who developed the tests for plumbers or the circumstances under which they were developed.

In an earlier report, we pointed out that the test development efforts of the Board of Electricians and Plumbers were not based on proper test development procedures. In the latter part of 1979, the examinations for electricians were revised through the addition of a number of wiring diagram problems which had not been validated. In January 1980, the first time that the revised examinations were administered, no supervising electrician candidates passed the examination. This situation prompted the board to express the view that future examinations would have to be monitored closely to ensure that the examinations are "a fair and true test of the candidates' ability."⁸

Table 3.1, which displays 1982 examinations results for selected licensing categories of electricians and plumbers, indicates that inordinately high failure rates, especially for journeyman electrician and supervising electrician candidates, continue to characterize the examinations.

The failure rate in the journeyman electrician examination range from a high of 92 percent, when 22 out of 24 candidates taking the January examination failed, to a low of 71 percent in September, when 17 out of 24 failed. For supervising electricians, the highest failure rate was likewise in January, when 13 out of 15 (87 percent) failed, and the lowest in September, when 9 out of 23 (39 percent) failed.

The situation with respect to the plumber examination is less pronounced since the number of candidates is significantly smaller. Still, there are such paradoxes as in the

8. Legislative Auditor of the State of Hawaii, *Evaluation of the Professional and Vocational Program of the Department of Regulatory Agencies*, January 1982, pp. 39-40.

Table 3.1
1982 Examination Results for Electricians and Plumbers
Selected Categories

	<i>Journeyman Electrician</i>		<i>Supervising Electrician</i>	
	<i>(Pass)</i>	<i>(Fail)</i>	<i>(Pass)</i>	<i>(Fail)</i>
January 1982	2 (8%)	22 (92%)	2 (13%)	13 (87%)
March 1982	7 (27%)	19 (73%)	10 (40%)	15 (60%)
May 1982	3 (12%)	21 (88%)	12 (43%)	16 (57%)
July 1982	5 (25%)	15 (75%)	9 (37%)	15 (63%)
September 1982	7 (29%)	17 (71%)	14 (61%)	9 (39%)

	<i>Journeyman Plumber</i>		<i>Master Plumber</i>	
	<i>(Pass)</i>	<i>(Fail)</i>	<i>(Pass)</i>	<i>(Fail)</i>
January 1982	1 (33%)	2 (67%)	3 (60%)	2 (40%)
March 1982	1 (50%)	1 (50%)	3 (50%)	3 (50%)
May 1982	3 (30%)	7 (70%)	5 (71%)	2 (29%)
July 1982	6 (75%)	2 (25%)	2 (67%)	1 (33%)
September 1982	0 (—)	2 (100%)	1 (100%)	0 (—)

Source: Department of Commerce and Consumer Affairs, Examinations Branch.

journeyman plumber examination given in May, when 7 of 10 candidates failed, followed by an almost opposite result in July, when 6 out of 8 candidates passed.

The high failure rate, even among those who have successfully completed their apprenticeships or have worked as journeymen in other jurisdictions, does raise questions about the validity of the examinations. More seriously, as to the consequences, there is the possibility that the examinations unfairly restrict or delay entry into the occupations or impede advancement in the occupations.

If licensing for electricians and plumbers is continued and passage of examinations is used as a prerequisite for licensing, it would be appropriate for the board to review the examinations and determine how they should be revised, in terms of validity as well as coverage. We note, for example, that while one of the greatest dangers of faulty plumbing is the contamination of the potable water supply through direct or indirect cross-connections, the master plumber examination as well as the journeyman plumbers examination cover this aspect in only a very limited and cursory way.

The board has from time to time expressed its concern over the examinations, as it did after the January 1980 examination for supervising electricians. A constraint has been the considerable time and effort that would be required of the board for thoroughgoing review, revision, and validation. One approach would be to secure consultative advice and input from a wider range of people knowledgeable about the requirements of the trades, such as instructors in the trades at the community colleges, the JACs, the unions, and with respect to plumbing and cross-connections, the Department of Health.

Effects of state licensing. Licensing by the board has little effect on actual work performed or wages paid to electricians and plumbers. Apprentice electricians become union journeyman electricians once they complete the state apprenticeship program regardless of whether they acquire a license from the board. They receive the same pay as a licensed journeyman electrician although they must continue to work under the supervision of a licensed journeyman electrician until they receive a state license.

Apprentice plumbers remain apprentices even though they acquire state licenses from the Board of Electricians and Plumbers. In order to become union journeyman plumbers, they must pass the union examination.

Thus, a state journeyman's license is not a prerequisite for a union journeyman electrician to receive journeyman's pay, and it is not the final or decisive factor in determining whether an apprentice plumber can become a union journeyman plumber.

Other Board Activities

There is not much to report on other activities normally associated with a licensing board, such as complaint disposition or disciplinary action. The board meets every other month, and its activities consist mainly of approving or denying applications for examination and licensure, which are mostly pro forma actions.

Since it is the business that is held ultimately responsible for the actions of employees, complaints concerning electrical work and plumbing are forwarded to the Contractors License Board rather than to the Board of Electricians and Plumbers. Records show that for the past two years, the Board of Electricians and Plumbers has not received any complaints against electricians and plumbers.⁹

9. In 1982, the Board of Electricians and Plumbers received five complaints, but none of the complaints involved electrical work and plumbing. All five complaints alleged unlicensed practice by motion picture operators and were filed by an anonymous person.

Although the board has the authority to apply sanctions against any incompetent electricians and plumbers, it has not adopted any rules against the kinds of actions it will take on violations. The board has never revoked or suspended a license.

Summary

There is evidence that the public can be harmed by hazards created by faulty electrical and plumbing work. However, the licensing of electricians and plumbers under Chapter 448E, HRS, does not provide any additional protection than that already being provided by other state and county agencies and the unions. As to motion picture operations, it is clear that the public is not endangered by the work of motion picture operators and that they need not be licensed.

Recommendations

We recommend as follows:

- 1. Chapter 448E, HRS, be allowed to expire as scheduled on December 31, 1983.*
- 2. If the Legislature should decide to retain Chapter 448E, HRS, the statute be amended to remove the requirement for the licensing of motion picture operators.*
- 3. Should licensing of electricians and plumbers be retained, the Board of Electricians and Plumbers take steps to develop valid and reliable examinations and in doing so, obtain the advice and input of others who are knowledgeable about the requirements of the respective trades.*

APPENDIX
RESPONSES OF AFFECTED AGENCIES

COMMENTS ON AGENCY RESPONSES

A preliminary draft of this Sunset Evaluation Report was transmitted on November 19, 1982 to the Board of Electricians and Plumbers and the Department of Commerce and Consumer Affairs for their review and comments. A copy of the transmittal letter to the board is included as Attachment 1 of this appendix. A similar letter was sent to the department.

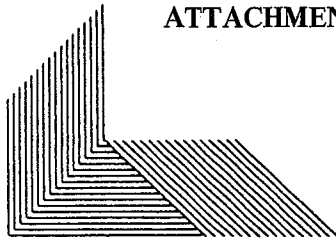
We did not receive a response from the board as such, but separate responses were submitted by electrical industry members of the board and plumbing industry members of the board. These are included as Attachments 2 and 3. Along with their responses, the industry members submitted exhibits pertaining to the dangers resulting from improper plumbing work and the use of unlicensed contractors. These exhibits have not been reproduced in this report but are available for public inspection at our office.

The responses from both the electrical and plumbing members of the board point to the harm that might result from improper electrical or plumbing work. We do not dispute that potential harm exists, but as we concluded in our report, current licensing operations provide little additional protection against harm. The principal agencies providing protection against improper electrical and plumbing work are the building, fire, and water departments of the respective counties and the State Department of Health.

No response was received from the board concerning our recommendation to discontinue the licensing of motion picture operators. As part of its response, the plumbing industry members state that the licensing of motion picture operators should be separated from the law licensing electricians and plumbers as it is a totally different matter. We did receive an unsolicited letter from the International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada, Local No. 665. It is included for information purposes as Attachment 4. The letter advocates continued licensing of motion picture operators. The letter also suggests that we erred in our report by stating that the training program for motion picture operators was 10,000 hours. The report makes no such statement. The 10,000 hours of training cited in the report refers to journeyman plumbers and not motion picture operators.

The response from the Department of Commerce and Consumer Affairs, included as Attachment 5, states that the department is in agreement with our analysis and evaluation.

THE OFFICE OF THE AUDITOR
STATE OF HAWAII
465 S. KING STREET, RM. 500
HONOLULU, HAWAII 96813
(808) 548-2450



CLINTON T. TANIMURA
AUDITOR
RALPH W. KONDO
DEPUTY AUDITOR

November 19, 1982

Mr. George R. Rodrigues, Jr., Chairman
Board of Electricians and Plumbers
Department of Commerce and Consumer Affairs
State of Hawaii
Honolulu, Hawaii 96813

Dear Mr. Rodrigues:

Enclosed are seven preliminary copies, numbered 4 through 10, of our *Sunset Evaluation Report, Electricians and Plumbers*. These copies are for review by you and other members of the board. This preliminary report has also been transmitted to Dr. Mary G. F. Bitterman, Director, Department of Commerce and Consumer Affairs.

The report contains our recommendations relating to the regulation of electricians, plumbers, and motion picture operators. If you have any comments on our recommendations, we would appreciate receiving them by December 20, 1982. Any comments we receive will be included as part of the final report which will be submitted to the Legislature.

Since the report is not in final form and changes may possibly be made to it, access to this report should be restricted solely to board members and those officials whom you might wish to call upon to assist you in your response. We request that you exercise controls over access to the report and ensure that the report will not be reproduced. Should you require additional copies, please contact our office. Public release of the report will be made solely by our office and only after the report is published in its final form.

We appreciate the assistance and cooperation extended to us.

Sincerely,

Clinton T. Tanimura
Legislative Auditor

Enclosures

December 13, 1982

Mr. Clinton T. Tanimura
Legislative Auditor
The Office of the Auditor
485 South King Street, Room 500
Honolulu, HI 96813

RECEIVED
DEC 20 11 43 AM '82
OFF. OF THE AUDITOR
STATE OF HAWAII

RE: SUNSET EVALUATION REPORT
ELECTRICIANS AND PLUMBERS

Dear Mr. Tanimura:

Pursuant to your suggestion, we have reviewed your preliminary report and submit our comments and recommendations. Inasmuch as we were appointed as electrical industry members of the Electricians and Plumbers Board, we shall direct our comments as it pertains to our industry and trade.

At the outset, we would like to point out that it is a rather comprehensive evaluation and, in general, accurately reflects the activities of the Electricians and Plumbers Board. However, we are not in accord with your recommendation that Chapter 448E, HRS, should be allowed to expire as scheduled on December 31, 1983. May we, therefore, prevail upon you to take into consideration the following factors, in the hopes that you may reconsider your position when compiling your final report.

Licensing of Occupation Is Warranted:

It is our considered opinion that licensing of electricians and plumbers are warranted and meets all of the criteria specified in your report. More specifically:

- (1) There exists an identifiable potential danger to public health, safety or welfare arising from the operation or conduct of the occupation or profession;
- (2) The public that is likely to be harmed is the consuming public;
- (3) The potential harm is not one against which the public can reasonably be expected to protect itself;
- (4) There is a reasonable relationship between licensing and protection to the public from potential harm;
- (5) Licensing is superior to other optional ways of restricting the profession or vocation to protect the public from the potential harm;
- (6) The benefits of licensing outweigh its costs.

December 13, 1982

DLIR Apprenticeship Program Does Not Provide Public Protection Against Danger Of Incompetent Electrical Work:

The primary function of the Bureau of Apprenticeship, DLIR, is registration of programs and apprenticeship agreements. The actual administration of the program is done by the Joint Apprenticeship and Training Committee for the Electrical Industry.

It is to be noted that the JATC for the Electrical Industry has not indentured any wireman electrician apprentice since May 1980 for Kauai and Maui and 1974 for the island of Oahu. Then too, the last graduating group of apprentices was in 1978. It is recognized, however, that individual employers could indenture apprentices under their own programs. However, in reality, hardly any employer sponsored their own program and there are none currently in force.

In light of the foregoing, we believe too much emphasis is being placed upon the function of the Apprenticeship Bureau as an agency to provide the public with reasonable protection against incompetent electricians and plumbers.

Local 1186, IBEW Administered Examination Not Criteria For License:

The union-conducted examination does not qualify the applicant for a State journeyman electrician's license. Rather, in conjunction with their Referral Procedure, the examination categorizes the electrician and places him within several groups when being referred to the electrical contractor for employment. It is also to be remembered that the examination is administered to union members and is not, therefore, accessible to non-members who wish to become journeyman electricians but have not gone through the State Apprenticeship Program.

The current Electricians and Plumbers Board's examination does not take into consideration, nor is the journeyman's license predicated upon having to be a union member and having passed the union-conducted examination. Consequently, such examination should not be considered in lieu of the current state conducted examination.

Contractors License Board Regulates Specialty Contractors--Not Electricians:

Chapter 444, HRS, regulates electrical work to be done by electrical contractors licensed as specialty contractors. However, the Act also provides the homeowners the right to perform electrical work on their own premises without having to be a licensed electrical contractor.

The various counties within the State of Hawaii in turn, through their electrical ordinances, prescribe the conditions under which a homeowner's permit is issued. In this connection, the counties are dependent upon the state supervising electrician and/or state journeyman electrician licenses in the performance and/or supervision of such work.

For the foregoing reasons, your contention that the licensed electrical contractor could provide the necessary supervision to assure that the electrical work is performed in conformity with the applicable codes would not prevail. Rather, by deleting the current licensing requirement would adversely affect the controls imposed by the various counties.

December 13, 1982

Questionable Examinations and High Failure Rate:

We do not concur that the questionable validity of the examination is the cause for the high failure rate nor is the examination intended to restrict or delay entry into the trade. Rather, the cause could be directly attributed to the applicant not possessing the necessary minimum requirements for such examination.

The broad application of four years experience in the trades is intended for applicants seeking a license for which he is qualified. More specifically, a wireman electrician applying for journeyman wireman's license would not encounter the same difficulty as an applicant who gained his experience as an industrial electrician or a maintenance electrician.

The high failure rate is caused by applicants seeking a license outside of the specific phase of electrical work he had gained his work experience. The Board is cognizant of this fact and was successful in promoting the passage of an industrial electrician's classification license during the 1982 legislative session.

Conclusions and Recommendations:

For reasons enumerated above, we are firmly convinced that to "sunset" the Electricians and Plumbers Board is not in the public's best interest. While it is recognized that some activities of the Board may be subject to scrutiny, the fact that corrective actions are being taken to alleviate the problems and strengthen the affairs of the Board justifies its continuance. In this connection:

- (a) The Board's present composition of labor, management and public representatives provides the input that supports your suggestion of broader participation.
- (b) The passage of an industrial electrician's license would go a long way in providing a means of classifying those applicants seeking a journeyman license and improve upon the number of applicants passing their examination.
- (c) The Board is considering the merits of a national examination to provide the validity of our journeyman and/or supervising electricians' license examinations. However, should they be adopted, local conditions and trade practices would necessitate certain modifications to such examination.

In conclusion, may we express our congratulations to you and your staff for a commendable job done on the comprehensive evaluation report and thank you for permitting us an opportunity of expressing our views. We trust that our comments and recommendations would be given consideration in determination of your final report.

Sincerely,

George K. Hall

George K. Hall, Member
Electricians-Plumbers Board

Nick Teves

Nick Teves, Member
Electricians-Plumbers Board

ATTACHMENT 3

December 14, 1982

RECEIVED

DEC 21 11 21 AM '82

OFF. OF THE AUDITOR
STATE OF HAWAII

Mr. Clinton T. Tanimura
Legislative Auditor
The Office of the Auditor
485 South King Street, Room 500
Honolulu, Hawaii 96813

Dear Mr. Tanimura:

Plumbing Members Response

SUBJECT: Sunset Evaluation Report - Electricians and Plumbers
Chapter 448E HRS

We the undersigned plumbing trade members of the Board of Electricians and Plumbers respectfully do not concur with the Sunset Evaluation Report on the Electricians and Plumbers Chapter 448E HRS.

With respect to the recommendations, the following are our comments:

1. Where you recommend that "Chapter 448E, HRS, be allowed to expire as scheduled on December 31, 1983", we respectfully state that Chapter 448E, HRS should be re-enacted.
2. Where you recommend that "If the Legislature should decide to retain Chapter 448E, HRS, the statute be amended to remove the requirement for the licensing of motion picture operators", we respectfully state that this matter should be separated from the Electricians & Plumbers Law since it is totally different from the electrical and plumbing trades.
3. Where you recommend that "Should licensing of electricians and plumbers be retained, the Board of Electricians and Plumbers take steps to develop valid and reliable examinations and in doing so, obtain the advice and input of others who are knowledgeable about the requirements of the respective trades", we respectfully state that the Board of Electricians and Plumbers should be expanded to provide for additional trade members to assist in this matter. Also, we need the assistance of the administration to help us in developing such valid and reliable examinations.

We feel that Chapter 448E, HRS should be re-enacted because of the following reasons:

1. Licensing of plumbers and master plumbers in Hawaii was started in 1913 under the jurisdiction of the City & County of Honolulu. Since that beginning, plumbers and master plumbers have always been licensed in Hawaii. The primary reason for licensing plumbers and master plumbers in 1913 remains the same for licensing plumbers and master plumbers in 1982. That is, to protect the health, safety, and welfare of the public through the use of a four(4) point system of (1) permits, (2) code, (3) license, and (4) inspection.

What is the public's defense against plumbing hazards which could produce water-borne disease outbreaks? Also, against accidents, such as exploding water tanks, gas lines, and hot-water scalding? Also, against hazards, which create the conditions of filth that breed other diseases? Also, against shoddy workmanship, illegal material, and other non-code installations? Answer ... The public has state & county regulations to protect itself. There are four controls:

- A. Codes - A plumbing code outlines the modern, safe methods and materials for all plumbing installations. By establishing a code, the community says that plumbing in any private or public building is a part of the community's water and sewage disposal systems; that such installations should not be left to the discretion of any irresponsible individual; That the protection of the public health and safety must be guaranteed by setting up minimum standards.
- B. Licensing - Licensing assures competence in the installer. However perfect technically, a plumbing code is meaningless if its provisions are not carried out in actual practice. Through licensing, the community says that plumbing work must be done by competent installers; that such installers must qualify by submitting to an examination of their technical knowledge.
- C. Permits & D. Inspections - Permits and Inspections insure that Code and licensing controls are effective. Through these regulations, the community polices the activities of both consumers and installers. Permits for new plumbing and alterations insure that planned improvements are consonant with code provisions, and enable inspectors to schedule their work.

Inspections insure that the installation as completed by the installer conforms to code provisions.

This four-point system of control is the culmination of many years of trial-and-error search for adequate protection. By requiring that only licensed plumbers can perform plumbing work, it makes the inspection process simple in that the inspector need only make spot-checks. There is not enough inspectors to check every job, 8 hours a day, 7 days a week.

2. Major plumbing hazards which can happen -

- A. Cross-Connections
- B. Leakage from Soil and Waste Lines
- C. Accidents
- D. Rural Hazards

A sheet describing the above hazards is attached.

Because of the seriousness of the potential hazards associated with plumbing, it is imperative that these hazards do not happen at all.

If a hazard should occur, it is too late to go back & fix the "bad plumbing". We should do all we can to prevent the hazards from occurring.

3. Examples of serious hazards are as follows:

- A. Article titled, "Hot Water Heater Bleve In School, Kills Seven". (Copy is attached) This article illustrates the importance of having skilled licensed plumbers working on water heaters. If licensing was to be eliminated as recommended by the Legislative Auditor, how many explosions and deaths in our state would be required to reinstate the licensing provision?
- B. Booklet titled, "How the Public Protects Itself With Plumbing Code". This booklet illustrates a number of serious hazards which could occur in a plumbing system. We need licensed plumbers to prevent similar occurrences in the State of Hawaii. (Copy is attached)

4. Other pertinent comments are listed as follows:

- A. Most of the plumbing work is generally hidden from view of the consumer. As such, when a consumer purchases a house or a condominium, he does not know the quality and workmanship of the plumbing system. The present licensing law eliminates any fear or question whether the plumbing work is good or bad. This in turn provides for the protection of the welfare of the public. The licensed journeyman plumber is trained to do a good job everytime. He generally works by himself or with a helper, apprentice, or another journeyman. He knows the code and installs the plumbing work in accordance with the code and plans. As he works, he supervises himself and his subordinates to see that the job is done right. As a matter of fact, the plumbing inspectors hired by the respective counties cannot check every plumbing work installed in the state. The integrity and conscientiousness of the journeyman plumber combined with his skills and knowledge of the plumbing trade provides for the best inspection. Even his employer who is the plumbing contractor cannot be at the job-site all of the time to check the work of his plumbers.
- B. If licensing were to be removed, many unscrupulous plumbing contractors would resort to hiring inexperienced workers who probably would do a lousy job. The homeowners who don't know anything about plumbing would be at a disadvantage because they don't know the quality and professionalism of the "plumber" who will work on their problems or jobs. As stated earlier, it is "too late" to fix a plumbing hazard. Furthermore, these unscrupulous contractors would probably leave town when he runs into trouble.
- C. The sunset evaluation report states that the public is adequately protected by the licensing of the plumbing contractor (employer) and, as such, licensing of the plumbers is not required. We argue against this statement because the plumbing contractor does not install the plumbing work. He employs plumbers to do the plumbing work. At present, the Contractors License Law allows B-licensed general contractors to do their own plumbing work as part of the over-all job. General Contractors don't know anything about plumbing but they could employ a licensed master plumber to supervise the job and licensed journeyman plumbers to do

the work. If the public gets sick and dies or gets injured or is killed by a faulty plumbing work, the public does not want any legislative relief to sue the contractor because the law says the contractor is responsible for the plumbing work. The public does not want to get sick, injured, or die. All he wants is a good, safe plumbing job.

- D. The requirement of licensed plumbers also provide public health, safety and welfare for private and public institutions. From time to time, public agencies to include Parks and Recreation, Waimano Home, State hospitals, etc. and private institutions such as hospitals, hotels, private schools, businesses, etc. hire licensed plumbers to do their own plumbing related work. These agencies and institutions use the license requirement as an added qualification to insure that the person they hire shall be a qualified and competent plumber. Since plumbing is a very complicated work especially in the repair and maintenance field, it is imperative that only qualified and competent plumbers work for these agencies and institutions. The seriousness of a hazard in a hotel, hospital, etc. is so great that the public must be protected. The plumbing work is too important to allow unskilled workers to do the work on a trial and error method or a "I'll come back and fix it if it doesn't work" attitude.
- E. Plumbing work involves gas and gas lines. The installation of these gas lines is a serious matter. It should be done only by qualified licensed plumbers. Human lives are at stake when you're dealing with gas and gas lines.
- F. The current system of codes, licensing, permits, and inspections is found in all of the 50 states. Not all of the 50 states have the license requirement at the state level. If not at the state level, surely you will find it at the county level. This system was started in 1882 and have developed into a reasonable & practical method to protect the health of the nation.
- G. The impact of the licensing of plumbers is very great when you look at the overall Contractors Licensing Law and the permit systems in the respective counties. By eliminating the need for licensed plumbers, you essentially are saying that a homeowner or any person can do his own plumbing work. As provided in the Contractors License Law a homeowner can do his own work. Presently, the Plumbers Law require that all plumbing work must be done by licensed plumbers. What is the protection of the public if any person or homeowner can do plumbing work? He is not knowledgeable of the code, he is not trained to detect problems, and he can walk away from his problems by selling his house to the public. The public must be protected from shoddy workmanship which may not be safe or healthy. Furthermore, what is the state's liability if any damage or injury or illness occurs because of the homeowner doing his own work? By eliminating the licensing law, you are saying that any homeowner or any person can do plumbing work.

- H. The report states that licensing is not required because of the DLIR apprenticeship program. We disagree with this statement because only union plumbers must go through the plumbing apprenticeship program. The plumbing apprenticeship program is a voluntary program administered by the union and union contractors for the betterment of the union-segment of the plumbing industry. What about the non-union plumber? We have a lot of non-union licensed plumbers who are skilled and competent. These non-union licensed plumbers did not go through the apprenticeship program. In fact, the apprenticeship program in Hawaii did not start until the 1950's. Prior to that, all licensed plumbers got their training in the field from their employers and the master plumber. The non-union plumber continues to get his training and experience in the field from his employer and the master plumber. The non-union plumber must study the code and other classroom studies on his own time. He does not have the benefit of an apprenticeship program. What would happen if the union decided to drop its apprenticeship program?
- I. The report states that the Department of Health also provides public protection. We disagree with this statement. It is the plumber in the field who carries out the policies of the Department of Health who provides the public protection. There is not enough inspectors in the Department of Health to go out and check every job which falls under their jurisdiction.
- J. Another item overlooked in the report is the fact that in almost every set of plans which are drawn up for residential and small commercial construction the plumbing work is not laid out on the plans. The actual plumbing work is done in the field based on the licensed journeyman plumber's own knowledge of the code, his personal design and method of installation. The licensed journeyman plumber installs the proper materials, sizes the pipes, installs the fixtures and pipes in accordance with the code, and performs all of his work in the best manner. Again, there are not enough inspectors to be hired to do the inspection if plumbing work was to be done by any person.
- K. Since plumbing work is often enclosed in walls, under slabs, under the ground and other concealed locations, it can be very expensive to correct a faulty system. The public must be protected from "fly-by-night" operators coming into the state and doing lousy plumbing work. Often, the fault or problem may not be detected until many years later. The problem could occur because of an undersized drain line or inferior material or illegal material or sloped the wrong way or just plain lousy workmanship without pride which causes leaks, etc. What's the public's remedy in this situation? He went with the lowest price and he got a bum job.
- L. Plumbing is a trade or a profession which calls for a specialized knowledge and skills, intensive training, and most important, a high standard of workmanship. Plumbers who have gone through the training and received their licenses are proud of their trade. They have pride in their work. Plumbing is a trade which should not be protected by after-the-fact costly legal action. Government must use its constitutional right to exercise its powers to license plumbers and to protect the public.

- M. In Chicago during the 1933 World's Fair, thousands of Fair visitors were stricken by amebic dysentery. The epidemic was traced to faulty plumbing in two Chicago hotels. There were 1,409 official cases and 98 deaths. Many victims were not treated in hospitals, and thus were not included in the count. The report of the investigation showed that much of the trouble was laid to the use of handy men in altering and repairing the old hotel plumbing. One of the lessons drawn from this amebic dysentery is that plumbing demands the best. Dr. Herman N. Bundesen, President of Chicago's Board of Health in 1933, in a public broadcast issued the following statement to the National Association of Master Plumbers Convention in 1935:

"The lesson that plumbing is important to public health has been thoroughly learned by us in Chicago as the result of our amebic dysentery experience.

It is my earnest hope that other cities and towns will benefit by our experience and eliminate hazardous plumbing wherever it may exist before they are forced to go through some similar incident.

It has been reported to me from many other cities that plumbing conditions, both in hotels and in federal buildings, are just as dangerous as any that were found here in Chicago. In fact, even greater hazards were found in some cities.

I feel sure that you will carry away with you as you return to your homes and communities throughout the country, a better recognition of your place in the protection of public health.

You will go forth from this meeting to tell the entire world of the importance of seeing that, first, plumbing be properly designed; second, properly installed by a competent licensed master plumber; and third, thoroughly inspected and reinspected at frequent intervals by well qualified plumbing inspectors.

The prevention of water-borne disease rests, to a great degree, in the hands of the members of this great Association of yours".

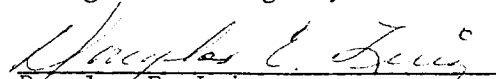
Since the 1933 epidemic in Chicago, the number of serious hazards have decreased.

CONCLUSION:

Based on the above comments, we respectfully request that the Legislative Auditor's Sunset Evaluation Report on Electricians and Plumbers Chapter 448E, HRS be amended to provide that Chapter 448E be re-enacted. The seriousness of allowing the licensed plumber to be eliminated in the State of Hawaii is too great and too important. We feel that the report does not justify the recommendations of the Legislative Auditor.

Respectfully submitted,


George R. Rodrigues, Jr.


Douglas E. Luiz



INTERNATIONAL ALLIANCE OF THEATRICAL STAGE EMPLOYEES
AND MOVING PICTURE MACHINE OPERATORS
OF THE UNITED STATES AND CANADA
LOCAL NO. 665
HONOLULU, HAWAII 96809

December 21, 1982

AFFILIATED WITH THE
AMERICAN FEDERATION OF LABOR &
CONGRESS OF INDUSTRIAL ORGANIZATION
HAWAII STATE FEDERATION OF LABOR

P. O. BOX 493

Mr. Clinton T. Tanimura
Legislative Auditor
The Office of the Auditor
State of Hawaii
465 S. King Street, Rm. 500
Honolulu, Hawaii 96813

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OFF. OF THE AUDITOR
STATE OF HAWAII

Dear Mr. Tanimura :

The Motion Picture Machine Operators Union of the United States and Canada I.A.T.S.E. Local 665, have in its membership, eighty four of these licensed motion picture operators employed as motion picture machine operators in the State of Hawaii; and

The Department of Health are the principle agencies providing public protection against the danger of incompetent motion picture machine operators responsible for the care, operation and handling of equipment in the projection booth. The Projection Booth is "THE HEART OF THE THEATRE"; and

Further, the Consolidated Amusement Company and Royal Theaters, Ltd. has cooperated with the Union to a training program for motion picture machine operators (at least four hundred hours or equivalent to one years training), not 10,000 hours as stated in the report, for the past forty years; and

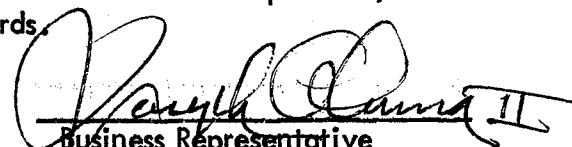
Furthermore, the danger to public safety, health and welfare concerning the projection booth was always the performance of the motion picture machine operator. Nitrate film was one of the factor with the additional responsibilities of the operator in the booth; and

Therefore, incompetent work by a motion picture machine operator can result in danger to the public's safety and health, such as fire, caused by improper care of projectors, improper splicing of film, improper operation of projectors and lamphouses (carbon or xenon), improper replacing of tubes in amplifiers, improper handling of generators or rectifiers (voltage control), improper handling of cooling system for Aperature gates and lamphouses and knowlege to handle emergencies, such as the "Aikahi Theater, Gas Bomb Incidents", in April of 1982, - (Public Panicking).

The Local Union and Employers recommends, Licensed Motion Picture Machine Operators, to continue, for the Safety and Welfare of the Public. Kind Regards.

Sincerely yours,


Secretary/Treasurer


Business Representative

ATTACHMENT 5



GEORGE R. ARIYOSHI
GOVERNOR

MARY G. F. BITTERMAN
DIRECTOR

DICK H. OKAJI
LICENSING ADMINISTRATOR

STATE OF HAWAII
PROFESSIONAL & VOCATIONAL LICENSING DIVISION
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS

P. O. BOX 3469
HONOLULU, HAWAII 96801

December 20, 1982

Honorable Clinton T. Tanimura
Legislative Auditor
State of Hawaii
465 South King Street, Room 500
Honolulu, Hawaii 96813

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DEC 21 9 14 AM '82
OFF. OF THE AUDITOR
STATE OF HAWAII

Dear Mr. Tanimura:

Thank you for the opportunity to comment on your sunset evaluation report on electricians and plumbers.

The Department of Commerce and Consumer Affairs is in agreement with your analysis and evaluation of the regulation of electricians, plumbers and motion picture operators. We believe the report accurately and thoroughly discusses and assesses the Board's activities and other county and state regulations as they relate to consumer protection.

Sincerely yours,

A handwritten signature in cursive script that reads "Donald Ching".

DONALD D. H. CHING
ACTING DIRECTOR