

**Small Business Economic Impact Statement for  
Carbon Monoxide Alarms in Residential Settings**

**Prepared by  
State Building Code Council  
Department of General Administration**

**June 9, 2011**

## **Table of Contents**

<b>Executive Summary.....</b>	<b>1</b>
<b>Section I: Introduction – Compliance with the Proposed Rules .....</b>	<b>2</b>
<b>Section II: Compliance Costs for Washington Businesses .....</b>	<b>4</b>
<b>Section III: Analysis of Proportionate Impact on Small Businesses .....</b>	<b>5</b>
<b>Section IV: Small Business Involvement and Impact Reduction Efforts .....</b>	<b>5</b>
<b>Section V: Number of Affected Businesses in Washington .....</b>	<b>7</b>
<b>Section VI: Jobs Created or Lost as a Result of these Rules.....</b>	<b>7</b>
<b>APPENDIX 1: Estimated Economic Impact for CO Alarms per Dwelling Unit</b>	

**DRAFT**

## **Executive Summary**

### **Impact on small business**

Permanent rulemaking for CO alarms will result in some cost outlay for small businesses in the lodging and rental housing industries. These costs will be incurred for the purchase of CO alarms and batteries, and in some cases for installation services. In rental housing, tenants are required to maintain the alarms including battery replacement. There could also be installation costs under certain limited circumstances, for example during new construction or remodeling projects, depending on the needs and desires of a particular business.

The enacting legislation and proposed rules are silent on cost recovery, however, it is assumed that rental property owners and lodging establishments could and would charge fees.

Other small businesses would see an increase in revenue; these include hardware stores and home centers that sell alarms and batteries. The overall impact would be positive; the degree of impact would depend on the number of alarms and batteries sold.

The rules are anticipated to be job neutral, although there would be some temporary work for installation jobs for certain trades people such as maintenance personnel or electricians; these would primarily be for short term contracts for installation or maintenance of CO alarms, and would likely be part of larger remodeling project. Businesses that install smoke, fire and burglar alarms might experience increased business revenue if they offer installation services for CO alarms. There is not expected to be a disproportionate impact on smaller versus larger businesses.

## **Section I: Introduction/Compliance with the Rules**

### **Who is required to comply with the Rules?**

The proposed rules regarding installation of Carbon Monoxide alarms in residential settings will modify the Building Code, Fire Code and Residential Code, as follows:

- Building Code (WAC 51-50) and Fire Code (WAC 51-54):
  - ❖ Residential occupancies building owners are required to install CO alarms in all new residential construction, regardless of fuel source.
  - ❖ Exceptions are allowed for sleeping or dwelling units in transient residential occupancies (R-1), and permanent residential (R-2) college dorms, hotels, and DSHS licensed boarding homes and residential treatment facilities which do not contain fuel sources or an attached garage but are located in a building that contains such sources.
  - ❖ Existing Group R-2 occupancies building owners would be required to install CO alarms when a permit is pulled for alterations, repairs or additions, or when one or more sleeping rooms are added or created.
  - ❖ Exceptions are allowed in certain situations related to adjacency to rooms that contain fuel-fired systems, duct work and ventilation shafts; or if a building contains a common area CO alarm system.
  - ❖ For existing buildings, certain work is excluded for existing buildings, e.g., replacement of roofing, siding, windows, doors, additions of porches or decks, or electrical permits; installation/repair of non-combustion plumbing or mechanical systems are also exempt.
- Residential Code (WAC 51-51):
  - ❖ CO alarms are required in all new residential construction.
  - ❖ Alarms would be required in Existing dwellings when a permit is pulled for alterations, repairs or additions, or when one or more sleeping rooms are added or created.
  - ❖ Certain work is excluded, e.g., replacement of roofing, siding, windows, doors, additions of porches or decks, or electrical permits; installation/repair of non-combustion plumbing or mechanical systems are also exempt.
  - ❖ These provisions apply regardless of fuel source.

Required implementation dates are as set in the enacting legislation, i.e., January 1, 2011 for new construction and no later than January 1, 2013 for existing dwellings.

To comply with these rules, property owners will need to:

- ❖ assess how many alarms are needed for each dwelling unit they are renting or leasing to tenants.
- ❖ determine whether installation should be done by the landlord, the tenant, existing maintenance personnel, or if they will contract with a third party for this task.
- ❖ analyze whether any of their units meet the exceptions allowed for in the rules.
- ❖ purchase or order and pay for alarms, keep records, and manage inventory.
- ❖ budget for the purchase, and potentially the installation, of the alarms.
- ❖ Educate tenants, e.g., about necessary maintenance of the alarm and batteries.

### **When are Professional Services Required to Comply with the Rule?**

If and when residential property owner obtain a permit for remodeling, they will be required to install CO alarms. During such a remodel, laborers, carpenters, plumbers, electricians and other professional building trades would be on-site to complete the renovations required by the project plan documents. In the event that the property owner decides to install hard-wired alarms or an alarm system throughout the residence, an electrician would do the actual installation of the alarms or alarm system. The cost of construction is indeterminate because it is driven by the alarm system chosen, the specific project design, and local market construction industry costs. Estimates for the total cost burden, including loaded wage rate with benefits, and time and materials range from \$150 to \$250 per alarm, according to the Independent Electrical Contractors Association, and the National Electrical Contractors Association.

### **What Installation Methods are used?**

Most CO Alarms are designed and manufactured to be user-friendly and intended to be installed by a homeowner or resident. Some CO alarm installations can be accomplished with basic home repair tools such as a drill, a screwdriver, and a hammer; others would require specialized electrical wiring tools and would be installed by a skilled electrician.

- Battery alarms are available that require no installation at all; these can be placed on a table or desk and will operate once the batteries are inserted. Other battery alarms are meant to be attached to a wall/ceiling bracket that comes with the unit. The bracket is screwed to the wall or ceiling with two screws, like a smoke alarm. The alarm is mounted to the bracket by a twisting motion.
- Plug-in with battery back-up alarms require no installation. Once the batteries are inserted the alarm is plugged into a wall outlet.
- Hard-wire with battery back-up models include a battery, a mounting bracket, and a wiring harness. They connect to the house wiring with a three pin connector in the back of the alarm. They are connected with the house wiring using wire nuts. Once the wiring installation is complete, the alarm is mounted to the bracket, as above.

## Section II: Compliance Costs for Washington Businesses

### Assumptions:

In rental housing, where alarms are required, most if not all landlords and property owners will incur initial costs for the purchase and installation of the alarms; it is assumed that these costs would be passed on to tenants through maintenance fees or rent payments. Hotel and motel owners could also pass the cost on through increased rates. For existing dwellings, where alarms are required, most if not all property owners will choose either battery-powered or plug-in models rather than electrical hard-wired models.

For new construction and potentially for remodeling jobs, many residential designers, housing construction contractors and property owners will choose hard-wired combination smoke alarm/CO alarm models because both smoke and CO alarms are required under the building code. Therefore, no additional installation costs should be incurred beyond what it required for the smoke alarm system installation, unless the combination units are significantly more expensive. It is assumed that any costs incurred for CO alarms in new construction would be passed on to the homebuyer or property owner.

### Average Alarm Cost:

Alarm costs range from an average of \$30 to \$51 per alarm, depending on the model and manufacturer chosen, and not including cost of batteries or installation. Taking into account the cost of batteries and installation, the cost range shifts to \$38 to \$84 per alarm.

- **EQUIPMENT:** CO Alarms; conduit and wire for hard-wired systems.
- **SUPPLIES:** Batteries (replacement batteries will be furnished by the tenant, per statute).
- **MATERIAL:** Information regarding CO Poisoning and the function of the alarms is contained in the product packaging.
- **LABOR:** Optional expense, depending on the type of alarm system chosen and whether it can be installed by a property owner or tenant directly, or must be installed by a professional electrician.
- **PROFESSIONAL SERVICES:** Some property owners may choose to have an alarm company install, monitor and maintain their CO alarm systems.
- **ADMINISTRATIVE COSTS:** Inventory management, dependent on the number of housing units and the type of alarms chosen.

### Impact on sales or revenue

There will be a positive impact on home improvement stores and hardware stores as sales of the alarms and batteries will increase.

There will be a positive impact on smoke and fire alarm companies as they will perform more alarm system installations.

## Section III: Analysis of Proportionate Impact on Small Businesses

**TABLE ONE: Small Businesses Impacted by CO Alarm Rules**

Type of business	NAICS CODE #	# IN STATE (UP TO 49 Employees)	#IN STATE (50 OR MORE Employees)	ANTICIPATED IMPACTS
Hardware stores	#444130	308	9	Positive: due to sales on alarm systems and batteries
Home Centers	#444110	20	2	Positive: due to sales on alarm systems and batteries
Homes for the Elderly (Licensed adult family homes)	# 623312	1103	61	Neutral: depending on the specifics of a given facility, many units in this category of housing will be exempt from the requirements of the rule
Hotels & Motels	#721110	906	71	Negative: costs will be incurred for alarm purchase, installation and maintenance. Some will be exempt.
Rental Housing	#531110	1609	46	Neutral: Initial cost of alarms, batteries and installation may be recovered from tenants.
Real Estate Agents and Brokers	#531210	1977	96	Neutral – the rules do not contain requirements for real estate agents. Statute requires seller’s disclosure form.
Alarm Systems – electric/installation	#238210	1992	59	Positive: due to contracts for installation of alarms in new construction or remodels

### The impact on small businesses compared to the largest businesses in the state will not be disproportionate.

- Smaller hardware stores and home centers will experience increased revenues for the sale of alarms and batteries. Larger stores will likely have a larger volume of sales, thus, they may experience greater revenue increases. In addition, larger stores may be able to sell the alarms at a lower price due to economies of scale, and thus would increase their profit margin compared to smaller businesses.
- Licensed Adult Family Homes which do not contain a fuel-source will not be required to install the alarms unless their units are adjacent to units which do contain a fuel source. Residents of these facilities are closely monitored and would be unable to bring in any fuel-burning devices. Thus many will be exempt from the rule requirements, regardless of the size of the business.
- Lodging industry requirements are identical to those in Licensed Adult Family Homes, thus many will be exempt. Small and large lodging businesses and large businesses will all have the same requirements, though larger hotel/motel facilities are more likely than smaller facilities to have on-site full time personnel available for installation and maintenance of the alarm systems. There would be no disproportionate impact as any additional costs could be passed on to lodging customers.
- The impact on the Real Estate industry will be neutral. When homes are sold the seller’s disclosure form will be required to specify if a CO alarm has been installed. Realtors are not required to supply homes with the alarms.

## **Section IV: Small Business Involvement and Impact Reduction Efforts**

### ***Actions Taken to Reduce the Impact of the Rule on Small Businesses***

The proposed rules are written to allow exceptions under the Building Code and Fire Code which limit the placement of alarms in certain situations. The alarms would not be required in sleeping units or dwelling units in R-1 occupancies, and R-2 college dormitories, hotels, DSHS licensed boarding home and residential treatment facility occupancies that do not themselves contain fuel-burning appliances, or a fuel burning fireplace, or have an attached garage, but that are located in a building which contains such a fuel-source,

### ***Involvement of Small Business in the Development of the Proposed Rules***

A special Technical Advisory Group (TAG) was developed to address permanent rulemaking issues on CO Alarms. Several TAG members represented the interests of small business, as follows:

- Rental Housing Association of Washington (Julie Johnson) NAICS #53111
- Washington Multi-Family Housing Association (Joe Puckett) NAICS #53111
- Washington Lodging Association (Rodney Schauf) NAICS
- Aging Services of Washington (Julie Martin) NAICS #623312
- Washington Realtors Association (Annie Fitzsimmons) NAICS #531

Other TAG members brought expertise in epidemiology, building design, fire and emergency response, and the alarm industry and other fields, as well as poisoning victims' families. The group met four times to consider a number of proposed changes.. Ultimately, after a great deal of debate and collaboration, the group voted to propose permanent rules to the Council that would require the alarms in residential settings, regardless of the fuel-source or presence of an attached garage; their proposal did allow for certain exceptions within Group R occupancies.



## **Section V: Number of affected businesses in Washington:**

- Hardware stores (NAICS Code #444130) = 308 (50 ees or less) or 9 (50+ ees)
- Home Centers (NAICS Code #444110) = 20 (50 ees or less) or 2 (50+ ees)
- Homes for the Elderly (Licensed Adult Family Homes) (NAICS Code # 623312) = 1103 (50 ees or less) or 61 (50+ ees)
- Hotels & Motels (NAICS Code #721110) = 906 (50 ees or less) or 71 (50+ ees)
- Rental Housing (NAICS Code #531110) = Lessors of residential buildings and dwellings – 1609 (50 ees or less) or 46 (50+ ees)
- Real Estate Agents and Brokers (NAICS Code #531210) = 1,977 (50 ees or less) or 96 (50+ ees)
- Alarm Systems, electric, installation only (NAICS Code #238210) = 1992 (50 ees or less) or 59 (50+ ees)

## **Section VI: Jobs created or lost as a result of these Rules:**

These rules are likely to be job neutral overall, i.e., they will not result in any job gains or losses. Initially, some job gains may be anticipated in the short term, but these would be of a temporary nature.

- The types of jobs that might be likely to increase temporarily in the short term would be for alarm installation businesses and/or electrical contractors working on new residential construction or on remodeling projects for existing residences to install hard-wired alarm systems. This would not have a significant impact on the industry and would not affect employment rates in the construction industry.
- In terms of sales jobs for hardware stores and home centers, no additional hiring is anticipated as a result of these rules, and no jobs would be lost.
- In terms of the lodging industry and the rental housing industry, it is likely that some businesses would hire contractors on a temporary basis for installation of the battery or plug-in alarms, but that would be on a case by case basis depending on the needs of an individual business.

## APPENDIX 1: Estimated Economic Impact for CO Alarms per Dwelling Unit (based on installation method)

Type of alarm and assumptions*	Type of dwelling unit	Time to install	Installation costs (hourly rates)			Total cost per chosen installation method
			Maintenance personnel (if chosen)	Home Owner	Contractor**	
All battery powered:* <ul style="list-style-type: none"> <li>• Average cost per alarm including batteries is \$31.86 plus tax</li> <li>• May be installed by property owner at no cost, or</li> <li>• If installed by maintenance personnel, assume loaded wage @ \$22.40 per hour</li> </ul>	1 -2 bedroom apartment, one level, adjacent bedrooms	20 minutes	\$7.50	NA	NA	\$ 39.36
	Multi-level townhouse, two bedrooms on two levels	40 minutes	\$15.00	NA	NA	78.72
	Single-family home, one level, three bedrooms separated throughout the house	One hour	\$22.40	NA	NA	\$117.98
	Dormitory room, i.e., one sleeping room	20 minutes	\$7.50	NA	NA	\$39.36
Plug-in with battery back-up:* <ul style="list-style-type: none"> <li>• Average cost per alarm including battery is \$45.18 plus tax</li> <li>• Installed by property owner at no cost, or</li> <li>• If installed by maintenance personnel, assume loaded wage @ \$22.40 per hour</li> </ul>	1 -2 bedroom apartment, one level, adjacent bedrooms	10 minutes	\$3.75	NA	NA	\$48.93
	Multi-level townhouse, two bedrooms on two levels	20 minutes	\$7.50	NA	NA	\$97.86
	Single-family home, one level, three bedrooms separated throughout the house	30 minutes	\$11.20	NA	NA	\$146.74
	Dormitory room, i.e., one sleeping room	10 minutes	\$3.75	NA	NA	\$48.93
Hard-wired with battery back-up:** <ul style="list-style-type: none"> <li>• Average cost of alarm installation, including conduit, wire and labor is \$175 - \$250 per unit.***</li> <li>• Installed by an electrical contractor</li> <li>• Cannot be installed by property owners</li> </ul>	1 -2 bedroom apartment, one level, adjacent bedrooms	1 hour	NA	NA	\$150 - \$250	\$150 - \$250
	Multi-level townhouse, two bedrooms on two levels	2 hours	NA	NA	\$300 - \$500	\$300 - \$500
	Single-family home, one level, three bedrooms separated throughout the house	3 hours	NA	NA	\$450 - \$750	\$450 - \$750
	Dormitory room, i.e., one sleeping room	4 hours	NA	NA	\$150 - \$250	\$150 - \$250

\*Battery powered and plug-in units can be readily installed with ordinary household tools by home owners, and by building maintenance personnel in rental housing, hotels and motels, etc.

\*\*Hardwired models require installation by an electrical contractor.

\*\*\*Rate estimates based on information from the Puget Sound Chapter of the Independent Electrical Contractors, Inc. and the National Electrical Contractor's Association including project materials and fully burdened wage rates (includes benefits, etc).