Oregon
Kate Brown, Governor

Department of Consumer and Business Services
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April 17, 2017

House Committee on Business and Labor
Oregon House of Representatives
900 Court St. NE
Salem Oregon 97301

Re: HB 2737(-2)

Dear Chair Holvey and members of the House Committee on Business and Labor:

Our primary concern about HB 2737(-2) is that it **eliminates building code safety provisions** for small homes. Our office has been participating in the workgroup to try to develop an approach to address "tiny houses" while maintaining the right of every Oregonian to live in a safely constructed home. We have raised several safety concerns, but also tried to raise potential solutions.

We want to bring to the attention of the committee, the Legislature, and Oregon citizens the following concerns with HB 2737 as drafted and amended.

- HB 2737(-2) **eliminates certain fire safety requirements** for users and occupants of small houses.
- The proposed changes to state building code requirements **have not been vetted** by Oregon officials, or, in our opinion, adequately vetted at the national level.
- We have not been able to locate any scientific justification that supports elimination of fire safety codes for small houses. Most of the technical data we can find suggests that **extra care to address fire safety should be considered, not eliminated** (see attached small house hazard report).
- The approach taken in HB 2737(-2) establishes a **"lower standard of care"** for small houses purported to support low income homeowners. This approach may subject the state to a "claim of **violation of the equal protection clause** of Article 1 of the Oregon Constitution."[1] Additionally, waiving existing safety standards without empirical or scientific evidence may expose the state to a "**significant tort risk.**"[2]
- The amendments to HB 2737(-2) are dated April 11, 2017. The amendments were made available on OLIS April 17, 2017, for public review. There are **technical problems** with the amendments (let alone legal and safety concerns) and the code provisions appear to even modify national model code appendix language.
- The specific fire safety concerns are as follows:
    1. **Fire load density**:
       Fire load density may be higher in small houses, resulting in a faster growing fire. Extra measures may need to be necessary to address storage and fire load density.[3]

[1] Comments DCBS received from DOJ.
[2] DOJ identified an equal protection concern and significant risk of tort based on HB 2737-2.

2. **Fire growth**:
   Fire growth is dependent on fuels available (contents and building elements). Increased interior flame spread ratings may need to be considered for small houses.[3]

3. **Fire protection systems**:
   The reliability and effectiveness of traditional smoke detectors and fire sprinkler systems (to our knowledge) have not been analyzed for small houses.[3]

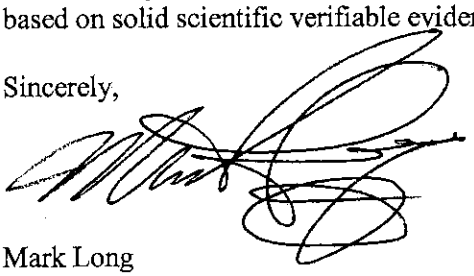
4. **Fire ignition likelihood**:
   The likelihood of a fire starting in a small house is potentially no different than that of a traditional sized house. We cannot find data to support elimination of safety codes for small houses that are not allowed for traditional-sized houses.[3]

5. **Loft spaces**:
   Loft spaces are not permitted for traditional-sized houses for a number of safety reasons. Occupants sleeping in loft spaces are more susceptible to smoke and heat from a growing fire (remember the fire growth and load density concerns unique to small houses, now compounded by HB 2737-2[4]) due to the occupant location relative to the ceiling. **Occupants may be incapacitated in a small house loft space before fire alarms sound.**[3]

6. **Fire testing and data**:
   We could not locate any evidence-based studies of fire hazards unique to small houses. We could find anecdotal information on fires in recreational vehicles (apparently the basis for eliminating safety codes for small houses – see attached).[5] The Division has reviewed 260 recreational vehicle fires occurring in the U.S. and Canada since July, 2016. According to local media reports, those **260 fires resulted in 25 deaths** and 50 injuries. Most of those killed were **using the structure as their primary residence** at the time of the fire.

We have provided the committee with our review of the actions discussed at the national level. The national technical committee rejected similar language proposed in HB 2737(-2). Our primary concern is effectiveness of the overall building construction approach to safety and the ability to rely on traditional means of egress, smoke and fire sprinkler equipment, fuel loads and density, and general data unique to fires in small spaces. We have recommended that **scientific study and/or technical vetting by Oregon officials should occur** before any existing safety requirements are eliminated. The report from the fire protection engineer notes "There appears to be a **number of questions and issues** related to **occupant fire safety** in small houses that **need to be addressed and thoroughly vetted for occupant safety**." Our office agrees. At the very least, code provisions should be based on solid scientific verifiable evidence and designed to ensure the safety of occupants.

Sincerely,



Mark Long
Administrator

Enclosures

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[3] Commentary from ARUP, "Fire Hazards Associated with Small Houses."
[4] BCD believes that eliminating safety features without an overall analysis compounds the risk to occupants.
[5] Testimony at National ICC suggesting RV based codes for small houses.

Your ref
Our ref 601886-02
File ref

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April 14, 2017

Dear Tom,

Fire Hazards Associated with Small Houses – Discussion Document

Introduction

Following the conversations held this week, Arup provides the following document to introduce the fire safety issues associated with small (tiny) houses. The aim of this document is to assist Oregon Building Codes Division (BCD) with their discussion and decisions regarding fire safety compliance for small houses.

Definition of a Small (Tiny) Houses

A small or tiny house is not a defined term. A residential structure under 500 square feet (46 m^2) is generally accepted to be a tiny house. The houses are normally a single floor, with no basement or full upper floor. Most small houses will have a mezzanine loft space. There are often few, if any, internal partitions within a small house, with only the bathroom being enclosed.

A small house is different to temporary accommodation of a similar size, such as a recreational vehicle (RV), as a small home is a permanent place of residence, whereas an RV is short-term accommodation.

Proposed Code Changes

The Oregon Residential Specialty Code (2014) regulates dwellings in Oregon. The ORSC is based on the 2012 International Residential Code. Both the 2015 and 2018 IRC have had proposed amendments to address small houses.

The 2015 IRC proposed amendments for small homes, which were not approved for adoption[1], included:

- Defining a small house as a dwelling of 500 sqft or less;
- Defining a loft space;
- Permitting exceptions for a number of dwelling requirements, such as ceiling heights, door sizes, hallway width, guards and the provision of automatic sprinklers.

For the 2018 revision of the IRC, proposed amendments for small houses were determined to be included within a non-mandatory appendix. This appendix is not part of the code and is for local review and adoption only and included:

- Defining a small house as a dwelling of 400 sqft or less;
- Defining a loft space;
- Specifying a egress roof access window;
- Permitted exceptions for ceiling height, doors, hallway width, guards and ladders.

Further information on small homes and code compliance has been provided by the NFPA within their white paper "Applying Building Codes to Tiny Homes"[2].

Existing Research

From our limited research, we were not able to find any studies on the fire hazards associated with small houses. The closest applicable work is by the NFPA[3] on "manufactured homes", which are small houses that are able to be relocated, but are for permanent occupation. This report has a number of findings on fire safety:

- Civilian deaths per 100,000 housing units is similar to that of one and two family homes.
- Heating is the highest cause of fires in manufactured homes. The percentage of fires caused by heating in manufactured homes is more than for one and two family homes, at 20%.
- Fatalities caused by fires are attributable to heating in 35% of fatalities in manufactured homes, compared with heating only contributing to 22% of fatalities in one and two family homes.
- Direct property damage caused by heating and candles represented 34% of fires in manufactured homes, compared with only 19% of fires in one and two family homes.

[1] ICC "Tiny Hose Code Change Proposal" (RB 168-16)
[2] NFPA, 2017 "Applying Building Codes to Tiny Homes" (NFPA.org)
[3] Hall, J., 2013 "Manufactured home fires", National Fire Protection Association, Fire Analysis and Research Division

- Fatalities in manufactured homes are more common in January, February and March, due to heating.

These statistics may be directly relatable to small homes, given the similarity in their construction.

Fire Hazards

The following items are outlined as an introduction to the fire hazards associated with residential fire safety and areas of concern that may be applicable to small houses. The information presented below is a summary of data from the International Code Council (ICC), National Fire Protection Association (NFPA) and a small workshop held with Arup fire protection engineers.

Fire Ignition Likelihood

The likelihood of a fire starting within a small house, measured as a rate of fire starts per sq foot, is most likely no different to that of a normal sized home, given the fire ignition hazards are similar – cooking, candles, heaters, electrical faults. The likelihood would be expected to be similar, if data was available. The ignition likelihood would increase if the electrical installations do not meet those of the IRC or the contractors involved are not appropriately licensed.

Fire Load Density

A small house will have a higher than typical fire load density per sqft, when compared to a normal sized dwelling. The need to squeeze more household items into a small floor area requires efficient storage and more vertically stacked storage. While the fire load overall may be less in a small house compared with a normal sized dwelling, the fire load density is higher. This higher fire load density can result in a faster growing fire, due to the vertical storage and also a more sustained fire, if a fire is ignited.

Fire Growth

If a fire ignites, then fire growth is dependent on the fuels available. The fuels available are the contents within the house, the fixtures and fittings. An aspect of control within dwellings to reduce early fire spread is the flammability of interior finishes and furnishings. In this regard, consideration should be given to limiting the flammability of wall and floor finishes to assist with reducing early fire spread. If possible, the use of reduced flammability furnishings should also be considered (mattresses, foam furnishings). Compliance and enforcement can be difficult to achieve.

Fire Protection Systems

The key fire protection measures in any dwelling are smoke alarms, and where installed, residential sprinkler protection.

Smoke alarms are a very cost-effective means by which to detect and alert occupants of a residential dwelling fire. Each small home will need to have a smoke alarm. Smoke alarms

are very important to alert occupants early in the fire development to a growing fire and the smoke hazard present, to allow early egress. The ability for normal 'off the shelf" smoke alarms to still perform effectively in alerting occupants who are sleeping, in a small home has not been proven. Of concern are occupants who may be sleeping in a loft area who could be overcome with smoke before an alarm can sound.

Also to be addressed are smoke alarms being very susceptible to false alarms due to the small floor area and location of the detector within the same space as the kitchen. Smoke alarms are more likely to be turned off or disabled, due to false alarms. An NFPA report[4] indicates that smoke alarms in half of the manufactured homes surveyed were removed. Smoke alarms may need to be multi-criteria or rate of heat increase, which can reduce the number of false alarms. These types of smoke alarms may not be as sensitive to a smoldering fire.

Another proven life safety fire protection system within dwellings are automatic sprinkler systems. It is acknowledged that sprinklers will be a life safety advantage in a fire, but these systems are a significant relative cost for a small house, on a square foot basis. How effective sprinkler protection is for life safety in a growing fire is an unknown as there have not been any fire tests to date (to our understanding), for small houses. There is a potential for occupant injury in a slow burning or smoldering fire. Sprinkler systems are a very effective fire protection in multi-story houses, especially where occupants are sleeping on an upper floor. In small houses, there is a need for very quick activation of the sprinklers.

Carbon monoxide alarms are also required within dwellings and these are still able to be installed and will operate effectively within a small home.

Loft Spaces

Small homes may be designed with occupants sleeping in loft (mezzanines) areas that are located above the main floor. Occupants sleeping in a loft area are more susceptible to smoke and heat from a growing fire due to their location near the ceiling. The increased risk to occupants within a loft space has not been quantified, as far as we can tell from the limited research undertaken.

Also of concern with loft spaces is the access ladder and the ease by which occupants can egress from the loft space safely to reach the exit. The loft ladder may not be a compliant form of ladder, with regard to IRC requirements. Loft spaces are not currently permitted within the ORSC, for a number of safety reasons.

Fire Testing and Evidential Data

From the limited research we have undertaken, there does not appear to have been any evidence based studies of fire hazards within small homes. Residential fires have been well-studied for many decades within the US. The NFPA provides a number of publically accessible reports on fire safety in homes. Research on dwelling fire safety has been undertaken to address structural issues, fire growth, fire spread, fire protection and improving occupant egress. Even with the growing number of people living in small

[4] Hall, J., 2013 "Manufactured home fires", National Fire Protection Association, Fire Analysis and Research Division

homes, there does not appear to be any current studies to understand the extent of changes to occupant fire safety or the impact (if any).

Summary

From the information provided within this document, there appears to be a number of questions and issues related to occupant fire safety in small houses that need to be addressed and thoroughly vetted for occupant safety. Of concern for small houses is the effectiveness of smoke alarms and the increased occupant risk to smoke inhalation when sleeping in a loft.

Fire incident data on manufactured homes from NFPA indicates that heating of small homes in winter results in a higher number of fires and fatalities, than occurs in one and two family homes. The report also indicates that smoke alarms are often ineffective or removed from these types of dwellings.

The increased fire hazards noted within this document does not mean that small houses are a danger to their occupants and should not be permitted for construction. The reduced cost of these houses is a significant benefit to the community in that they provide affordable housing. But, simply because a house is more affordable does not mean that the risk to life from fire should be reduced. Any increased fire hazard for a small house needs to be understood and where possible, quantified. Mitigation measures that are effective then need to be implemented to provide the occupants with an appropriate level of fire safety.

There are a number of other code compliance issues associated with small houses, such as plumbing and electrical installation compliance, daylight, room size, ceiling heights, guards, stair compliance etc, and these need to be addressed as well, to maintain occupant safety standards, in an appropriate method.

Please direct any queries on this letter to the undersigned.

Yours sincerely

Barber

David Barber
Principal

RABE Linda E * DCBS

From: Lozano Katharine M <katharine.m.lozano@state.or.us>
Sent: Friday, April 14, 2017 9:08 AM
To: COX Alana * DCBS
Cc: LOZANO Katharine M; LONG Mark * DCBS; BASS Dawn * DCBS
Subject: Re: HB 2737(-2)

1. It is my understanding that there is no empirical or scientific evidence supporting the standards outline in this bill, that national technical committees have rejected the standards, and that the Division has made a public record through more than one forum that it does not believe the minimum safety of these standards have been established. (A) The Division has an affirmative statutory duty to develop reasonable safe building standards under ORS 455.020. If the standards provided in House Bill 2737-2 (2017) are not, in fact, safe, the Division would likely not be fulfilling its statutory duty under ORS 455.020 if it enforced the provisions of House Bill 2737-2. Additionally, there is, apparently, no evidence that the Standards in HB 2737-2 ARE safe, mere enactment of the bill is arguably in contravention of ORS 455.020

(B) Because the Division has an affirmative duty to promulgate reasonably safe building standards, adopting unsafe standards is a breach of that duty and opens the Division and the state to significant tort risk. As the Division and national technical committees are record as disputing the safety of the standards in HB 2737-2, there may even be a prima facie case for negligence already established, should harm occur because the HB 2737-2 standards are inadequate.

(2) Because the standards in HB 2737-2 apply only to very small square footage housing, they will likely apply only to very low cost housing, and may be subject to claims of violation of the equal protection clause of Article I of the Oregon Constitution, by providing lower safety standards for housing of low income home owners and low income renters than for other homeowners or renters (discrimination based on poverty is a failure to provide equal protection, see, e.g., State v. CLARK, 291 Or 231, 630 P2d 810 (1981).

Katharine LOZANO
Senior Assistant Attorney General
Oregon Department of Justice

RV fires in the U.S. and Canada since July, 2016

TOTAL	259	25	50	19	
Month	**Date/Link**	**Dead**	**Inured**	**Pets Injured Killed**	**Notes**
Apr-17	April 16, 2017 — http://www.mercuryne	1	0	0	Man living in RV.
	April 16, 2017 — http://www.abc15.com	0	0	0	
	April 14, 2017 — http://herald-citizen.co	0	0	0	
	April 14, 2017 — http://www.wmdt.com/	0	0	0	
	April 11, 2017 — http://kval.com/news/l	0	0	0	
	April 9, 2017 — http://www.dailyheraldtr	0	0	0	
	April 7, 2017 — http://www.columbian.c	1	5	0	Family living in RV.
	April 6, 2017 — http://www.kiro7.com/ne	0	0	0	Living in RV at homeless camp.
	April 4, 2017 — http://www.ktnv.com/ne	1	0	0	
	April 1, 2017 — http://www.unionleader.	0	0	0	
Mar-17	March 29, 2017 — http://www.azcentral	0	0	0	
	March 29, 2017 — http://www.jcfloridan	0	0	0	Family living in RV.
	March 29, 2017 — http://www.wkyt.com	0	0	0	
	March 28, 2017 — https://www.stgeorge	0	0	0	
	March 27, 2017 — http://www.local10.c	0	1	0	
	March 27, 2017 — http://www.thebayne	0	0	2	Electrical fire.
	March 26, 2017 — http://amarillo.com/n	0	0	0	
	March 24, 2017 — http://www.thesiusla	0	0	0	
	March 22, 2017 — http://wjhl.com/2017	0	0	0	
	March 21, 2017 — http://www.kjrh.com/	1	0	0	
	March 21, 2017 — http://www.redbluffd	0	0	0	
	March 20, 2017 — http://abc7news.com	0	1	0	
	March 20, 2017 — http://kboi2.com/new	0	0	0	
	March 17, 2017 — http://www.kwch.com	0	0	0	
	March 17, 2017 — http://whnt.com/2017	0	0	0	
	March 17, 2017 — https://www.cvbugle	0	0	0	
	March 15, 2017 — http://www.myeaster	0	0	0	Portlable heater.
	March 14, 2017 — http://www.castanet.	0	0	0	
	March 13, 2017 — http://www.islandpac	0	0	0	
	March 12, 2017 — https://kdminer.com/	0	3	1	Family living in RV.
	March 12, 2017 — http://www.wtoc.com	0	0	0	
	March 12, 2017 — http://wishtv.com/20	0	1	0	
	March 10, 2017 — http://kvoe.com/new	0	0	0	
	March 10, 2017 — http://www.oaoa.com	0	0	0	
	March 9, 2017 — http://www.myeastern	0	0	0	Refrigerator.
	March 9, 2017 — http://losangeles.cbsl	0	0	0	Woman livng in RV. Candle.
	March 8, 2017 — http://www.jaspersunt	0	0	0	
	March 6, 2017 — http://www.sjnewsonli	0	0	0	
	March 6, 2017 — http://www.yakimaher	0	0	0	Man living in RV.
	March 6, 2017 — http://www.krcrtv.com	0	0	1	
	March 3, 2017 — http://www.bigspringh	0	0	0	
Feb-17	Feb. 28, 2017 — http://knsiradio.com/ne	0	0	0	
	Feb. 28, 2017 — http://preps.tampabay.	0	0	0	
	Feb. 25, 2017 — http://www.good4utah	0	0	0	
	Feb. 24, 2017 — http://www.spokesman	0	1	0	Candle.
	Feb. 24, 2017 — http://www.tri-cityheral	1	0	0	Man living in RV.
	Feb. 17, 2017 — http://wsau.com/news/	0	0	0	
	Feb. 16, 2017 — http://www.nbcsandieg	0	0	0	
	Feb. 16, 2017 — http://www.parrysound	0	0	0	
	Feb. 15, 2017 — http://newschannel9.c	0	0	0	
	Feb. 15, 2017 — http://www.nwfdailyne	0	0	0	Family living in RV.
	Feb. 15, 2017 — http://www.chattanoog	0	0	0	
	Feb. 9, 2017 — http://www.news4jax.co	2	2	0	Family living in RV. Stove fire.
	Feb. 9, 2017 — http://www.mychamplai	0	0	0	
	Feb. 7, 2017 — http://www.pamplinmed	0	0	0	
	Feb. 7, 2017 — https://duboiscountyher	0	0	0	
	Feb. 7, 2017 — http://sanangelolive.com	0	0	0	
	Feb. 6, 2017 — http://www.kgwn.tv/con	1	0	0	
	Feb. 6, 2017 — http://potomaclocal.com	0	0	0	

RV fires in the U.S. and Canada since July, 2016

	Feb. 5, 2017 — http://www.thedenverch	1	0	0	
	Feb. 3, 2017 — http://www.gainesvillere	0	0	0	
	Feb. 2, 2017 — http://katu.com/news/lo	0	0	0	
	Feb. 2, 2017 — http://www.myrtlebeach	0	0	0	
	Jan. 30, 2017 — http://www.kgwn.tv/co	0	2	0	Family living in RV.
	Jan. 27, 2017 — http://www.kolotv.com/	0	1	0	
	Jan. 25, 2017 — http://www.parispi.net/	0	0	1	
	Jan. 24, 2017 — http://www.timescoloni	0	0	0	
	Jan. 23, 2017 — http://www.suffolknews	0	0	0	
	Jan. 18, 2017 — http://cjonline.com/new	0	0	0	
	Jan. 17, 2017 — http://www.richmond.c	0	0	0	Electrical fire.
Jan-17	Jan. 17, 2017 — http://www.northescam	0	0	0	
	Jan. 14, 2017 — http://q13fox.com/2017	0	0	0	
	Jan. 14, 2017 — http://www.thenewstrib	0	0	0	
	Jan. 13, 2017 — http://kron4.com/2017/	0	0	0	
	Jan. 13, 2017 — http://sanfrancisco.cbs	0	0	0	
	Jan. 10, 2017 — http://www.newschann	1	0	0	
	Jan. 3, 2017 — http://www.yakimaherald	0	0	0	Heater.
	Jan. 2, 2017 — http://www.norwichbulle	0	0	0	
	Dec. 31, 2016 — http://www.ktvz.com/n	0	0	0	Family living in RV.
	Dec. 30, 2016 — http://newsregister.co	0	0	0	
	Dec. 30, 2016 — http://www.bozemand	0	1	0	
	Dec. 29, 2016 — http://www.12newsnow	0	0	0	Family living in RV.
	Dec. 29, 2016 — http://www.ktnv.com/n	0	0	0	
	Dec. 28, 2016 — http://registerguard.co	0	0	0	Candle.
	Dec. 26, 2016 — http://mynews4.com/n	0	0	1	
	Dec. 26, 2016 — https://www.noozhawk	0	0	0	
	Dec. 25, 2016 — http://krqe.com/2016/1	0	0	0	
	Dec. 24, 2016 — http://www.vcstar.com	0	1	1	
	Dec. 22, 2016 — http://www.parsonssu	0	0	0	Portlable heater.
	Dec. 22, 2016 — http://www.news4jax.c	0	0	0	Meth lab.
	Dec. 22, 2016 — http://www.mcdowelln	0	0	0	
	Dec. 22, 2016 — http://www.coastrepor	0	0	0	Portlable heater.
Dec-16	Dec. 20, 2016 — http://www.kcentv.com	1	0	0	Disabled man living in RV.
	Dec 20, 2016 — http://www.yakimahera	0	0	0	Portlable heater.
	Dec. 20, 2016 — http://www.tucsonnew	0	0	0	
	Dec. 17, 2016 — https://www.theeastsic	0	0	0	
	Dec. 15, 2016 — http://www.bellingham	0	1	0	
	Dec. 14, 2016 — http://www.news4jax.c	0	0	0	Meth lab.
	Dec. 7, 2016 — http://www.inews880.co	0	0	0	
	Dec. 6, 2016 — http://www.kerngoldene	0	0	0	Space heater.
	Dec. 6, 2016 — http://www.hermistonhe	0	0	0	
	Dec. 5, 2016 — http://kymkemp.com/20	0	0	0	
	Dec. 5, 2016 — http://hoodline.com/201	0	0	1	
	Dec. 4, 2016 — http://kimatv.com/news/	0	0	0	
	Dec. 3, 2016 — http://6abc.com/news/2	0	0	0	Appeared to be living in RV.
	Dec. 2, 2016 — http://www.sandiegount	0	0	0	Appeared to be living in RV.
	Dec. 2, 2016 — http://www.azcentral.co	2	0	0	Electrical fire.
	Nov. 28, 2016 — http://www.carrollcoun	0	0	0	
	Nov. 28, 2016 — http://www.kltv.com/st	0	1	0	
	Nov. 26, 2016 — http://www.ellwoodcity	0	0	0	
	Nov. 24, 2016 — http://www.pe.com/art	0	0	0	
	Nov. 23, 2016 — http://www.kyma.com/	0	0	0	Propoane water heater.
	Nov. 23, 2016 — http://kxan.com/2016/	0	0	0	
	Nov. 22, 2016 — http://www.the-dispato	0	0	0	
	Nov. 21, 2016 — http://kbnd.com/kbnd-	0	0	0	Stove.
	Nov. 20, 2016 — http://newschannel9.c	0	0	4	
	Nov. 18, 2016 — http://santamariatimes	0	0	0	
	Nov. 17, 2016 — http://wkrg.com/2016/	0	1	0	
	Nov. 17, 2016 — http://www.osoyoostim	1	0	0	
	Nov. 16, 2016 — http://www.averyjourn	0	0	0	
	Nov. 16, 2016 — http://www.southernm	0	1	0	Furnace.
Nov-16	Nov. 16, 2016 — http://www.wahoo-ash	0	0	0	

RV fires in the U.S. and Canada since July, 2016

Nov-16	Nov. 16, 2016 — http://www.9and10nev	0	0	0	
	Nov. 15, 2016 — http://www.dailytrib.co	0	0	0	
	Nov. 14, 2016 — http://www.nbcconnec	0	0	0	
	Nov. 14, 2016 — http://www.bizjournals	0	0	0	
	Nov. 13, 2016 — http://www.nbcconnec	0	0	0	
	Nov. 13, 2016 — http://infotel.ca/newsit	0	0	0	
	Nov. 11, 2016 — http://wsls.com/2016/1	0	0	0	
	Nov. 8, 2016 — http://www.fdlreporter.c	0	0	0	Electrical short at refrigerator.
	Nov. 7, 2016 — http://www.krgv.com/sto	0	0	0	
	Nov. 6, 2016 — http://www.langleytimes	0	0	0	
	Nov. 4, 2016 — http://www.vcstar.com/s	0	0	0	
	Nov. 4, 2016 — http://vocm.com/news/r	0	0	0	
	Nov. 4, 2016 — http://www.cbc.ca/news	0	0	0	
	Nov. 3, 2016 — http://www.nbcdfw.com	0	0	0	
	Nov. 1, 2016 — http://www.greenevilles	0	0	0	Electrical short in stove.
Oct-16	Oct. 31, 2016 — https://calcoastnews.c	0	0	0	
	Oct. 31, 2016 — http://www.myleaderpa	0	0	0	
	Oct. 30, 2016 — http://www.cw6sandieg	0	0	0	
	Oct. 30, 2016 — http://abc3340.com/ne	0	0	0	
	Oct. 30, 2016 — http://vancouverisland.	0	0	0	
	Oct. 30, 2016 — http://www.sanluisobis	0	1	1	Misues of electrical adapters.
	Oct. 28, 2016 — http://www.pressofatla	0	0	0	
	Oct. 28, 2016 — http://www.chronline.c	0	0	0	Fire led to propane tank explosion.
	Oct. 25, 2016 — http://www.wbrz.com/n	0	0	0	
	Oct. 24, 2016 — https://thetelegraph.co	1	0	0	Fire led to oxygen tank explosion.
	Oct. 23, 2016 — http://www.cbsnews.co	0	0	0	
	Oct. 21, 2016 — http://www.chron.com/	0	7	0	
	Oct. 21, 2016 — http://abc7news.com/n	0	0	0	
	Oct. 20, 2016 — http://www.kezi.com/ne	0	0	0	
	Oct. 20, 2016 — http://abc11.com/news	0	0	0	
	Oct. 19, 2016 — http://www.greenbaypr	0	0	0	
	Oct. 19, 2016 — http://gazette.com/artic	0	1	0	
	Oct. 16, 2016 — http://katu.com/news/lo	0	0	0	
	Oct. 14, 2016 — http://www.dothaneagl	0	4	0	Gas explosion.
	Oct. 14, 2016 — http://jacksonville.com/	1	0	0	
	Oct. 14, 2016 — http://www.mymotherlo	0	0	0	
	Oct. 12, 2016 — http://www.newson6.co	0	0	0	
	Oct. 10, 2016 — http://franklinhomepag	1	0	0	
	Oct. 10, 2016 — http://www.ktts.com/ne	0	0	0	
	Oct. 10, 2016 — http://santamariatimes.	0	0	0	
	Oct. 9, 2016 — http://www.dailyrecord.c	0	0	0	
	Oct. 9, 2016 — http://katu.com/news/loc	0	0	0	
	Oct. 8, 2016 — http://www.cm-life.com/a	0	0	0	
	Oct. 8, 2016 — http://www.duluthnewstr	0	0	0	
	Oct. 6, 2016 — http://www.willmarradio.	0	0	0	
	Oct. 6, 2016 — http://sanangelolive.com	0	0	1	Dog killed.
	Oct. 5, 2016 — http://www.morganmess	1	0	0	
	Oct. 5, 2016 — http://www.wdtv.com/co	0	0	0	
	Oct. 5, 2016 — http://www.aol.com/artic	0	1	0	
	Oct. 4, 2016 — http://www.kolotv.com/c	1	0	0	
	Oct. 4, 2016 — http://www.tribtown.com	0	1	0	
	Oct. 2, 2016 — http://www.bdtonline.co	0	0	0	
Sept-16	Sept. 30, 2016 — http://www.pvtrib.com	0	0	0	
	Sept. 28, 2016 — http://www.morrishera	0	0	0	
	Sept. 26, 2016 — http://wdtn.com/2016/	0	0	0	
	Sept. 26, 2016 — http://www.wsfa.com/	0	0	0	
	Sept. 25, 2016 — http://www.cbc.ca/new	0	0	0	Appeared to be living in trailer.
	Sept. 25, 2016 — http://www.dailypress	0	0	0	
	Sept. 25, 2016 — http://www.wtvm.com	0	0	0	
	Sept. 22, 2016 — http://www.sunherald	0	0	0	
	Sept. 21, 2016 — http://www.dailyrecor	0	0	0	
	Sept. 21, 2016 — http://www.morganme	0	1	0	
	Sept. 20, 2016 — http://republicanherald	0	0	0	

RV fires in the U.S. and Canada since July, 2016

Sep-16	Sept. 19, 2016 — http://www.washingto	0	0	0	
	Sept. 19, 2016 — http://www.ellswortha	0	0	0	Electrical fire.
	Sept. 15, 2016 — http://www.mymother	1	0	0	Appeared to be living in RV.
	Sept. 14, 2016 — http://www.abc17new	0	0	0	
	Sept. 14, 2016 — http://www.baynews9	0	0	0	
	Sept. 13, 2016 — http://democratherald	0	0	0	
	Sept. 13, 2016 — http://www.redding.co	0	1	0	
	Sept. 11, 2016 — http://wavy.com/2016	0	0	0	
	Sept. 8, 2016 — http://www.wjbdradio.c	0	0	0	Electrical fire.
	Sept. 6, 2016 — http://www.lucernevalle	0	0	0	
	Sept. 6, 2016 — http://www.columbian.c	0	0	0	Living in RV. Candle.
	Sept. 6, 2016 — http://www.hometownli	0	0	0	
	Sept. 5, 2016 — http://www.kwch.com/c	0	0	0	
	Sept. 5, 2016 — http://www.cbs8.com/s	0	2	2	Propane tank explosion.
	Sept. 4, 2016 — http://www.thetelegram	0	0	0	
	Sept. 3, 2016 — http://www.thetelegram	0	0	0	
	Sept. 2, 2016 — http://www.kezi.com/ne	0	0	0	
	Sept. 2, 2016 — http://www.kesq.com/n	0	0	0	
	Sept. 1, 2016 — http://lebanon-express	0	0	0	
	Sept. 1, 2016 — http://www.oregonlive.c	0	0	0	
	Sept. 1, 2016 — http://www.jacksborone	0	0	0	Lighting cigarette on stove.
	Sept. 1, 2016 — http://www.appeal-dem	1	0	0	Living in RV. Mechanical.
	Sept. 1, 2016 — http://www.10news.cor	0	1	0	
Aug-16	Aug. 31, 2016 — http://www.michiganst	0	2	0	Stove.
	Aug. 30, 2016 — http://www.dailyinterla	0	0	0	Electrical fire.
	Aug. 30, 2016 — http://www.jacksonsur	0	0	0	
	Aug. 30, 2016 — http://www.ktnv.com/n	0	0	0	
	Aug. 28, 2016 — http://www.dailypress.	0	0	0	
	Aug. 25, 2016 — http://www.wcyb.com/	0	0	0	Cooking fire on stove.
	Aug. 24, 2016 — http://www.wmdt.com/	0	0	0	Electrical fire at refrigerator.
	Aug. 22, 2016 — http://www.myyellowkr	0	0	0	
	Aug. 21, 2016 — http://www.yumasun.c	0	0	0	Veteran living in RV.
	Aug. 20, 2016 — http://whitecenternow.	0	0	0	
	Aug. 19, 2016 — http://www.columbian.	0	0	0	
	Aug. 19, 2016 — http://www.westseattle	0	0	0	
	Aug. 19, 2016 — http://www.kwch.com/	0	0	0	Venting propane tank.
	Aug. 19, 2016 — http://www.statter911.	0	0	0	
	Aug. 19, 2016 — http://www.montereyh	0	0	1	Cat killed.
	Aug. 19, 2016 — http://www.vvng.com/n	0	0	0	
	Aug. 18, 2016 — http://wpri.com/2016/0	0	0	0	
	Aug. 17, 2016 — http://www.thenewstrib	0	1	0	Firefighter injured.
	Aug. 17, 2016 — http://www.krcrtv.com/	1	0	0	Appeared to be living in RV.
	Aug. 16, 2016 — http://www.newsnet5.c	0	0	2	Two dogs killed.
	Aug. 16, 2016 — http://www.wect.com/s	0	0	0	Living in RV.
	Aug. 16, 2016 — http://www.foxwilmingt	0	0	0	
	Aug. 15, 2016 — http://www.dailypress.	0	0	0	
	Aug. 15, 2016 — http://www.foxwilmingt	0	0	0	
	Aug. 15, 2016 — http://www.dailypress.	0	0	0	
	Aug. 14, 2016) — http://www.pressdem	0	0	0	
	Aug. 11, 2016 — http://www.osoyoostim	0	0	0	
	Aug. 11, 2016 — http://www.yumasun.c	0	0	0	
	Aug. 11, 2016 — http://www.kyma.com/	1	0	0	Veteran living in RV.
	Aug. 10, 2016 — http://rvdailyreport.com	0	0	0	
	Aug. 10, 2016 — http://rvdailyreport.com	0	0	0	Gas leak.
	Aug. 10, 2016 — http://rvdailyreport.com	0	1	0	Disabled man living in RV.
	Aug. 9, 2016 — http://wate.com/2016/0	0	2	0	
	Aug. 9, 2016 — http://rvdailyreport.com/	0	1	0	Propane tank fire.
	Aug. 5, 2016 — http://rvdailyreport.com/	0	0	0	Electrical fire.
	Aug. 5, 2016 — http://rvdailyreport.com/	0	0	0	Electrical fire at bathroom fan.
	Aug. 4, 2016 — http://rvdailyreport.com/	0	0	0	
	Aug. 4, 2016 — http://rvdailyreport.com/	0	0	0	
	Aug. 3, 2016 — http://rvdailyreport.com/	0	0	0	
	Aug. 1, 2016 — http://rvdailyreport.com/	0	0	0	

RV fires in the U.S. and Canada since July, 2016

	July 29, 2016 — http://rvdailyreport.com	0	0	0	
	July 27, 2016 — http://rvdailyreport.com	0	0	0	
	July 26, 2016 — http://rvdailyreport.com	0	0	0	
	July 25, 2016 — http://rvdailyreport.com	0	0	0	
	July 25, 2016 — http://rvdailyreport.com	0	0	0	
Jul-16	July 25, 2016 — http://rvdailyreport.com	1	0	0	Firefighter killed by exploding propane tank.
	July 25, 2016 — http://rvdailyreport.com	0	0	0	
	July 25, 2016 — http://rvdailyreport.com	0	0	0	
	July 22, 2016 — http://rvdailyreport.com	0	0	0	
	July 18, 2016 — http://rvdailyreport.com	0	0	0	
	July 4, 2016 — http://rvdailyreport.com/	1	0	0	