

2015 Smoke Alarm Summit

Following are notes, organized by Module, that were taken by the note taker.

Module 1 – Smoke Alarms and Fires: What do the data say?

What are the data gaps?

- Pattern matching - Marty - assuming there are nuisance alarms
 - 37% of people fought the fire
 - Dr. Klein - how we think - high risk, high context situations
 - We go with our intuition
- Attic spaces not listed
 - We are not encouraging people to put SA in attic
 - Lightning strikes
- Hearing loss
 - Difficult to tell if someone is using a hearing aid nowadays
- Update the survey from 93 (96% of homes said they have alarms)
 - Housing boom - what is in American homes?
 - Power source, technology?
 - Subdivided homes
- Owner occupied homes
 - American Housing Survey - not a huge difference in alarms
 - Over 90% of homes said they have alarms in owner occupied homes
- Unreported fires
 - People handle it themselves
- Q: to smoke alarm manufacturers - what data do you all have on SAs?
 - We don't have data that researchers don't have
 - We get information from experts
 - How many are sold per year?
 - 45 million
 - Not enough alarms being sold
- Smoke alarm installs
 - More homes with 1 SA or more homes with as many SA as possible?
 - Cleveland program
 - Liability factor
 - If we are not putting it to code are we putting in a liability factor
 - Upgrade municipal code to match state code
- Why do people not have smoke alarms?

- Older adults - people living in a home for decades, and they stop doing things in the home
- Smoke alarms removed (when people move)
- Removal due to nuisance
- Quality of the data
 - Are firefighters not answering all the questions for NFIRS?
 - Are we asking the right questions?
 - Los Angeles / Ventura County
 - People feel they have more alarms than they have
 - Tracking whether they are actually working
 - 40% of homes have at least 1 malfunctioning SA
 - 35% of homes in last year (2500 homes sample) - over 20 year old alarms
 - Message: replace your alarms in 8 years
 - Take off the alarm - show them the date of the alarm
 - Process to teach firefighters data entry is confusing
 - Switching between agencies can be another hurdle
 - Some situations cannot be entered into NFIRS report due to special situations
 - NFIRS gaps - Marty
 - Not clear where fire is located to spread of fire
 - Photoelectric or ionization alarms?
 - Smoke alarms in multifamily homes
 - Multiple smoke alarms - which alarms are operating, which aren't?
 - Data is collected after the fire
 - What is the goal of our summit with regard to smoke alarms?
 - Are we trying to fill the gaps for homes without smoke alarms?
 - Or those homes with not working smoke alarms?
- Who is more likely than others to engage in risky behaviors?
 - Not just presence of smoke alarms
 - Who is more likely to engage in something that could start fires?
- What is the performance degradation over time?
- Andrea - are there opportunities to learn about the behavioral causes of the fires when they go to the scene?
 - Quality of the housing, furnishings, smoking in the home?
 - NFIRS addresses causes of fire
 - Underestimates alcohol-related fire deaths
 - Gap in NFIRS - Mental impairment as a factor (suicide)
 - What about dementia?
- The most important next steps for Marty
 - Really find out what is going on in the general public (not just high-risk groups) with smoke alarms

- NFIRS is overdue for an overhaul - a task group to think about what code choices look like in NFIRS 6
 - Advocate with government agencies to make a need to revise
 - Improve the data collection - more data to make more informed decisions
- 2010 census had smoke alarms questions
 - Marty - American Housing Survey asks do homes have working smoke alarms
 - Issues with self-reporting
 - Why are hardwired alarms going off?
 - They are more expensive

How can these gaps be addressed?

- Advocacy
 - Firefighters enjoy being advocates
 - Smoke alarm advocacy program
 - A simple app to encourage advocacy
 - Help better capture the data
- App is helpful in tracking the data
- Beyond the fire report - how would you get the rest of the story
 - How to motivate the fire service to care about that - they are busy people
 - Use the data to show that they are making a change
 - Making things safer for firefighters
 - Vision 20/20 - united voice to give it back to fire service in that it engages it all
 - Motivate them to help us
- General complacency about fires
 - Big decreases in fire deaths, but its still a sizeable amount
 - Average person does not think about fires - about how many smoke alarms in the home
- How many smoke alarms go in a home?
 - Brooklyn fire - 1 alarm is not enough
 - Bring homes up to safety code
- Cleveland - narrative in every NFIRS report
 - In officer roll call - talk to them why we need these narratives
 - Educate fire fighters
- Online training program about the importance of the data
 - What impact it has on the community and them
 - Free online training
 - Less than an hour
- Hopkins study about black hole of data - why are firefighters doing it?
- Validate that the firefighters entering data are making a difference
- Has anyone explored working with home monitoring companies?
 - We can collect data about nuisance alarms or contained fires to understand behaviors around them

- As sensors and tech becomes more affordable
 - Can we have a "black box" for a smoke alarm
 - To give us more data
 - What about privacy?
- The private sector is making a profit - it's a good thing we are selling alarms
- How to motivate people to get alarms in the home
 - Fire service and research has done a great job
 - What would motivate the people to get alarms in their home
 - Lets think about how to improve their motivation
 - Apple is motivating people to use their products
 - Feed from their marketing perspective
- Door open vs door closed
 - People are sleeping with door opened despite warnings
 - NFIRS does not capture this question
 - Investigation reports might capture this
 - Does this effect whether an alarm is reported?
- How many homes actually meet the requirement for alarm in all floors, hardwired
 - How do we get this information
 - Can we assume the codes justified the reason why we need alarms in all floors
 - People will question this if we can't justify
- The codes are a minimum for our programs
- Other resources to tap in - to address manpower issues
 - Citizen corps
 - American Red Cross
 - Go in the homes after a fire - ask them to collect the smoke alarms
 - Figure out how many were actually working pre-fire
 - Get some data
 - Find the narrative
- We have fire death rate in the US than other countries?
 - What are other countries doing better than the US?
 - Difficult to compare countries due to population issues
 - We aren't doing that bad
 - US fire death rate has decreased over 30 years
 - US is higher than European countries, but lower than satellite countries
- Quality of the data
 - Is our data really good?
 - Start with NFIRS reporting
 - Keep it simple for firefighters
 - Expand beyond the report
 - Reach out to community partners and volunteers
- Closing comment - Marty
 - It is good so many people care about data

- Make sure every parent is aware that smoke alarms will save their kids
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Module 2 – Smoke Alarm Installation and Maintenance: What role does human behavior play?

What are the gaps in understanding the role of human behavior? How can these gaps be addressed?

- In the fire prevention world there are many conflicting messages on smoke alarms
 - How does this impact the consumer?
 - It is confusing to the consumer - it makes them less likely to act
 - Questions may lead to skepticism - who to trust?
 - One reason why we boil the message down to - have 1 working smoke alarm
- It was the fire dept that said we need more than 1 message
 - What one single message should we focus on?
 - What could be a single tagline on smoke alarm safety?
 - Multiple behaviors and directions must be considered before getting a message
 - We can give them a few messages - only operate in these few messages
 - A better way to motivate people to have working smoke alarms to have these 2 motivational messages
 - Want to be able to localize messages to community - make it relevant
- Fire service is microcosm of society - we need different deliverables to account for cultural differences among the population
 - Materials generator - to create templates for different deliverables
 - Materials and medium
 - Control the branding and messaging
 - Cede some control to local department to adapt to the community
- Installing and maintaining smoke alarms messages
 - We forget what we know is not what everyone else knows
 - Recognize that researchers are weird people - people are not invested like we are
- With data, is there any way to justify a message that says smoke alarms will save x lives this year
 - People already know smoke alarms work
 - Telling people how great they are will not make people think about alarms a new way
 - Recognition that home fires is the most pressing threat to American life like natural disaster
- Back in the day homes didn't have smoke alarms
 - Industry got that message out in the 1970s
 - We don't know how many people listen to messages from the fire service
 - Lack of education outreach from the fire dept
 - Are there plans to do more campaigns to sell smoke alarms?

- How do we relay how dangerous smoke is?
- We are telling the public too much - too much data fed to the public
 - You can't give out too many messages at once
 - We are giving messages that help people in the distant future
 - Give the audience a reason to care right now
 - Mass media - what behavior change are we looking for
 - Really niched projects
 - We have to stop doing things that don't work anymore
- Advertising
 - Too many channels nowadays
 - So many other facets of advertising other than TV
 - Public relations, social media, radio, print
 - Difficult to say no to opportunities - it is a public service to advertise smoke alarms
 - Donating alarms to people who need them
 - Organizations have to get behind public service
- Greg Istre - 45% of smoke alarms were no longer there 10 years later
 - 100 of alarms were removed from Home Safety Project
 - This is an area we need to know more about
 - Removal of alarms accounts more loss of alarms than degradation of alarms
- Increase in the usage of smoke alarms in home
 - 1968 act from Nixon in Warren Commission to address nation's fire problem and reduce fire loss
 - Presented in 1973 - America Burning
 - Over 90 recommendations to reduce fire loss
 - 2 addressed smoke alarms
 - Promulgate regulation to mandate smoke alarms
 - A few years later, smoke alarms became mandated in new homes
 - Housing boom in the 80s and 90s
 - A lot had to do with the model codes
- Richard Taylor's report
 - Utility of the smoke alarm itself
 - If my smoke alarm battery goes out, who cares (vs a television remote)
 - Is the utility of smoke alarms known?
 - This has not come up when testing messages
 - How motivated people are to fix it?
 - Some of the gaps are widely accepted regarding smoke alarms (its not happening to me)
 - People said they had working alarms because "they were supposed to say it"
 - They aren't sitting around thinking about their smoke alarms
 - People who responded said they alarms were a nuisance
 - Why do people take down their alarms?
- Are people throwing their alarms away or moving them around?
 - People who rent are more likely to have missing alarms

- People who were not original residents were more likely to have missing alarms
- Testing and maintaining the smoke alarms would require more effort
 - Ownership of an alarm vs testing and maintaining
 - What are some strategies can we use to improve these behaviors?
 - How can we enforce this behavior?
 - Giving them an immediate reward - something they can feel or have after doing it right
 - Why do 10 year alarms still have to be maintained
- 10 year alarms taken out of service
 - Missing alarms vs nuisance alarms
- Maybe the technology can make testing smoke alarms easier
 - Getting a ladder is difficult
 - A remote to test alarms?
 - Types of alarms - can confuse the consumer
- Home visits
 - Are you looking to do home visits just to test alarms (not installing)
 - Some cities have taken that strategy - test alarms and tell them what they need
 - In Ontario they will fine you if you don't have enough smoke alarms
- Chirps
 - People hear the chirp - they think it means their alarm is working
 - What do the sounds of the smoke alarm mean?
- Reasons for taking down smoke alarm
 - Improper placement of the alarm (kitchen)
 - It could be a success if it is placed in the right place
 - A win - your alarm protected you - can we frame this message
 - It might be difficult to frame this message this way
- Lithium technology
 - It has advanced quite a bit
 - Shelf life of a battery doesn't mean it will work 10 years in an alarm
 - If you compare to a sealed 10 year lithium battery - sold over 40 million
 - Consumer reports of Kidde alarms
 - 7 ppm of these alarms have failed
 - Not many people have reported their alarms failing
- Smoke alarms need an end of life signal
 - People may have a difficult time to distinguishing 10 year lithium battery
 - People may not be aware of end of life signal without digging into the manual
- We need to figure out how to think about new things
 - How do we make smoke alarms or fire safety cooler?
 - Can we get to a point where we are tied into smart technology?
 - How to use tech to help us?
 - Keep our strategies but also progress with technology
- Firefighters are intuitive learners

- Those who participate in home visiting programs want to install in the kitchen due to kitchen fires
- Train them to install alarms in the right place
- High risk population of older adults cant handle technology well
 - Difficulty setting a digital alarm
- Important to install smoke alarms - equally important where to not install
 - Location matters - can exacerbate nuisance alarms - people taking them down
 - No smoke alarm 10-20ft from cooking source
 - If you do must be photoelectric alarm not ionization
- Behavior in households
 - Most people in Maine own their homes
 - Renters in Maine see it as their responsibility to have alarms
- We might need to come up with more effective language
- You can't tell alarms apart - you can tell an old car from a new car
 - New models of alarms - new and sexy looking smoke alarms
- Jeff Richardson - Project Paradigm
 - Fire prevention and medical organizations
 - Liability
 - Waivers
 - Some orgs use them
 - Law firm is preparing a waiver form for each state
 - Separate fact from fiction
 - Most stories are not real - false reports
 - Look what losses have been filed
 - 1 pager to show what claims have been made
 - Creating a hotline
 - Have lawyers in firm to answer questions
 - Insurance policies
 - Buying insurance/liability policy
 - Organizations can sign on the be additional insurer
 - Organizations afraid of policy have insurance

Module 3 – Smoke Alarm Installation and Maintenance: What role does technology play?

Discussion Questions

- ***How can technology be used to make maintaining smoke alarms easier for people? How do we balance NFPA72 requirements with feasibility and costs to consumers?***

• **How do we balance sensitivity and adequate egress time with unwanted alarms? Can we reduce the need to use the hush feature?**

• **How can technology be used to meet the needs of especially vulnerable populations?**

• **What are the gaps in understanding the role of technology?**

• **How can these gaps be addressed?**

- Strobe lights are a good visual but not good at waking - why does NFPA72 require strobe lights
 - For culturally deaf populations, strobes were effective
 - For other hard-hearing populations - we need low frequency alarms since strobes weren't effective
- Some states and jurisdictions are changing code requirements for certain types of smoke alarm technology
 - What happens if great technology comes by and is hindered?
 - There has been no useful technology-based legislation thus far
 - Some laws are well-intended but it will create problems for new technology
- Did NFPA72 discuss differences in risk for having 1 alarm in every level or 1 alarm in every room?
 - That was done in the 90s
 - The committee recommends smoke alarms in the bedrooms
- Interconnectivity is important - most smoke alarms in the market don't have that
 - How is it affordable to be marketed?
 - There was a previous barrier with interconnectivity because they had to be hardwired
 - Now it is easier with unwired alarms that are interconnected
- Smoke alarms in the attic
 - Prohibit smoke alarms in the attic
 - No environmental controls in the attic - possibly a lot of nuisance
 - It should be addressed if more deaths have started due to attic fires
 - Smoke alarms are currently not designed to be in the attic due to environmental issues
 - Is it worth the expense to implement this?
 - Attic fires are dangerous to firefighters
 - Fast moving fires into the attic space - UL tests
- To what extent is cost a factor and at what point should we consider a better scenario?
 - Good - battery operated
 - Better - 120V with battery backup
 - Best - household system interconnected and monitored by a system to contact fire dept
 - We need to make the decision-making simple for the public about their options when buying smoke alarms
 - It needs to be technology independent
- Is there any research being done on gases - any manufacturers doing research on gas production?
 - There could be a gas produced before combustion and smoke
 - Let them know to react before the fire actually happens
 - HCN - pyrolyse polyurethane HCN can form

- Spectroscopy tests
 - Biggest concern is CO gas
 - We can do more for the future - new sensors can detect these gases
 - PVC sensing system has been developed and has been implemented
 - Did not catch on where implemented
- Is anyone applying NFPA72 standards retroactively to residential buildings?
 - A lot of fire codes are not retroactive
 - When do you make homeowners upgrade their homes?
 - It varies by jurisdiction - it is a challenge
 - In 2013, 75% of all fire deaths happened in 1 or 2 family homes
 - Not much enforcement in 1 or 2 family homes typically
- What are our goals in the short term, medium term, long term?
 - Sprinklers effective as a long term goal
 - Short term fix - firefighters visiting homes to meet homes
 - Tradeoffs - you have to both short term and long term solutions going on at once
 - For every issue that comes up to the NFPA committee - is it too much or is it enough?
- AFG grants have funded millions of smoke alarms
 - Decision of what smoke alarms to purchase for our next projects? (mass purchase)
 - Larry's answer - any of them will save your life
 - If there's a smoker in the house or smoldering possibly - single station photoelectric (cheapest)
 - Ionization otherwise
 - Advanced detector if they are closer to the bathroom or kitchen
 - RJ - if you need to buy more smoke alarms - usually means photoelectric
 - If there is a smaller population of need, buy ionization alarms
 - Recommendation: some photoelectric and ionization and the home?
 - Follow the guidelines of distance from cooking source
 - It really depends on the home, what are you performance are you seeking?
- Who is ultimately in our construct culpable for having smoke alarms in the home?
- Based on existing data, how many alarms get a better return
 - With low SES populations, how can they understand increasing the number of alarms needlessly
- People removing batteries from their alarms
 - Hush feature solves this issue
 - Also prevents people forgetting to put them back
 - Hardwiring is not a requirement
- It is difficult to replace existing smoke alarms because we haven't standardized the installation base
 - Make it easier for people to install the alarms easier without messing drywall or getting electrician
 - As we change the standard, it takes time to facilitate the change outs
 - Hiring an electrician is a barrier

- Part of the issue with interconnected alarms is the differences in connections between wired alarms by brand
 - Brands not talking to each other - the connections are all different
 - Industry cannot agree - for a lot of reasons this is the case
 - Are there are other areas in the problem that we are not discussing (technical aspects)
 - There is no big missing piece now
 - People in the manufacturing world will provide solutions
 - As researchers need to know what we want
 - One of the weak links in protection is the battery
 - In poor neighborhoods they aren't going to be hardwired alarms
 - Lithium batteries fail at a predictable rate
 - Is there research into battery technology that will result in a lower failure rate?
 - Battery technology is an area of intense research
 - Constrained by our existing technology
 - Lots of people working on alternatives
 - Sulfur-Lithium - promising technology
 - Maybe 10 years before the next battery chemistry difference
 - 10 year alarms must be tested
 - We can't expect them to work the whole time
 - They are just like any other product
 - Concern: sealed 10 year products can make people complacent on not testing them
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Module 4 – What are the next steps to ensure that the results of this meeting can inform policy and practice in the short term and long run?

Group Reports

Table 1

- Garner support and execute a new census on smoke alarms and data (based on CPSC data)
 - Give us a handle of where we are now
- Establish a task force to revise NFIRS data
 - Especially elements on smoke alarm performance, nuisance alarms
 - Find fire depts that will test new data elements
- Engaging every US fire dept - conducting targeted home safety visits
 - Resources are limited
 - We need national leadership to direct fire depts - tie to grant funding

- Research and test effective methods to address fire problems
 - Older adults focus

Table 2

- Pool resources of small groups of depts - look at successes of smoke alarm data
- Need changes to NFIRS with modern computer technology - long term goal - but start it now
- Human behaviors - firefighters and nonprofits work with the public to change human behavior
- Materials in schools to get the messages out to kids to their families - teachback program to test alarms
- Technology - materials to address needs of community - not one-size-fits-all solution
- Policy and enforcement - find time for fire depts to get the word out; get other groups involved as well

Table 3

- Short term
 - Advocacy - encourage people to allow us to help them
 - Develop methodology for proper advocacy
 - Training - how to get in home, educate, install smoke alarms
 - Take the data and share it in a uniform method
- Medium term
 - Buy-in from fire depts
 - Through legislation or other methodology
 - Standards of safety - fire depts have their own standards for safety - eager to leaders of safety
- Long term
 - Start making technology changes
 - Manufacturers - always an opportunity for someone new to come along
 - A new innovative product - bring about new competition for companies

Table 4

- Short term
 - Partner with a community and develop a message that caters to them
 - Religious partners, age groups, clubs and community groups
 - Develop a new accurate community risk - we are looking at response data most of the time - old data
 - Get over ionization vs photoelectric issue - paralysis by analysis - our true goal is community safety

- Enforcement - require landlords to comply - require homes for sale to retrofit the alarm standards
- Medium term
 - Identify funding
 - We are telling people in poor communities what to do - they have more difficult decisions - identify the message to make it a priority
 - Training of fire service to better record NFIRS, make them know why it is important
- Long term
 - Sustainability of efforts
 - Identify technologies that are reliable and cost-effective
 - Identify degradation of alarms
 - Push manufacturers to develop better tech

Table 5

- 40% of fire deaths from smoke alarms when they sounded
 - We need more data
 - Were homes up to code
 - Age of the alarms
 - Type of alarms
 - Interconnectivity
 - Location
 - Nuisance
 - Escape plans
 - Home characteristics
- 37% of fire deaths with homes with no smoke alarms present
 - Incentives or rewards
 - Educational data
 - Increase awareness
 - Installation programs
 - News media - promulgate when news happens
 - What is the strategy for a fire dept visiting program?
 - Figure out what is the biggest payoffs for a home visiting strategy
- 23% of Fire deaths with no working smoke alarms
 - Battery failures
 - What is actually failing in smoke alarms
 - Transience of power issues in the home
- Long term
 - A really advanced alarm for really cheap
 - Make smoke alarms intertwined with things we do today - hook it up technology
 - Make a smoke alarm that self-checks itself - takes the human aspect out of it

Table 6

- Expand the message to older adults, vulnerable people
- Address the data gap by going beyond NFIRS data - characteristics of people, epidemiology data
- Standardization of smoke alarm equipment, battery
- Same comm protocols
- Make messages consistent
- Testing smoke alarms - how do we test them
- Have a clearinghouse of information on manufacturing dates
- Smoke alarm installation tools - emphasize that people keep a good inventory, train people properly, have installation protocols, keep records
- Focusing on home visits - what happens after the home visit
- Focus on new construction - modernize interconnectivity in new construction
- Cost-benefit of smoke alarm programs
- Know about whether placement or number of alarms in home is protective
- Why do people not want to call the fire dept?
- Clearinghouse of best technology - to discern what smoke alarms to buy, let everyone know what is the best technology out there

Table 7

- Build relationships with community - encourage city hall to not cut the budgets
- Build a customer base
- Research program that would look out for the consumer - determine a list of what people want in smoke alarms
- Better communication from the device to people - people don't know what it means
 - A speaker with multiple languages
- NFIRS revision - long term solution

Following are the notes received from participants on yellow cards and in some cases on paper.

1. Find a way to make the installation and maintenance of smoke alarms “easy, popular, and fun” so that the action will happen.
2. Understand that current technology is not yet ready to compensate for all human behavior traits. Technology continues to evolve but may never be able to compensate for everything. Resources are always limited.
3. Smoke dorms by Design (UL 217) are not perfect (2.5 failures/million hours). This is why the UL standard includes a requirement to test weekly. People DO NOT typically test

their alarms. The move to 10-year alarms will make this problem much worse. We can lower the failure rate but not make it 0. So in a large population of alarms there will be some failures over time.

4. General population survey (CPSC); NFIRS overdue for an overhaul. What should code factors be in NNRS6? Need a better sense of hard wired alarms – if, working, why?
5. One working smoke detector in living area. Education of college, high school, and younger.
6. Include steps to address behavior. That is human behavior. Look into hiring experts in human behavior to help find solutions - Derrick Sawyer. The top 3 causes of fire ... men, women & children.
7. Technology to remind people to check smoke alarms. In the auto industry cars remind you to get your vehicle serviced.
8. I have a concern that some information/data/research was reported today with different interpretations than I have heard before: culturally deaf (strokes will wake); parents voice wakes children
9. We examine fire alarm use/problems primarily through the lens of NFIRs alone. We should examine other data on the characteristics of houses and households to program our understanding.
10. Criteria for AFGFP&S grants include requirement for smoke alarm installation: some Ion and some photo in each home; every level and every bedroom; remove this choice/decision – mandate it with applications and funding
11. What is time to escape, when alarm alerts? 2 minutes (NPPA red cross); 3 minutes Nist findings from Dunes II (standardize this)
12. What is the impact on communities with Veterans who return home with disabilities (sensory, mobility, cognitive)? Are their partnership opportunities for home fire safety for Veterans?
13. Can we learn from Japan's rising fire death rate? What are they doing to respond to mitigate the problem?
14. Calculate cost benefit of home visits to include staffing – even if “staffing” is volunteers like Red Cross or if “staffing” is FF on duty. The entry into home (invitation) and volunteers/FF available are the biggest issue. Hardest part so installing plenty of alarms in bedrooms, etc. is cost effective – you may never be invited again.
15. We cannot let the 10 year unit discussion become another ionization S photoelectric battle. We will wait too much time.
16. Interconnection is key to better level of protection. How do we accomplish this in home visit model in high-risk homes? Need new technology?

17. Need data about homes, condition of smoke alarms, sensory and mobility disabilities, etc. in fire report data. – And – need malfunctioning alarms to be independently tested to determine why.
18. Need best practices to conduct home visit tasks as part of emergency response.
19. Impact NFIRS VI with information we need about home fires, home fire death, and injuries.
20. Some alarms (single station alarms) – need more oversight to standardize equipment, user manuals, eliminate “bells and whistles” like lights, etc., make easier for consumer to select and install
21. Garner support to fund and execute a new census on fire safety/smoke alarms in America. (CPSC study replicate)
22. Engage every US fire department in conducting home safety visits as the most impactful strategy to eliminate fire deaths and injuries. Starting with homes at highest risk.
23. Establish task force to revise NFIRS data elements related to home smoke alarm performance including unwanted alarms (in anticipation of an eventual NFIRS 6) and find fire department and evaluate it.
24. Research and pilot-test effective methods to address the huge problem of fire deaths among older adults (build on successful models)
25. Long term – make sure smoke alarms are included in the smart/connected home concept by integrating with other systems or applying to fire alarm systems on commercial buildings as well.
26. Consider your most at-risk audience. Re: the number and placement of alarms. And keep in mind the _____. Don’t make good the _____ of great.
27. Repeating the CPSC home survey should include assessing knowledge, beliefs and experiences in addition to whether smoke alarms are working and what type they are.
28. “Bringing up to code” what is “meets code”. Data gap – how many houses meet past 2007 NFPA 72 for all bedrooms?
29. Bobby Halton -- Not just socioeconomic that lack smoke alarms, i.e.: 20 year old nice home. Hearing loss 2010 code, attic spaces – bobby – Fires can be bad
30. Consider your most at-risk audience re: the # and placement of alarms. And keep in mind the maxim: Don’t make good the enemy of great.
31. Why do we need to test smoke alarms (this comment was followed by several mathematical equations).
32. Messaging to adults if focus – need to consider smoke alarm and fire safety for youth
 - Part of team now
 - Better informed adults (will be)
 - Also other groups
 Focus groups (older adults, people with disabilities), test messages

33. Data gap about smoke alarm fire death has solution outside of NFIRS
 - Housing (age of housing)
 - Characteristics of occupants
 - Disabilities / sensory mobility
 - Owner Occupied
 - Alcohol use / Fire Deaths
34. Standardization of smoke alarm equipment.
 - Batteries
 - Same base
 - Same communication protocols
 - MFG users manual
 - Messaging
35. Testing Smoke Alarms
 - How do we test smoke detecting chambers
 - Date to replace visible
 - And clear information about MFG date is the date to base 10 year replacement (consider shelf life)
36. Need smoke alarm installation project administrative tools
 - Inventory
 - Training
 - Equipment selection
 - Installation Protocol
 - Hold Harmless from p.p
37. Focus on new construction
 - Modernize interconnected
 - Alarms in all new construction
38. Cost benefit that calculates/considers the staff cost of home visits not just cost of smoke alarms
39. Number of alarms and placement is 1 in 3 homes better than 3 in one home
40. People fight fires (from Marty's report). What is this about? Why do people not want to call F.D.?
41. Clearinghouse about best technologies so smoke alarms selection is easier to discern better equipment such as "smart" dual sensor available now.