Disaster Epi-Strike Team Report

Saturday, September 7th, 2013

Report prepared by:

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Introduction

On Saturday, September 7th, an emergency preparedness survey (Appendix A) of 6 towns was conducted using the CDCs Community ASsessment for Public Health Emergency Response (CASPER) methodology. Participating in the operations were representatives from the Medical Reserve Corp (MRC), United States Public Health Service (USPHS), United States Navy (Navy), Connecticut State Department of Public Health (DPH), Ledge Light Health District (LLHD), Uncas Health District (UHD), City of Hartford Health and Human Services Department (HHHS), City of New Haven Health and Human Services Department (NHHHS), and Town of Groton Emergency Management. The goals of the drill were to 1) Assess household preparedness perceptions and behaviors 2) Determine the current status of potassium iodide (KI) distribution and awareness 3) Build the capacity of MRC and Public Health in the region to conduct rapid needs assessments. The resulting data will be used to guide the efforts of the Millstone Emergency Planning Zone (EPZ), LLHD, and emergency management directors in the region in preparing the community for natural and man-made disasters.

Methods

Sample Selection

A two-stage sampling method was used to select a representative sample of 210 households to be interviewed across the 6 towns of Old Lyme, East Lyme, Waterford, New London, Ledyard, and Groton. In the first stage, ArcGIS 10.0 (ESRI, Redlands, California) was used to select 30 clusters (census blocks) with probability of selection proportional to the number of households within the census block according to the 2010 Census (Figure 1). A cluster was defined as a single census block. In the second stage, 15 interview teams consisting of 2-3 persons randomly selected 7 households from each of the 30 clusters. The interview teams were provided with detailed maps of each cluster and instructed to choose the housing units for the 7 interviews by use of a sequential selection starting in the center of the cluster. A three-hour training session on interview techniques, safety issues, household selection, tracking methods, and referrals was given on the morning of Septeber 7th, 2013 to the 15 interview teams. Teams consisted primarily of MRC volunteers and state and local public health staff, in addition to several Uniformed Service members from the Navy and USPHS.

Survey Administration

A two-page, 17 question survey was developed by LLHD with input from the EPZ and Centers for Disease Control and Prevention (CDC) (Appendix 1). The survey addressed aspects of emergency

preparedness including elements of disaster planning, emergency communications, medical vulnerability, KI distribution and awareness, and use of smoke and carbon monoxide detectors. Household tracking forms were used to log the number of households where contact was attempted, the number of households where contact was made, and the outcome of every attempted interview. Households that completed the questionnaire were given a $5 gift card to a local store as an incentive to participate. Education materials on public health emergency preparedness were also disseminated.

Data Collection

Responses were collected on mobile tablet devices (Samsung Galaxy Tab 2) using Epi Info™ Companion for Android build 0.9.4 (CDC, Atlanta, Georgia), and paper questionnaires were used as a backup. In cases where teams were not comfortable using tablets, paper questionnaires were used as the primary data collection tool. In each household, one adult representative (aged at least 18 years or older) was interviewed. All interviews were conducted during the afternoon of September 7th, 2013 with each team attempting to complete 7 interviews per cluster for a goal of 210 household interviews. Three clusters contained fewer than 7 households, resulting in a total possible number of completed questionnaires of 203. As two of the original 30 clusters (3 and 20) were Navy housing with posted restrictions on solicitation, replacement clusters (31 and 32) were selected using the described methods.

Data Analysis

Tablet responses were uploaded and paper survey responses were entered into an Epi Info database. These data were exported and analyzed using JMP 10.0.1 (SAS Institute Inc., Cary, North Carolina). Contact rate, cooperation rate, and a completion rate were calculated according to the following formulas:

Contact rate:

$$\frac{\text{number of surveys completed}}{\text{number of households where contact was attempted}}$$

(Some houses were deemed “inaccessible” due to fences, private property warnings, dogs, etc; contact was not attempted in such cases).

Cooperation rate:

$$\frac{\text{number of surveys completed}}{\text{number of households where contact was made}}$$

Completion rate:

$$\frac{\text{number of surveys completed}}{\text{goal of 210 households}}$$

Response frequency distributions were weighted to adjust for the number of surveys actually completed per cluster (in relation to the target of 7 surveys per cluster). A weight variable was added to each survey according to the following formula:

Cluster weight:

$$\frac{\text{total \# of housing units in sampling frame}}{\text{(\# of surveys completed within cluster)*(\# of clusters selected)}}$$

Results

The analysis presented here is representative of the entire 6 town area mentioned previously, and is not intended to represent households from any individual town. The contact rate was low (42.4%), meaning that attempts to make contact with residents at a majority of households were unsuccessful. While it is possible that some residents who were home did not answer the door, it seems most likely that many of the residents from households where contact was unsuccessful were not at home. One the same day when surveying took place there were two local town fairs, a food festival, and a music festival. Dry air, moderate temperatures, and abundant sunshine on that day also conspired to tempt people from their homes to those events and other activities. When contact was made, the cooperation rate was high (72.8%). Incentives for participation, the brevity of the questionnaire (an average of less than 5 minutes to complete), and the importance of the subject matter were likely factors that drove the high cooperation rate. 185 households completed the questionnaire, for a completion rate of 88.1%. Because several clusters had fewer than 7 total households, it was only possible to complete a total of 203 questionnaires, for an adjusted completion rate of 91.1%.

Medical Care

Of households that completed the survey, 8% reported needing frequent medical care. Of those who reported needing care, 1.4% need oxygen, 1.4% need dialysis, chemo, or transfusions, and 3.3% require daily home medical care.

Metric	Response	Percent of Households	95% CI
Type of household	Single Family	87.4%	(86.3-88.4)
	Multi-Family Unit	7.9%	(7-8.8)
	Mobile Home	2.4%	(1.9-2.9)
	Other	2.4%	(1.9-2.9)
# of occupants	1	16.9%	(15.7-18.2)
	2	36.9%	(35.4-38.5)
	3	19.5%	(18.3-20.9)
	4	15.3%	(14.2-16.5)
	5	8.0%	(7.2-8.9)
	6	2.4%	(1.9-2.9)
	7	0.5%	(0.3-0.8)
	10	0.5%	(0.3-0.8)
Non-English speaking household member(s)	No	96.7%	(96-97.2)
	Yes	3.3%	(2.8-4)
Frequent medical care or at-home assistance			
	Oxygen	1.4%	(1.1-1.9)
	Dialysis, Chemo., Transfusions	1.4%	(1.1-1.9)
	Daily care at home	3.3%	(2.8-4)
	Other assistance	1.9%	(1.5-2.4)
	Among other assistance		
	can't drive at night	25.0%	(16.2-36.4)
	cpap	25.0%	(16.2-36.4)
	autistic child	25.0%	(16.2-36.4)
	infusion	25.0%	(16.2-36.4)

Household Preparedness

Most households (85.7%) reported that they were either somewhat or well prepared for emergencies. Only about 1 out of 7 households reported that they were either not at all prepared or were unsure about their level of preparedness. When asked about emergency preparedness supplies, an overwhelming majority of households reported having a first aid kit and a three day supply of water (besides tap), food and prescribed medications. On the other hand, a little under a half reported having a household emergency plan and only about a third reported having a generator.

Metric	Response	Percent of Households	95% CI
Perceived level of preparedness	Well prepared	35.0%	(33.5-36.6)
	Somewhat prepared	50.7%	(49-52.3)
	Not at all prepared	10.3%	(9.3-11.3)
	Unsure	4.0%	(3.4-4.7)
Household has an emergency plan	Yes	47.9%	(46.3-49.6)
	No	50.6%	(49-52.3)
	Don't Know	1.4%	(1.1-1.9)
Household has a first aid kit	Yes	86.1%	(84.9-87.2)
	No	12.5%	(11.5-13.6)
	Don't Know	1.4%	(1.1-1.9)
Household has a generator	Yes	36.6%	(35.1-38.2)
	No	62.9%	(61.3-64.5)
	Don't Know	0.5%	(0.3-0.8)
Household has 3-days of water	Yes	70.4%	(68.9-71.9)
	No	28.6%	(27.1-30.1)
	Don't Know	1.0%	(0.8-1.4)
Household has 3-days of food	Yes	93.6%	(92.7-94.4)
	No	5.9%	(5.2-6.7)
	Don't Know	0.5%	(0.3-0.8)
Household has 3-days of medications	Yes	92.2%	(91.2-93)
	No	4.0%	(3.4-4.7)
	Don't Know	3.9%	(3.3-4.6)

Evacuation Plans

Metric	Response	Percent of Households	95% CI
Would evacuate if told to do so	Yes	83.4%	(82.2-84.6)
	No	9.4%	(8.5-10.4)
	Don't Know	7.2%	(6.4-8.1)
Would evacuate to...	Friend/family home	51.6%	(49.8-53.4)
	Shelter (e.g. school, church, etc.)	25.3%	(23.8-26.9)
	Hotel	10.6%	(9.5-11.7)
	Other	12.5%	(11.4-13.8)
Reasons household would not evacuate	Householder is a first responder	5.1%	(3.2-8)
	Lack of trust in public officials	5.1%	(3.2-8)
	Concern about leaving property	25.3%	(21-30.2)
	Nowhere to go	15.2%	(11.7-19.4)
	Concern about personal safety	5.1%	(3.2-8)
	Concern about leaving pets	10.1%	(7.3-13.8)
	Concern about traffic jams	5.1%	(3.2-8)
	Other	29.1%	(24.5-34.2)
	Among other reasons		
	don't feel like its worth leaving	30.4%	(22.2-40.1)
	because I'm prepared	17.4%	(11.2-26.1)
	doesn't want to leave home	17.4%	(11.2-26.1)
	don't need to	17.4%	(11.2-26.1)
	just won't leave home	17.4%	(11.2-26.1)

When asked if households would evacuate if told to do so by public authorities, most (83.4%) reported that they would, with the remainder reporting that they were either unsure or wouldn't evacuate. Of households who reported that they would evacuate, about half said that they would go to the home of a friend or family. Only a quarter said they would go to a shelter and another quarter indicated a hotel or some other place for evacuation. Of households who reported that they would not evacuate, the top three specific reasons for staying put were concern about leaving property (25.3%), followed by having nowhere to go (15.2%) and concern about leaving pets (10.1%). Though the most frequent reason cited was "other" (29.1%), specific reasons within this response category varied widely.

Potassium iodide (KI)

Metric	Response	Percent of Households	95% CI
Enough KI for everyone in household	Yes	42.7%	(41.1-44.3)
	No	54.3%	(52.6-55.9)
	Don't Know	3.0%	(2.5-3.7)
Know where KI is stored in household	Yes	84.5%	(82.6-86.2)
	No	15.5%	(13.8-17.4)
Know where to get KI in town	Yes	26.7%	(25.2-28.1)
	No	73.3%	(71.9-74.8)

With the Millstone Nuclear Power Station EPZ (emergency planning zone) covering the towns surveyed, residents were asked about their supply and awareness of KI. When asked if households had enough pills for all who lived there, a little over half reported having enough. Almost three quarters of households reported not knowing where they can go in their town to get KI pills. Of those households that reported having enough KI for everyone, most (84.5%) reported knowing where the pills were located in their home. The other 15.5%, or 1 in 7 households did not know where their pills were in the home.

Methods of Communication

When asked for their main source of information regarding emergency events, the top three responses were television (53.6%) followed by internet (14.0%) and radio (10.9%). When asked what would be their main source of information for emergency events if the power was out in their home, responses shifted. The top three responses were radio (42.5%) followed by "other" (21.6%) and emergency text message (12.8%). Of those responding "other", most (60.2%) said they would use their cell phones.

Metric	Response	Percent of Households	95% CI
Main source of info regarding emergencies	TV	53.6%	(52-55.3)
	Radio	10.9%	(10-12)
	Emergency text message	10.0%	(9.1-11)
	Automated telephone call	3.2%	(2.7-3.9)
	Local newspaper	0.5%	(0.3-0.8)
	Neighbor/friend/family/word of mouth	1.7%	(1.3-2.2)
	Poster/flyer	0.5%	(0.3-0.8)
	Church/other group	0.5%	(0.3-0.8)
	Social media	1.4%	(1.1-1.9)
	Internet	14.0%	(12.9-15.2)
	Other	5.9%	(5.2-6.7)
	Among other sources		
	cell phone	41.9%	(34.6-49.6)
	public address system	18.3%	(13.1-25)
	email	14.7%	(10-20.9)
	speaker system	14.7%	(10-20.9)
	ham radio	10.5%	(6.6-16.1)
Main source of info regarding emergencies during power outage	TV	6.6%	(5.9-7.5)
	Radio	42.5%	(40.9-44.1)
	Emergency text message	12.8%	(11.8-14)
	Automated telephone call	2.4%	(1.9-2.9)
	Local newspaper	1.0%	(0.7-1.3)
	Neighbor/friend/family/word of mouth	3.4%	(2.9-4.1)
	Poster/flyer	1.0%	(0.7-1.3)
	Church/other group	0.5%	(0.3-0.8)
	Social media	2.9%	(2.4-3.5)
	Internet	7.9%	(7-8.8)
	Other	21.6%	(20.2-22.9)
	Among other sources		
	cell phone	60.2%	(56.6-63.7)
	don't know/Some other way	15.5%	(13.1-18.4)
	telephone	13.6%	(11.3-16.3)
	ham radio	5.5%	(4.1-7.4)
	look outside	2.8%	(1.8-4.2)
	local fire dept	2.4%	(1.5-3.8)

Smoke and Carbon monoxide (CO) Detector

An overwhelming majority of households (96.5%) reported having a working smoke detector, however only 68% of households reported having a working CO detector in their home. Of households that reported not having a CO detector, the top three reasons for not having one were "other" (40.3%), "not purchased one yet" (30.1%), and "not at risk for CO exposure" (24.0%). Specific reasons within the "other" response category varied widely.

Metric	Response	Percent of Households	95% CI
Household has a working smoke detector	Yes	96.5%	(95.9-97.1)
	No	3.0%	(2.5-3.6)
	Don't Know	0.5%	(0.3-0.8)
Household has a working CO detector	Yes	68.3%	(66.8-69.9)
	No	25.8%	(24.4-27.3)
	Don't Know	5.8%	(5.1-6.6)
Reasons why household does not have a working CO detector	Not purchased one yet	30.1%	(27.2-33.2)
	Not at risk for CO exposure	24.0%	(21.4-26.9)
	Have a smoke detector and don't need one	3.7%	(2.7-5.2)
	Too expensive	1.9%	(1.2-3)
	Other	40.3%	(37.1-43.5)
	Among other reasons		
	just don't have one	37.2%	(32.4-42.3)
	never thought about it	24.0%	(19.9-28.6)
	no reason	18.6%	(15-22.9)
	landlord doesn't provide one	10.9%	(8.1-14.5)
	don't want one	4.7%	(2.9-7.3)
	gave it away	4.7%	(2.9-7.3)

Conclusions

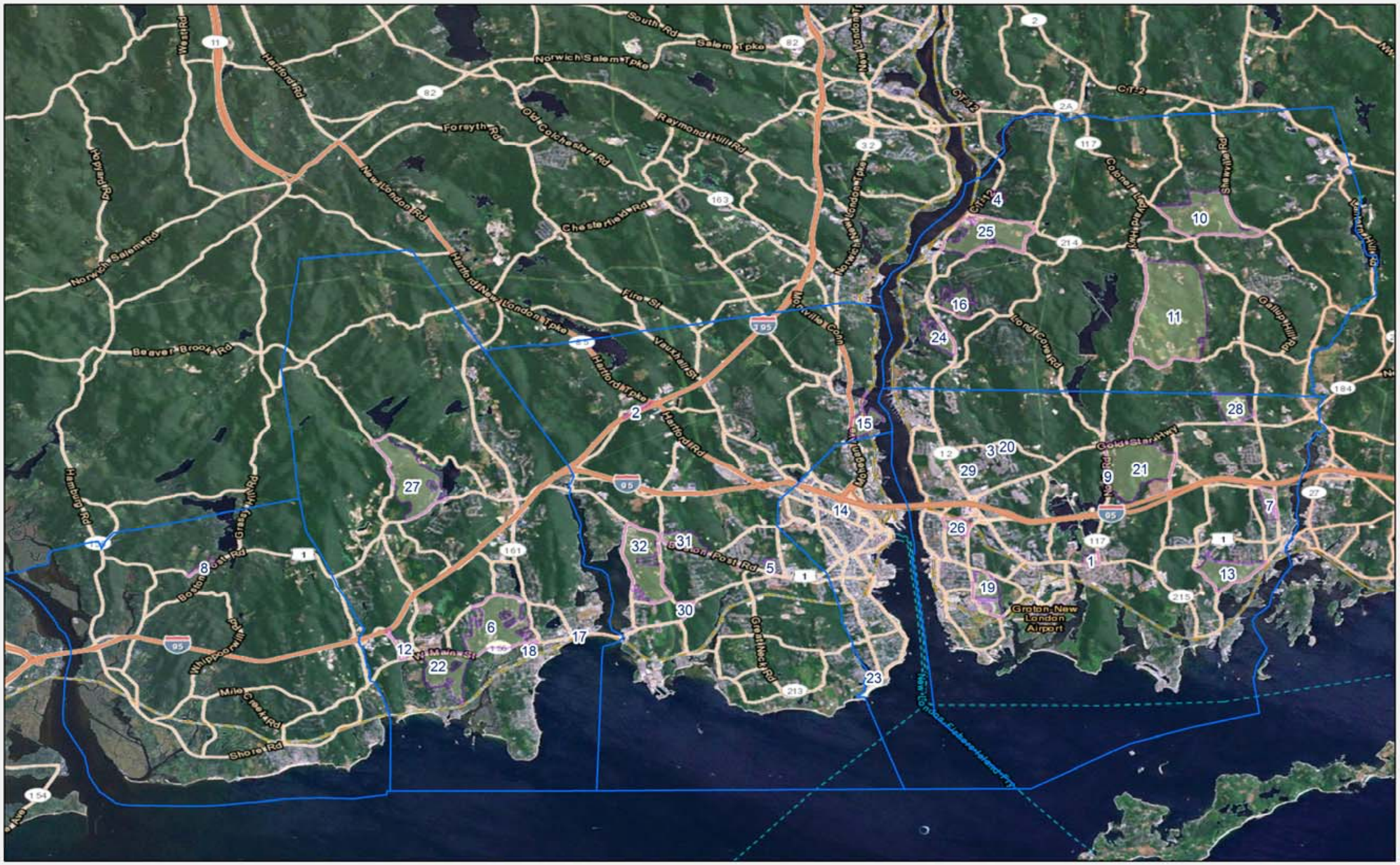
Over 80% of households reported that they would evacuate if told to do so, with 25% of those households indicating that they would go to a shelter. This suggests that during a large-scale event, existing shelters would be quickly overwhelmed. Emergency management and public health officials need to be prepared to identify, open and staff additional shelters should widespread evacuation orders be issued. A number of metrics revealed opportunities for better preparedness messaging. Perhaps the most important is the need for every household to have an emergency plan. Roughly half of all households indicated that they had no such plan.

Another area where messaging should be focused is on the need to follow evacuation orders when issued. While over 80% of households indicated they would evacuate if told to do so, the remaining non-evacuated households could amount to a catastrophe during a significant event, such as a powerful hurricane. Because many felt they lacked anywhere to go, and suggested a concern about leaving their pets, educating the public about the presence of shelters, including shelters that accommodate pets is critical. About 4 years after the last KI distribution campaign, most households reported not having enough KI for everyone in the home. More alarming is that roughly 3 out of every 4 households did not know where to get KI in their town. This confusion may be due to the differences across towns in where KI is made available. For future KI distribution campaigns, each town in the EPZ should consider making KI available at similar locations, for example at each town hall, or each police department.

Before an emergency, and before a power outage, TV emerged as the most desired source of information among respondents. In the event of a power outage, radio rises to the top as the preferred source. Emergency response officials should establish local and regional TV and radio contact lists before an emergency, and consider the types of messaging most appropriate for each medium before an emergency.

Figure 1

Master Cluster Map



Appendix A

Cluster: **House Number:** **Date:** **Interviewer:** **Start Time:**

First, we are going to ask about basic household information

Q1. Which best describes the type of structure for your household?
☐Single Family ☐Multi-family Unit ☐Mobile Home ☐Other

Q2. How many people live in your household?

Q3. Is there any adult in your household who does not speak English? ☐Yes ☐No

Next, we have some questions about home medical needs

Q4. Do you or any member of your household require any of the following?
☐ Oxygen
☐ Dialysis, chemotherapy or regular blood transfusions
☐ Adult(s) who requires daily care at home (e.g. medical, bathing, etc.)
Other type of assistance (please specify)

Now, we are going to ask about emergency preparedness and evacuation plans

Q5. How prepared do you feel your household is to handle a disaster or emergency?
Well prepared ☐ Somewhat prepared ☐ Not at all prepared ☐ Don't know/Not sure

Q6. Does your household have any of the following?

A disaster or emergency plan?
☐Yes ☐No ☐Don't know

A first aid kit?
☐Yes ☐No ☐Don't know

A generator
☐Yes ☐No ☐Don't know

Enough drinking water (besides tap) for the next 3 days (Assume you need 1 gallon for each person each day)?
☐Yes ☐No ☐Don't know

Enough non-perishable food for the next 3 days?
☐Yes ☐No ☐Don't know

A 3-day supply of prescription medication for each person who takes prescribed meds?
☐Yes ☐No ☐Don't know ☐NA

Q7. If told by local authorities you had to evacuate would you leave your home?
☐Yes ☐No (Skip to Q9) ☐Don't know (Skip to Q10)

Q8. If you would evacuate, where would you go?
☐Friend/family home ☐Hotel ☐Shelter (e.g. school, church, etc.)
☐Other (skip to Q10)

Q9. What is the main reason why you wouldn't leave? (Choose ONLY ONE)
☐I am a first responder and would be required to respond to an emergency
☐Lack of transportation
☐Lack of trust in public officials
☐Concern about leaving property
☐Nowhere to go
☐Concern about personal safety
☐Concern about leaving pets
☐Concern about traffic jams
☐Inconvenient/expensive
☐Health problems (e.g., could not be moved)
☐Other (please specify)

The next few questions deal with living near the Millstone Nuclear Power Station in Waterford

Q10. Does your household have potassium iodide (KI) pills for all individuals living here?
☐Yes ☐No (skip to Q12) ☐Don't know (skip to Q12).

Q11. If public authorities told you to take potassium iodide (KI) pills, do you know where they are in your home?
☐Yes ☐No ☐Don't know

Q12. Do you know where to get potassium iodide (KI) pills?
☐Yes ☐No ☐Don't know

Finally, we would like to ask you about your household communication methods in regards to an emergency and carbon monoxide.

Q13. What is your household's main source of information regarding emergency events?
(Choose ONLY ONE)
☐TV
☐Radio
☐Emergency text message (interviewer note: not a personal text message from a friend or family member)
☐Automated call (e.g., reverse 911)
☐Local newspaper
☐Neighbor/friend/family/word of mouth
☐Poster/flyer
☐Church or other groups
☐ Social Media (Facebook, Twitter, etc)
☐ Internet
☐Other (please specify)

Q14. What would be your household's main source of information for an emergency in the event of a power outage?
(Choose ONLY ONE)
☐TV
☐Radio
☐Emergency text message (interviewer note: not a personal text message from a friend or family member)
☐Automated call (e.g., reverse 911)
☐Local newspaper
☐Neighbor/friend/family/word of mouth
☐Poster/flyer
☐Church or other groups
☐ Social Media (Facebook, Twitter, etc)
☐ Internet
☐Other (please specify)

Q15. Does your household have a working smoke detector?
☐Yes ☐No ☐Don't know

Q16. Does your household have a working carbon monoxide detector?
☐Yes (skip to END OF INTERVIEW) ☐No ☐Don't know (skip to END OF INTERVIEW)

Q17. What would be the main reason why your household does not have a working carbon monoxide detector? (Choose ONLY ONE)
☐I have not gotten around to purchasing one yet
☐I am not at risk of carbon monoxide exposure in my home
☐I do not know where to buy one
☐I have a smoke detector and I do not need one
☐ They are too expensive
☐ They are not required by local code
☐ Other (please specify)

END OF INTERVIEW, THANK INTERVIEWEE, GIVE GIFT CARD

End Time: