

LUMMI ISLAND PREPAREDNESS AND EVACUATION PLANNING SURVEY ANALYSIS

Western Washington University, Environmental Studies Department

for Lummi Island Fire District 11

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Executive Summary

In the spring of 2025, Lummi Island Fire District (LIFD) 11 collaborated with Western Washington University to better understand emergency preparedness on Lummi Island,. Recognizing the need for a comprehensive evacuation plan for wildfire and tsunami hazards, the district requested support from Dr. Rebekah Paci-Green and her student team. As a foundational step, the team assessed Island residents' current awareness of risks, preparedness levels, vulnerabilities, and available resources through a systematic household survey.

The team developed a 26-question survey using FEMA's guidelines and refined with input from local fire officials and distributed via the university's digital platform. From mid-July to early August, student pairs conducted door-to-door outreach across Lummi Island. The team defined neighborhoods using local knowledge and natural boundaries to ensure systematic data collection. When in-person contacts were not possible, residents received information via door hangers and email newsletters. This information included a digital QR code and URL for residents to participate in the survey through an online survey portal, maximizing participation opportunities.

By the end of the survey window, 142 household responses were recorded, representing roughly 300 residents. Survey results indicated high preparedness levels throughout the island and areas where evacuation planning should focus. Notable results are as follows:

- Most households had purchased residential insurance, had set aside emergency supplies and money for emergencies and safeguarded important documents.
- Lummi Island residents maintain strong neighborly connection, with nearly all households knowing the members of at least one or more immediate neighbors well.
- In a large-scale disaster, most survey participants expected the LIFD to respond to their personal emergency needs in 24 hours or less, but a matter of days or weeks from off-island authorities.

- Some respondents indicate that they would need assistance to evacuate from their home or stated they did not know, but most respondents would not require transportation assistance when evacuating their homes.
- There is a high prevalence of self-sufficiency in an emergency with private ownership of propane tanks, generators, private wells, wood heat, food, water, heat, and medication. However, islanders depend on the public grid for electricity.
- All respondents owned cars and several owned boats—vehicles that could be useful in an evacuation. Most residents owned shovels and buckets, first aid kits, chainsaws, tents, sunshades, camp stoves, and weather radios.
- Many residents knew CPR, basic First Aid, food preparation, small boat operation, childcare and construction among other emergency support skills.
- Over half of the respondents plan to evacuate with one or more small animal, mostly dogs and cats.
- Some residents mentioned other emergency related topics including a desire for preparedness meetings, concerns for the ferry in an emergency, concerns for unclear evacuation routes, availability of resources such as water holding tanks and heavy equipment, and what to do when the emergency siren goes off.

This information will guide following steps in the evacuation planning process. The Western Washington University team and the LIFD will gather with the Lummi Island residents on November 14, 2025, to discuss survey results and the next steps of the planning process, with a goal of understanding what residents want included in their plan and how to shape the process itself.

Survey Methodology

In spring 2025, the Whatcom County Fire District 11 contacted Western Washington University's Dr. Rebekah Paci-Green looking for support in developing a Lummi Island emergency evacuation plan. Dr. Paci-Green and students met with the district and decided the first step to developing an evacuation plan was understanding the current level of risk awareness, emergency preparedness, vulnerabilities and capacities of Lummi Island households.

The team developed a 26-question household preparedness survey, modeled on FEMA's national household preparedness survey and a review of challenges and logistics of small island evacuation. A representative of the fire district reviewed these questions and offered suggestions, after which they were finalized and entered into Qualtrics, a digital survey platform supported by the university.

Survey Implementation

After sending out announcements about the survey in late June through island newsletters and listservs, the research team began a door-to-door survey of island residents. For the purposes of this survey, we outlined nine neighborhoods in Lummi Island for survey participants to identify the area in which they live. Outlines were based on geographical qualifiers such as roads or fields, and local knowledge provided by Lummi Island Fire District (LIFD)¹, as shown in Figure 1.

¹ Areas on our map were sometimes hard to distinguish from each other, for example if a house was right on the border of two areas it may have caused some confusion or lack of legibility to interviewees. Some people disagreed with our area classifications or were confused by our naming scheme.

Over five days of surveying, from mid-July to early August, teams of two knocked on doors and asked residents if they would be willing to participate in a 10-minute survey. Residents were either handed a tablet on which to take the survey or read the questions while the surveyor entered their responses. Responses were anonymous, meaning no contact information or addresses were collected. When completed, surveyors asked the residents if they wanted to take part in a drawing for prizes from island businesses. Those that did entered their contact information on a separate form.

When residents did not want to take the survey immediately or when no one answered the door, the team left a door hanger with a survey link and QR code. Fire department volunteers also sent out these links and encouragement to participate through an island newsletter and other email lists of island residents.



Figure 1. Island Areas used for Systematic Collection of Survey Responses

Respondent Demographics

In total, our team gathered 142 household responses to the survey, representing around 300 island residents.² Because the survey specifically excluded short-term visitors, most of these responses were from people who were full-time residents of the island (73%). A small percentage of responses were from households that occupied their Lummi Island home for 9-12 months (8%), 5-9 months (8%), and 1-4 months (10%). Almost all respondents stated their home was primarily owner-occupied (93%).

The results of the survey should be understood as representing perceptions, needs, resources, and expectations of island residents only. Visitors and vacationers, which can double the island population in the summer, are likely to have far fewer resources, ability to shelter in place, or knowledge of the local hazards.

² In order to ensure that the survey responses remained anonymous, the team did not attempt to stop the possibility of multiple members of the same household taking the survey. While unlikely, the survey responses may include duplicate survey responses from the same household.

The distribution of survey responses by island “area” are shown in Table 1 below.

Table 1. Response Count by Island Area

	Count	Percent
The Spit	12	8%
North End / Point Migley	11	8%
West Shore	24	17%
Legoe Bay	9	6%
North and West Coastline Subtotal	56	39%
Centerview	24	17%
Granger Way	19	13%
Center Island	15	11%
Center Island Subtotal	58	41%
Scenic Estates	24	17%
Seacrest and Sunrise Cove	4	3%
South Island Subtotal	28	20%
Lummi Island Total	142	100%

Most households were small and consisted of older adults. The average household size was 2.3 people, with over half the households (57%) having two people and nearly a quarter (21%) having a single person. Half the households consisted of residents over 65 years of age; only a small portion (10%) had children. Some residents noted that their household size changed

seasonally, with family and friends coming to visit and expanding the household size for a short time.

Results

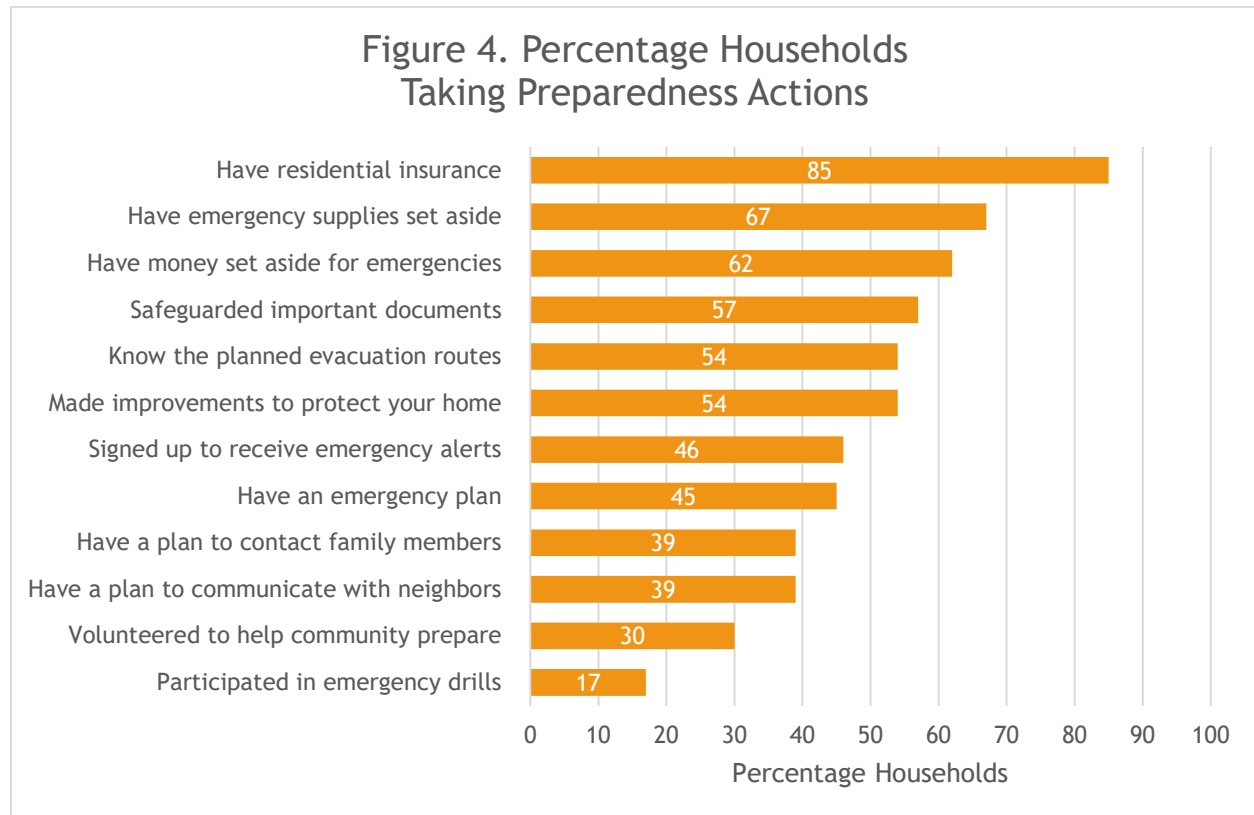
This section describes and discusses the results of the survey questions. We discuss each question in turn, often including a chart or graphic of the results. A list of survey response tables can also be found in Appendix 1 for complete details.

Preparedness Actions Taken

Q4. Which of the following actions has your household taken to prepare for a disaster?

Lummi Island households had taken many steps to prepare for disasters. As shown in Figure 4, nearly all households had purchased residential insurance (85%) and most had set aside emergency supplies (67%) and money for emergencies (62%) and safeguarded important documents (57%). About half had made improvements to protect their home (54%), knew their evacuation route (54%), and signed up for emergency alerts (46%). Making emergency plans with family members, neighbors, or volunteering for community preparedness were actions taken less often, with only about a third of households doing so. Fewer than a fifth of the households (17%) had participated in emergency drills.

Throughout Lummi Island, there was a high prevalence of disaster preparedness activity in households, with an average of six specific actions taken, and a standard deviation of three actions.

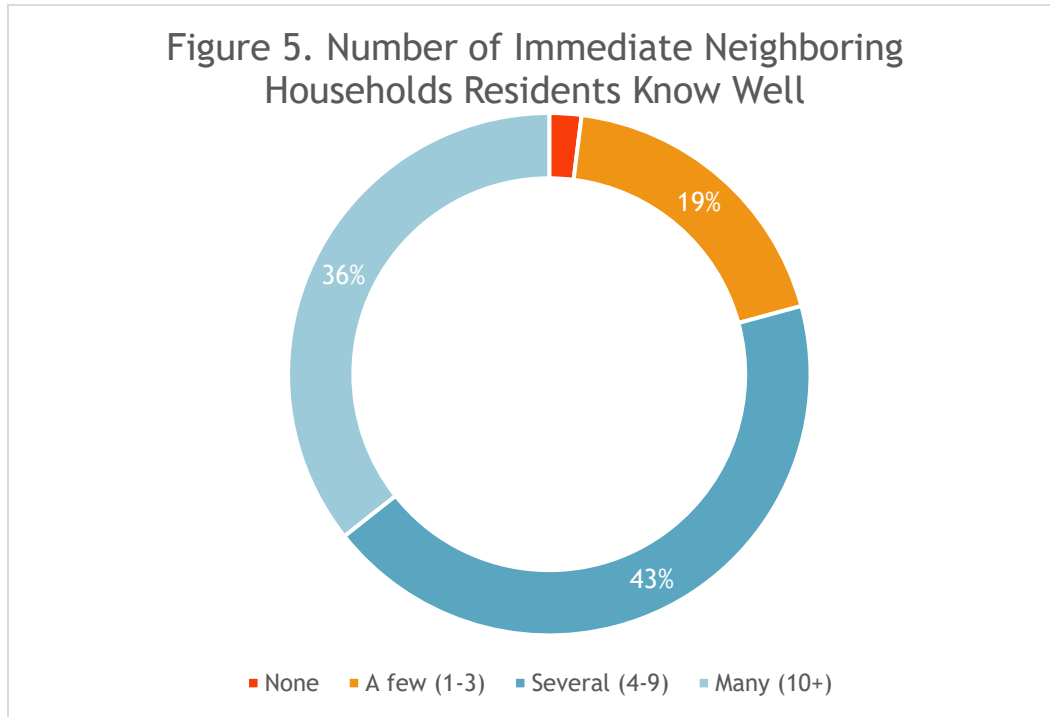


While few households reported making emergency plans, many respondents we interviewed stated that they had a general idea of what their plan would be even without having discussed it with others in their household. They felt that emergency roles and actions were intuitive and did not require discussion. For others who had made plans, they were uncertain if the plans still counted because they had not discussed it as a household in a long time.

Interactions with Neighbors around Emergency Preparedness

Q5. How many of your immediate neighbors do you know well?

Lummi Island residents value neighborly connection, with nearly all (98%) households knowing the members of at least one or more immediate neighboring households well. One out of five (19%) households knew a few neighbors, half (44%) knew several, and one third (36%) knew many households, as shown in Figure 5. Neighbors did not know households that are vacation rental homes through platforms such as Airbnb, contributing to the 2% of participants who did not know any neighboring households.



When broken out by island area, some variation is evident. South Island residents tended to know fewer neighbors than North Shoreline residents, as shown in table 5 below.

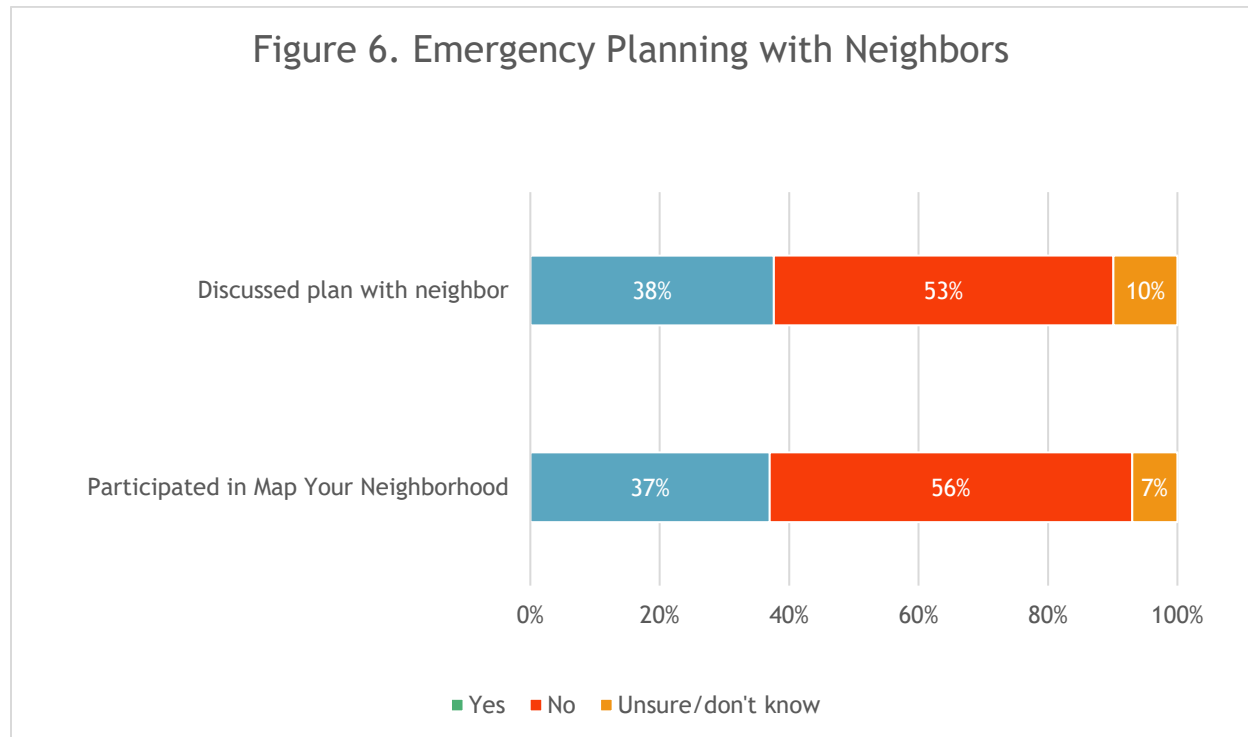
Table 2. Number of Immediate Neighboring Households Residents Know Well, by Geography

	None	A few (1-3)	Several (4-9)	Many (10+)
Center Island	2%	21%	45%	33%
North Shoreline Area	0%	18%	38%	44%
South Island	7%	15%	52%	26%
All Lummi Island	2%	19%	44%	36%

Q6. Discussing disaster or emergency plans with neighbors

Many Lummi Island residents had ideas of what their plans would be with their neighbors in an emergency but had never actually discussed and agreed upon plans. As shown in Figure 6, Just over a third had discussed plans with their neighbors (38%) or participated in Map Your Neighborhood (MYN) (37%), an emergency planning program in which neighbors come together and discuss important planning items such as the location of propane tanks, backup generators; children, disabled, or elderly folks; and safe emergency assembly zones, among other disaster planning criteria. It is likely that most residents that said they had discussed emergency plans with neighbors had done so through MYN, give the nearly identical percentages.

Some interviewees were adamant that they knew exactly what to do in an emergency such as calling their neighbors, but they did not consider that natural hazards might disrupt phone lines. Neighbors who had discussed plans years ago were unsure if those plans were still in place. Lummi Islanders overwhelmingly felt it was obvious that neighbors would come together in an emergency without hesitation. Some residents were quite explicit about this agreement: residents of Sunny Lane that took the survey spoke of their plan to go to Legoe Bay Road and tell residents to evacuate up the hill to their property if a tsunami warning were issued. However, not all residents may have considered how a disaster would disrupt their ability to carry out typical activities, such as a major disaster disrupting cell phone communication or buckling roads. Regardless, island residents were clear that they had an unspoken community agreement that everyone would help each other.



Expectations of Response and Support

Q7. In a large-scale disaster or emergency affecting the region, how soon would you expect the local fire district on Lummi Island to respond to your emergency needs?

Q8. In a large-scale disaster or emergency affecting the region, how soon would you expect off-island authorities (Sheriff, Coast Guard, FEMA, or similar) to respond to your emergency needs?

Lummi Island residents had markedly different expectations of how quickly first responders could reach them and address their needs in a large-scale emergency. Residents were asked how quickly the local fire district could respond to their needs in a large-scale disaster or emergency affecting the region. They were asked the same question about off-island authorities, such as the Sheriff, Coast Guard, FEMA, or similar. Residents struggled to answer this question because of the vague language in the question and limited response options. Some felt that “Large-scale disaster or emergency affecting the region” was a vague

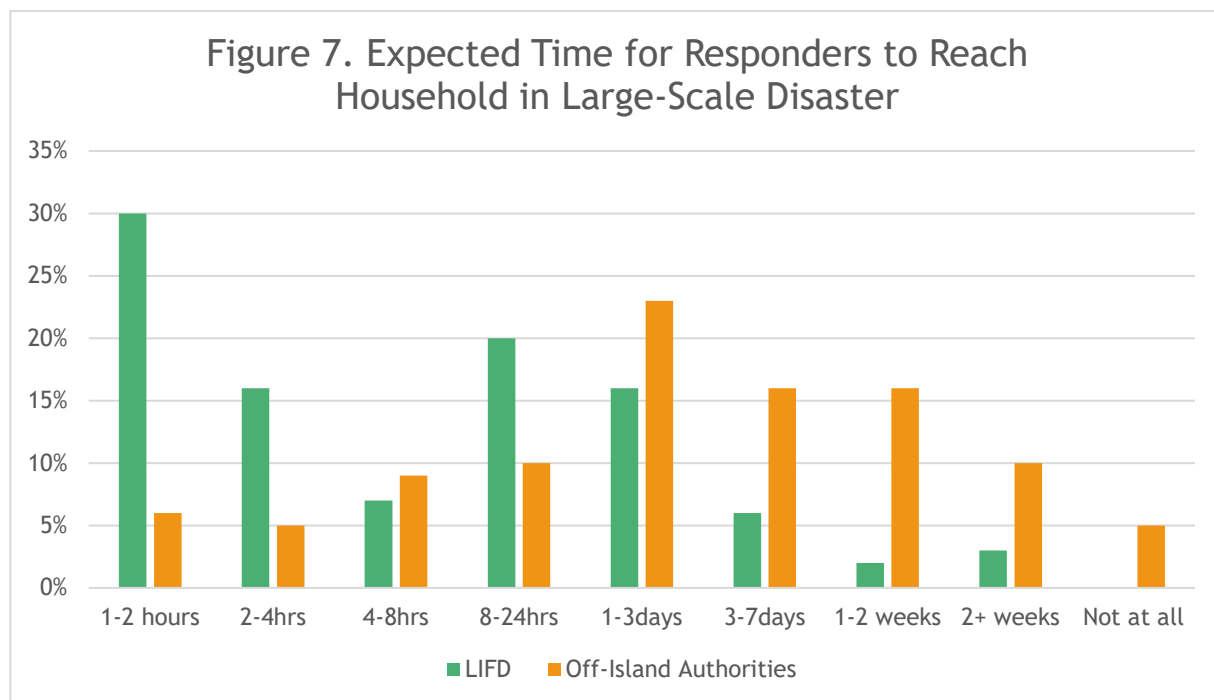
descriptor and most requested surveyors to provide more context for the question. When asked for context, we classified the disaster as county-wide, affecting Whatcom County mainland and nearby areas including Bellingham, Lummi Nation, and potentially other nearby islands.

Residents expected immediate response to personal emergency needs from the LIFD—the island’s volunteer 17-member fire crew—in a large-scale disaster. As shown in Figure 7, one out of three (30%) survey participants stated that in a large-scale disaster, the fire department would respond to their personal emergency needs within 1-2 hours, the smallest time increment option on our survey. Most (73%) of survey participants expected the Lummi Island fire district to respond to their personal emergency needs in 24 hours or less in a large-scale disaster. Many residents noted that the survey should have had a “less than one hour” option because the fire district could respond as quickly as 5 minutes. One respondent critiqued that we had written the survey from an urban perspective that did not understand the geographical and cultural closeness of the island community that would allow firefighters to respond within minutes to personal emergency needs in a large-scale disaster. Yet, few residents considered how these response times may not be possible in an event impacting a large portion of the island. In such an event, the fire district’s limited personnel and equipment would mean they could not be everywhere at once.

Lummi Islanders’ expectations for off-island authorities to respond to personal emergency needs were remarkably lower than for the local island Fire District. Few survey respondents (20%) expected a response from off-island authorities in the first 24 hours. One quarter of survey participants (23%) expected response to personal needs from off-island authorities between 1-3 days. A handful of participants (5%) expected no response at all from off-island authorities.

Lummi Islanders expected little to no help from off-island authorities, recognizing that in a large-scale disaster they will have to attend to their own needs. Since survey respondents felt off-island authorities did not consider the needs of Lummi Islanders, residents were not

factoring external support into their planning. One participant even mentioned Lummi Island would fit better in Island County than in Whatcom County because small island populations would experience similar issues in a disaster event. One survey participant mentioned that the Lummi Nation had supported Lummi Island in a large 2017 flood event that affected the island, despite there being no jurisdictional authority or responsibility between the Nation and the Island. However, most participants indicated that they did not expect Lummi Nation to support Lummi Island in a disaster event.

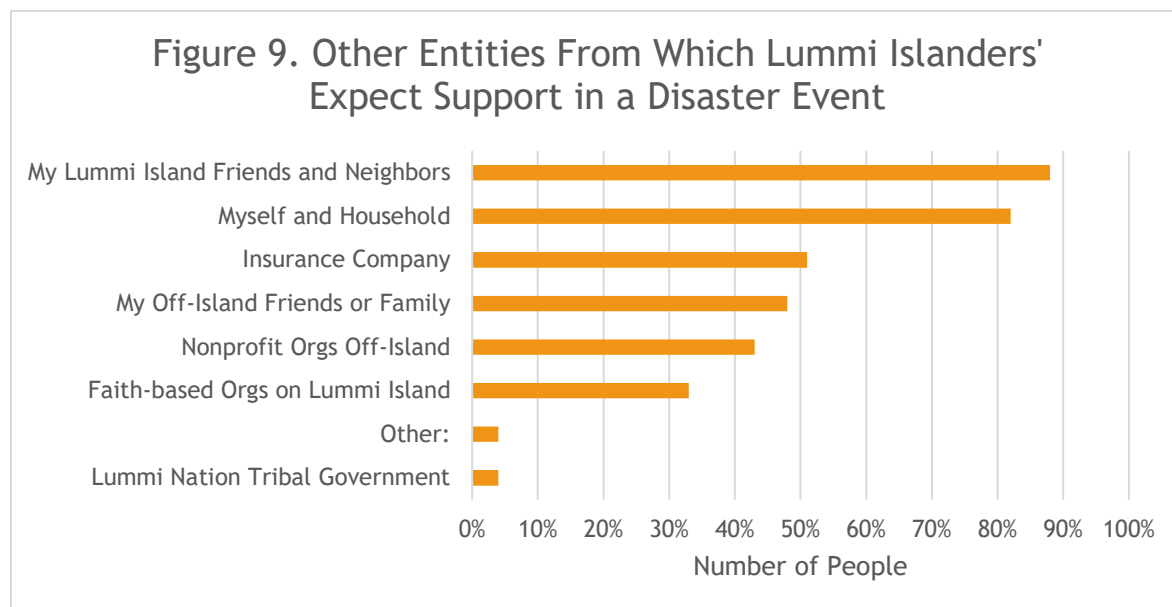


Q9. In the event of a disaster or emergency, who else would you expect support from?

The prevalent notion of neighborly support among Lummi Islanders appeared again in responses to Question 9. In a disaster or emergency scenario, most survey participants indicated they expect support from Lummi Island friends and neighbors (88%) and

themselves or their household (82%), as shown in Figure 8. Half of survey participants also expect support from their insurance companies (51%) and off-island friends or family (48%), off-island nonprofits such as American Red Cross (43%).

Residents made many qualifying comments regarding their expectations of support. Some participants clarified that they expected the on-island faith-based organizations to act as a safe assembly zone in a disaster event, but they did not expect the organizations to provide other response services. Many people asserted they did not expect support from any off-island nonprofit organizations whatsoever. Others noted that they did not have any off-island friends or family because their social support all lived on Lummi Island. Some residents did not expect support from Lummi Nation, especially because the reservation would be experiencing disaster itself. Finally, people noted they did not expect immediate disaster response support from nonprofits, faith-based organizations or insurance, but that those entities may support later in the recovery phase.



Assistance in Evacuating Home

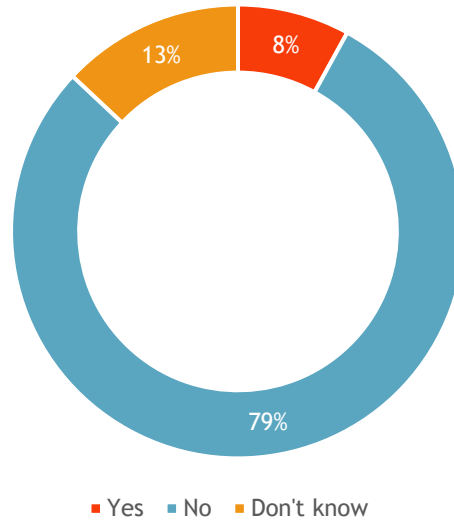
Q10. Would your household require assistance with transportation to leave your home in an evacuation?

Q11. Injuries and post-surgery recovery can temporarily limit the mobility of members of your household. In this scenario, what assistance would your household need to evacuate to an on-island assembly area?

Almost all Lummi Islanders felt they could independently evacuate in a disaster event without transportation assistance. While some indicate that they would need assistance to evacuate from their home (8%) or stated they did not know (13%), most respondents (79%) would not require transportation assistance when evacuating their homes, as shown in Figure 9.³ In fact, two thirds (69%) felt they would still be able to self-evacuate even if injured or recovering from surgery, likely with the aid of a spouse or other household members. A small portion of residents (8%) stated that had a transportation plan with neighbors who could help if they were injured or experienced temporary mobility limitation; others (13%) indicated that injuries or post-surgery recovery may necessitate temporary transportation assistance in an evacuation.

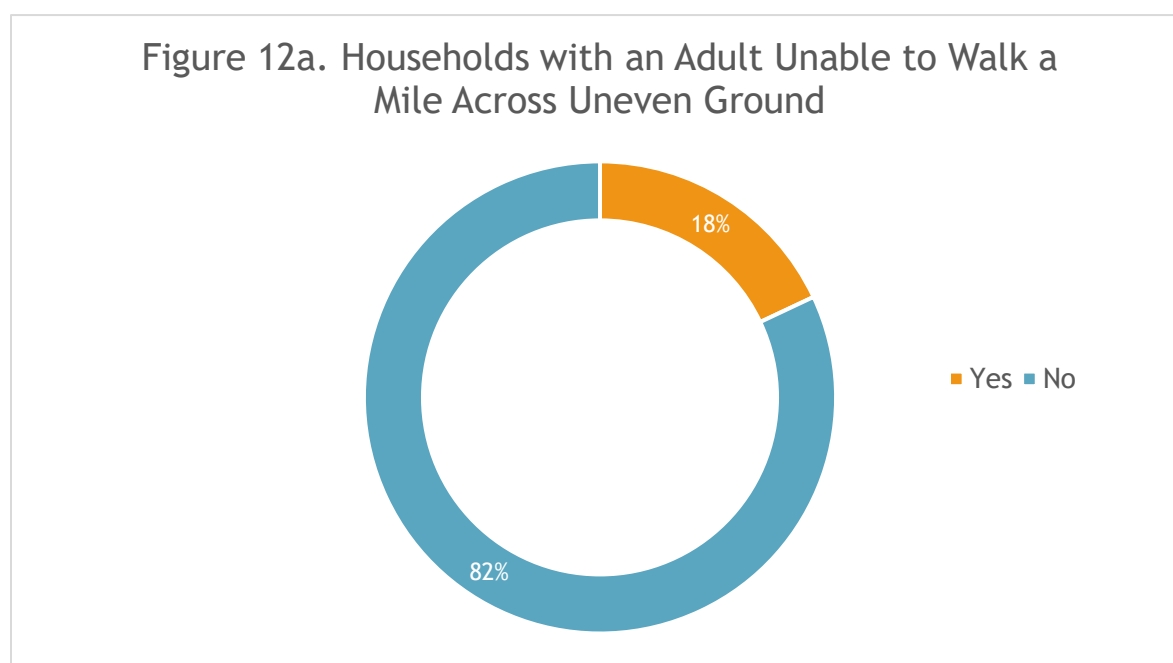
³ Question 11 made inquiries into personal capacities. People may not have wanted to consider worst case scenario events such as hazard-induced bodily injuries, car or road damage, or the primary vehicle or driver not being home at the time of the evacuation order. Some participants may have overestimated personal capacities for transportation in an evacuation. However, the widespread expectation of neighborly support would likely result in many neighbors checking in on each other and assisting those in need.

Figure 10. Households That Would Require Transportation Assistance in an Evacuation (N=137)



Q12. Of the people that live in your Lummi Island household, how many of the adults may be UNABLE TO WALK A MILE on uneven ground without assistance?

Some evacuations may require residents to leave their cars behind and use unimproved roads or paths to evacuate to designated safe places. Question 12 asks participants to consider their household members' capacities to walk a mile on uneven ground without assistance, should the evacuation route require it. Most households (82%) stated that all adults would be able to walk a mile on uneven ground without assistance. As shown in Figure 12, One-fifth (18%) of survey participants had one or more adult household members who would be unable to walk a mile on uneven ground without assistance.



The percentage of households with one or more adults who might struggle to walk unassisted for a mile varied across the island quite considerably. Of those who responded to the survey, nearly half the households in North End/Point Migley fell into this category. Households in Center Island and Scenic Estates also had about one in five households with an adult who could not walk a mile on uneven ground unassisted. Several (18%) of the households on The Spit, an area within the tsunami evacuation zone, may also have difficulty evacuating on foot. Figure 2, below, shows the results of this question by island area.

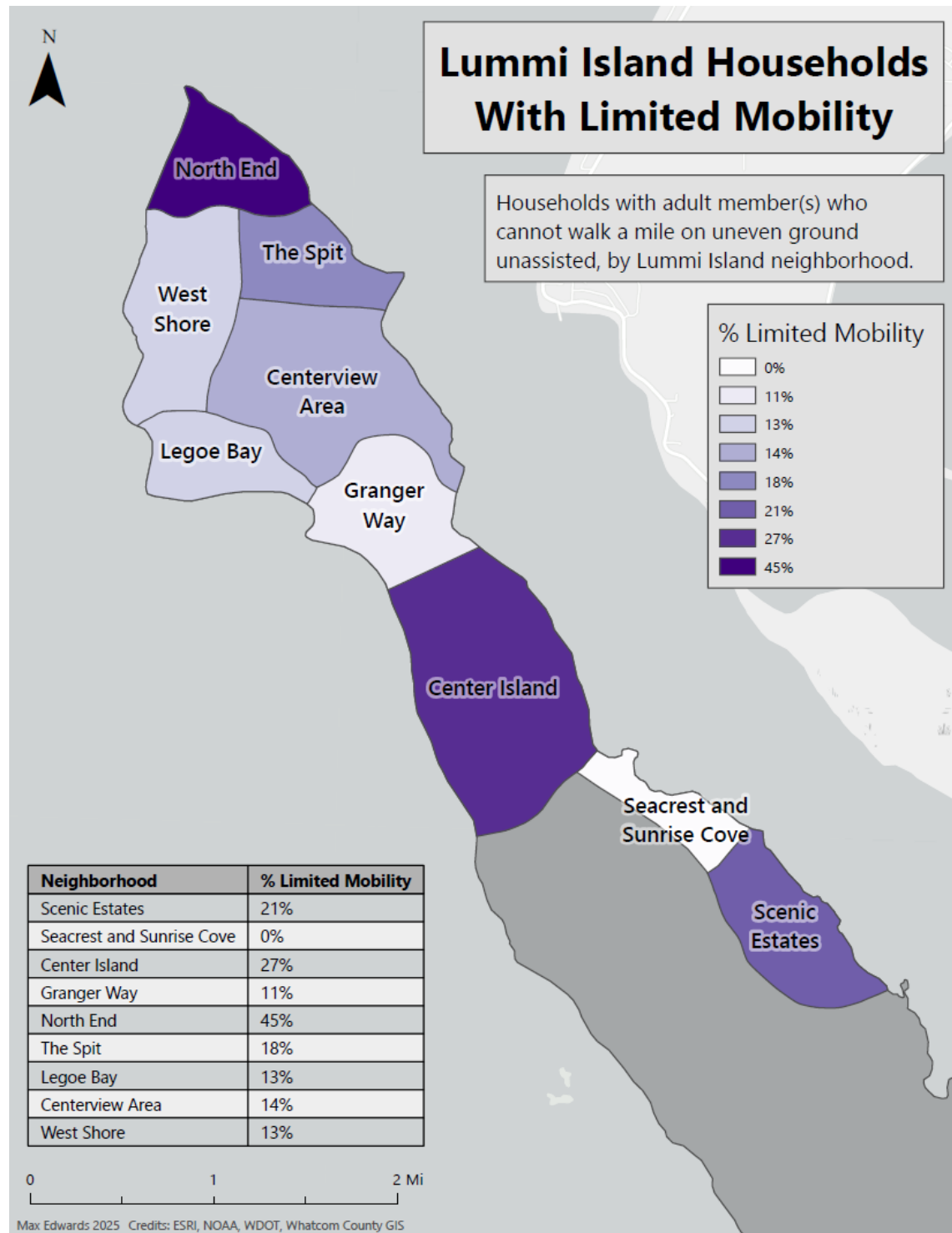


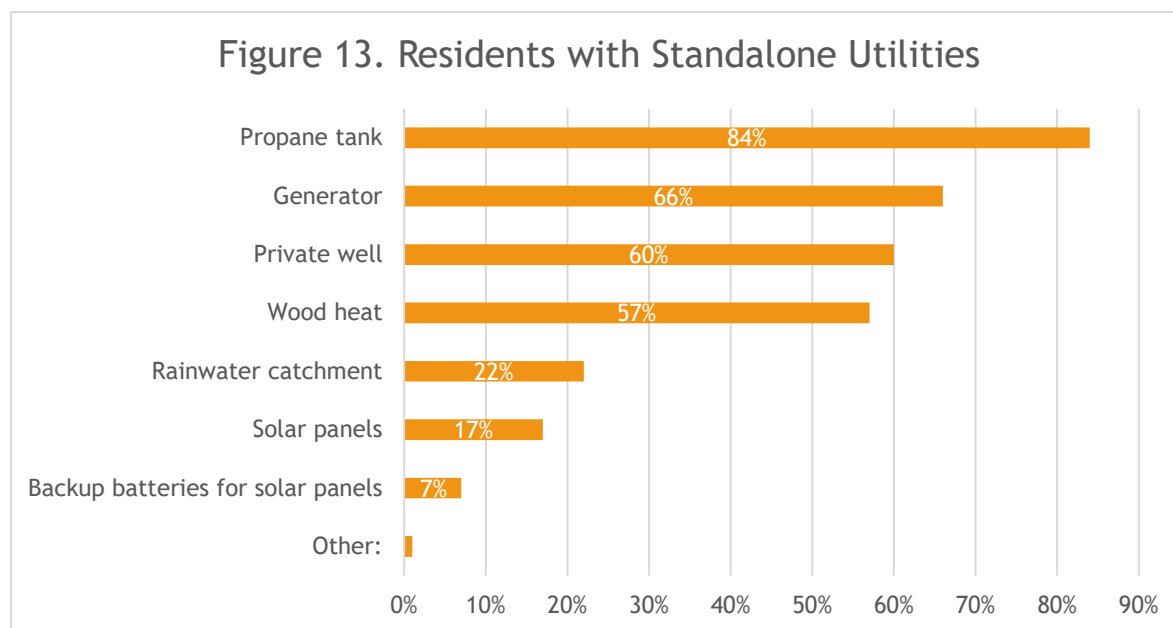
Figure 12b. Lummi Island Households with Limited Mobility, by Geography

Backup Utilities

Q13. Which of the following standalone utilities, if any, does your household have? (Select all that apply)

Standalone utilities are important assets in disaster events because they can provide electricity, water, heat, and other essential services that can substitute for public services that weather events may disrupt. The survey found high prevalence of essential standalone utilities among Lummi Island households. As shown in Figure 13, over half the households had propane tanks, generators, private wells, and wood heat (84%, 66%, 60%, and 57% respectively). Rainwater catchment and solar panels for backup electricity were far less prevalent. One question that remains is how many private or co-op wells have both holding tanks and a way to manually pump the water, as well as where these are located.

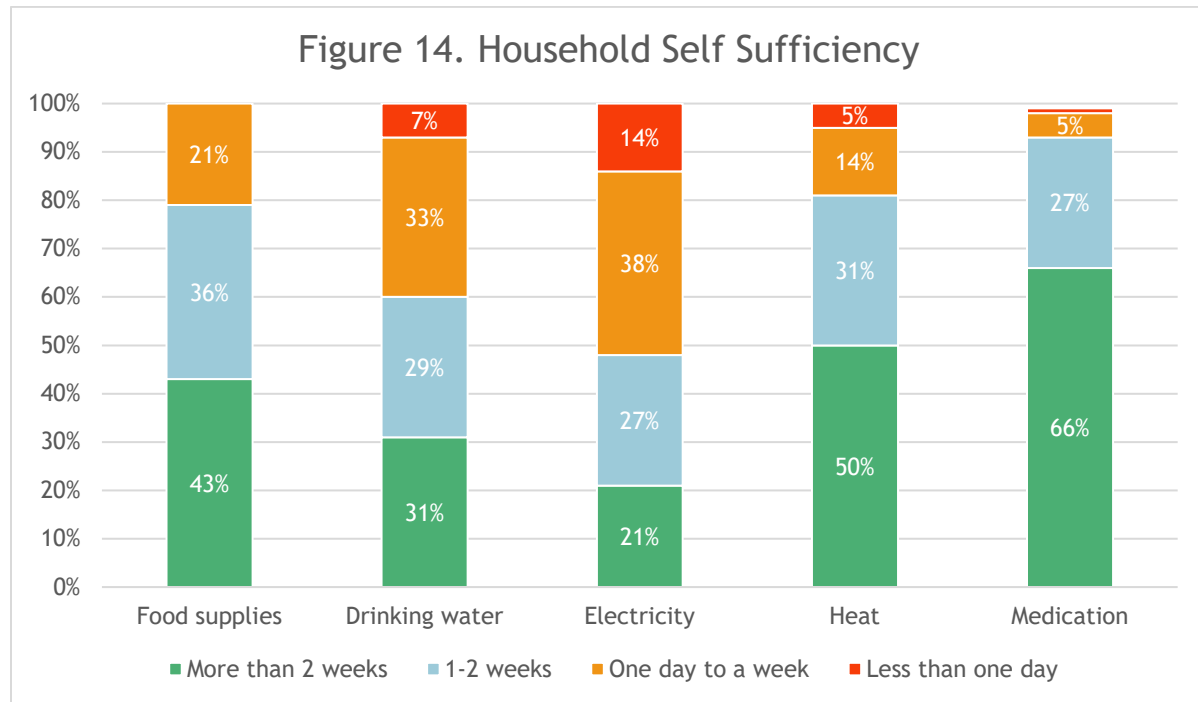
While many Lummi Islanders had backup utilities, some were uncertain how well these backup utilities would support their household in a disaster scenario. Islanders noted they had not used some of these backup utilities in years and that they could potentially be out of service. Participants who had standalone generators also commented that they did not know how long their generators could operate in an emergency event. Those with private wells also may not have considered whether they knew how to use a manual pump to access their private well in the case of a loss of power.



Household Self Sufficiency in an Emergency

Q14. How long can you provide for your own household's needs with no outside assistance or reliance on public utilities?

In disaster scenarios, weather events can disrupt household access to outside assistance or public utilities for essential survival services such as food supplies, drinking water, electricity, heating, and medication. Question 14 assesses survey participants' capacities to provide for their own households' needs without external assistance or reliance upon public utilities in a disaster scenario. Results are shown in Figure 14.



- Food Supplies.** Nearly half (43%) of residents said they had stored food provisions that would last more than two weeks, and another third (36%) said they had provisions that would last 1-2 weeks. Due to the geographical isolation that comes with being an island community, most residents said they went to mainland Whatcom County to do their grocery shopping once or twice a month, and therefore, always had enough food to get them through a few weeks. However, a fifth of responding Lummi Islanders stated they only had food to last up to a week.
- Drinking Water.** Lummi Islanders have ample backup water storage that could prove vital in an emergency. One third of participants could provide their household with drinking water for more than 2 weeks and nearly as many (29%) said they had supplies for 1-2 weeks. Less than one in ten (7%) survey participants indicated they only had enough drinking water to supply their household for less than one day.
- Electricity.** Residents were more reliant on public electricity than they were all other utility options. Only about 1 in five (21%) participants could provide electricity to their household for more than two weeks without public utilities, likely with the use of solar panels and backup batteries. Some households (17%) would not be able to provide

electricity to their homes for more than one day, if at all, without public utilities.

Three-quarters (75%) would be able to provide electricity for their household for one day to two weeks, most likely through the use of generators and stored fuel.

- **Heating.** Heating was a prevalent self-powered utility on Lummi Island. One-third (31%) of respondents could heat their households for 1-2 weeks and one-half (50%) for more than two weeks. Only a small handful of residents were unable to heat their households without outside assistance for less than one day (5%) or a day to a week (14%). High prevalence of wood heat and backup generators on Lummi Island can help households heat their homes if a disaster event took place in the winter.
- **Medication.** Survey respondents were more stocked on medication than any other criteria for Question 14. Two-thirds (66%) of households had enough backup medication to provide for their house for more than 2 weeks, and a quarter (27%) had enough for 1-2 weeks. The remainder (15%) had enough medication for less than one week without outside assistance.

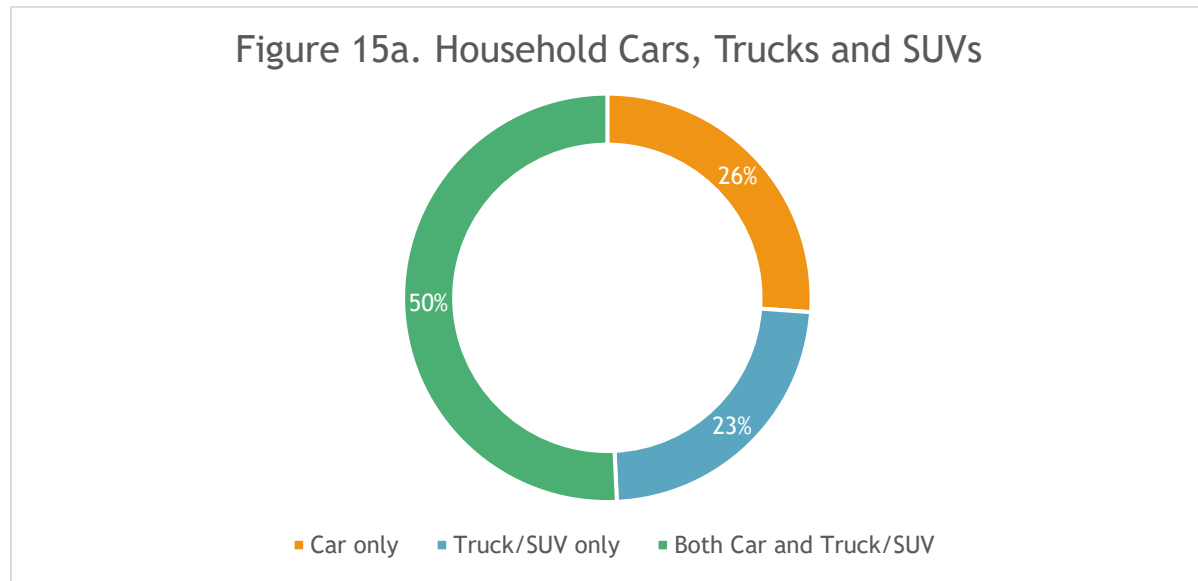
Household Resources

Q15. Which of the following vehicles does your household have?

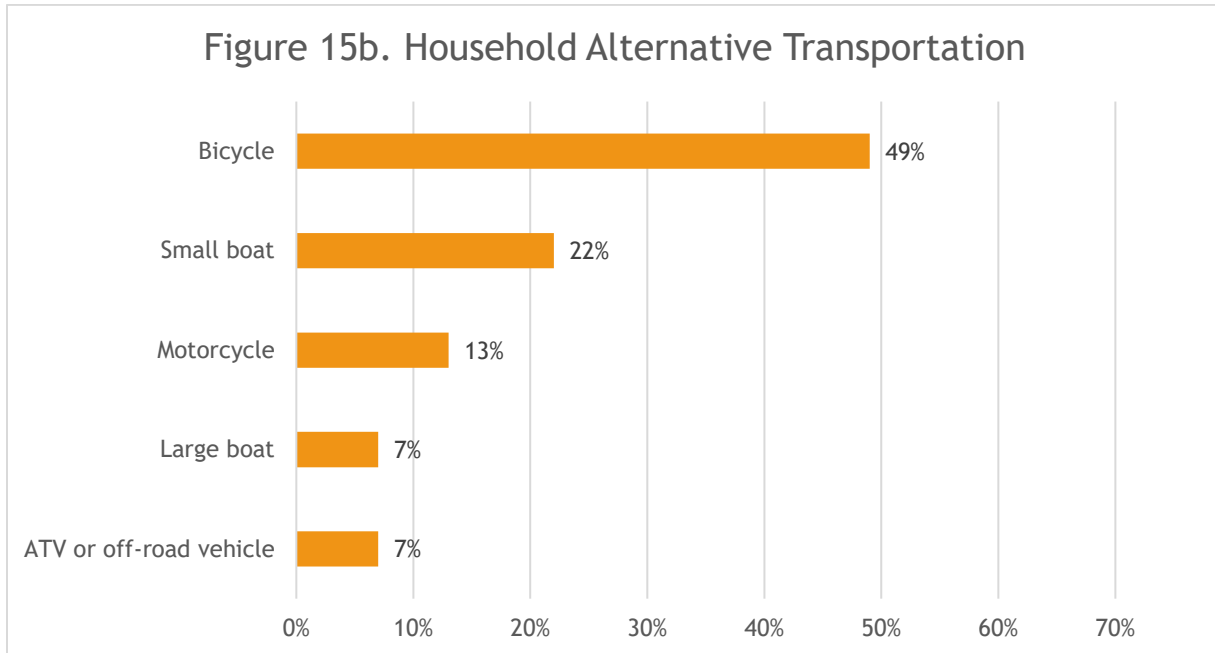
Q16. Which of the following tools or equipment does your household have?

Lummi Islanders had widespread ownership of tools, equipment, and transportation modes that could serve them in an emergency evacuation. Two questions asked them which resources their household had.

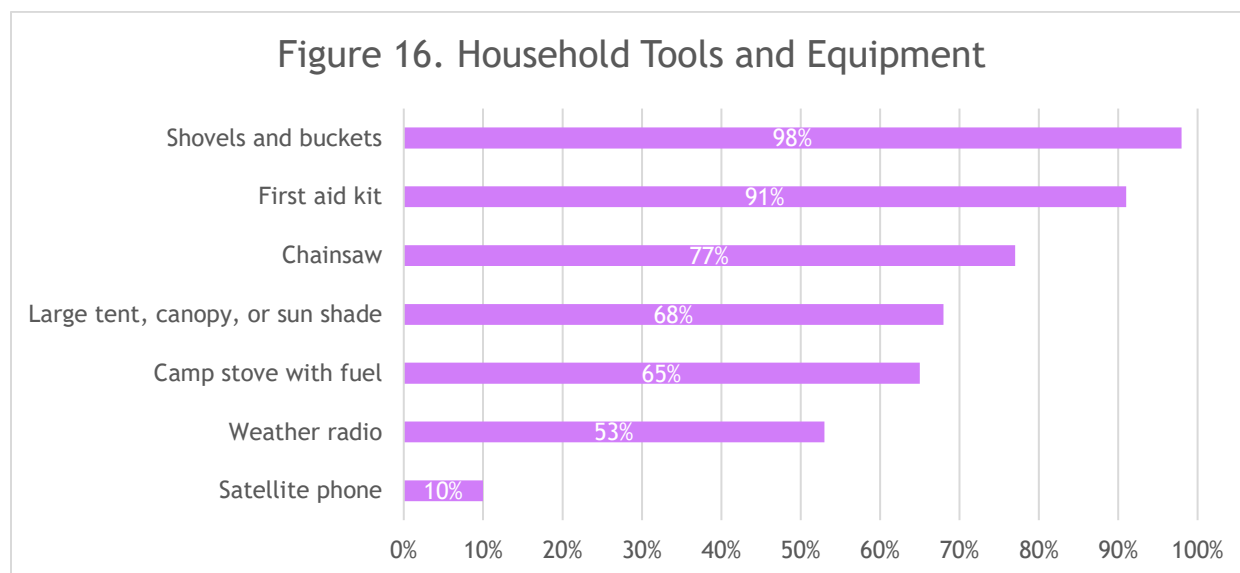
Vehicle ownership was universal throughout Lummi Island. All respondents reported having at least one vehicle. As shown in Figure 15a, a quarter (26%) had a car, and a similar number (23%) had a truck or SUV. Half the respondents (50%) had both. These vehicles would allow many people to carpool or could carry response or relief equipment in an evacuation.



Additionally, bicycle, motorcycle, all-terrain vehicles (ATVs) and passenger boat ownership rates were prevalent throughout Lummi Island. As shown in Figure 15b, nearly half of the households owned a bicycle (49%) and a small number owned a motorcycle (13%) or ATV (7%). Being on an island, boat ownership rates were also high. Nearly a quarter (22%) owned a small boat (1-5 passengers), many of which were likely canoes and kayaks. Ten households (7%) reported having larger boats that could carry six or more passengers. Assuming these boats are undamaged in an emergency and are accessible via dock or beach landing, these ten larger boats, at minimum, could evacuate 50-60 people at a time. A few respondents also listed other vehicles, including RVs, kayaks, electric bikes, and a tractor—all of which could be useful in on- and off-island evacuations.



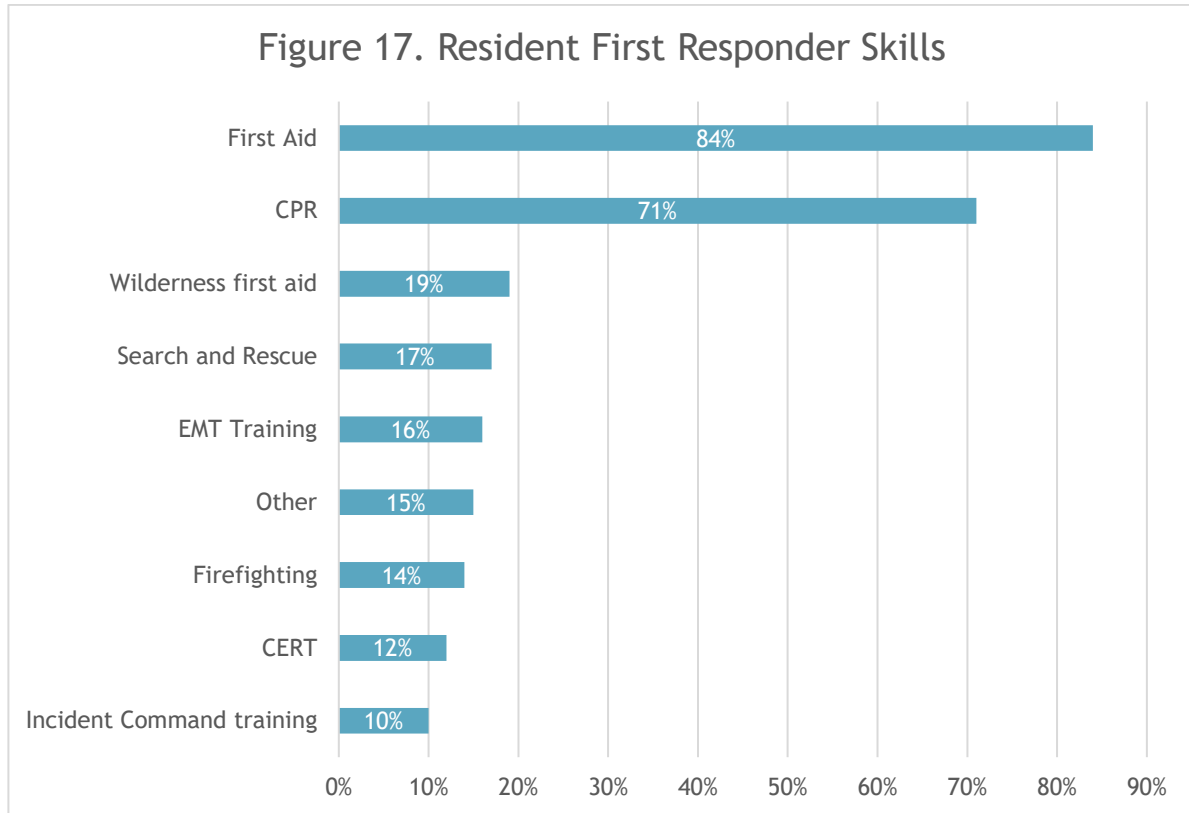
Lummi Island respondents also reported higher rates of owning tools and equipment that could support emergency, on-island evacuations. Virtually all respondents (98%) have shovels and buckets (98%) and first aid kits (91%). At least two-thirds also have chainsaws, tents, sunshades, and camp stoves. With over half (53%) reporting weather radios and 10% owning satellite phones—spread across North, Central and South Island—most neighborhoods are likely to be informed about conditions, even without cell coverage. Residents mentioned that some items are cost-prohibitive, which explains why some are less commonly owned. The average responding household has at least four of our listed items, and some have more.



Response and Support Skills

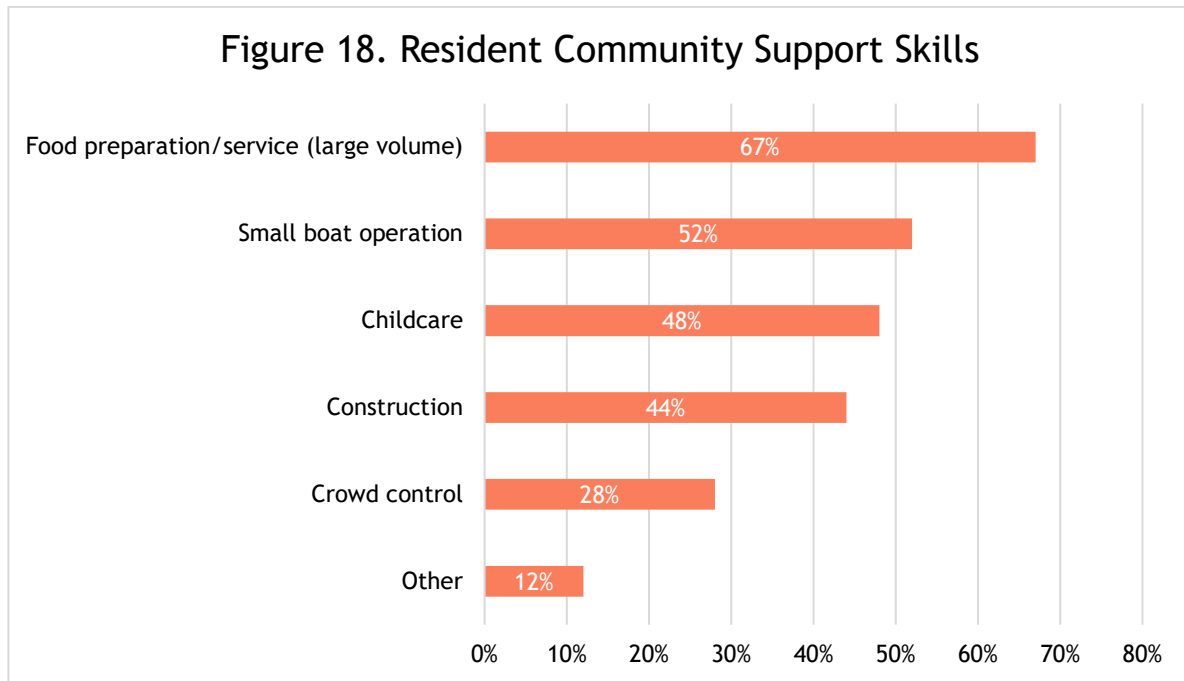
Q17. Which of the following first responder skills do you or your household possess?

Many households had someone with first responder skills. As shown in Figure 17, almost all had someone who knew CPR (85%) and basic First Aid (71%), with all other skills falling between 10% and 20% prevalence. Thus, at least a few residents within each neighborhood are likely to have each type of skill. Some mentioned having past skills/training but no recent practice, which could limit their effectiveness. EMT training is limited to volunteer firefighters, whose extensive breadth and depth of training are tracked by the Fire District. “Other” skills residents reported included healthcare provider, HAM radio, and nurse aid training.



Q18. Which of the following community support skills do you or your household possess?

Lummi Islanders have a wide and comprehensive variety of community support skills that could be useful in an emergency shelter or staging situation. As shown in Figure 18, food preparation, small boat operation, childcare and construction were prevalent skills (67%, 52%, 48%, and 44% respectively). The average household reports having at least two of the skills listed. Many residents indicated in comments or in conversation with team members that they are proud of their ability to contribute to the community and willing to use these skills if needed.

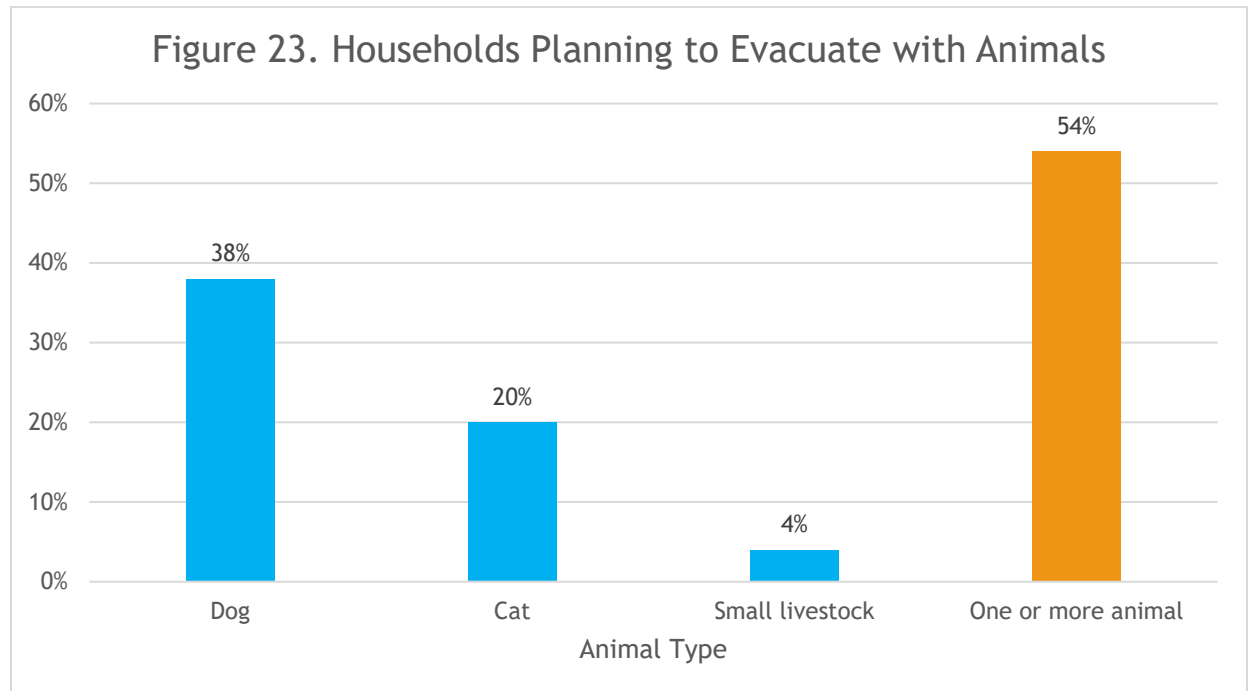


Evacuation with Pets and Livestock

Q23. In an evacuation, which, if any, pets or livestock would you plan to evacuate with?

Past disasters have shown that households often modify evacuation plans based upon their bonds with pets and livestock. If evacuation sites will not accept pets, some people choose not to evacuate at all. Accounting for pets and livestock in evacuation becomes important for ensuring that residents are willing to follow evacuation orders.

Pets and livestock were common among Lummi Islanders. Figure 23, slightly over half (54%) of households have at least one animal that they plan to bring in the event of an evacuation. Dogs are the most common (38%) with cats next (20%). Although no respondents reported plans to take large livestock (horses, cattle, etc.) in an evacuation, some reported to researchers that they did not know what to do with large animals in a disaster. This could prompt discussion of best practices for large livestock and how to protect them when evacuating.



Residents' Thoughts and Concerns

The final question of the survey asked Lummi Islanders to share any additional thoughts or concerns they had. Thirty-seven respondents did so. A full list of comments can be found in the appendix. Highlights include:

- Desire for preparedness meetings, workshops, or reinstating of CERT training (6 comments)
- Concern over off-island, including concerns about a lack of public dock, limitation of ferry, damage to ferry dock in an earthquake (6 comments)
- Concern over evacuation routes, including not knowing them, single road egress (3 comments)
- Availability or resources, especially location of water holding tanks and heavy equipment)
- Unclear what siren means when it goes off (1 comment)

Next Steps

The results of this survey were shared with Lummi Island residents at the November 14, 2025, Lummi Island Community Preparedness Meeting. Approximately fifty residents attended the meeting and provided insights, suggestions, and concerns. Nearly a dozen also signed up to support the next phase of evacuation planning.

In January 2026, the Western Washington University team and the LIFD will form an evacuation planning working group and evacuation planning outreach group. The working group will include a small number of residents with direct links to networks, organizations, and stakeholders that are relevant to emergency planning. Others on the outreach group will be important conduits of two-way information sharing; they will help convey information about evacuation planning and seek community-wide input into evacuation planning decisions necessary for drafting an plan.

Appendix 1: Survey

Q1 Welcome to the Lummi Island Emergency Preparedness Survey! This brief survey will take approximately 5-10 minutes to complete and will include multiple choice and checkbox questions about needs, skills, and expectations of an emergency evacuation. We will also ask you about your age and where you live on Lummi Island. We will not ask you for any identifying information like your name or contact information. You may choose to leave the survey at any time. This survey is being disseminated through an online link, door-to-door canvassing, and at the Lummi Island ferry and farmer's market. Please take it only once per household! Do you confirm that you are 18 years of age or older, live part-time or full-time on Lummi Island, and want to participate in this study?

☐ Yes (1)

☐ No (2)

Q2 In which area of Lummi Island do you live? (If you're not sure, select the best option)

☐ North End / Point Migley (1)

☐ The Spit (4)

☐ West Shore (3)

☐ Legoe Bay (2)

☐ Centerview (7)

☐ Granger Way (6)

☐ Center Island (5)

☐ Seacrest and Sunrise Cove (8)

☐ Scenic Estates (9)

☐ Other: (10) _____

Q3 How many people live in your Lummi Island household?

▼ 0 (1) ... 9 (10)

Q4 Which of the following actions has your household taken to prepare for a disaster? (Select all that apply)

- ☐ Have an emergency plan (1)
- ☐ Participated in emergency drills (2)
- ☐ Safeguarded important documents (3)
- ☐ Know the planned evacuation routes (4)
- ☐ Signed up to receive emergency alerts (5)
- ☐ Have a plan to contact family members (6)
- ☐ Volunteered to help community prepare (7)
- ☐ Have a plan to communicate with neighbors (8)

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- ☐ Have money set aside for emergencies (9)
- ☐ Have residential insurance (10)
- ☐ Have emergency supplies set aside (11)
- ☐ Made improvements to protect your home (12)

Q5 How many of your immediate neighbors do you know well? Please answer in households, not individuals.

- ☐ None (1)
- ☐ A few (1-3) (2)
- ☐ Several (4-9) (3)
- ☐ Many (10+) (4)

Q6 Please answer each of the following questions regarding your neighborhood connections.

Yes (1)

No (2)

Unsure/don't know
(3)

Have you and your
neighbors discussed
a plan to help each
other in an
emergency? (3)

☐☐☐

Have you
participated in a Map
Your Neighborhood
meeting? (5)

☐☐☐

Q7 In a large-scale disaster or emergency affecting the region, how soon would you expect
the **local fire district** on Lummi Island to respond to your emergency needs?

☐ 1-2 hours (1)

☐ 2-4 hours (2)

☐ 4-8 hours (3)

☐ 8-24 hours (4)

☐ 1-3 days (5)

☐ 3-7 days (6)

☐ 1-2 weeks (7)

☐ More than two weeks (8)

Q8 In a large-scale disaster or emergency affecting the region, how soon would you expect **off-island authorities** (Sheriff, Coast Guard, FEMA, or similar) to respond to your emergency needs?

- ☐ 1-2 hours (1)
- ☐ 2-4 hours (2)
- ☐ 4-8 hours (3)
- ☐ 8-24 hours (4)
- ☐ 1-3 days (5)
- ☐ 3-7 days (6)
- ☐ 1-2 weeks (7)
- ☐ More than two weeks (8)
- ☐ Not at all (9)

Q9 In the event of a disaster or emergency, who else would you expect support from? (Select all that apply)

- ☐ Myself and household (1)
- ☐ My off-island friends or family (2)
- ☐ My Lummi Island friends and neighbors (13)

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- ☐ Lummi Nation tribal government (10)
- ☐ Insurance company (5)
- ☐ Faith-based organizations on Lummi Island (7)
- ☐ Nonprofit organizations off island (for example Red Cross) (6)
- ☐ Other: (8) _____

Some emergencies or disasters may require the evacuation of unsafe areas to keep people safe and allow for response. Households may be encouraged or required to move to a nearby designated assembly area or to leave the island. The following questions ask about your household's ability to evacuate and the support you may need in doing so.

Q10 Would your household require assistance with transportation to leave your home in an evacuation?

- ☐ Yes (1)
- ☐ No (2)
- ☐ Don't know (3)

Q11 Injuries and post-surgery recovery can temporarily limit the mobility of members of your household. In this scenario, what assistance would your household need to evacuate to an on-island assembly area?

- ☐ Our household would be able to self-evacuate (1)
- ☐ Our household may not be able to self-evacuate, but we have a plan with neighbors (2)
- ☐ Our household would require temporary transportation assistance (3)
- ☐ Don't know (5)

Q12 Of the people that live in your Lummi Island household, how many of the adults may be UNABLE TO WALK A MILE on uneven ground without assistance?

▼ 0 (1) ... 9 (10)

Some disasters and emergencies temporarily damage public utilities such as electricity, piped water, and internet. The following questions ask about your household's ability to cope with these temporary disruptions using your own supplies or standalone utilities.

Q13 Which of the following **standalone utilities**, if any, does your household have? (Select all that apply)

- ☐ Solar panels (1)
- ☐ Backup batteries for solar panels (2)
- ☐ Generator (3)
- ☐ Propane tank (4)
- ☐ Wood heat (5)
- ☐ Private well (6)
- ☐ Rainwater catchment (7)
- ☐ Other: (9) _____

Q14 How long can you provide for your own household's needs with no outside assistance or reliance on public utilities? Please consider each item separately:

	Less than one day (5)	One day to a week (1)	1-2 weeks (2)	More than 2 weeks (4)
Food supplies (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking water (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electricity (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heating (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In emergencies and disasters, communities come together to support each other. This section asks about the resources and skills you have that might contribute to community emergency response, recovery, and wellbeing.

Q15 Which of the following **vehicles** does your household have?

- ☐ Passenger car (1)
- ☐ Truck or SUV (2)
- ☐ ATV/offroad vehicle (3)
- ☐ Motorcycle (4)

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☐

Bicycle (5)

☐

Boat (1-5 passengers) (6)

☐

Boat (6 or more passengers) (7)

☐

Other: (8) _____

Q16 Which of the following **tools or equipment** does your household have?

- ☐ Chainsaw (1)
- ☐ Camp stove with fuel (2)
- ☐ Shovels and buckets (3)
- ☐ Large tent, canopy, or sun shade (4)
- ☐ Satellite phone (5)
- ☐ Weather radio (6)
- ☐ First aid kit (7)
- ☐ Other: (8) _____

Q17 Which of the following **first responder** skills do you or your household possess?

- ☐ CPR (1)
- ☐ First aid (2)
- ☐ Search and rescue (3)
- ☐ Wilderness first aid (4)
- ☐ Community Emergency Response Team (CERT) (5)
- ☐ EMT training (7)

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☐

Incident Command training for emergency response (8)

☐

Firefighting (9)

☐

Other: (6) _____

Q18 Which of the following **community support** skills do you or your household possess?

- ☐ Food preparation/service (large volume) (1)
- ☐ Childcare (2)
- ☐ Crowd control (3)
- ☐ Construction (4)
- ☐ Small boat operation (5)
- ☐ Other: (6) _____

You're almost done! We have just a couple questions more about your household.

Q19 Of the people that live in your Lummi Island household, how many are ages 0 to 5?

▼ 0 (1) ... 9 (10)

Q20 Of the people that live in your Lummi Island household, how many are ages 6 to 17?

▼ 0 (1) ... 9 (10)

Q21 Of the people that live in your Lummi Island household, how many are ages 18 to 65?

▼ 0 (1) ... 9 (10)

Q22 Of the people that live in your Lummi Island household, how many are ages 65 and older?

▼ 0 (1) ... 9 (10)

Q23 In an evacuation, which, if any, pets or livestock would you plan to evacuate with? (Check all that apply)

- ☐ Dog(s) (1)
- ☐ Cats(s) (2)
- ☐ Small livestock (e.g. rabbit, chicken, goat) (3)
- ☐ Large livestock (e.g. sheep, horse) (4)
- ☐ Other (6)

Q24 About how many months per year is someone in your home?

- ☐ Less than a month (1)
- ☐ 1-4 months (2)
- ☐ 5-9 months (4)
- ☐ 9 to 12 months (5)
- ☐ Full time residence (6) Q25 What is the primary use of your home?
- ☐ owner occupancy (1)
- ☐ long-term rental (2)
- ☐ vacation/short-term rental (3)

Q26 Is there anything else you'd like to tell us about emergency/disaster preparedness or evacuation planning?

Appendix 2: Question Response Tables

Q2: In which area of Lummi Island do you live? (N=142)		
Options	Count	Percent
West Shore	24	17%
Centerview	24	17%
Scenic Estates	24	17%
Granger Way	19	13%
Center Island	15	11%
North End / Point Migley	11	8%
The Spit	12	8%
Legoe Bay	9	6%
Seacrest and Sunrise Cove	4	3%
Other	0	0%
Total	142	100%

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Q3: How many people live in your Lummi Island household? (N=138)		
Option	Count	Percent
1	29	21%
2	79	57%
3	9	7%
4	15	11%
5	2	1%
6	2	1%
7	1	1%
8	0	0%
9	1	1%
Total	138	100%
Average ppl/house	2.3	

Q4: Which of the following actions has your household taken to prepare for a disaster? (Select all that apply) (N=138)		
Option	Count	Percentage

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Have residential insurance	117	85%
Have emergency supplies set aside	93	67%
Have money set aside for emergencies	85	62%
Safeguarded important documents	78	57%
Know the planned evacuation routes	75	54%
Made improvements to protect your home	74	54%
Signed up to receive emergency alerts	64	46%
Have an emergency plan	62	45%
Have a plan to contact family members	54	39%
Have a plan to communicate with neighbors	54	39%
Volunteered to help community prepare	41	30%
Participated in emergency drills	24	17%
Total	138	

Q5: How many of your immediate neighbors do you know well? Please answer in households, not individuals. (N=140)		
Option	Count	Percent
None	3	2%
A few (1-3)	26	19%
Several (4-9)	61	44%
Many (10+)	50	36%
Total	140	

Q6. Please answer each of the following questions regarding your neighborhood connections.				
	N	Frequency		
		Yes	No	Unsure/don't know
Have you and your neighbors discussed a plan to help each other in an emergency?	136	51 (38%)	72 (53%)	13 (10%)
Have you participated in a Map Your Neighborhood meeting?	133	49 (37%)	75 (56%)	9 (7%)

Q7 & 8. In a large-scale disaster or emergency affecting the region, how soon would you expect the following entities to respond to your emergency needs?										
	N	Frequency								
		1-2 hours	2-4hrs	4-8hrs	8-24hrs	1-3days	3-7days	1-2 weeks	2+ weeks	Not at all
The local fire district on Lummi Island	138	42 30%	22 16%	10 7%	27 20%	22 16%	8 6%	3 2%	4 3%	N/A
Off-Island authorities (Sheriff, Coast Guard, FEMA, or similar)	135	8 6%	7 5%	12 9%	13 10%	31 23%	22 16%	21 16%	14 10%	7 5%

Q9: In the event of a disaster or emergency, who else would you expect support from? (Select all that apply) (N=138)		
Option	Count	Percent
My Lummi Island friends and neighbors	121	88%
Myself and household	113	82%
Insurance company	70	51%
My off-island friends or family	66	48%

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Nonprofit organizations off island (for example Red Cross)	60	43%
Faith-based organizations on Lummi Island	46	33%
Lummi Nation tribal government	5	4%
Other:	5	4%

Q10. Would your household require assistance with transportation to leave your home in an evacuation? (N=137)		
Option	Count	Percent
Yes	11	8%
No	108	79%
Don't know	18	13%

Q11. Injuries and post-surgery recovery can temporarily limit the mobility of members of your household. In this scenario, what assistance would your household need to evacuate to an on-island assembly area? (N=137)		
Option	Count	Percent
Our household would be able to self-evacuate	95	69%
Our household may not be able to self-evacuate, but we have a plan with neighbors	11	8%

Our household would require temporary transportation assistance	18	13%
Don't know	13	9%

Q12: Of the people that live in your Lummi Island household, how many of the adults may be UNABLE TO WALK A MILE on uneven ground without assistance? (N=128)		
Option	Count	Percent
0	105	82%
1	17	13%
2	4	3%
3	0	0%
4	1	1%
5	0	0%
6	1	1%
7	0	0%
8	0	0%
9	0	0%
Total unable to walk	35	

Q13: Which of the following standalone utilities, if any, does your household have? (Select all that apply) (N=134)		
Option	Count	Percent
Propane tank	113	84%
Generator	88	66%
Private well	81	60%
Wood heat	77	57%
Rainwater catchment	29	22%
Solar panels	23	17%
Backup batteries for solar panels	10	7%
Other:	1	1%

Q14. How long can you provide for your own household's needs with no outside assistance or reliance on public utilities?

	Frequency (%)				
	N	Less than one day	One day to a week	1-2 weeks	More than 2 weeks
Food supplies	137	0 (0%)	29 (21%)	49 (36%)	59 (43%)
Drinking water	137	10 (7%)	45 (33%)	40 (29%)	42 (31%)
Electricity	132	19 (14%)	50 (38%)	35 (37%)	28 (21%)
Heating	133	7 (5%)	18 (14%)	41 (31%)	67 (50%)
Medication	131	1 (1%)	7 (5%)	36 (27%)	87 (66%)

Q15. Which of the following vehicles does your household have? (N=136)

Options	Count	Percentage
Passenger car	104	76%
Truck or SUV	101	74%
Bicycle	66	49%
Boat (1-5 passengers)	30	22%
Motorcycle	17	13%
Boat (6 or more passengers)	10	7%
Other	10	7%

Q16. Which of the following tools or equipment does your household have? (N=136)

Options	Count	Percentage
Shovels and buckets	131	98%
First aid kit	122	91%
Chainsaw	103	77%
Large tent, canopy, or sunshade	91	68%
Camp stove with fuel	87	65%
Weather radio	71	53%
Satellite phone	14	10%
Other	9	7%
Average # of "Yes" items	4.4	

Q17. Which of the following first responder skills do you or your household possess? (N=118)

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Options	Count	Percentage
First Aid	99	84%
CPR	84	71%
Wilderness first aid	22	19%
Search and Rescue	20	17%
EMT Training	19	16%
Other	18	15%
Firefighting	17	14%
CERT	14	12%
Incident Command training	12	10%
Average # of "Yes" items	2.1	

Q18. Which of the following community support skills do you or your household possess? (N=116)

Options	Count	Percentage
Food preparation/service (large volume)	78	67%
Small boat operation	60	52%
Childcare	56	48%
Construction	51	44%
Crowd control	32	28%
Other	14	12%

Q19-22. Of the people that live in your Lummi Island household, how many are: (N=134)

Options	Count	Percentage
Ages 0-5	6	2%
Ages 6-17	32	10%

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Ages 18-65	120	39%
Ages 65 and older	150	49%
TOTAL	308	100%

Q23. In an evacuation, which, if any, pets or livestock would you plan to evacuate with? (N=142)

Options	Count	Percentage
Dog(s)	54	38%
Cats(s)	29	20%
Small livestock	5	4%

Q24. About how many months per year is someone in your home? (N=131)

Option	Count	Percent
Full time residence	96	73%
1-4 months	13	10%
5-9 months	11	8%
9 to 12 months	10	8%
Less than a month	1	1%

Q25. What is the primary use of your home? (N=135)

Option	Count	Percent
Owner-occupancy	125	93%
Long-term rental	5	4%
Vacation/short-term rental	5	4%

Is there anything else you'd like to tell us about emergency/disaster preparedness or evacuation planning?

Qualitative Notes from Team:

- Residents indicated Scenic Estates had less money and fewer vacation properties than the rest of the island
- Lots of concerns about single routes in/out of neighborhoods
- Self-designed and self-built homes common

FULL COMMENTS LIST FOLLOWS:

We have long intended to devise plans with neighbors, acquire rations, and plan primarily for a devastating earthquake. We have not done so! We would really love any community preparedness meetings or workshops that might help us come up with important considerations and tangible steps to set ourselves and our neighbors up for the best possible outcome. Thank you so much

let's go!!!

Classes in this were long ago. We all need to revisit in our neighborhood groups with experienced instructors!

Current member of Lummi Fire Department.

Need a public dock near ferry landing.

Create and update family plans every year.

I have a HAM license

Biggest concerns are **fire and need to evacuate by boat**, for ourselves and 2 big dogs

Nope

Ferry worker

Nothing

"I think it would be valuable to have a list of heavy equipment operators and owners- could be very helpful for fires and earthquakes. Also a list of folks who have holding tanks for their wells- these could be sources of water even without electricity. "

no

Would be good to better understand what the meaning is when the siren goes off. There's no way to tell right now if it is a disaster warning.

Have first hand experience with hurricanes, tornadoes, wildfires and earthquakes. Would love more islanders to be prepared. I have given preparedness presentations (and post-disaster recovery). If I can help, please contact

No

I do worry about how we could all get off the island in case of fire, etc. or in case of earthquake damage to ferry docks.

Without my car, I would need help evacuating.

We both have HAM licenses

Community areas should meet more often

The ferry is not adequate for getting residents off the island. On normal days we could leave our house 10 minutes before the ferry was scheduled to leave and be able to catch the ferry. Now we need at least two hours. Also, if the Lummi Nation land floods, we have no way to drive to get to Bellingham.

Boating to exit

Encourage participation in disaster drills (practice for whole community).

"As far as I am aware, there are no formal evacuation routes other than for tsunamis. On demand generator capacity is unknown at this time for extended period of use to provide power for heat, lights & appliances. **I'm aware if supply lines are damaged from propane tank, propane tank to generator, it could not be safely used. it would not be of use. "**

Water storage, always stored, 2500 gal.

Very community oriented down here, homeowners been here for 50+ years

As a Christian she is in good hands

No

Only one road out in case of forest fire. Worries me.

The island lacks a public dock; it would go a long way towards making evac / supply runs easier, and could be used by the tourism office for additional revenue

Nope!

No

You're doing a great job making the survey.

I used to be on a neighborhood CERT team but I don't think the fire department runs that program anymore and I **wish they did/it brings new neighbors etc together**

Need a good evacuation route

Thanks and good luck

I do not support the concept of full island evacuation but rather support the shelter in place concept.

