CHAPTER 16

Transportation

New here? Ready, Set, Ready is a 10-minute starting point: an honest assessment, one gap closed for real, then a map for using the rest of this site. Once something's actually happened, Surviving picks up where this chapter leaves off, organized by chronology instead of category. Curious how Tier, Stage, and Phase relate? See the Glossary.

Why This Category Matters

Nearly every other chapter assumes the household can actually get somewhere: to a pet-friendly shelter, an alternate dialysis center, a rally point with neighbors, or simply away from danger. A full pantry and a broken-down car in the driveway is still a stranded household. Transportation is the connective tissue between every other category's plans and the physical ability to execute them.

As with the Access & Functional Needs chapter, adapt this to your household's actual situation: vehicle type, whether anyone can't drive, and whether animal power or a bicycle is realistic on your specific property and terrain.

Stored vs. Produced (a Partial Fit Here)

The same stored-versus-produced shift that runs through this manual's other chapters applies here too, though less cleanly: Tier 1 is Stored, a working vehicle and passable roads, used as-is. Tier 2 is the transition, fuel and service become unreliable, and the household shifts from occasional maintenance to active upkeep plus a non-fuel backup. Tier 3 is where most chapters reach a clean Produced stage, full production; transportation only gets there partially. The tier's own goal is mobility "without reliable commercial fuel or vehicle service infrastructure," and it depends on household skill and stored spare parts as much as on genuine alternative power. Biodiesel and wood gas are real, but advanced and household-dependent, not a default outcome the way growing your own food is. Tier 4 pools that same partial capability at community scale. Worth being direct about: for most households, this chapter's Tier 3 stretches and repairs what exists longer than it produces something wholly new.

Tier 1: Short-to-Medium Term (Hours – 14 Days)

Goal: Stored: using what's already available. Ensure immediate vehicle readiness and safe route planning for evacuation or reaching resources when normal traffic infrastructure and road conditions are disrupted.

Tier 1 assumes the household still has a working vehicle and passable roads most of the time, but conditions (weather, debris, congestion, a specific hazard) can make any single route or method of travel unreliable without warning.

Skills to Build

- **Vehicle Readiness Habit:** Never let the fuel tank drop below half. Treat "half a tank" as the new empty. This single habit means a sudden evacuation never starts with a trip to a gas station that may be out of fuel, without power, or has a line around the block.
- **Multi-Route Planning:** Identify at least two evacuation routes from home in different directions, not just the fastest normal-conditions route. A single route can be blocked by debris, flooding, or traffic exactly when it's needed most. Tie this to the Communication chapter's two meeting-point plan.
- **Hazard Recognition While Driving:** Know when not to drive: never cross a flooded road (see the Shelter & Structural Safety chapter's "Turn Around, Don't Drown" guidance; vehicles are swept away in surprisingly shallow moving water), treat any downed power line as energized and stay in the vehicle away from it, and reduce speed drastically or stop in heavy wildfire smoke rather than driving on reduced visibility.
- **Traction Law Compliance:** Understand Utah's Traction Law (Administrative Rule R920-6) before winter storms hit, not during one. When active: AWD/4WD vehicles need mud-and-snow (M+S) tires at minimum, or chains/snow socks/3-peak-mountain-snowflake (3PMSF) tires; 2WD vehicles need 3PMSF tires at minimum, or chains on at least two drive wheels. The Cottonwood Canyons have a stricter "Class 3" designation with additional tread-depth requirements when warning beacons are flashing.

▸ GO DEEPER

The **Transportation Addendum** builds these into real, tested competency.

For the hands-on how-to:

Vehicle Emergency Kit & Roadside Basics | Land Navigation Without GPS

Basic Bicycle Maintenance & Repair

Tech & Equipment

- **Vehicle Emergency Kit:** Jumper cables or a portable jump-starter pack, a tire repair/plug kit, a portable air compressor, a tow strap, and an ice scraper/snow brush, kept in the vehicle year-round, not just when winter weather is forecast. See the Vehicle Emergency Kit & Roadside Basics skill guide for how to actually use each piece.
- **Traction Devices:** Tire chains or snow socks matched to your specific vehicle and tire size, purchased and test-fitted in your driveway in advance. Chain sizes sell out fast once a storm is forecast, and the first fitting should never be on the side of a canyon road in the dark.
- **Basic Tools:** An adjustable wrench, a basic screwdriver set, and a flashlight/headlamp kept in the vehicle, shared principle with the Energy & Heat chapter's equipment list.

Materials & Supplies

Item	Quantity / Spec	Notes
Vehicle 72-hour kit	Water, non-perishable food, blanket, first aid	A vehicle-specific version of the Water, Food, and Medical Care chapters' kits; don't assume the house go-bag will always be with the car. See the Go-Bags & 72-Hour Kits skill guide for the full list and how to size a get-home bag specifically.
Paper maps	State + county, kept in the vehicle	Same principle as the Communication chapter's physical maps; useless if left at home when the car is what's stranded.
Winter driving supplies	Ice melt/sand, blankets, hand warmers	For traction on ice under tires and for waiting out a breakdown in cold weather.

WARNING

Two Rules Worth Never Breaking Behind the Wheel

Never drive across a flooded road; vehicles are swept away in surprisingly shallow moving water. And treat any downed power line as energized no matter how it looks, staying in the vehicle away from it rather than getting out to move it or check.

Northern Utah Note

Traction Law enforcement is real, not just a suggestion. Utah Highway Patrol and local law enforcement can and do cite vehicles that don't meet the posted requirements, and being turned away at a canyon checkpoint during a storm is a common, avoidable failure. Check current requirements directly at udottraffic.utah.gov before any winter mountain drive, since specific canyons and roads activate the rule independently based on conditions.

Quick Checklist

- [ ] Fuel tank habitually kept above half
- [ ] At least two evacuation routes identified from home, in different directions
- [ ] Every driver in the household knows the flooded-road and downed-power-line rules
- [ ] Traction devices matched to each vehicle, purchased and test-fitted before winter
- [ ] Vehicle emergency kit (jumper cables, tire kit, tow strap) in every vehicle
- [ ] Vehicle-specific 72-hour kit packed and current
- [ ] Paper maps kept in the vehicle, not just at home
- [ ] Practiced: driven at least one alternate evacuation route to confirm it's actually passable

Tier 2: Extended (2 Weeks – 3 Months)

Goal: *The stored-to-produced transition, fuel and service become unreliable. Maintain personal transportation capability when fuel is scarce and normal vehicle service or repair isn't available.*

Tier 2 assumes fuel and vehicle service are unreliable for weeks at a time. The household shifts from occasional maintenance to active upkeep, and adds non-fuel-dependent transportation as a genuine backup rather than a novelty.

Skills to Build

- **Basic Vehicle Maintenance:** Check and top off fluids, inspect belts and hoses for cracking, and clean battery terminals. Most roadside breakdowns come from a handful of preventable causes, and catching them early beats fixing them stranded.

- **Fuel Management & Safety:** Never siphon fuel by mouth. Swallowing or aspirating gasoline is a genuine poisoning risk that can cause severe chemical pneumonitis and has killed people who tried it; use a manual siphon pump instead, which costs under $15 and removes the risk entirely. For stored fuel, follow the Energy & Heat chapter's stabilization and rotation guidance.
- **Alternate Route Navigation:** Practice navigating with paper maps and landmarks rather than GPS. Cross-reference the Communication chapter's map-reading skill, applied specifically to driving routes rather than on-foot evacuation. See the Land Navigation Without GPS skill guide for map-and-compass technique.
- **Bicycle as Backup Transport:** Basic bike maintenance (tire repair, chain lubrication) and safe technique for riding while hauling cargo: a genuinely practical fuel-free option for short-to-medium trips once the skill and the right equipment are in place. See the Basic Bicycle Maintenance & Repair skill guide for the actual repair steps.

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Tech & Equipment

- **Basic Mechanic Tool Kit:** Ideally sized to your specific vehicle make/model. Many auto parts retailers sell kits matched to common models.
- **Manual Fuel Transfer Pump:** For safely moving fuel between containers or into a tank. Never mouth-siphon, per the safety note above.
- **Bicycle with Cargo Capacity:** Panniers or a small cargo trailer, sized to actually haul meaningful supplies, not just commute empty-handed.
- **Bike Repair Kit:** Tire levers, a patch kit, a spare tube, and a compact pump.

Materials & Supplies

Item	Quantity / Spec	Notes
Stabilized fuel reserve	See Energy & Heat chapter for quantities	Cross-reference rather than duplicate; this chapter and Energy & Heat draw from the same stored fuel.
Spare vehicle parts	Belts, fuses, essential fluids	Matched to your specific vehicle's actual maintenance schedule.
Bicycle spare parts	Tubes, chain links, brake pads	Cheap insurance against a bike being the one thing standing between the household and mobility.

WARNING

Never Siphon Fuel by Mouth

Swallowing or aspirating even a small amount of gasoline is a genuine poisoning risk that can cause severe chemical pneumonitis, and it has killed people who tried it. A manual siphon pump costs under $15 and removes the risk entirely; keep one with your fuel-transfer supplies and don't rely on the mouth-siphon method you may have seen demonstrated casually.

Electric Vehicles: A Different Set of Constraints

EVs remove fuel-storage concerns entirely but trade them for others: AAA testing shows EVs lose roughly 30–40% of range in 20°F weather, largely from cabin heating draw. A real planning factor for Utah winters, not a minor inconvenience. Plan charging stops more frequently in cold weather (roughly every 100–120 miles rather than 150–180), and if a home solar setup is part of your Energy & Heat chapter plan, understand whether it can actually charge a vehicle during a grid outage; most home solar systems without a specific EV-charging configuration cannot, even if they power other things in the house.

Quick Checklist

- [ ] Household can perform basic fluid/belt/battery maintenance checks
- [ ] Manual fuel transfer pump on hand; mouth-siphoning understood as genuinely dangerous, not just discouraged
- [ ] At least one household member comfortable navigating by paper map alone
- [ ] Bicycle(s) with cargo capacity maintained and ready

- [ ] Bike repair kit assembled and basic repair skill practiced
- [ ] EV owners: cold-weather range and charging-stop planning adjusted for winter
- [ ] Practiced: completed a real trip using only bicycle transport to confirm the setup actually works

Tier 3: Permanent (Indefinite)

Goal: *Produced (partial): skill and stored parts stretch mobility further than production replaces it. Sustain mobility without reliable commercial fuel or vehicle service infrastructure.*

Tier 3 assumes no more fuel deliveries and no mechanic to call. Transportation capability now depends entirely on household skill, stored parts, and, for some households, genuinely alternative power sources for movement.

Skills to Build

- **Advanced Vehicle Repair:** Diagnose and repair common failure points (starter, alternator, fuel pump, ignition system) at a household level. A real skill that takes deliberate study and practice now, not something to learn for the first time when it's the only running vehicle left.
- **Alternative Fuel Knowledge:** Biodiesel (processed from used cooking oil) and wood gas (a real, historically proven technology: "producer gas" vehicles were common across fuel-starved WWII-era Europe) are both genuine options, but both are technically demanding and require real study and practice before relying on them. Treat this as an advanced skill to research and build toward now, not a casual weekend project.
- **Animal-Powered Transport:** If you're raising draft animals as part of the Food chapter's Tier 3 livestock plan, basic handling, harnessing, and tack maintenance is a real, learnable skill worth building deliberately for a rural Utah property.
- **Land Navigation:** Dead-reckoning and terrain-reading without GPS or maintained roads. A genuinely different skill than following a paper map on existing roads. See the Land Navigation Without GPS skill guide for map-and-compass technique, pace counting, and which natural-navigation tricks actually work.

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Tech & Equipment

- **Advanced Tool Set:** Engine-level repair tools, not just roadside-emergency basics.
- **Draft Animal Tack:** Harness and related equipment, properly fitted and maintained, if pursuing animal-powered transport.
- **Maintained Bicycle/Cart System:** As a reliable primary transport method, not just a Tier 2 backup.
- **Small-Scale Alternative Fuel Setup:** A wood gasifier or biodiesel processing setup, if pursuing that path. Genuinely advanced equipment that assumes the skill above is already developed, not equipment to buy and figure out later.

Materials & Supplies

Item	Quantity / Spec	Notes
Comprehensive spare parts stockpile	Belts, hoses, filters, fluids, common wear parts	Sized against your specific vehicle's actual failure history, not a generic list.
Animal feed reserve	If using draft animals	Cross-reference the Food chapter's livestock feed guidance.
Detailed regional maps	Physical, covering beyond the immediate county	For land navigation beyond the range of daily paper maps.

Quick Checklist

- [ ] Household can diagnose and repair common vehicle failure points
- [ ] Alternative fuel option (biodiesel/wood gas) researched and, if pursued, actually practiced, not just equipment on a shelf
- [ ] Draft animal handling and tack maintenance skills built, if applicable
- [ ] Land navigation practiced without GPS or maintained roads

- [ ] Comprehensive spare parts stockpile matched to actual vehicle needs
- [ ] Practiced: completed a real repair on a household vehicle using only stocked parts and tools

Tier 4: Sustainable Community

Goal: *Produced (partial), at community scale. Build community-scale transportation resilience so mobility doesn't depend on any single household's vehicle, fuel reserve, or mechanical skill.*

A single household's Tier 3 transportation plan is still one vehicle, one skill set, and one fuel reserve. A breakdown or empty tank leaves that household stranded regardless of how well-prepared they were individually. Tier 4 pools transportation capability the same way earlier chapters pool medical, security, and energy capability.

A shared fuel depot or a pooled tractor and trailer are worth real coordination for a neighborhood with genuine shared risk, a flood-prone area needing debris-clearing equipment, a long rural evacuation route everyone shares, not for a scattering of households with no real overlap in need. Ask concretely: how many households would actually draw on shared equipment or fuel, and does anyone genuinely have the equipment, storage space, and willingness to steward it, before building a depot or roster around a need that isn't actually there.

Choosing an Approach

Three real models exist, and they fit different circumstances.

Approach	What it is	Fits when
Informal route coordination	Shared evacuation routes and rally points, no shared fuel or equipment	A small trusted group, or little real overlap in equipment need
Shared equipment pool	A tractor, trailer, or similar heavy equipment shared under a written agreement, no shared fuel storage	A few households with real, complementary equipment and a willing steward
Shared fuel depot	Pooled fuel storage with agreed access rules, cross-referenced with the Energy & Heat and Economic & Financial chapters	Genuine shared need, real storage capacity, and someone willing to navigate the real regulatory requirements below

WARNING

Stored Fuel Above a Modest Quantity Triggers Real Fire-Code Requirements

Permits, specific container and construction standards, defined by your local fire code, not a single national number, and local amendments vary enough that a neighboring town's rule doesn't necessarily apply to yours. A shared depot that grows past what any one household would store on its own can cross that line without anyone deciding it should. Check with your local fire marshal before building a shared fuel depot of any real size, not after.

Skills to Build

- **Community Route & Evacuation Planning:** Coordinate evacuation routes and rally points across the neighborhood in advance. Building directly on the Security & Self-Defense chapter's community pact, so the household's individual route plan is backed by a shared one.
- **Teaching and Professional Certification:** ASE (Automotive Service Excellence) is the recognized national standard for automotive technicians, typically pursued after an accredited program plus a year of industry experience for the highest level. A national bicycle mechanic certification program covers wheel building, cable and housing sizing, brake adjustment, and fit through written and hands-on testing, for bike mechanics specifically. Teach vehicle and winter-driving safety to your own neighborhood, too: a short, practiced walkthrough of basic maintenance checks and traction-device installation, taught to several neighbors before winter each year, is a genuinely high-leverage, low-cost investment. Difficulty: High. Training: ASE certification or a national bicycle mechanic program. Cost: $$-$$$.
- **Distributed Mechanic Skills:** Train more than one person in vehicle repair, the same redundancy principle used for medical, radio, and caregiving skills throughout this manual.
- **Fuel Pooling & Rationing:** Establish a shared fuel depot with clear, agreed access rules. Cross-reference the Energy & Heat chapter's fuel storage and the Economic & Financial chapter's barter/trade framework for how access gets allocated fairly.

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Tech & Equipment

- **Shared Heavy Equipment:** A community-pooled tractor, trailer, or other heavy-hauling equipment. Expensive and often underused at the household level, genuinely useful shared.
- **Community Fuel Depot:** Shared, securely stored fuel reserve. Cross-reference the Energy & Heat chapter's storage guidance, scaled to serve multiple households.

Materials & Supplies

Item	Quantity / Spec	Notes
Community transport roster	Who has what vehicle, capability, and skill	The Mutual Aid Agreement template's household skill/equipment table is a real starting point, filled out with vehicle capability specifically.
Shared spare parts cache	Common wear parts across vehicle types in the community	Pooled resource beyond what any single household stocks alone.

Northern Utah Note

udottraffic.utah.gov provides real-time road condition, closure, and traction-law information statewide. Worth bookmarking at the household level now and treating as a standing community resource for coordinating shared routes and rally points.

Quick Checklist

- [ ] Community evacuation routes and rally points coordinated with neighbors
- [ ] Multiple community members trained in vehicle repair
- [ ] Shared fuel depot established with agreed access rules
- [ ] Shared heavy equipment (tractor, trailer) pooled and accessible
- [ ] Community transport roster maintained and current
- [ ] Local fire-code fuel-storage limits checked before any shared depot grows past household scale

- [ ] At least one household member pursuing ASE or bicycle-mechanic certification, if community need is real
- [ ] Practiced: a community route-coordination drill completed

At a Glance: Transportation Across All Tiers

A single-page reference for planning purposes. This does not replace the detailed guidance above; use it to see how the plan scales, not as a standalone checklist.

Tier	Mode	Duration	Transport Method	Key Constraint
Tier 1	Stored	Hours – 14 days	Personal vehicle	Route/hazard awareness, traction law
Tier 2	Transition	2 weeks – 3 months	Vehicle + bicycle backup	Fuel scarcity, no professional service
Tier 3	Produced (partial)	Indefinite	Self-maintained vehicle, animal power	No fuel supply chain, no mechanics
Tier 4	Produced (partial)	Sustainable community	Shared/pooled community transport	Distributed skill and fuel access