



Farm connectivity planning workbook

Page 1 of 8 — define the decision

Use this workbook before a site survey, vendor meeting, or internal decision. Fill in what you know and write **unknown** where a fact still needs checking. The finished workbook should give you a shortlist and a specific next step.

Keep sensitive details out of shared copies. Do not record passwords, access codes, public IP addresses, camera views, exact security-device locations, or credentials. Store provider and configuration records separately in a secured location.

This is a planning aid, not a coverage guarantee, utility locate, code review, electrical design, excavation plan, engineered radio design, or life-safety design. Contact [Kansas 811](#) before excavation. Use qualified contractors and electrical guidance where the work requires them.

Project: _____ Date: _____
Farm/business: _____ County: _____
Decision owner: _____ Target date: _____

The job in one sentence

We need to connect _____ to _____ so that

What connection is actually needed?

Check all that apply; circle or mark the primary job.

- ☐ Extend the main office/farm local network (LAN) to another building
- ☐ Give the remote building its own internet connection
- ☐ Provide backup if the primary connection fails
- ☐ Reach selected office systems through a secure routed or VPN design
- ☐ Unknown; a network designer must classify the job

A bridge or fiber commonly extends a LAN. Cellular and Starlink commonly provide independent internet. Separate internet services do not automatically create one shared LAN.

Site and permission snapshot

Building/site	Owner or tenant	Permanent, seasonal, temporary, or backup	Mount/route permission needed?
Main:			
Remote:			
Other:			

Exterior-mount approval by: _____

Route/excavation approval by: _____

Lease, easement, shared-property, or access limit:

Timing and change

- ☐ Permanent need
- ☐ Seasonal need; active months: _____
- ☐ Temporary through: _____
- ☐ Backup only
- ☐ Construction/trenching is already planned
- ☐ Future bins, buildings, roads, drainage, or electrical work may affect the site
- ☐ Crop rotation, full crop height, or mature foliage may change a radio path

Decision deadline and reason: _____

Future change that the design must allow for:



Page 2 of 8 — inventory the work and outage cost

List work and device groups, not passwords or detailed security information.

Building	System/work	Users or devices	Needs main LAN, internet only, or unknown?	Busy period	Local/offline option?
	Cloud/office software				
	Office server/storage/printer				
	Cameras/NVR				
	Scale/POS/production				
	Phones/access/sensors				
	Livestock/environmental system				
	Staff/guest Wi-Fi				
	Other:				

Current main-site provider: _____

Current remote-site provider, if any: _____

Current usage known from provider/router records? ☐ Yes ☐ No

Peak season or busiest hours: _____

Upload, camera, backup, or data-volume concern: _____

Current and future requirements

Requirement	Needed now	Needed in 1–3 years	How will it be measured or confirmed?
Main-LAN access	☐	☐	
Cloud/internet access	☐	☐	
Continuous camera traffic	☐	☐	
Large uploads/backups	☐	☐	
Remote vendor access	☐	☐	
Guest/business separation	☐	☐	
Addressing/central management	☐	☐	
Backup path	☐	☐	

What does an outage do?

Outage	Work that stops or degrades	Consequence	Safe local/manual workaround	Recovery target
15 minutes				
1 hour				
1 day				

Overall consequence: ☐ Low ☐ Moderate ☐ High ☐ Safety-sensitive

A safety-sensitive system requires its own manufacturer-approved local fail-safe and operating plan. A general-purpose network or internet service must not be represented as its only safe control.

Systems needing a separate fail-safe or vendor review: _____

Manual/offline procedure owner: _____



Page 3 of 8 — map the site and radio path

Site sketch

Draw buildings, north, roads, concrete, drainage, trees, fields, bins, elevators, utility areas, equipment parking, possible cable routes, and possible radio endpoints. Use an approximate scale. Keep sensitive security details off broadly shared copies.

Mark north, the main and remote buildings, approximate distance, possible routes, obstructions, and future construction.

Building-to-building path

Main endpoint: _____ Remote endpoint: _____

Approximate distance and measurement method: _____

Proposed main mount: _____ Proposed remote mount: _____

Safe year-round access to both? ☐ Yes ☐ No ☐ Unknown

Visible from ground-level endpoint areas? ☐ Yes ☐ No ☐ Not checked

Visible rooftops do not prove a usable bridge path. A survey must check terrain and clearance around the direct line, including the Fresnel zone.

Mark every factor that exists now or could exist during the system's life:

- ☐ Leaf-on or mature trees
- ☐ Full expected crop height / seasonal crops
- ☐ Grain bins, elevators, roofs, or terrain rise
- ☐ Parked semis, combines, or movable equipment
- ☐ Planned structures, bins, or utility work
- ☐ Wind exposure or possible mount movement
- ☐ Utility poles or overhead lines
- ☐ Path still requires modeled and field-verified clearance

Worst-season path condition: _____

Parking, traffic, or future-obstruction concern: _____

Endpoint environment

Condition	Main end	Remote end	Unknown/action
Metal siding or roof			
Dust, moisture, washdown, chemicals			
Livestock/rodent exposure			
Doors, sharp edges, vehicle impact			
Protected indoor equipment space			
Reliable power			
Safe service access in bad weather			

Ground-level photos collected and labeled? ☐ Yes ☐ No

Photo/sketch file location: _____

Do not climb a roof, pole, bin, or tower for this worksheet. Keep mounts and work away from overhead lines; use safe access and qualified people for elevated inspection.



Page 4 of 8 — check the fiber route and excavation boundary

Complete this page if fiber remains a candidate. **Do not excavate from this worksheet.**

Proposed route start/end: _____

Approximate length and measurement method: _____

Who owns or controls the whole route? _____

- ☐ Route is shown on the site sketch
- ☐ Ownership and permissions are confirmed
- ☐ Easement/right-of-way questions are resolved
- ☐ Future grading, post driving, drainage, and construction were considered
- ☐ Existing construction may allow coordinated conduit work
- ☐ Alternate route should be assessed
- ☐ Route authority or feasibility remains unknown

Route conditions

Condition/crossing	Location or extent	Installer/contractor question
Road, drive, or pavement		
Drainage, ditch, or creek		
Heavy-equipment/livestock area		
Rock, difficult soil, or terrain		
Fence, gate, or future construction		
Other:		

Utilities, excavation, and records

Kansas 811 status:

- ☐ No excavation is scheduled
- ☐ Request is required before excavation
- ☐ Request submitted; reference: _____
- ☐ Public locates completed; responsible contractor will verify status and timing

Public locates may not identify private farm utilities. Mark items requiring separate investigation:

- ☐ Private electrical feeds
- ☐ Water lines
- ☐ Propane/fuel
- ☐ Drainage/irrigation
- ☐ Existing communications/camera cable
- ☐ Old or undocumented wiring
- ☐ Other: _____

Private-utility responsibility assigned to: _____

Excavation/boring contractor or responsible party: _____

Permit/authority question: _____

Restoration owner: _____ As-built record owner: _____

Questions the fiber scope must answer

- ☐ Installation method fits soil, route, crossings, and exposure
- ☐ Cable, conduit, handholes, and enclosures fit the application
- ☐ Pulling, termination, optics, labeling, and testing are included
- ☐ Spare conduit or strands were considered
- ☐ Endpoint switches, power, and electrical protection are included
- ☐ Route locating, repair access, and documentation are included

Installer questions:



Page 5 of 8 — validate cellular and Starlink at the site

Fixed cellular field record

Coverage maps screen carriers; they do not promise service in a metal building. Test the proposed router or antenna area when practical, and repeat during relevant operating periods.

Carrier	Exact location	Indoor/outdoor	Date/time	Device/method	Result/observation	Repeat?

- ☐ [FCC National Broadband Map](#) checked by carrier
- ☐ More than one carrier screened if continuity matters
- ☐ Proposed indoor router and external antenna areas evaluated
- ☐ Metal walls/roof, terrain, foliage, antenna cable, and busy-hour conditions considered
- ☐ Address eligibility and current plan availability confirmed
- ☐ Data/priority treatment and expected workload confirmed
- ☐ Addressing, remote access, monitoring, and reboot needs confirmed
- ☐ Results remain unknown; a proper field test is assigned

Cellular vendor questions or unresolved test:

- _____
- _____

Starlink site record

Service address/location: _____

Proposed mount: _____

- ☐ Current address/service availability checked
- ☐ Starlink app obstruction scan run at the proposed mount
- ☐ Scan date/result saved with project records
- ☐ Leaf-on trees, crops, bins, elevators, roofs, and future construction considered
- ☐ Secure mount and safe future service access are feasible
- ☐ Cable route avoids damage, pinch points, and unsafe entries
- ☐ Protected indoor location and suitable power/UPS are available
- ☐ Current hardware specification and plan terms checked
- ☐ Recurring cost, priority treatment, and intended use confirmed
- ☐ Obstruction, mounting, or access still requires site review

Obstruction result/file: _____

Starlink vendor questions:

- _____
- _____

If the building gets independent internet

Select the intended design:

- ☐ Internet only; office LAN resources are not required
- ☐ Selected office resources through a secure routed/VPN design
- ☐ Backup internet for this building or site
- ☐ Unknown; network design is required

Office systems that must cross between networks:

Who will configure, secure, document, and maintain access? _____

A routed or VPN design depends on both internet services. Record that dependency on page 6 and include its administration in the cost comparison.



Page 6 of 8 — trace power, support, and shared failures

Follow the powered chain

List only devices that apply. A backup path is unavailable if one shared, unprotected device fails.

Device/location	Power source	UPS/generator?	Required runtime	Reboot method	Monitor/alert owner
Main modem/router/switch					
Main bridge/fiber endpoint					
Remote bridge/fiber endpoint					
Remote router/switch					
Cellular or Starlink equipment					
Critical application/device					

Complete network chain tested on generator/UPS? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Action/owner: _____

Electrical, physical, and service boundaries

- ☐ Qualified grounding/bonding/surge reviewer assigned: _____
- ☐ Manufacturer instructions and adopted codes will be followed
- ☐ Fiber endpoints and every powered device stay in the electrical review
- ☐ Entries and exterior-to-interior transitions will be protected
- ☐ No isolated ground rod is being copied from an internet diagram
- ☐ Mounts/cables avoid overhead lines, equipment, doors, livestock, washdown, chemicals, and impacts
- ☐ Equipment can be serviced safely during likely outage conditions

Electrical review needed by: _____

The [National Weather Service ground-current resource](#) explains why lightning effects extend beyond a direct strike. Installation-specific grounding, bonding, surge protection, and safe-access decisions belong with qualified people.

Ownership and support

Responsibility	Name/company	Contact stored securely at	Response/lead time
Network/configuration			
Provider account			
Electrical work			
Mount/roof access			
Fiber/excavation repair			

Configuration backup location (secured): _____

As-built drawings and test records: _____

Spare equipment or expected repair lead time: _____

Shared dependency check

If primary and backup are planned, check anything both rely on:

- ☐ Utility power, UPS, or generator
- ☐ Mast, roof area, exterior cable route, or entry
- ☐ Indoor switch, router, or configuration
- ☐ Office internet circuit or upstream carrier
- ☐ Building access, one credential, or one responder
- ☐ Shared dependencies are still unknown

Shared failures that most needs correction or an accepted risk:



Page 7 of 8 — compare complete cost and fit

Use current written quotes and provider terms. Mark **unknown** rather than guessing. Evaluation period: _____ years.

Lifecycle cost

Cost/dependency	Bridge	Fiber	Cellular	Starlink
Survey/design and field tests				
Link/router/terminal/optics				
Mounts, antennas, enclosures, cabling				
Trench, conduit, crossings, restoration				
Electrical protection and backup power				
Installation, testing, permits, locates				
Monthly/annual service				
Monitoring/security administration				
Safe access, repairs, and replacement				
Documentation/training				
Backup connection/dependencies				
Evaluated-period total				

Quote dates/sources: _____

Cost or term awaiting confirmation: _____

Fit score

Score 0 = does not fit; 1 = major unknown/concern; 2 = workable with conditions; 3 = confirmed good fit. A score cannot override a safety problem or failed mandatory requirement.

Factor	Bridge	Fiber	Cellular	Starlink
Solves LAN vs. internet job				
Exact-site feasibility checked				
Current and future workload fit				
Outage/fallback need addressed				
Complete lifecycle cost accepted				
Safe installation/service path				
Farm controls route, mount, and terms				
Power/protection plan works				
Support and repair time accepted				
Documentation/monitoring owner exists				
Total / 30				

Mandatory conditions no option may fail:

1.



Page 8 of 8 — shortlist, failure plan, and next step

Option shortlist

- ☐ Wireless bridge remains because: _____
- ☐ Fiber remains because: _____
- ☐ Cellular remains because: _____
- ☐ Starlink remains because: _____
- ☐ Hybrid primary/backup remains because: _____
- ☐ No option is ready; site facts are still missing

Option eliminated	Site-specific evidence or failed requirement

Failure plan

Primary candidate: _____ Backup candidate: _____

Failure to test	What should continue?	Failover or local method	Who responds?	Test date/result
Main internet/link fails				
Remote service/link fails				
Power fails at either end				
Shared router/switch fails				
Cloud application/path unavailable				

Manual/local procedure stored at: _____

What will remain unavailable during failover?

Safety-sensitive system vendor review needed? ☐ No ☐ Yes: _____

- ☐ Local/manual behavior is documented
- ☐ Failover and return to normal will be tested in a controlled period
- ☐ Responsible operator knows the procedure
- ☐ General-purpose networking is not treated as a life-safety control

Vendor or installer questions

Ask	Answer/evidence
What exact site evidence supports the design?	
What is excluded from installed and recurring cost?	
What shared failures, access limits, or repair delays remain?	

Choose the next action

- ☐ Request a wireless path and mounting survey
- ☐ Request a fiber route/civil-work assessment
- ☐ Run documented multi-carrier cellular tests
- ☐ Complete a Starlink obstruction and installation review
- ☐ Obtain current installed-cost quotes for shortlisted options
- ☐ Design and test the primary/backup arrangement
- ☐ Resolve ownership, utility, electrical, safety, or permit questions first
- ☐ Delay the project and keep this record for future construction
- ☐ Proceed only after the conditions below are confirmed

Selected action: _____

Owner: _____ Due date: _____

Conditions to resolve first: