

Emergency Connectivity Fund Solution: Wi-Fi Bookmobile

When your community can't come to the library to use the public Wi-Fi, why not bring the internet to them? One way libraries provide internet access to under-connected communities is by delivering Wi-Fi access through bookmobiles or other vehicles like cars, busses, portable kiosks, etc.

This guide is meant to help libraries design, plan, and implement a Wi-Fi bookmobile program. The guide also includes an overview of what libraries need to consider when requesting funding through the FCC's Emergency Connectivity Fund (ECF) program. More ECF-eligible programming scenarios are available at www.ala.org/advocacy/ECF.

Goals

To support the online activities of community members who do not have access to affordable high-speed internet access in their homes, the Wi-Fi bookmobile will:

- Increase internet access in community areas where the service is not available.
- Enable students with devices to do research and complete homework.
- Allow users to search and apply for jobs.
- Allow community members to apply for social services.
- Allow community members to participate in activities related to our society, democracy, and the economy.

Pros

- Vehicles are (clearly!) mobile so they can go wherever the need is greatest, e.g. parks, grocery store parking lots, neighborhoods, etc.
- They are fairly easy to set up and support for the end user.

Cons

- Bookmobile (or other vehicle) must be in a location that is covered by the hotspot service provider.
- Limited number of devices can connect to the hotspot at a time. Check the hotspot and service provider to determine user limits.
- Depending on the hotspot coverage, users must be within approximately 30-300 feet of the hotspot to access the internet service.
- Service is only available for a limited amount of time at a given location (based on vehicle schedule).

- Some service providers throttle internet speeds once a certain amount of data has been used in a billing cycle. When this happens, internet speeds become slower and can take longer to complete tasks on the internet. (Libraries are encouraged to try and find an internet provider that has no data limits.)

Staff Skill Level Needed to Set Up Solution

Staff who select the cellular service provider need to understand specific terminology to select the plan and service provider(s) that best meets the programmatic goals. When selecting a provider these terms will be used in describing the terms of services of a cellular agreement: data limits, throttling, bandwidth, roaming, 5 GHz, 2.4 GHz, and LTE. The selector should also understand the basics of how cellular technology works and what physical barriers (e.g. tall buildings, thick walls, dense vegetation) could impact cellular signal coverage and strength.

After the contract is signed, additional terminology will be used that aids in tracking and troubleshooting hotspot issues. Those terms include: MEID (Mobile Equipment Identifier), MDN (Mobile Directory Number), and SIM (Subscriber Identity Module).

Staff who set up the program and/or those identified to troubleshoot connectivity issues need to understand these unique issues to determine if the hotspot is working correctly, or if there are external impediments to service or the patron's device. Examples include:

- Data limit incorrectly set.
- Incorrect hotspot settings are slowing down the internet connection.
- Physical barriers are reducing cell signals.
- Hotspot hardware is defective.
- Firmware or software update is required.

Staff Skill Level Needed to Support End Users

Questions and problems patrons experience are similar to those asked about Wi-Fi access in the library. If staff can address Wi-Fi questions with the library's connection, they should be able to troubleshoot hotspot issues on the bookmobile. For instance, if service slows down there are several issues that may be causing the service interruption.

- Has the data limit been reached for the service period, and therefore the data is throttled slowing the internet speed?
- Is there an impediment (such as a solid wall, a mountain, etc.) that could reduce the signal strength?
- Is cellular coverage limited in the area or is the signal weak, which can slow internet speeds?

- Is the device malfunctioning in some manner? To assist users with hotspots issues, staff need to have some training and familiarity with them. It's also a good idea to have a back-up hotspot that could be used if there's a malfunction.

Most service providers include direct end user support via a 1-800 number or web chat service. (Support should be a key factor when evaluating providers.)

Equipment Needed

- Hotspot
- Cellular service for the hotspot
- Bookmobile or similar type vehicle
- Possible antenna to boost the Wi-Fi signal
- Laptops or tablets available for those who do not have devices (optional). The ECF program may be used to reimburse for this cost. See [Laptop or Tablet Lending](#) solution for more information.

ECF Program Requirements

The Universal Service Administrative Company (USAC) is administering the ECF program. Listed below are some of the requirements library staff should be aware of as they develop a device lending program. An [ALA summary of the FCC's ECF Order](#) also provides direct references to key provisions referenced below.

Eligible Expenses

Applicants should review the program's [Eligible Services List](#) to ensure their request is compliant with the program rules. The list below highlights eligible expenses of interest:

- Physical hotspot (reimbursable up to \$250 per hotspot).
 - Includes any component from the manufacturer necessary for the equipment to operate, such as cords and chargers.
 - A manufacturer's multi-year warranty for a period of up to three years that is provided as an integral part of an eligible component, without a separately identifiable cost, is also eligible.
- Modems (e.g., air cards), routers, or services that combine a modem and router
- Mobile broadband Internet access services (i.e., data plan) for the hotspot.
- Mobile devices such as laptop or tablet (optional, reimbursable up to \$400 per device).

Activation, initial configuration costs, taxes, shipping charges, and other reasonable fees incurred with the purchase of the eligible equipment and services are eligible for support under the ECF program.

CIPA Compliance

The American Library Association created [The Emergency Connectivity Fund, E-rate, and CIPA Compliance](#) scenarios to help libraries determine if their ECF request needs to be compliant with the Children’s Internet Protection Act (CIPA) to meet program requirements.

Inventory Requirements

The ECF program requires libraries who receive funds from this program document eligible services and equipment. Applicants should review the program’s [Device and Service Inventory Requirements](#) to ensure their documentation is compliant with the program rules.

Libraries must retain their records to demonstrate compliance with all the ECF program rules for at least 10 years from the last date of service or delivery of equipment.

Certification of Need

The ECF requires that the user sign an acceptable use policy (AUP), that states the ECF equipment or service is intended only for patrons who do not have internet access sufficient to meet their needs. A library may enable this certification, for instance, via a splash page that opens when an end user logs in via their device.

How to Set Up the Program

For assistance in selecting a service provider see the guide [Selecting the Right Cellular Service Provider](#).

The number of hotspots needed will depend on various factors. These questions will help determine the number of hotspots needed:

- How many bookmobiles, or other vehicles, are available for this purpose?
- How many locations does each vehicle visit?
- How many people are likely to be at each location?
- How are people likely to use the internet service? Will they browse the internet or check email, which uses a small amount of data, or will they be attending video conference meetings or streaming media, which requires more bandwidth?
- How long does it take to get from one location to the next?

- How often will the bookmobile visit each location (once a week, two times a week, every day)?
- How long will the bookmobile stay at each location?

End user access

- The ECF requires a user to agree to an acceptable use policy (AUP), that states the ECF equipment or service is intended only for people who do not have internet access sufficient to meet their needs.
- Can anyone access the Wi-Fi, or library card holders only? Students only?

Option 1: Enterprise-Level Hotspot (Super Hotspot)

An enterprise-level hotspot can broadcast a Wi-Fi signal up to 300 feet, depending on the location. The range and number of people who can connect at once will depend not only on the equipment used but the strength of the cell signal at each location, number of devices attached to the hotspot at one time and how people are using the internet. Depending on the solution selected, between 10-100 people can connect at a time. For assistance in selecting a service provider see the guide [Selecting the Right Cellular Service Provider](#). While the enterprise level hotspot is usually more expensive than the consumer hotspot solution, it supports more devices, has a higher bandwidth capacity available, and the signal can broadcast greater distance—allowing the library to offer a more robust service.

1. Select the service provider. Be sure to explain to them how this service will be used to ensure that the plan supports the program goals.
 - a. Some vendors will offer bundles that include the necessary hardware (antenna, router, cellular service) and installation. If using the ECF, not all equipment, like the antenna, is an eligible expense. Can the library cover those expenses?
2. Purchase an antenna (if needed) that is compatible with the use case. It should be rated for outdoor use and support cellular service connections. Work with the service provider to ensure the equipment is compatible with their service.
3. Identify the power source for the equipment.
4. Install the equipment in a location that ensures it can receive and send unobstructed data signals but also in a place staff can access the hotspot to troubleshoot hardware issues.
5. Create a public Wi-Fi network. Will the network be open, or will you require a password?
6. Enable web encryption to add an extra layer of security.
7. Set up an authorized use page that states the Wi-Fi internet connection is intended for users who do not have internet access sufficient to meet their needs. When users click

to accept the terms of service, they are granted Wi-Fi access. If they don't accept the terms of service, they will not have access to the Wi-Fi.

Option 2: Consumer Hotspot

Consumer hotspots can broadcast a Wi-Fi signal up to 30 feet depending on the location and signal strength. Depending on the solution selected up to 10-15 devices can wirelessly connect to the hotspot via Wi-Fi at one time. The more devices connected, the slower the internet speed. If the hotspot is in a low traffic location this solution could meet their needs and is the easier of the two options to set up. For assistance in selecting a service provider see the guide [Selecting the Right Cellular Service Provider](#).

1. Select the service provider and hotspot. Be sure to explain how this service will be used to ensure that the plan supports the program goals.
 - a. Note: Some wireless service providers can route the internet traffic through a CIPA-compliant filter. See [The Emergency Connectivity Fund, E-rate, and CIPA Compliance](#) for information about whether this is needed for your program.
2. Identify a power source for the hotspot. Hotspot charges can last between 6-10 hours depending on the model and how much it is used.
3. Install and secure the hotspot. Select a location that can receive and send data signals but also in a place staff can access the hotspot to troubleshoot hardware issues.
4. Create a public Wi-Fi network. Will the network be open, or will you require a password?
5. Enable web encryption to add an extra layer of security (if possible).
6. Set up an authorized use page that states the Wi-Fi internet connection is intended for users who do not have internet access sufficient to meet their needs. When users click to accept the terms of service, they are granted Wi-Fi access. If they don't accept the terms of service, they will not have access to the Wi-Fi.

Assessment

How will the library assess this service to ensure it is meeting the project goals and documents the benefits to the funder and the community? When launching a new service, you should identify both quantitative and qualitative data to gather.

- Examples of data to gather at each location where your vehicle stops:
 - Number of users
 - Number of sessions
 - Total and average time a device utilized the location's network
 - Average length of session

- Data use statistics, including amount of data used, max data used and average data used
- End-user survey: could be a pop-up window before they connect to the Wi-Fi device or a paper survey. The following surveys were used in hotspot lending programs but could be adopted to fit this use case:
 - Immediate User Survey
<https://drive.google.com/file/d/1uI6ipVyb9KqOUVUSB5JcJ2RB8igItY8L/view>
 - Kansas Public Libraries MiFi Pilot Survey Questions (starts on page 11)
<https://kslib.info/DocumentCenter/View/4842/MiFi-Pilot---Project-report---Kansas-Public-Libraries-2015-12?bidId=>

Possible Funding Sources

In addition to the ECF program, other funding may be available to support and sustain your hotspot program, including:

- IMLS
- State Library grants
- State or local funding provided to government entities through the American Recovery Act Plan
- Private funding sources such as grants and foundations
- Library's operational budget
- Library Friends group or Foundation

Other Considerations

Patrons may need additional services or support when they use the hotspot. As you develop the hotspot program, look for ways to promote and integrate these services:

- Homework help both in person and online
- Digital skills coaching
- Job searching
- Entrepreneurship and small business development opportunities

Library Examples

- Boonslick Regional Library BRLMobile2GO
<http://www.boonslickregionallibrary.com/outreach/>
- Madison Public Library Dream Bus
<https://www.madisonpubliclibrary.org/locations/dream-bus>

- Rock Island Public Library Library2Go
<https://rockislandlibrary.org/RILibrary/files/f3/f3acb738-07c4-4b85-a433-3b8c1e5a2176.pdf>

Additional Resources

- BKLYNCONNECT Playbook: A Resource for Researching, Designing and Implementing a Public Wi-Fi Pilot Program in Your Neighborhood Playbook
https://www.bklynlibrary.org/sites/default/files/documents/general/BKLYNConnect_Playbook.pdf
- The American Library Association and the Public Library Association Hotspot playbook
<http://www.ala.org/pla/initiatives/digitallead/hotspot-playbook>
- Mobile Beacon offers mobile hotspots to libraries. Learn more about their program.
<http://www.techsoup.org/mobile-beacon>