BETTER CONNECTIVITY, BETTER PROGRAMS:

HOW TO IMPLEMENT A BROADBAND DEMAND AGGREGATION PROGRAM
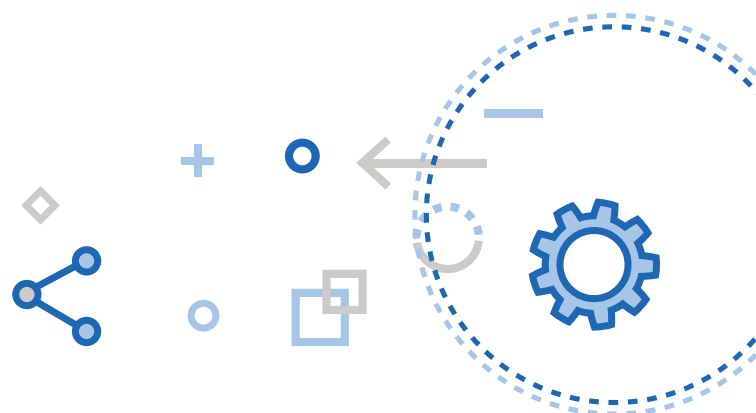
TABLE OF CONTENTS

BETTER CONNECTIVITY, BETTER PROGRAMS:

HOW TO IMPLEMENT A BROADBAND DEMAND AGGREGATION PROGRAM

I n 2012, some of the most expensive internet access service in the world was the only way humanitarian organizations could serve the world's largest refugee community, Dadaab in Kenya. Even though it was founded twenty years earlier, internet access in Dadaab was still inadequate -- slow, inefficient, difficult to maintain and expensive, with high-maintenance satellite dishes that cost between $500 and $1,000 per month for one megabit of data.

However, within four years, Dadaab now has robust wireless network coverage and redundant terrestrial internet service, at a fraction of the cost. What happened? Aid programs in Dadaab started to work together. They gathered data, determined their common long-term needs, shared their expertise and started to purchase internet connectivity together.

This guide shows you how to bring those same tools and strategies to benefit programs in your country.

USAID programs are utilizing digital technology more than ever before – and the rapid expansion of mobile and internet access in the developing world holds the promise of becoming a platform for resilient economic and social growth.

However, as USAID programs become more dependent upon digital technology, the availability and cost of connectivity is becoming a significant barrier to fully realizing that vision. Where connectivity is not available, or where it is priced high, USAID partners must work with USAID Missions, governments, and service providers to find market based solutions to overcome digital connectivity barrriers.

The Better Connectivity, Better Programs: How to Implement a Demand Aggregation Program

(How-to Guide) is designed to enable USAID personnel to support Implementing Partners (IPs) in obtaining access to affordable telecommunications services including broadband. USAID Administrator Mark Green, speaking before the U.S. Chamber of Commerce, identified three revolutions in development and highlighted the importance of the proliferation of technology to the USAID mission. He noted, "The first revolution is one that shouldn't be surprising to anyone here. It's a revolution in technology. Not just the everyday discoveries, but far more importantly, the rapidly growing availability and affordability across the developing world."   Along with other aid and donor agencies, USAID's programs comprise a significant portion of telecommunications demand in specific countries, particularly in rural areas.

By aggregating its programmatic and administrative telecommunications demand, USAID can assist IPs in obtaining improved service in currently underserved areas and negotiate better price and service levels. This handbook provides a roadmap for USAID Missions and operating units to:

- Help implementing partners become better purchasers of internet and mobile connectivity

- Foster collaboration between implementing partners and network providers that will expand access to digital services

- Understand and document the cost of internet and mobile services currently being spent on programs

- Determine where connectivity coverage gaps and affordability gaps exist, and to highlight some policy and advocacy approaches to bridge those gaps.

How-to Guide is for Mission Staff

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The Demand Aggregation "How-to Guide" is designed for USAID staff interested in assisting program officers and IPs to take advantage of USAID broad buying power as it relates to the procurement of telecommunications/broadband services. However, IP management and technical staff will also be interested in some of the material.

Why Broadband Demand Aggregation Works

Through their buying decisions, significant purchasers of telecommunications services can increase service quality and drive down prices significantly and rapidly, operating like a "buyers club."

Telecommunications networks are costly and risky to build, particularly in rural, low-revenue regions in which many USAID programs operate. In many communities, USAID partners and other NGOs may in fact be some of the largest purchasers of mobile and internet service. Moreover, mobile network operators and internet providers may not be fully aware of this collective purchasing power, and the costs of marketing to individual humanitarian programs may be cost-prohibitive for those

providers. However, partners and NGOs working together as a community to gather and present information on their collective current purchases, immediate needs, and long-term plans can have a significant impact on a telecommunications service provider's decision to make an up-front investment in new network capacity. Moreover, when service providers make those upgrades, the entire community will benefit.

This How-to Guide will show USAID Missions and implementing partners how to collect and present this data in a way that will drive private sector investment and improve the quality of telecommunications service available to USAID programs.

For more information on the economics of service provider investment, see Appendix A.

Approach

How can USAID Missions help their implementing partners take advantage of the opportunity to improve network service and save money?

Effectively aggregating demand requires an ability to work with the various stakeholders to collect and package relevant information that supports a compelling value proposition for service providers.

Using the step by step process presented in the How-to Guide, USAID Mission staff can work directly with their NGO partners to develop specific telecommunications demand estimates for selected geographies and user types. Exhibit 1 presents the six step demand aggregation approach. This approach provides the organizational construct for the remainder of the How-to Guide.
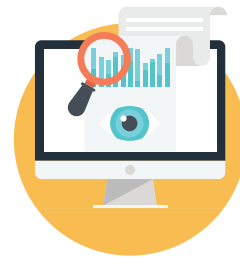
Exhibit 1: Connectivity Demand Aggregation How-to Guide Approach

Group According to Need

Capture Requirements and Socialize the Program

Analyze, Quantify and Consolidate Requirements

Understand the Landscape

Package Demand and Present Value Proposition

RFI/RFP/Contract Development

The Guide provides the knowledge to bridge the gaps in expertise within constituencies and sectors. The Guide details how Implementing Partners can collectively work with sectoral leaders to encourage investment by governments, the private sector and local communities in telecommunications infrastructure and services. It outlines techniques to effectively develop telecommunications service markets where there may be pockets of existing or potential demand, which are either too small or too isolated to be attractive to suppliers.

This Guide will help Missions develop the expertise to undertake this process.

GROUP ACCORDING TO NEED

STEP 1
Group According to Need

The first step in the demand aggregation process is to identify and group implementing partners according to needs or operations in similar geographies. Additionally, identification of non-core demand in a geographic area should also take place. While the How-to Guide focuses on the service demand of IP facilities, it also includes mechanisms to calculate ancillary demand derived from providing service to the non-core facilities (e.g., program beneficiaries and geographically proximate government facilities – schools and hospitals). This extended demand is further characterized as follows in the recently released USAID Connectivity and Capacity Requirements for Digital Development report:

- **Field staff-implemented** – Programs that operate in the field using dedicated staff (whether pre-existing staff, newly hired, or staff of partner organizations). These programs have significant control over the devices used and human capacity to implement the program, however many encounter challenges with field resources such as connectivity and power.

- **Facility-based** – Many health programs operate out of fixed health facilities using the facility staff. These programs offer the opportunity to directly impact service delivery and improve health outcomes. With a fixed facility and staff, the implementing program can influence available resources by recommending technical requirements and providing training to all necessary staff. However, the program does not maintain ultimate decision-making authority over the resources and may need to work around resource constraints that have the potential to impact program operations

- **Beneficiary-oriented** – Communicating directly with beneficiaries can be an efficient way to both deliver information critical to their health and livelihoods as well as to gather data to further improve services. Beneficiary-implemented programs have numerous inherent challenges in implementation – they rely on the beneficiary to have access to devices, connectivity and other technical resources, as well as to be able to efficiently use the digital solution developed.

- **Internet of Things** – Defined as "a global infrastructure for the information society," the Internet of Things enables improved data for decision-making through connected devices communicating in real-time and relatively effortlessly. While implementing programs have control over the devices used and human capacity to implement the program, there are many challenges that may be encountered, such as continued connectivity for devices not fixed at a particular location or physical security of devices.

Exhibit 2 illustrates core and non-core USAID generated demand.


Exhibit 2: Core and Non-Core Demand
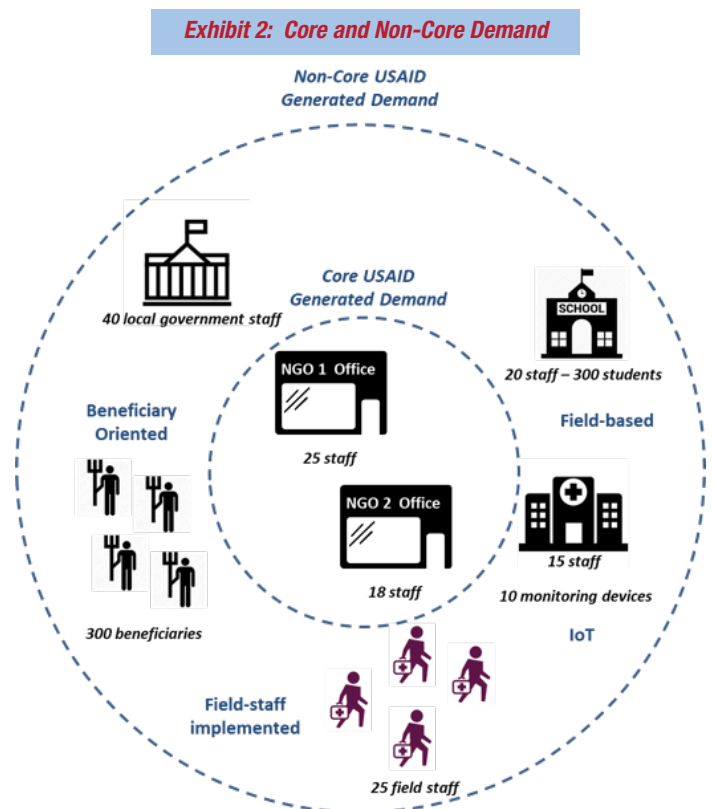
Now that a broad understanding of potential aggregate demand has been established, the Mission can begin the segmentation process. For the Mission, there are various ways of doing this:

- **Geographic aggregations** – all programs in a specific geography (See Uganda Project Member Locations)

- **Similar potential network demand** – (e.g., mobile data collection by field staff)

- **Single IP strategy** – (e.g., all programs of an implementing partner)

- **Program umbrella** (e.g., all Feed the Future programs)

Mission staff should consider all of these as potential ways to group connectivity demand into potential aggregation projects. Rather than fixate on one approach (such as, "all health programs"), future negotiations with service providers might require flexibility. While the type of segmentation may not impact the total volume and value of USAID generated telecommunications demand, the method of segmentation can affect the attractiveness of specific demand packages provided to the service providers. As an example, IPs in a specific geography with large field staff may require a similar solution that when aggregated represent an attractive market segment.

	Activity #	Activity
Step 1: Identify Like Constituencies	1	Identify all USAID funded programs nationally and organize by geography – Create bubble charts
	2	Note period of performance and incorporate project 5-year profile into geographic mapping of programs
	3	Note number of facilities associated with each program – Cross reference number of facilities by IP
	4	When possible, capture latitude and longitude of specific locations
	5	Identify uses of mobile and internet technology for each program, such as field data collection, SMS text message groups, field and central office staff levels
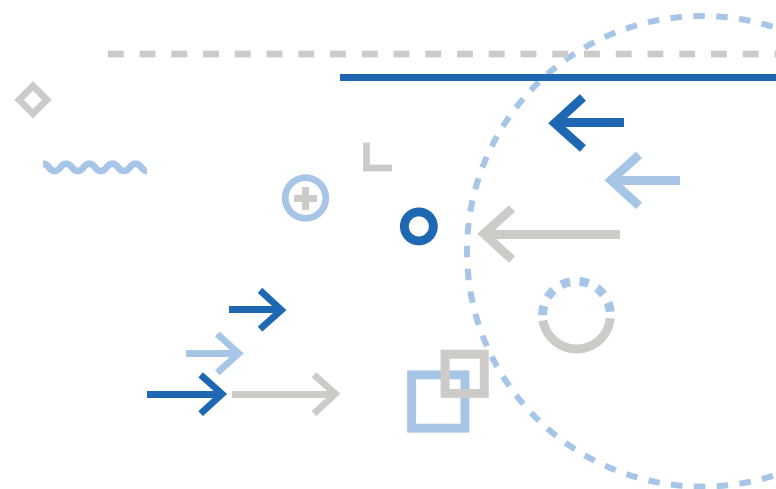
CAPTURE REQUIREMENTS AND SOCIALIZE THE PROGRAM

STEP 2

Capture Requirements and Socialize the Program

The next step in the demand aggregation process is to identify the type and quantity of connectivity services that each implementing partner is currently using and will need in the future. Generally speaking, implementing partner reports will not systematically include this data and information. As a result, the best method of obtaining connectivity information is through a survey. This methodology is currently being used in Uganda. While surveys are an effective mechanism for obtaining data on current telecommunications usage, future connectivity needs are best obtained through face to face interviews with both technical and senior managerial IP staff. Understanding future needs is important because when service providers evaluate infrastructure investments they typically take a multi-year view.

Appendix A contains a survey that has been used in demand aggregation programs in Africa. This survey was circulated using a web-based service (in this case, a SurveyMonkey platform). A draft email from Mission staff to IPs asking them to take the survey is included in Appendix B.

A web-based survey is an efficient and effective means of obtaining this information, as survey results are usually tabulated in real-time, with usable data insights becoming almost immediately available for analysis and use. In addition, using the common instrument will also be efficient for implementing partners that may have already filled out this survey for some USAID country programs.

Of course, the data in the survey is only valuable if most, if not all, IPs participate. Any successful demand aggregation strategy requires "buy in" by a critical mass of implementing partners – as a result, successful socialization of the approach is crucial. The data collection survey should be seen as an opportunity to gather information and to communicate to implementing partners the reason why the Mission is exploring the costs and quality of internet and mobile service, the Mission's desire to identify ways in which IPs can possibly save

money and expand access, and to communicate to IPs the next steps in the project.

While the survey is a "first salvo" in getting IPs to think differently about the way they purchase connectivity, to be successful it will need consistent, visible follow-up from the Mission. Communications from Mission leadership on the importance of the program, visibility and discussions at Chief of Party meetings, inclusion in newsletters, and follow-up by project directors are all components of success.

Additionally, the Mission should socialize demand aggregation activities with the telecommunications regulator so that the approach is looked at as being one of several drivers for success in bringing telecommunications services to rural areas. USAID should continue to support policy initiatives with the appropriate regulatory authority that supports rural development.

For particularly large USAID country programs, the services of a consultant might be helpful in establishing and maintaining a strong focus on this data collection and socialization effort. The USAID Digital Inclusion team has mechanisms in place that can assist a Mission that wishes to bring in a short-term consultant to help bring this information together.
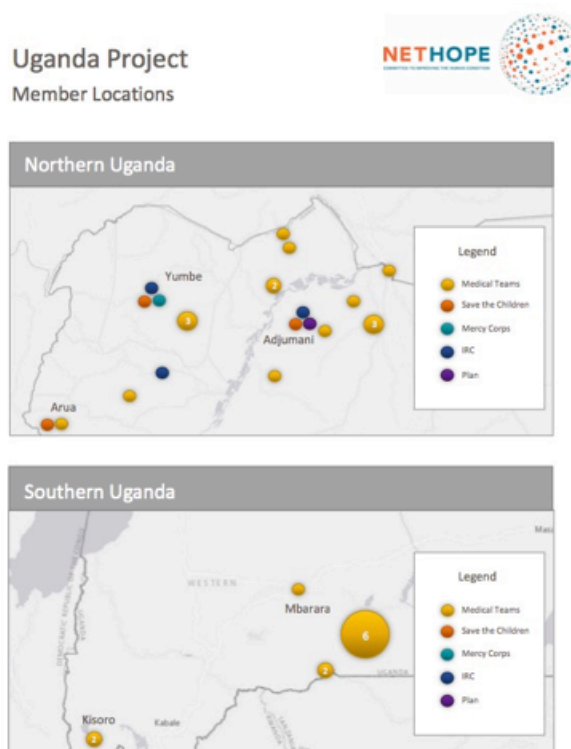
	Activity #	Activity
Step 2: Capture Requirements and Socialize the Program	1	Identify IP lead for telecommunications and ICT services
	2	Provide IP with data collection request survey (See Appendix A)
	3	Socialize demand aggregation programs through Mission leadership communication, IP meetings, gatherings and newsletters
	4	Track IP progress and ensure at least 90% participation
	5	Identify which requirements can be met by market players and which requirements may require new services or new infrastructure
	6	Complete requirements template and consolidate information according to segmentation strategy

This step requires direct interaction with IPs. The goal is to understand and capture the current and future needs of the project facility and staff as well as potential future needs of field workers and beneficiaries.

What You Have at the End

Once Mission staff has completed the survey, they will have a completed table that represents aggregate demand for telecommunications services either nation-wide or in specific geographies. The data will accurately represent the value of USAID-supported demand and provide the data sets necessary to support negotiations with service providers on price, coverage, and service levels.

Remember, the premise behind demand aggregation is to educate the service provider on the value of the USAID-supported market segment. Demand aggregation can change the service provider's view of its fundamental investment decision and highlight economies of scale and other factors. See Appendix C for details on service provider investment decision making.

Organization	No. of Facilities	Staff per Facility	Services Required	Service Demand	Service Provider	Satisfaction with Existing Service	Estimated Monthly Spend

The information from the output table can then be packaged and used by the Mission and IPs to form the basis of a dialogue/negotiation with service providers. Remember, the survey results are valuable information that can support a range of negotiation strategies. How best to use this information when speaking with service providers will vary by country and by situation. Our goal is to generate service provider interest in this new and attractive market segment without prematurely releasing information that could provide a competitive advantage for the IPs in future negotiations.

ANALYZE, QUANTIFY AND CONSOLIDATE REQUIREMENTS

STEP 3

Analyze, Quantify and Consolidate Requirements

Once a critical mass of IPs has completed the Connectivity Survey, the Mission can begin to analyze the results. This analysis should be cross-cutting and flexible – remember that the goal is both to identify the total IP service spend but also to identify situations in which implementing partners have similar needs that could potentially be combined.

> *Just because an IP is not ordering 10 Mbps of service today does not mean that they do not need 10 Mbps of capacity.*

	Activity #	Activity
Step 3: Quantify and Consolidate Requirements	1	Tabulate survey results
	2	Identify required quantities of each service required by organization/facility (e.g., Mbps of access)
	3	Identify duration service is required
	4	Develop tables that aggregate service requirement quantities by geography, by organization, by program consistent with the segmentation approach identified in Step 1: Group According to Need – Sample output templates can be found in Appendix D
	5	Compare survey results to benchmark data and validate demand levels
	6	Identify geographically adjacent public facilities
	7	Identify geographically associated beneficiaries in the target geography

Compare estimated service usage to benchmark table

It is also important to remember that there will frequently be discrepancies between current network utilization by an IP and its future needs. In costly and access-restricted areas, IPs will of course have organized their purchases of connectivity service around those constraints. These accommodations can include:

- Limiting the number of field staff that are provided mobile devices

- Subscribing to a low-quality fixed internet access service because higher capacity circuits are more expensive

- Utilizing paper or off-line tools for data collection

- Limiting use of satellite connectivity to certain times of day to take advantage of off-peak bandwidth pricing discounts.

As a result, the demand aggregation analysis should include potential future needs as well as an assessment as to whether IPs current purchases are limited by these constraints.

Benchmarks are useful for estimating that need. In some cases, IPs will have a good understanding of their overall telecommunications and broadband usage requirements – based on historical information and internal benchmarks. In other cases, the IP can consult USAID connectivity and digital inclusion experts to develop usage and capacity estimates.

Models built for countries as diverse as Uganda, Liberia and Vanuatu can be used to estimate the amount of Internet capacity different institutions and digital development projects will need. Capacity for an institution will vary based upon the number of users and the nature of uses, and are often measured in Megabits per second per month. Broadband contracts with institutions may also guarantee throughput, quality of service assurances, and potentially data caps or overage charges.

UNDERSTAND THE LANDSCAPE

STEP 4

Understand the Landscape

At some point during the direct engagement with IPs, it is important to develop an understanding of the existing telecommunications landscape at both a national and local level.

	Activity #	Activity
Step 4: Understand the Landscape	1	Review existing information previously collected by the Mission
	2	Conduct telecommunications sector desk research (e.g., ITU, GSMA)
	3	Obtain service provider information including: •Services •Coverage •Pricing
	4	Develop telecommunications sector fact sheet

In many cases, Missions will have basic data on the telecommunications sector, including number and types of service providers, subscriber levels and high-level coverage information. If this information has not been previously collected, the International Telecommunications Union (ITU) collects and disseminates annual telecommunications sector country profiles. Missions can also obtain sector information through GSMA, mAccess Diagnostic Tool, and the USAID Global Development Lab Digital Inclusion team.

While not critical to the successful application of the How-to Guide, having a basic understanding of the economics behind common broadband technologies will improve the Mission's ability to support its IPs. Appendix E provides a high-level summary and links to additional resources.

Additional sources of basic telecommunications sector and service information include GSMA, World Bank, Budde Reports, the national telecommunications regulatory authority and specific service provider websites. Missions can also obtain sector information through GSMA, mAccess Diagnostic Tool, and the USAID Global Development Lab Digital Inclusion team.

Sample Resource Links

https://www.globalinnovationexchange.org/resources/maccess-diagnostic-tool

https://www.gsmaintelligence.com/

http://www.ucc.co.ug/reports-and-publications/
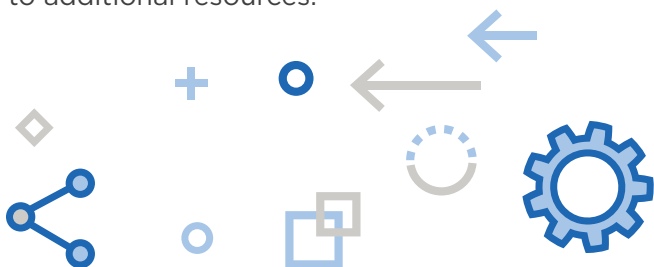
Another potential source of information is service provider websites, which typically include service offerings, coverage maps, service pricing and contact information. While these maps often do not give detailed information, they can provide an initial observation as to whether there is the potential for coverage in the desired area.

Also remember that USAID and implementing partner field staff themselves are the best "eyes and ears" of mobile and internet network quality. Every time a field worker goes into a region with a mobile phone is an opportunity to test out network quality and reliability. The USAID Digital Inclusion team utilizes network survey tools and apps (such as NetRadar [link]) in several countries and can train field staff on how to use the application on mobile devises and map the results.

Another important element of knowing the situation before you engage service providers is understanding the service costs and published tariffs for the desired service suite. In general, rates for fixed broadband service are more likely to be regulated, with baseline prices often being posted at the communications regulator website or the service provider site. For mobile service in Africa, where competition is more likely to take hold, prices can change in response to competition and are not necessarily publicly accessible. Research ICT Africa [link] researches and publishes posted prices for certain bundles of mobile service. The USAID mAccess Data tool also contains pricing for certain mobile service bundles.

This data will generally show the potentially extreme economies of scale and potential savings available when larger quantities of service are purchased. For example, Exhibit 3 aggregates and compares the published tariffs for multiple fixed broadband service providers in Uganda. It should be noted that a service offering and published tariff does not necessarily mean that that service is currently available in the desired service area.

<div align="center">

Exhibit 3: Core and Non-Core Demand

</div>

Monthly Bundles (USD) Cost per 100 Mb						
Data Bundle (Mb)	**Africell**	**Airtel**	**MTN**	**Smart**	**UTL**	**Vodafone**
100	1.19	n/a	1.22	1.08	0.00	n/a
500	1.05	n/a	1.08	0.97	0.78	1.07
1,000	0.93	0.95	0.95	0.68	0.76	0.81
5,000	0.48	0.49	0.49	0.49	0.54	0.46
10,000	0.34	0.34	0.34	0.33	0.31	0.30
100,000	n/a	n/a	0.14	n/a	n/a	n/a

Source: Ugandan Business News, Looking for the Best Internet Plan in Uganda – Here's Some Data for you – September 5, 2016

As shown, as the size of the data bundle increases, the cost per unit of data (in terms of megabytes (MB) or gigabytes (GB)) declines. This fact is a key component of the demand aggregation strategy where IPs are seeking to benefit from economies of scale. By consolidating broadband demand into larger bundles, USAID should be able to take advantage of the downward cost curve associated with broadband pricing.

Another factor that affects the price offered is the length of a contract, particularly for fixed internet service. When a service provider installs a connection at a building, it has incurred a (sometimes large) fixed cost – labor, customer acquisition and support costs, equipment – to get the service up and running. Generally speaking, the provider will spread out these fixed costs over the length of time it expects to keep the customer on its network. If a customer commits to a longer term contract, beyond one year, the monthly price of service will decrease. Exhibit 4 illustrates this concept.

<div align="center">*Exhibit 4: Sample Service Cost Variation by Contract Length*</div>

Service	Contract Term			Monthly Cost (USD)		
Fixed Internet	Monthly	1-year	2-year	100.00	80.00	60.00
Mobile Internet (10 accounts)	Monthly	1-year	2-year	150.00	125.00	100.00

PACKAGE DEMAND AND PRESENT VALUE PROPOSITION

STEP 5

Package Demand and Present Value Proposition

The next step is to translate the aggregated demand information into financial terms with an eye toward presenting a potential revenue figure to the service provider. As with requirements aggregation, revenue potential should be organized by IP and by geography.

	Activity #	Activity
Step 5: Package Demand and Present Value Proposition	1	Calculate monthly revenue for each segment, service, and geography include Life time customer value calculation
	2	Create Demand Report
	3	Develop provider outreach strategies
	4	Communicate Results to IPs and Mission: Workshop
	5	Develop provider engagement strategy

The Guide contains sample financial calculation templates to facilitate calculations (See Appendix F). It also provides a generic presentation that can be used to convey a compelling value proposition to the service providers (See Appendix G).

RFI/RFP/CONTRACT DEVELOPMENT

STEP 6
RFI/RFP/Contract Development

With the necessary information in hand and following preliminary discussions with service providers, IPs should negotiate with selected service providers to obtain services and pricing based on their aggregate demand. This negotiation can take many forms and the outcome can range from buying services off a previously negotiated master services agreement to a bespoke contract based on vendor responses to an RFP.

	Activity #	Activity
Step 6: RFI/RFP/Contract Development	1	Support final requirements development and negotiating strategy
	2	Support RFI/RFP development
	3	Provide examples of relevant master services agreements
	4	Seek support from Allies including associations and regulators

Desired Outcomes

With the demand aggregation analysis complete, it is important to remember that expending resources to better understand IP and associated telecommunications demand has very specific outcomes. At the highest level, the goal is to influence service provider behavior in a way the benefits USAID programs. Specifically, the exercise is designed to convince service providers to take some or all of the following actions:

• Extend service to an underserved area

• Provide enhanced service levels (e.g., bandwidth speed, dedicated help, faster response time)

• Reduce the cost of service

For service providers to adjust their business models and investment plans, they require actionable information that presents a convincing business case for the specific action or concession.

Mechanisms

IPs have a range of options on how they work together to present consolidated demand to the service providers. It should be noted that it is the IP - not USAID - that will be engaging service providers. Consequently, IPs can use formal or informal mechanisms to work together and engage service providers. Exhibit 5 presents a range of approaches.

For service providers to adjust their business models and investment plans, they require actionable information that presents a convincing business case for the specific action or concession.

Loose Collaboration and Coordination	Documented Demand/RFI	Joint or Consortia Purchase
Collaborate on needs, areas of focus, technical assistance in procurement	Providers respond to joint call by purchasers and present service options	Common, formal contract process
No legal structure; separate contracts	Informal legal structure; separate contracts	Formal legal structure
Suitable where formal coordination limited (disaster response); opportunistic	Suitable where service needs vary by purchaser	Suitable for significant, relatively similar demand (e.g., "fixed service in Arua")
Examples: Gig.U, Telecommunications without Borders	Examples: Digital Liberia	Examples: Jamaica schools, Dadaab, Macedonia Connects

In addition to determining the optimum affiliation method, IPs, working with USAID should consider developing a Master Services Agreement (MSA) with specific service providers that set prices and service levels.

Qualifying IPs can use the MSA and take advantage of pre-negotiated rates and service levels. Another mechanism that could prove particularly useful in encouraging service providers to extend service to new areas is to enable prepayment of service charges. Given the long-term nature of many USAID contracts, USAID should consider allowing prepayment of telecommunications charges by IPs to service providers. This approach will reduce the cash flow burden on service providers of deploying new infrastructure and encourage investment.

Allies

USAID should share demand aggregation concepts with the Ministry of Communications and entities responsible for Universal Service Funds (USFs). Aligning with USFs can present opportunities for de-risking and co-investment. In most countries, service providers have service obligations that are part of their licenses. Typical requirements include extending coverage to rural areas, consistent pricing between urban and rural areas, and providing service to underserved market segments. USAID may be able to work directly with service providers and regulators to identify pockets of demand that be profitably served and would also meet USF/licensing obligations and create a win/win situation.

Potential Roadblocks and Caveats

While there are significant potential benefits to a broadband demand aggregation program, there are a number of roadblocks that may need to be overcome. For instance,

- Internet and mobile contract terms of implementing partners may not entirely coincide. Transitioning from individual contracts to a joint contract might require a phase-in period or buy-outs of existing service contract. This could impact the structure of a purchasing consortium.

- Confidentiality provisions in provider contracts may inhibit participation of some implementing partners. If an implementing partner says it cannot provide data due to a confidentiality provision in its contract, this claim should be documented.

- Organization of purchasing co-ops or consortia will need to comply with the local laws

- Every effort should be made to understand potential for future network upgrades. A solid data gathering and provider engagement program can help minimize this risk. Contract terms should contain upgrade clauses that enable implementing partners to take advantage of technological advances

- Network upgrades to bring new service to an area can be subject to delay due to permitting and other regulatory approvals. Service contracts should provide implementing partners the ability to opt-out of a contract or receive an equivalent service at the same price in case the new network is not completed within an agreed-upon period of time.

Additional Supporting Activities

Demand Aggregation is but one part of a consolidated effort to better integrate technology into USAID programs regardless of their geographic location. Supporting activities include policy development that encourages the development and broad deployment of affordable telecommunications technologies. Recent USAID program support to National Broadband Plans and Universal Service Fund frameworks have directly impacted the availability and use of technologies in USAID programs resulting in improved efficiency and scalability. A second area where additional activities would complement the Demand Aggregation effort is in End User Skills development. Organically creating demand through information and training will increase the level of demand and speed adoption. Collectively, these activities will enable USAID programs to take full advantage of the power of telecommunications and connectivity.

APPENDICES

Sample Survey 1 • Uganda Example

Q1: Who is completing this survey?

Q2: Who is Your Agency's Country Director in Uganda?

Q3: Who is Your Agency's IT Director in Uganda?

Q4: How many locations does your organization operate in Uganda?

Q5: How many staff are assigned to each location?

Q6: In Which Regions Is Your Agency Working in Uganda?

Q7: How Does Your Agency Access The Internet in the Locations Where You Work?

Q8: Who is your service provider?

Q9: How Satisfied Are You With the Internet Connectivity For Your Offices/Staff in Uganda? (Cost, quality of service)

Q10: How Much Do Estimate Your Agency Spends Per Month on Internet Access in Uganda (all locations combined)

Q11: Do you expect the spend amount to increase in the future?

Q12: How do you get power/electricity for your offices?

Sample Survey 2 • Consolidated Output Uganda

In the case of Uganda, a blank template was provided to IP's for completion

USAID IP?	Location Name	Office Type (Country, Area, Sub, etc)	Lat	Long	Priority to Improve Connectivity	Connection Type	Bandwidth	Dedicated or Shared	Name of ISP	Estimated Monthly Cost (USD)
	Juru HC II	Other	-0.8316	30.9156	Low	3G		Dedicated	MTN	100
	Kibengo HC II	Other	-0.84445	30.88364	Low	3G		Dedicated	MTN	100
	MTI Country (	Country Offic	0.35428	32.61886	Low	3G		Dedicated	MTN	100
	MTI Mbarara	Area Office	-0.60597	30.63006	Low	3G		Dedicated	MTN	100
	Rulongo HC II	Other	-0.97376	30.76755	Low	3G		Dedicated	MTN	100
	Rwekubo HC I	Other	-0.83886	30.83328	Low	3G		Dedicated	MTN	100
	Yumbe	Field Office	3.4693	31.2499	Medium	3G	2MB		MTN	303

Appendix B:
Mission Coordination Memo

Subject: USAID Connectivity Activity

From: USAID Mission

To: Implementing Parnters

I am writing to inform you that the USAID Global Development Lab is supporting a connectivity activity that is focusing as an initial priority on _____, specifically the _____ region. Through a centrally funded agreement with the Lab, NetHope recently began targeted technical assistance to work with USAID/Uganda on promoting improved broadband connectivity using a strategy that relies on demand aggregation as a central concept. The main aims of this activity are to improve connectivity access, reduce operating costs, and increase service and utilization.

NetHope is a consortia-based nonprofit that brings together over 50 international nonprofits with high-tech companies and development agencies to create and deploy information and communications technology (ICT) solutions. Since 2010, NetHope has been the primary implementing partner for USAID's Global Broadband and Innovations Alliance (GBI), which focuses on improving Internet access and applications in priority countries.

This effort seeks to assist USAID/Uganda's implementing partners in procuring less expensive, more reliable broadband connectivity. The driving notion behind the effort is that a more unified and organized partner community can lead to increased market visibility to catalyze telecom provider service expansion and enhanced leverage in negotiating higher-quality, lower-price services. NetHope will play the central role in help to gathering demand-side data, establishing a constructive dialogue with broadband and mobile network operators, and providing expertise in negotiating agreements that ultimately will improve connectivity in targeted communities.

To this end, NetHope has requested Mission support in identifying USAID/Uganda implementing partners that are working in the northwest region. As one of these implementers, your feedback and input is critical for advancing this effort. Please note that participation in this activity is encouraged but is entirely voluntary.

This initial step in this process is a brief survey designed to yield a high-level, composite perspective of the implementing partner's community's experiences and challenges with connectivity in the focus geography. We request kindly that you to watch for this correspondence and respond within the prescribed timeframe. Tim may also contact you about scheduling a short meeting or arranging a call with you or someone else you appoint. Your responses will be kept confidential. Please let us know if you have any questions or concerns. Thank you in advance for your time and support, and we welcome your comments.
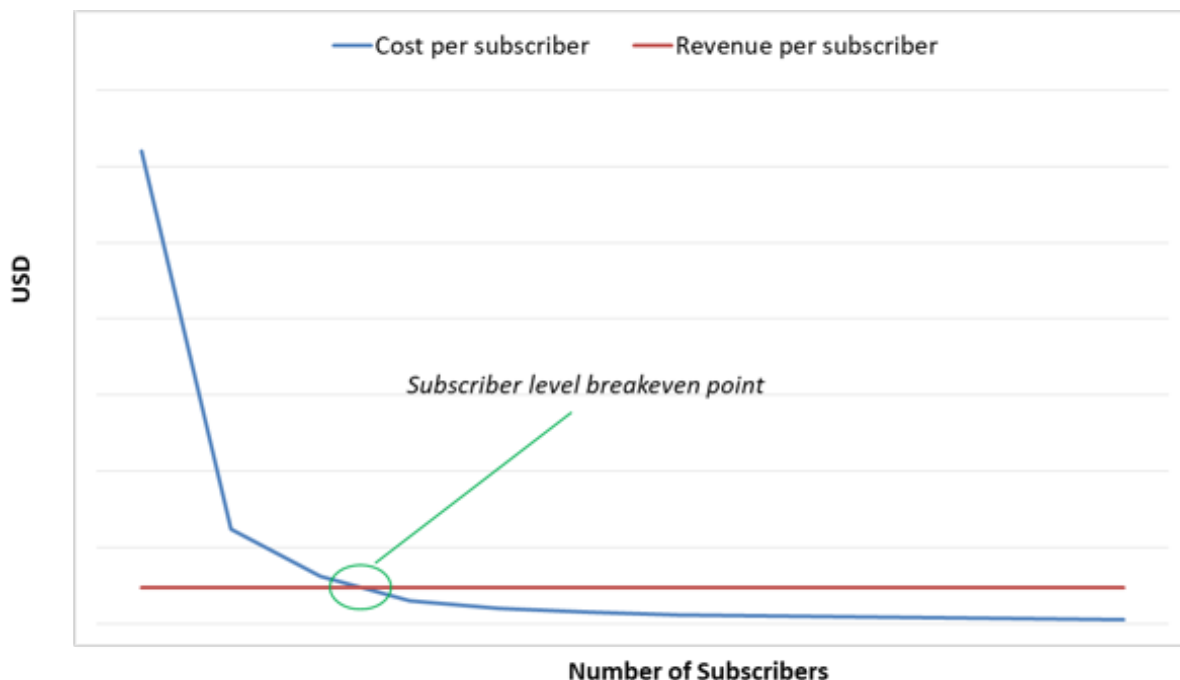
Appendix C:
Service Provider Investment Perspective

The central reason behind the continuing gap between urban and rural connectivity is economic. Networks are costly to build and have extreme economies of scale, scope, and density. In urban areas, an operator can spread out the large fixed costs of network construction over a broader population and service offerings. In rural areas, not only is the per customer cost of building a network significantly higher, the total revenue available to the operator is lower. Exhibit 6 illustrates this concept using the cost and capacity of a traditional 3G cell site, the de facto current standard for delivering broadband to rural areas.

As a result, service providers simply do not see sufficient market potential to justify the risk of investing in the infrastructure needed to provide broadband services in what are perceived to be low demand, low value areas.

USAID programs and other NGOs operating in rural, hard-to-serve regions are significant purchasers of communications services in those areas. Acting together, the IP and NGO communities can, by assuring providers that they will be reliable purchasers of connectivity services in a region, have a dramatic impact on the provider's investment decisions. As shown in Exhibit 7, service providers have a very structured approach when evaluating the risk of deploying network infrastructure. In order to invest, Capital plus Operating expenses must be less than the Likelihood of obtaining Revenue over the useful life of the network, plus the Spillover Benefits of the network that the operator can gain, minus the Likelihood of Competitive Losses. At each point in the investment equations operators ask a series of questions that inform both cost and revenue decisions.

Exhibit 6:

Better Connectivity, Better Programs: How to Implement a Demand Aggregation Program

Exhibit 7:

$$C + O < (L)R + SB - (L)CL$$

Can I keep competitors away?

Will a new technology be cheaper?

Cheaper ways to market and sell?

Can I sell another service over this network?

How can I keep my customers longer?

Can I raise prices?
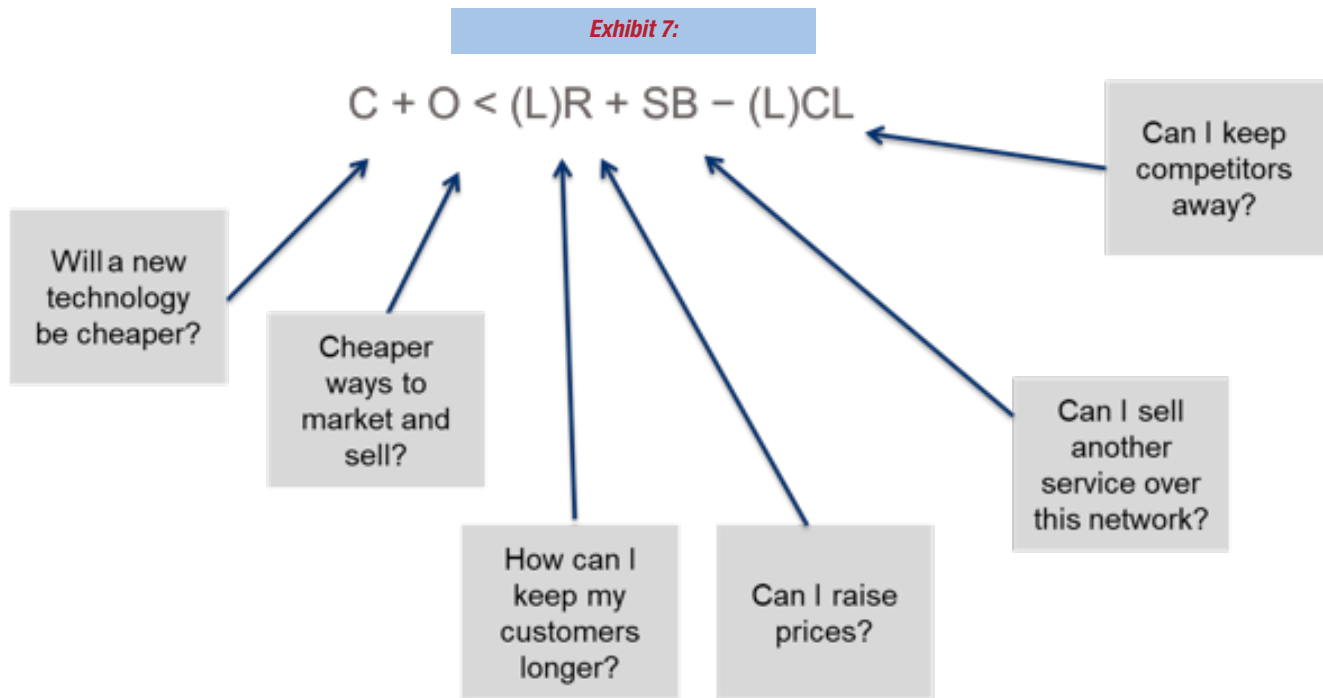
Demand aggregation combined with a properly transmitted message to service providers can dramatically impact the infrastructure investment decision. Exhibit 8 highlights how this new information lowers risk and improves the economics of the investment.

Exhibit 8:

$$C + O < (L)R + SB - (L)CL$$

Lower sales, marketing, billing costs of providers

Lower risk of losing customers and risk of non-payment

Increase revenue (more consumption)

Increase spillover sales (video, government)
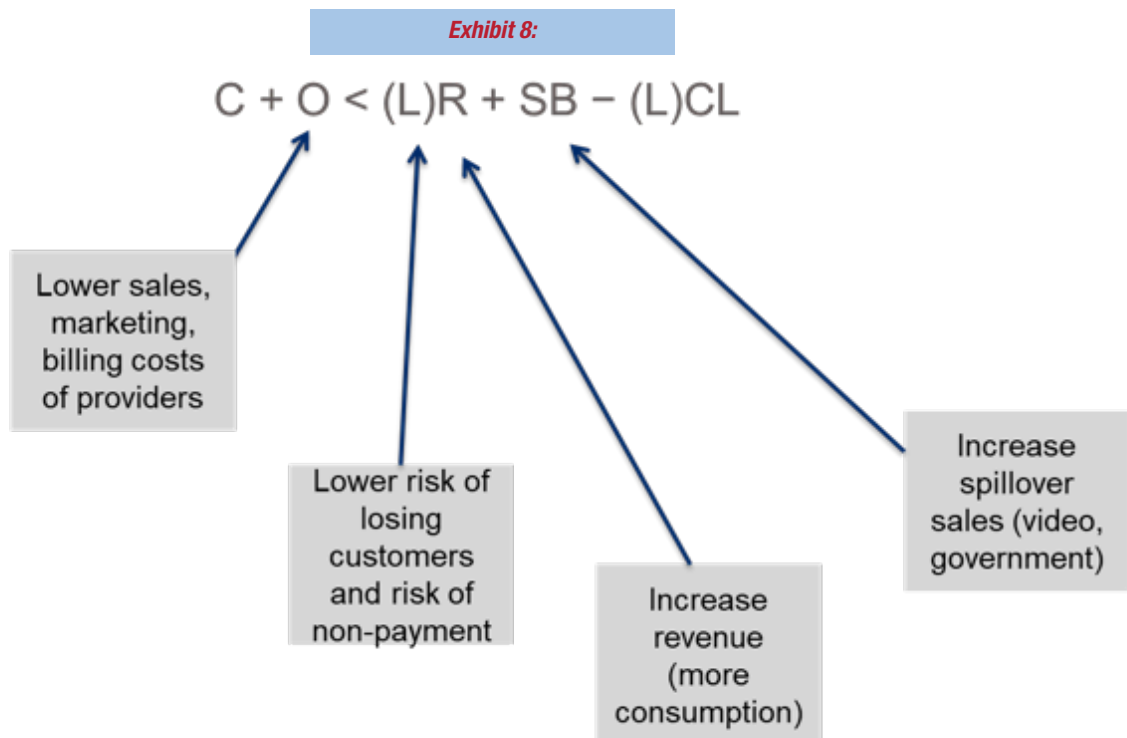
Appendix D:
Sample Segmented Demand Output Tables

Referencing Step 3, Activity 4, below is an example of how to quantify IP requirements and organize survey data.

A. Estimate number of staff per facility

Partner A

Facility	Number of Staff	Monthly Internet Spend (USD)	Location
Feed the Future Field Office	15	$100.00	District A
Total			

Partner B

Facility	Number of Staff	Monthly Internet Spend (USD)	Location
Regional Headquarters	23	$120.00	District A
Total			

B. Identify required telecommunications and broadband services by facility

Partner A

	Broadband Drops	Landlines	Broadband USB Modem	WiFi	Mobile phone accounts
Feed the Future Field Office					

Partner B

	Broadband Drops	Landlines	Broadband USB Modem	WiFi	Mobile phone accounts
Regional Headquarters					

Better Connectivity, Better Programs: How to Implement a Demand Aggregation Program

Sample Segmented Demand Output Tables

Reorganize data by geography

District A

Facility	Number of Staff	Monthly Internet Spend (USD)	Location
Feed the Future Field Office	15	$100.00	Partner A
Regional Headquarters	23	$120.00	Partner Bnm
Total	38	$220.00	

	Broadband Drops	Landlines	Broadband USB Modem	WiFi	Mobile phone accounts
District A					

The most important cross-cuts and commonality will be by geography and service type. For example, the survey will most likely identify that many IPs have field offices in the same communities or settlements – a clear opportunity for cost savings. It may also indicate that many IPs regularly send field staff into areas with inadequate mobile coverage. That information, taken together, can be a powerful demonstration to a network provider that if they were to undertake a network upgrade, they would have customers in that area.

Broadband Technology Tradeoffs: Not all Service Delivery Technologies are Created Equal

Telecommunications and broadband services are provided through a variety of technologies and business models. In some markets, liberalized telecommunications policies result in a highly competitive market with multiple players offering a range of services. In other markets, more restrictive licensing policies limit the number and nature of service providers. However, regardless of the degree of liberalization in the telecommunications sector, in most markets, the availability of service and the number of service providers is significantly higher in urban areas than in rural areas. As previously noted, the primary reason for the disparity in service between rural and urban areas is the higher cost to serve per customer in rural areas and the relative wealth of urban versus rural customers. Recent technology advances have reduced some of the cost differential between urban and rural service delivery, but in general these patterns of rural-urban disparity persist. While Mission staff need not become experts on telecommunications network architecture, having a basic understanding of the cost parameters of typical service deployments will provide a stronger basis for negotiations, particularly when requesting service in currently unserved areas. The table below summarizes the main tradeoffs between various telecommunications technologies used by service providers in USAID target countries on the basis of costs, bandwidth (data throughput) and range.

Technology	Capital Cost (per site)	Service Cost for Customers (per subscription)	Bandwidth (Data Throughput)	Service Range (Distance in Kilometers)
2G GSM cellular	Medium	Low	Low	Medium
3G/4G cellular	High	Medium	Medium – High	Low
Wi-Fi Point to multipoint	Low	Low	Medium – High	Low
TV White Space	Medium	Low	Medium	Medium
Fiber to the premise	High	High	High	Low
Satellite	High	High	High	High

Further reading:

"Closing the Access Gap: Innovation to Accelerate Universal Internet Adoption"
https://www.usaid.gov/sites/default/files/documents/15396/Closing-the-Access-Gap.pdf
"Business models for the Last Billion: Closing the Digital Divide"
https://www.usaid.gov/documents/15396/business-models-last-billion
"Harness the Internet of Things for Global Development"
https://www.itu.int/en/action/broadband/Documents/Harnessing-IoT-Global-Development.pdf

Appendix F:
Demand Aggregation Financial Model Template

An Excel model has been developed that combines survey results information with benchmark data and local tariff data to create a financial model that estimates the potential value of aggregated demand. This model, along with a more detailed explanation of how to use the model can be found at http://inclusion.digitaldevelopment.org/broadband-demand-aggregation. The tables below illustrate notional inputs and outputs from the model.

Bandwidth Assumptions

Institution	Unit	Facility Size				Bandwidth (Mbps) (per month)				Source
		Small	Medium	Large	Very Large	Small	Medium	Large	Very Large	
NGO	Employees	<6	>=6 & <40	>=40		10.0	15.0	20.0	50.0	
Government	Employees	<6	>=6 & <40	>=40		10.0	15.0	20.0	50.0	
Health	Beds	<9	>=9 & <28	=28&<20	>=200	11.0	16.0	22.0	55.0	
Education	Students	<700	700 & <1,1	189 & <5	>=5000	10.0	15.0	25.0	50.0	
Private	Employees	<6	>=6 & <40	>=40		10.0	15.0	20.0	50.0	

General Assumptions

Assumption	Value	Source/Basis/Notes
Connectivity		
One-Time Cost of Connection		Connectivity of the facility to the service provider can either be via fiber cable or a wireless connection
Average Retail Bandwidth Cost		
Average Annual Growth of Bandwith Demand by Institution		
NGO	5.0%	
Government	5.0%	IFC and ITU reports indicating annual percentage bandwith growth of a typical facility (by facility type) once facility has obtained access to reliable high speed bandwidth
Health	5.0%	
Education	5.0%	
Private	5.0%	
Average Cost per Subscriber	$3.5	monthly spend

Aggregate Demand

	Year 1	Year 2	Year 3	Year 4	Year 5
District A					
Implementing Partners					
IP 1					
Small	1	2	2	3	3
Medium	0	0	1	1	1
Large	1	1	1	1	1
IP 2					
Small	2	2	2	2	2
Medium	1	1	1	1	2
Large	2	2	1	1	1
Sub Total					
Other Facilities					
Schools					
Small	10	11	12	13	14
Medium	4	5	5	5	5
Large	1	1	1	1	1
Hospitals					
Small	10	11	12	13	14
Medium	4	5	5	5	5
Large					
Government Offices					
Small	10	11	12	13	14
Medium	4	5	5	5	5
Large	1	1	1	1	1
Impacted Beneficiaries	500	600	700	800	900

Service Provider Revenue

Revenue (USD)

	Year 1	Year 2	Year 3	Year 4	Year 5
District A					
Implementing Partners					
IP 1					
Small	1,200	2,520	2,520	3,780	3,780
Medium	-	-	1,890	1,890	1,890
Large	2,640	2,772	2,722	2,722	2,722
IP 2					
Small	2,400	2,520	2,520	2,520	2,520
Medium	-	1,890	1,890	1,890	3,780
Large	-	5,544	2,772	2,772	2,772
Sub Total	6,240	15,246	14,364	15,624	17,514
Other Facilities					
Schools					
Small	12,00	13,860	15,120	16,380	17,640
Medium	7,200	9,450	9,450	9,450	9,450
Large	3,000	3,150	3,150	3,150	3,150
Hospitals					
Small	13,200	15,246	16,632	18,018	19,404
Medium	7,680	10,080	10,080	10,080	10,080
Large	-	2,772	2,772	2,772	2,772
Government Offices					
Small	12,00	13,860	15,120	16,380	17,640
Medium	7,200	9,450	9,450	9,450	9,450
Large	2,400	2,520	2,520	2,520	2,520
Impacted Beneficiaries	21,000	25,200	29,400	33,600	37,800
Total	91,920	120,834	128,058	137,424	147,420

Generic Demand Aggregation Value Proposition Presentation

Bridging Divides Together:

USAID Programs as Committed Buyers of Internet and Mobile Service

[Presentation to Internet and Mobile Service Providers]

Location
Date

Agenda

- Who we are
- Market Analysis of USAID programs as buyers
- Methodology
- Results
- Analysis
- Ask

1

USAID: Longstanding Presence in [Country] with Wide Reach and Scale

Notional

Key Activities

Health Programs
- Training 50,000 nurses
- Establishing telemedicine based clinics
- Coordinating vaccinations
- 112,000 total program beneficiaries

Education
- Training 40,000 teachers
- Establishing distance learning centers
- 200,000 total program beneficiaries

Agricultural
- Training 70,000 farmers
- Developing market pricing application
- Deploying 5,000 extension workers
- 180,000 total program beneficiaries

Financial Sector
- Supporting agent banking
- Facilitating digital payments
- 15,000 total program beneficiaries

USAID Program Spend by Sector (USD)
[Insert Country Specific Data]

- ■ Health — 20
- ■ Education — 25
- ■ Agriculture — 50
- ■ Financial Sector — 5

2

USAID Programs are among the largest purchasers of telecommunications services in [Country]

- USAID works in [Country] through [XX] "implementing partners" – contractors that have multi-year contracts to deliver services

- USAID partners programs rely on connectivity as an increasingly integral element of operations and service delivery

- Collectively, we are a sizable market segment, often with significant presence in rural and underserved geographies and communities

- We can represent market-making anchor tenants in areas of marginal economic viability

- **We would like to work with you to identify service gaps and identify solutions that benefit us both**

USAID Programs in Country

- Total annual spend $_____
- Total annual communications spend $____
- Number of programs____
- Number of Implementing Partners____
- Number of field staff____

3

To show our collective demand to the industry, we have consolidated data on our telecommunications requirements

- Organized workshops
- Identified key data elements
    - Location
    - Telecommunications requirements
    - Size
    - Current monthly spend
    - Plans for growth
- Developed survey instrument
- Implemented survey across organization
- Socialized finding

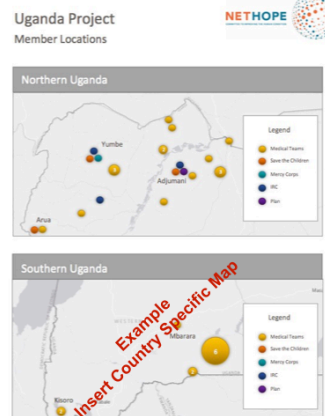*We did your market research for you!*

4

We have been able to identify important commonalities

Report findings included:

- Significant geographic overlap;
- Similar connectivity requirements including a need for both fixed and mobile services
- Significant monthly spend on telecommunications requirements
- Expanding, multiyear requirements

IP Geographic Overlap

Uganda Project
Member Locations

NETHOPE

Northern Uganda

Southern Uganda

Insert Country Specific Map
Example

NetHope has extensive data visualization capabilities available to Missions and Implementing Partners

5

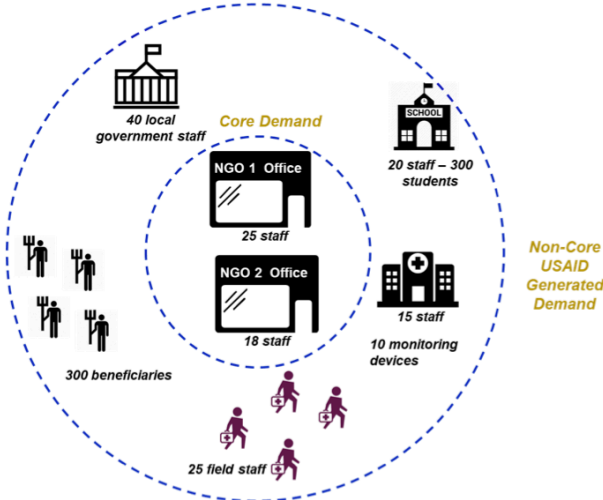## USAID programs represent a stable customer base with several advantages

- Five-year funding cycle linked to USAID's Country Development Cooperation Strategy, which is negotiated with the government

- Donor-funded – reliable, stable, sometimes long-term, multi-year revenue streams

- Often serve as communications service 'intermediaries' to broader user-customer community

- Higher spend/volumes more in line with business customer segment

- Willingness to pay for better quality

- Centralized nature of the market segment can lead to more unified business approaches (marketing, contracting, provisioning, service)

YOU ARE VALUABLE TO US

6

Serving USAID programs can unlock additional demand in the same geographic area

Demand Progression
40 local government staff
Core Demand
NGO 1 Office
25 staff
NGO 2 Office
18 staff
300 beneficiaries
25 field staff
SCHOOL
20 staff – 300 students
15 staff
10 monitoring devices
Non-Core USAID Generated Demand

- USAID programs serve as "anchor tenants" supporting an infrastructure investment with long-term commitment to the region

- Service providers can employ a graduated approach

- Supply is the driver of adoption

- "Me too" effect – other institutions and individuals will see the value of telecommunications
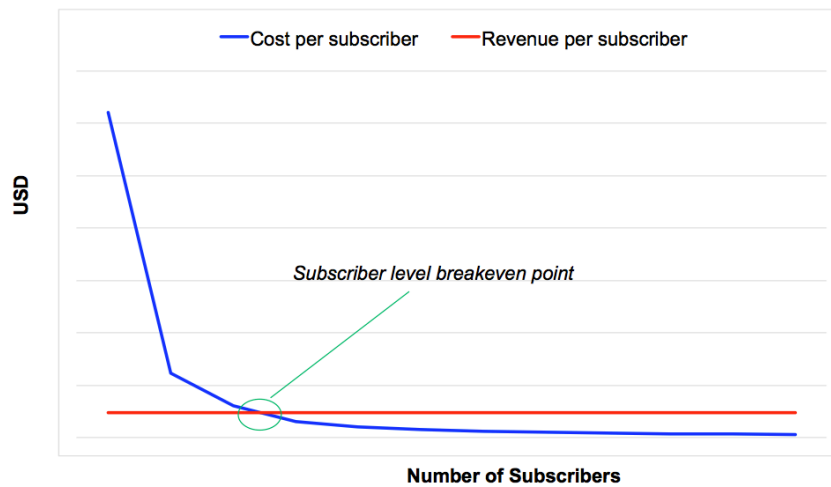
7

Collectively this untapped demand can ensure that service providers achieve the necessary economies of scale
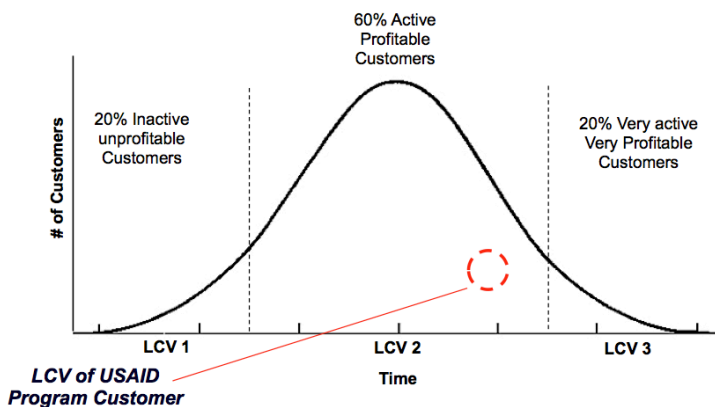
3G Cell site Economics

Cost per subscriber — Revenue per subscriber

USD

Subscriber level breakeven point

Number of Subscribers

8

USAID program generated demand will also have a higher Life time customer value (LCV)

LCV = ((Average revenue per unit – Average operating cost per unit)*Average Length of Service) – Cost per Gross Addition

USAID Program Customer Profile

- Higher ARPU
- Longer length of service
- Lower acquisition costs
- Reduced churn

60% Active Profitable Customers

20% Inactive unprofitable Customers

20% Very active Very Profitable Customers

# of Customers

LCV 1   LCV 2   LCV 3

Time

LCV of USAID Program Customer

9

Analysis...

Revenue forecasting model highlights the financial potential of serving IPs and related subscribers in the region

Revenue (USD)	Year 1	Year 2	Year 3	Year 4	Year 5
District A					
Implementing Partners					
IP 1					
Small	1,200	2,520	2,520	3,780	3,780
Medium	-	-		1,890	1,890
Large	2,640	2,772		2,772	2,772
IP 2					
Small	2,400	?	520	2,520	2,520
Medium	-		1,890	1,890	3,780
Large	-		2,772	2,772	2,772
Sub Total	6,	46	14,364	15,624	17,514
Other Facilities					
Schools					
Sm	00	13,860	15,120	16,380	17,640
M	7,200	9,450	9,450	9,450	9,450
	3,000	3,150	3,150	3,150	3,150
Hospitals					
Small	13,200	15,246	16,632	18,018	19,404
Medium	7,680	10,080	10,080	10,080	10,080
Large	-	2,772	2,772	2,772	2,772
Government Offices					
Small	12,000	13,860	15,120	16,380	17,640
Medium	7,200	9,450	9,450	9,450	9,450
Large	2,400	2,520	2,520	2,520	2,520
Sub Total					
Impacted Beneficiaries	21,000	25,200	29,400	33,600	37,800
TOTAL	91,920	120,834	128,058	137,424	147,420

Example
Insert Country Specific Financial Results

Revenue Highlights

- X new subscribers

- X monthly revenue

- X% anticipated annual growth

10

Value proposition Summary – USAID programs are great customers

- Consistent requirements (similar service needs)

- Low risk organizations (we always pay)

- Reduced customer acquisition costs (we have already identified and packaged potential customers)

- Higher than average ARPU

- Potential for multi-year commitments

- Ability to pre-pay for services

- Trusted partner that can lead to additional subscribers

11

How can we help each other achieve our goals?

- Support in accelerating build plans and targeting infrastructure in key areas
- Creative pricing structures that align with our aggregate demand and spending profile and support service provider revenue requirements
- Opportunities for co-investment/development of new products and services
- Creative contracts/mechanisms/agreements

12