

BEYOND CONNECTIVITY:

HOW CALIFORNIA LIBRARIES CAN LEVERAGE BANDWIDTH TO ADVANCE COMMUNITY GOALS

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This report is written from the perspective of an informed observer at the conference. Unless attributed to a particular person, none of the comments, ideas or recommendations contained in this report should be taken as embodying the views or carrying the endorsement of any specific participant or affiliated organizations or employers at the Dialogue.

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FOREWORD

Public libraries are places of discovery and imagination and they have long served as a societal equalizer. Today's libraries play an important role in supporting a range of services and priorities for individuals, families and communities—including literacy and learning, career and workforce readiness, digital skills development and civic engagement. They are community anchors and a key part of the lifelong learning pipeline. In the California Research and Education Network (CalREN) managed by the Corporation for Education Network Initiatives in California (CENIC), California public libraries have a powerful resource to carry out their important work to expand and democratize learning and civic opportunities.

CENIC advances education, research and the public good by providing an advanced digital communications network that is essential for innovation, collaboration and economic growth in the 21st century. Membership in the CENIC network is comprised of research institutions in California and their partners around the globe, colleges and universities, community colleges, K-12 schools, public libraries, cultural institutions and a growing number of affiliate organizations who share the mission to advance education and research for public benefit. Public libraries are among the newest partners to connect to the CENIC network. Since 2013, the State of California and local communities have made significant investments to connect library systems and branches to CENIC's network that is orders of magnitude faster than libraries have previously experienced. But connecting to the network is just the first step.

As the new kids on the CENIC block, public libraries are exploring ways to leverage the insights, experimentation and innovations of other institutions on the network and to harness their CENIC connectivity to create innovative new services for their communities. They recognize that the introduction of high-speed, networked technologies can extend libraries' work to activate the human imagination in new ways and provide new platforms for innovation and entrepreneurial activity—if libraries can close the gaps and overcome the barriers that create challenges to using the network more completely.

With grant support from the Patrick J. McGovern Foundation, the Aspen Institute Dialogue on Public Libraries convened the "Beyond Connectivity: Gigabit Network Use in California Public Libraries" conference on December 4-5, 2018 in Sacramento to examine how public libraries in California are using the CENIC network and to identify what more can be done to support the development of advanced library services using new digital technologies. Conference participants examined ways to accelerate the development and uptake of innovative applications for gigabit connectivity with a focus on priorities in education, workforce and career readiness, equity in community design and civic participation.

While some libraries are using high-speed networks in innovative ways, a white paper prepared by John B. Horrigan as background reading for the conference found that many are simply using CENIC bandwidth for operational efficiencies. The conference identified two gaps—an *expectations gap* and a *broadband-imagination gap*—that impede the ability of public libraries to

take advantage of the CENIC network's capacity as rapidly and as programmatically as many library leaders would like to do.

To close these gaps, the roundtable recommended the creation of "collaborative blueprints for action" for public libraries, other CENIC members, (e.g., colleges and universities, K-12 schools), and other key stakeholders. Conference participants made it clear that *the will* for innovation is strong, it is *the way* that is not as clear. Critical to achieving success is having an ongoing forum which presently does not exist for leaders in these institutions to come together and address critical areas of interest and areas of need to develop deeper partnerships and resources.

The following report provides a snapshot of some of the things that California libraries are doing with high-speed bandwidth now and identifies the factors beyond better bandwidth that allow libraries and communities to take advantage of CENIC. It addresses technical, economic, institutional and other challenges that California public libraries face in getting the most out of CENIC's network. Finally, the report presents recommendations for accelerating uptake and innovation in the use of CENIC by focusing on three areas of opportunity where CENIC bandwidth can be used: universal pre-kindergarten, youth learning and engagement, and civic participation.

As the nation confronts widening gaps in wealth, education and participation, public libraries are neutral, free and inclusive public spaces that provide access, promote learning and build trusted relationships in communities. By building on this access and trust, and abundant bandwidth provided through CENIC, California's public libraries are expanding opportunities for the people and communities they serve in ways that are critical to closing these troubling gaps.

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The Aspen Institute Communications and Society Program would like to thank the Patrick J. McGovern Foundation for supporting the Aspen Institute Dialogue on Public Libraries and making the “Beyond Connectivity: Gigabit Network Use in California Public Libraries” conference and this report possible. The foundation’s support of and appreciation for public libraries makes it possible for libraries to serve a whole new generation of learners and entrepreneurs.

We also thank John B. Horrigan, conference rapporteur and white paper author, for the research and writing that he conducted for this project. His preparation of the background white paper, “From Books to Bandwidth: Connectivity and Innovation in California’s Public Libraries,” helped the conference planners and participants think through the critical issues that needed to be on the table. With this report, which incorporates some of the conclusions in that white paper, Horrigan has synthesized a wide-ranging discussion into a cogent narrative and summary that will inform state and local leaders, librarians and other stakeholders as they push forward to close gaps and make progress in their communities.

The staff of the California State Library provided exceptional support that enabled us to hold the conference in Room 500 of the Stanley Mosk Library and Courts Building, a beautiful chamber with murals chronicling the history and progress of California that provided an inspirational setting for our discussions. We are especially grateful to Deborah Lynch and Beverly Schwartzberg of the California State Library for their assistance. Kiahna Cassell, project director, and Rebecca Tantillo, associate in the Aspen Institute Communications and Society Program, managed the administration and logistics of the conference with great skill.

We also acknowledge the leaders of the Sacramento Public Library, Director Rivkah Sass and Deputy Director Jarrid Keller, for their counsel in the planning process and for hosting our opening reception and dinner at the Sacramento Public Library’s main branch. Likewise, we thank Joaquin Alvarado and Kristin Belden of Studiotobe for their thought leadership and support in planning the conference.

Finally, we thank our participants who are listed on pages 18-19 of this report and whose generous contributions of time and expertise have made the roundtable and this report possible.

BEYOND CONNECTIVITY:

HOW CALIFORNIA LIBRARIES CAN LEVERAGE BANDWIDTH TO ADVANCE COMMUNITY GOALS

OVERVIEW

Public libraries in California are in the midst of an historic shift in their ability to serve their communities. For their digital connectivity needs, most libraries now have access to the state's research and education network, CalREN, managed by the Corporation for Education Network Initiatives in California (CENIC). This network offers connections speeds between 1 gigabit per second (Gbps) and 100 Gbps. What are libraries doing with this bandwidth and what *should* they and other stakeholders do with it? This question animated a series of conversations that the Aspen Institute's Dialogue on Public Libraries convened with public library officials and other stakeholders in California.

The CENIC network offers California public libraries a prism through which to reimagine how they serve their communities. The discussions at the Aspen Institute's "Beyond Connectivity: Gigabit Network Use in California Public Libraries" conference showed that libraries are already using their new bandwidth capacity in innovative ways, but more needs to be done to take full advantage of CENIC. By embarking on new bandwidth-driven programs and services, libraries can change expectations about their role in addressing community challenges. At the same time, libraries themselves must do more than simply use CENIC bandwidth for operational efficiencies; they must collaborate amongst themselves and outside partners to further innovate services by using this robust bandwidth.

To reset expectations, participants recommended a collaborative blueprint for

action for all stakeholders in California—public libraries, state policymakers, local government officials, education leaders, the private sector, and the non-profit community. These parties should examine how CENIC bandwidth can contribute to solving three problems, with libraries as a fulcrum:

- Providing universal pre-kindergarten services, with a specific role in employment certification for those who want to work in the pre-K field;
- Expanding youth programs, with an emphasis on digital storytelling to improve literacy and empower youth voices;
- Promoting civic engagement, particularly as it relates to voting, the 2020 Census, and public safety.

The local public library is among the most trusted of any community anchor institution. Combining that trust with abundant bandwidth can expand possibilities for the communities that libraries serve.

WHAT CENIC MEANS

Public libraries have always been in the business of moving information and knowledge across networks. Checking out a book, taking it home on a bike or bus, and sharing its content in conversations with friends is the old-school way of networked information-sharing. Electronic networks are the currency of information-sharing today—a reality that libraries have understood for decades and that has prompted large investments by public libraries in digital infrastructure.

Yet some library facilities, especially in rural areas, are saddled with speeds that fall below the Federal Communications Commission's 25 Megabits per second download threshold for consumer broadband. This is at a time when community anchor institutions such as libraries **need speeds of at least 100 Mbps** and, often, multi-gigabit networks.

What happens when libraries experience network upgrades that result in speeds orders of magnitude greater than they have previously had? The State of California offers insight into that question, as public libraries now are able to connect to the California Research and Education Network (CalREN). CalREN is managed by the nonprofit Corporation for Education Network Initiatives in California, or CENIC.

Over 80% of all library jurisdictions in California now have their internet connectivity and services through CENIC, which offers speeds of 1 to 100 Gbps to member institutions. As a result, many libraries have gone from relatively pedestrian network speeds in their facilities to gigabit-plus speeds. The leap in bandwidth has not, in some cases, been accompanied by new library initiatives to take full advantage of it.

To explore questions of how libraries respond to large increases in network speeds and how they can accelerate the development and uptake of innovative applications for gigabit connectivity, the Aspen Institute's Dialogue on Public Libraries convened a series of discussions with library officials, technologists and other stakeholders in Sacramento, California on December 4-5, 2018. The meeting offered a number of examples where bandwidth can do more to help libraries serve communities, identified obstacles that stand in the way, and offered recommendations for overcoming these obstacles. The discussion revealed excitement and anticipation over the CENIC network, but also apprehension about two gaps:

- **The expectations gap:** This is the gap between how stakeholders view libraries' role in their communities and the scope of community challenges that CENIC connectivity can help libraries address.
- **The bandwidth-imagination gap:** This is the gap between the huge upgrade in network capability and the ability of libraries to develop new programs and services that fully exploit CENIC bandwidth.

The expectations gap calls on a range of stakeholders—elected officials, community leaders, the private sector, and library professionals—to contemplate how CENIC bandwidth and public libraries can help address significant challenges in California communities. The bandwidth-imagination gap calls on libraries to look outward to partners to develop programs and services that take advantage of CENIC capacity.

CHANGING EXPECTATIONS: EQUITY, TECHNOLOGY, AND COMMUNITY DESIGN

A prerequisite for libraries having a larger role in addressing community challenges is changing expectations around public libraries. But changing expectations about libraries is no easy task. Part of that has to do with libraries' unique role in their communities. No other institution opens its doors to people of all ages with free services that offer patrons the opportunity for learning, growth, and fun. Although a library is a classic "third place" (e.g., a community's coffee shops, parks, and other amenities), the local public library is a third place with first order community responsibilities.¹ The library often stays open when natural disaster strikes. It serves as a drop off center for voting and tech support when the latest gadget confuses a user. The local public library is an institution that communities cannot do without, but whose everyday reliability

1 Ray Oldenburg, *The Great Good Place: Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community*, Da Capo Books, 1989.

means it is not always “top of mind” as one of a community’s anchor institutions.

To help reset expectations, participants suggested that libraries try to promote an abundance mindset when thinking about their missions and how to communicate that to the community at large. Having abundance as an operating principle does not mean that libraries somehow double their budgets. Instead it means libraries should take an active role in shaping public perceptions of them. The way for libraries to create new expectations is to pursue initiatives in service of important societal issues. Specifically:

- **Equity:** Bandwidth at the library offers an on-ramp to the internet for those without a home subscription or a subscription with insufficient speed to run the latest apps. It is a place people can go to cultivate job skills or acquire a certification for employment in a specific field. By offering new services and programs that take advantage of CENIC, libraries can address not just digital inequality, but also promote economic opportunity, improved health outcomes, and education for all ages.

The question arose as to whether libraries should play a bigger role in discussions in the state about bandwidth and equity. How can public libraries work with other entities, such as the California Emerging Technology Fund, to achieve the goal of having 100% of California homes connected to broadband (at a time when 15% of homes are currently without broadband)? Should all homes have 1 GB connectivity available to them? How can public libraries facilitate broadband access for students of all ages? Public libraries in California could take a larger leadership role in pursuing discussions about defining ambitious tech goals and how to attain them.

- **Libraries as a showcase for technology:** A persistent theme was that libraries should be tech centers for their communities. This asks libraries to reach out to private-sector

partners to further that goal. Becoming a tech center also helps libraries better communicate their value to elected officials and other community leaders. But doing this is not about showcasing technology just for the sake of it. New technology can be daunting to many people and the library is a highly trusted institution for information and digital literacy. Ensuring libraries have the latest technology to demonstrate to patrons can help communities reap the benefits of innovation from the tech sector.

- **Libraries at the center of community design:** As libraries use bandwidth to contribute to fairness and opportunity in their communities, participants noted that this can place them at the center of community design. There are lessons to be learned from others who are employing technology in such a way. In Fresno, Bitwise Enterprises is about improving the supply of trained workers for the tech field, but also about making its hometown of Fresno a more desirable place to live and work. Libraries should similarly see themselves as active participants in improving the look and

BITWISE ENTERPRISES

In Fresno, an enterprise called Bitwise Industries trains local residents at its Geekwise Academy in an array of digital skills for tech jobs; to date, it has done so for more than 5,000 people of all ages. Bitwise also has sought to revitalize downtown Fresno by becoming an anchor business that develops new spaces and attracts more economic activity to a downtown that had fallen on hard times. Not every city in California has an entity such as Bitwise, but libraries can learn from its approach to place, education and execution as they expand workforce development programs for tech jobs. This, in turn, can help libraries be more at the center of community design.

feel of their communities and use CENIC bandwidth as a lever to do so.

Participants provided examples of how public libraries are resetting expectations while helping the community solve equity and design challenges. In Yolo County, the library's strategic planning process identified 500 homes without broadband access. This resulted in the library leading an effort to negotiate a technology solution by which a wireless signal provided broadband access to those homes. Library involvement in residential broadband solutions is not standard practice, but the library in Yolo County was the entity that helped solve the problem.

In Nevada County, the library found that its tele-tutor program for adult learners would benefit from allowing tutors to take laptops home to provide services. Being able to provide tutoring at home helped make the process easier for tutors, although it was noted that if CENIC could be leveraged to improve broadband access at home for low-income students, the tutoring program could be more powerful.

In these examples, library staff found ways to address community needs by thinking beyond the building. As libraries delve into these issues, they can also address the second gap—the bandwidth-imagination gap.

CLOSING THE BANDWIDTH-IMAGINATION GAP

The bandwidth-imagination gap is not unlike the phenomenon that often occurs when organizations encounter significant innovation. Electricity took a long time to have an impact on industrial practice and productivity because businesses had to reimagine and redesign factories to reap the rewards of a new way to power factories. Prior to CENIC, many libraries—especially rural ones—operated in a slow broadband environment (often 10 Mbps). Such slow speeds made it difficult to check out a book and offer public Wi-Fi

at the same time. In those situations, CENIC brings important improvements in operational efficiency. Yet implementing operational improvements may come at the expense of a more strategic approach focused on building for tomorrow and “dreaming big” about novel uses of bandwidth to serve library patrons and communities.

To highlight ways to close the bandwidth-imagination gap, participants focused on what some California libraries have already done with CENIC bandwidth.

Virtual Reality: Bringing virtual reality (VR) technology into libraries is a prominent theme in several California libraries connected to CENIC. At the Marin County Free Library, interest in VR began in 2016 as a way to expand educational opportunities in the county. Although the bandwidth that the CENIC network brings was a necessary condition to get the ball rolling in Marin, it was not sufficient. For starters, the library needed funding for computing equipment and other peripherals that make VR systems work. The California State Library provided a grant to help the library purchase computers with sufficient capacity to handle VR software. The initiative also needed additional equipment and educational content for VR. For that, partnerships were paramount. The library entered into a relationship with Oculus, a maker of VR hardware and software, and HTC Vive, a VR equipment maker.

Virtual reality is also a programming theme in the Los Angeles Public Library. At the LAPL, linking VR to education is part of the library's [Science, Technology, Engineering, Arts, and Mathematics \(STEAM\)](#) programming. Similar to Marin County libraries, LAPL uses Oculus and HTC Vive products for programming, with a particular interest in using the technology for immersive learning.

Using VR for these purposes requires imagination but also other assets, such as partnerships with companies who make VR gear to procure this equipment for libraries.

Another VR initiative at the Chula Vista Public Library has an intergenerational focus. The library's "One Mile" program refers to the familiar phrase of "walking a mile in another person's shoes" to convey the importance of understanding someone else's point of view. The project uses virtual reality, video, and story-telling to connect immigrants in the United States to their countries of origin. One application has grandparents and grandchildren using virtual reality goggles to jointly take a walk through, say, Mexico City (where the grandparent grew up).

Gaming and Rural Libraries: Like many library systems in California, the Sacramento Public Library has a diverse set of interests it has to serve; rural areas come into play prominently. Some two-thirds of its 28 libraries have CENIC connections and several rural ones are still unconnected. However, one CENIC-connected library in the town of Galt shows how bandwidth can impact the community's library services. The CENIC bandwidth has enabled gaming programs for young students in Galt, many of whom come from low-income households. Some 12-14 kids at a time gather in the town's library to play Minecraft, using connectivity and hardware that they lack at home. Not only do they learn about technology while having fun, the program helps foster a sense of community in Galt, as many of the kids (and their parents who often accompany them) have met each other for the first time through this program.

Learning: This foundational part of the library's mission can take on new meaning when a library has abundant bandwidth. In Sacramento, the library has used the service Twitch to host author visits for book releases. The CENIC bandwidth makes this possible, as the Twitch.tv service offers dedicated channels for an author to deliver remarks. It also allows the audience assembled at a library to have an interactive experience with the writer. Similarly, the Los Angeles Public Library used its high-speed network to host a gathering of the community to watch the landing of NASA's Insight craft on Mars.

Real-time cultural events are another use of CENIC bandwidth for libraries to consider, leveraging the symmetrical nature of the network. As one example, the San Mateo County Library let users view a live stream of the Music of Michael Jackson event put on by the SFJAZZ Collective. In a state with a large variety of cultural institutions, such as the Getty Museum in Los Angeles, the Monterey Bay Aquarium, and more, there is ample opportunity to share those amenities with communities across the state using the CENIC network.

Rural libraries may face barriers in developing interactive learning programs, in part because of scarce staff resources in smaller libraries. In Sutter County, there is a clear desire at the library to roll out interactive learning programs, using content from places such as The Exploratorium in San Francisco or the Library of Congress. However, the capacity for more digital programs does not automatically translate into such programs if staff does not have the time to run them. If it is not possible to hire new staff, then library leadership has to consider shifting staff responsibilities from old functions to new ones. That is not always possible, or possible to do quickly, even when new digitally-oriented programming ideas present themselves.

GETTING MORE OUT OF CENIC

The examples noted above demonstrate several of the exciting possibilities that a huge bandwidth boost offers to libraries. But integrating new technology into any organization takes far more than opening a box and turning on a switch. California public libraries are no exception and the challenges unfold in a number of ways.

Equipment & internal wiring: Libraries may have old computers running on operating systems that balk at applications that run on networks as fast as CENIC. Interactive gaming may run very well over a fast network such as CENIC, but then hit a bottleneck once the data arrives at a relatively antiquated computing

device. Internal wiring is another issue. Some libraries are old Carnegie buildings dating to the early 20th century and may not have upgraded their internal wiring to support the bandwidth that CENIC brings.

Staff and support: VR and other cutting-edge tech applications such as artificial intelligence and machine learning programs are very “high touch.” This means even libraries sophisticated enough to have such programming must have staff on hand to guide patrons through its use. Often, this involves asking incumbent staff to do new things on top of existing responsibilities. This places new burdens on staff in terms of managing tasks, but also calls for the tech skills to run a virtual reality program. Staff training is an obvious solution, but it is also necessary to create the “soft infrastructure” of information exchange among staff to learn the possibilities of new tech-driven programs and how to execute them.

Privacy and data security: This is an area where libraries and other CENIC members can combine forces. Libraries care deeply about users’ privacy, while perhaps lacking the staff capacity to stay current on a rapidly changing data security landscape. Here libraries’ membership in the CENIC community can be mutually beneficial. Libraries could benefit from the sophistication many research and educational institutions bring to data security, while those institutions could tap into the library field’s sensibilities about privacy. Fostering greater collaboration among CENIC member organizations around privacy and data security should be explored.

Last mile & network silos: The CENIC network runs to libraries’ central branches, but thereafter local network infrastructure is necessary to connect branches. This last mile connection can be a logistical challenge, especially in rural areas, but it is not always the case that a rural library branch is in a network desert. Over the years, the state of California has built dedicated communications for a variety of initiatives, such as telehealth. However, there is usually no way for these networks to connect to CENIC or to

be leveraged to help a rural library branch connect to CENIC. This siloed network problem can attenuate the value of the CENIC network. Exploring the legal barriers that have erected these silos should be a priority.

If the siloed network problem can be solved, rural areas have a chance to reap a number of benefits. Already, some rural areas have been able to leverage CENIC and other local networks to improve the connectivity proposition—and not just for libraries. Many local governments and health care facilities would benefit from more bandwidth. Agricultural businesses, in particular, are in critical need of access to sensor networks for water use, soil conditions, and other critical factors, as well as access to global markets for sale of agricultural products.

INITIATIVES TO ADVANCE LIBRARY USES OF CENIC

Although participants identified ways in which libraries are taking advantage of CENIC connectivity, there was also a clear sense that libraries have to do more to shift the aspirations and engagement of the public and key stakeholder groups for libraries in California. Libraries have roles in cross-cutting areas such as workforce development, career readiness, and improving literacy. In a world where local media in many places are having difficulty sustaining themselves, libraries can even serve as local content repositories for community members to share and store local content in lieu of traditional media. CENIC gives them greater capacity to fulfill these roles.

To move beyond aspirations, participants proposed that stakeholders explore specific initiatives that can put into focus how libraries can leverage CENIC bandwidth to align with key priorities across the state. The issues they identified were:

- Universal pre-kindergarten
- Youth programs
- Civic engagement

Universal Pre-K

Participants noted that universal pre-kindergarten (pre-K) in California is a **priority** for Governor Gavin Newsom and discussed how libraries can play a part. In particular, libraries can use broadband to train and certify professionals to provide pre-K services; the CENIC network could help libraries to do this at scale. Should libraries undertake such certification programs on a large scale, it is critical for them to document and communicate the number of jobs their pre-K certification efforts create. To think through a replicable model for libraries across the state to use for being a fulcrum for universal pre-K, participants suggested hearings across the state—perhaps convened by the State Library—to highlight innovative pre-K training models and libraries' role in developing them.

Youth programs

Participants noted that the CENIC network can be used to re-imagine programs that develop reading, writing, and creative skills for youth. A vehicle for libraries to address this is visual storytelling developed by kids. In turn, this can build kids' writing skills, creativity, and facility with digital tools—all of which can build citizenship and career-readiness skills. The CENIC network can serve as a tool for creation, production, and distribution of the stories created by youth, and bandwidth allows kids to use video and animation to tell stories. The non-profit organization 826 National is an example of how this can be done. Some libraries have

already embarked on digital story-telling programs. As a participant in the state library's Libraries Illuminated grant program, Marin County Free Library used CENIC bandwidth to allow kids to produce high definition video and virtual reality to convey to grandparents their experience on a farm. Going forward, libraries should seek partnerships with entities like 826 National to maximize the reach of digital story-telling that engages youth. These partnerships may also include K-12 schools in the state, a natural connection given libraries' relationships with schools. The added capacity of CENIC bandwidth can provide opportunities to learn from new partners and explore how to create new pathways for youth learning and engagement.

Civic engagement

Participants felt that libraries could use CENIC connectivity in three ways to improve civic engagement in the communities they serve:

- **Voting:** In 2020, all California counties will have the option of all-mail elections, which means that voters will have ballots mailed to them, which they will return to specified voting centers for tabulation. In 2018, a number of library systems in California served as ballot drop-off sites and more will serve that function in 2020. Libraries are ideal for this task because people trust them, but the CENIC network makes them even more ideal. The network can handle the capacity of dealing with tabulating votes and may have security advantages as well.

826 NATIONAL

Using technology to improve youth writing skills is a natural priority for libraries. 826 National is an enterprise that runs a national network of youth writing and publishing centers that includes a strong presence in California. The organization is using digital technology to help spark creativity for young people. 826 formed a partnership with the Cartoon Network to combat bullying. Kids often do not intervene when they see bullying because they have not witnessed such interventions done effectively. Working with the Cartoon Network, 826 had kids tell stories using writing and animation of bullying and how they intervened, which the Cartoon Network turned into public service announcements.

- **The 2020 Census:** Low-income and minority communities are at higher risk than others to being undercounted in the Census and that can have significant consequences for localities and the state, including the potential loss of millions of dollars in federal funding over the next decade. Libraries can play a role in educating people to participate in the Census, which is crucial given that the Census Bureau will encourage people to fill out the 2020 Census online. Already [Marin County](#) has received a state grant for pre-Census outreach. Since many population segments at risk of being undercounted have fewer digital access tools, and since the library is already a place where these groups turn for online access, the library's role here is a natural one.
- **Public safety and disaster recovery:** A number of examples showed the role the library can play in having a resilient network in the face of disasters. In Nevada County, the library lent hotspots for people displaced because of the Oroville Dam breach. In Los Angeles, the library is part of neighborhood resilience in the face of wildfires, offering a place for connectivity and community during times of emergency. In Sutter County, many reporters gathered at the fire station looking for Wi-Fi during the recent wildfires when a gigabit connection was available down the street at the library.

Libraries can help with civic engagement in more basic ways as well. Some local governments are moving away from providing paper forms for citizen transactions, instead making access available in digital formats. This may penalize those without the means to access the internet, making libraries and their online access tools the face of e-government for some population segments. All in all, the public's trust in the library is the foundation for the public library having a role in civic engagement, and the CENIC network offers a tool to help the library execute in these areas.

JUMPSTARTING THE FUTURE: A BLUEPRINT FOR ACTION

"The future is already here—it's just not evenly distributed." This memorable phrase uttered by the writer William Gibson captures the excitement of the new, while begging the question of how and how fast the future eventually arrives to everyone. This exploration of public libraries in California shines light on the steps the library community is undertaking to accelerate widespread dissemination of CENIC's benefits. But it is not a job for the library community alone; it will take collaboration with leaders in communities and all levels of government. To create and maintain momentum for change, several recommendations emerged from the Aspen Institute's "Beyond Connectivity" conference:

Planning

Libraries committed to integrating technology into how they serve their communities must undertake deliberate planning to make that happen effectively. Several California libraries said that strategic planning—sometimes by the library alone, other times by an entire county or region—helped identify how to use bandwidth to promote community goals and coordinate across institutions to carry out priorities.

Collaboration

Expanding collaboration can unfold in two ways for libraries. First, as they engage in programs relating to workforce development or pre-K, libraries will have to actively collaborate with stakeholders in those fields, and perhaps internet service providers to address patrons' at-home broadband needs. The other way relates to "thinking inside the network" as libraries now are connected to other CENIC institutions throughout California. This gives public libraries a new relationship to other institutions and the content they create, which in turn makes digital content more valuable to citizens of California.

Measurement and outreach

Although mentioned only in the context of libraries and pre-K employment certification, libraries should broadly explore measuring the outcomes of what they do with CENIC connectivity in the areas discussed above. By doing this, they assemble evidence to communicate to policymakers and others how bandwidth-enabled programs impact their patrons and communities.

As this examination of California libraries and the CENIC network has shown, bandwidth can be a catalyst for change. When a community has a key anchor institution with gigabit-plus network speeds, new opportunities emerge. With appropriate planning, collaboration, and partnerships, California's public libraries can help their communities seize these opportunities, close gaps, and ignite the imagination toward a brighter future for all.

AFTERWORD: REFLECTIONS ON THE FUTURE OF PUBLIC LIBRARIES

Libraries are a foundational resource for our communities and our democratic society. As libraries become more connected resource centers, new roles can emerge.

Participating in the Aspen Institute's "Beyond Connectivity" roundtable in raw and rainy Sacramento during December 2018, I warmed to several ideas we discussed. Most poignant is the new capacity of libraries to be a place for creators and makers, in addition to being a refuge and resource for seekers of information and knowledge. As new tools for creation are appearing, the ability to tap into global resources and then share what's created is enhanced with bandwidth.

California is blessed with CENIC and its forward-thinking connections and collaboration that are made possible by bountiful bandwidth. CENIC helps redefine physical space with an overlay of globally connected place—library as the smartest place in town. With the demise of local newspapers, libraries can become the home for new citizen journalists as the chroniclers of the community—with libraries functioning as publishers and archivists of the life and times of the regions they serve.

Presence is expanding, too with libraries serving as spots to vote, perches to plan, and as centers of competency and coordination in disasters. "Individuals in a quiet place" is giving way to "connections in a common space" enabling communities to fully flex toward collaborating and placemaking.

Kevin Clark
President
Content Evolution

TABLE: THE FUTURE OF LIBRARIES

NOW/NEW/NEXT INNOVATION

TEMPLATE

THE TABLE BELOW ILLUSTRATES A PROGRESSION OF INNOVATION FOR LIBRARIES. Prepared for the Aspen Institute Dialogue on Public Libraries Kevin Clark Content Evolution Now/New/Next™ Innovation Template		
NOW	NEW	NEXT
Single Competency	→ Role Expansion	→ Center of Competencies - Government (voting) - Collaborative Planning - Disasters + Coordination
Book Building	→ State & Global Connectivity	→ Smartest Place in Town (presence)
Knowledge Seekers	→ Digital Tools & Bandwidth	→ Knowledge Seekers + Content Creators
Librarians	→ University Degree Expansion	→ Information + Knowledge Scientists
Demise of Local Newspapers	→ Citizen Journalists + Blogs	→ Library as Publisher + Archivist (chronicler / placemaking)
Individuals in a quiet space	→ Connections in a common space	→ Community in collaboration

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BEYOND CONNECTIVITY: GIGABIT NETWORK USE IN CALIFORNIA PUBLIC LIBRARIES

SACRAMENTO, CALIFORNIA | DECEMBER 4-5, 2018

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ABOUT THE ASPEN INSTITUTE DIALOGUE ON PUBLIC LIBRARIES

WWW.LIBRARYVISION.ORG

Aspen Institute Dialogue on Public Libraries is a multi-stakeholder forum that creates unique opportunities for community and library leaders, innovators and institutional partners to collaborate on developing next generation initiatives for libraries across the country. The Dialogue launched in summer 2013 with support from the Bill & Melinda Gates Foundation's Global Libraries Program.

The project has led a national dialogue on the vision of public libraries of the future and activated a broad network of library champions among public and private sector stakeholders. This vision centers on three critical assets that libraries bring to the community: **people, place** and **platform**—the library as a **place** that empowers **people** to learn and builds the human capital of the community, and as a local, neutral democratic institution that helps to build the social capital and infrastructure of the community. The library as **platform** moves us into the future in ways that the local library can use information and network technologies to connect to resources throughout the world and allow patrons to become creators and innovators, too.

This vision is explained in [Rising to the Challenge: Re-envisioning Public Libraries](#) and furthered by an [Action Guide](#) used in communities nationally and globally to bring this vision to life. The Dialogue's work has impacted important decisions at the federal as well as state and local levels and includes the creation of new strategies, partnerships and initiatives to support and transform public libraries for 21st century digital society. The Dialogue is directed by Amy Garmer and is an initiative of the Aspen Institute's Communications and Society Program.