<u>**Executive Summary & Recommendations**</u>
Maddy Institute - CETF Roundtable Discussion
(December 18, 2020)

1. **Feasibility Study & develop proof-of-concept pilot projects to assess feasibility**
2. **Consider expanding EDUROAM as a first step.** CSU Stanislaus provides a good example. Relatedly, it may make sense to seek funding to support Radius installations and a rapid response team to set things up and provide support. The team could be comprised of staff from our institutions or even retired engineers.
3. **Potential Resources Needed**
   - Project Manager: Supports the technical project management and implementation.
      - Key Skills Include: Efficient project execution, effective change/transition management, political coordination and cooperation, system-level view, ability to track tasks and to break-out initiatives into component parts to build a work schedule, ability to create resource estimates, and ability to build comprehensive budget
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Higher education continues to be one of the most important and effective drivers of economic and social change. Higher education provides for social mobility, closing equity gaps, and addressing social injustices. The COVID-19 pandemic has made it very clear that digital equity gaps exist, and the need for broadband internet access and connectivity separated those who had the opportunity to learn, as well as those who had opportunities to engage in our digital economy.

Broadband is essential to modern life[1]. Through this body of work, in collaboration with the UC Merced, California State Universities Bakersfield, Fresno, and Stanislaus, local, state, and national partners, the Maddy Institute, and the California Emerging Technology Fund, we hope to provide a set of guidelines and recommendations to help move toward closing the broadband equity gap in the Central Valley of California.

We have organized our thoughts as follows:
   - Introduction
   - Preliminary Thoughts
   - Next Steps
   - Recommendations

<u>**Introduction**</u>
UC Merced, CSU Bakersfield, Fresno, and Stanislaus graduates a majority of all 4-year degree-seeking students from the Central Valley. A large number of 4-year degree-seeking students within the Central Valley self-report that they do not have any or sufficient broadband internet access to learn remotely from their homes; this either means no high-speed internet access or inadequate internet access. *(Note: Adequate broadband access was defined by the FCC to be 25*

Mbps down/3 Mbps up in 2015; a more recent study suggests that the goal should be 100 Mbps down/20 Mbps up.)

Central Valley residents, especially with a high percentage coming from lower socio-economic backgrounds, suffer even more when opportunities are lost because of a lack of adequate broadband internet. COVID-19 has made this "digital divide" even more evident. Vendors, generous donors, and government support can help greatly during these times, but we need a more sustainable and scalable path forward to address these complex challenges. What is needed are creative and innovative solutions. That being said, this is a large undertaking and will take strong commitment, partnership, and a large amount of resources. Together, however, we can help close this digital divide.

The group identified several key challenges:
- Inadequate and insufficient bandwidth creates inequities and disadvantages among populations already at the margin due to structural social and economic barriers.
- It is not enough to simply build capacity; it is important to build capacity that ensures inclusive access. And given the constancy of technological change, we must also "future proof" our policies and programs to ensure inclusion is sustainable.
- The "last mile" creates a fiscal challenge for ISPs since it often does not make business sense to offer that reach.
- Expanding infrastructure to the rural areas of the Valley is expensive.
- Policies, such as e-rate or other subsidies, tend to focus funding on the coastal areas of California, leaving a gap in the Valley.
- The lack of a feasibility study is problematic. One or more research teams should be developed to look at the data, work with ISPs and federal/state data sets and try and understand the problem in more detail by addressing such issues as:
  - Where are the affected areas?
  - What are the demographics of those areas?
  - How many households/persons are affected?
  - Who has the data?
  - What are their lived experiences?

Some potential ideas to explore include:
- Examining other national efforts to bring infrastructure/broadband to rural areas.
- Developing a guidance document on rural broadband deployment and adoption policies for the Legislature and Governor's Office. This is a social justice issue.

Among the considerations are:
- Cost - Price is a major factor shaping the fragile equilibrium of home broadband adoption, and price pressures go beyond the obvious challenge of high monthly fees.
- Limited availability, poor quality of service, hardware costs, hidden fees, and billing transparency are major issues for low-income or underrepresented communities.
- Privacy & security - many underrepresented communities are suspicious of the local and federal governments, as well as large technology companies. Some fear the data could be used to track or surveil them or their families.
- Serving Non-adopter – Making broadband available in municipalities, libraries, community centers
- Technology awareness or capacity limitations in rural communities

Preliminary Thoughts

Looking forward, the consensus was that the focus should be on the Four Digital Building Blocks of Inclusion:

- Providing low-cost broadband;
- Connecting digital-literacy training with relevant content and services;
- Making low cost computers available; and
- Operating public access computing centers.

More research on the prevalence and impact Four Digital Building Blocks of Inclusion across the Central Valley is needed. "Last Mile" solutions, in particular, are needed. This will require advocacy since they are expensive, and end users need to understand the relevance of this challenge to their economic future and educational opportunity. A number of models and examples exist and should be examined for their utility to the Central Valley. The right mix of public-private partnership, technical design, and service offerings will be needed to expand access.

To begin, however, we need more data. Possible sources of data include Broadband Technology Opportunity Program (BTOP), California Advanced Services Fund (CASF), and CENIC/Merit/R&E networks. The application of this data in feasibility studies with regard to telecommunications and infrastructure will require particular skill sets, and perhaps including an urban planning department would be beneficial. Part of any feasibility study must include future technologies with regards to telecommunications networks. Consequently it may be helpful to conduct interviews with the appropriate technology/infrastructure organizations and partner with computer science and engineering faculty/students to explore use cases. In addition, if potential telecommunications public/private partnerships are going to be a consideration, there are a number of publications that document these around the world. This will likely include the change management aspects, including marketing and communications. Finally, it would be important to factor in resource constraints, especially with overstretched university IT staff.

Next Steps

Any recommendation we put forward will require adequate resources. For example, lowering costs for students, such as through Affordable Learning Solutions, will likely increase costs for the university (or its partners).

Initially, one of the most viable options may be a broader rollout of Eduroam, where it is possible, to help provide broader access with lower overhead. Eduroam may be a key aspect, especially if community anchor institutions, such as community colleges, K-12 schools, public libraries, government entities, and healthcare facilities, can come together to work for the greater good.

It should be noted that the "last mile" will likely be the hardest aspect to fully understand and estimate. This is compounded by the fact that, in our case, the last mile may not be an actual physical location but something free from physical wires to allow access anywhere. Regardless of the method or means chosen, it is critical to factor in any ongoing costs, beyond the initial construction and implementation costs. In making these, and other decisions, it will be important to partner with the Regional Broadband Consortia.

Even if broadband was expanded to underserved areas, it is important to consider whether it is perceived as a basic need, such as food and water, or "just" another utility, such as electricity and

gas. *(Note: A Public Goods Charge could help serve as a framework for any future broadband-for-all effort.)*

Recommendations
- Connect with other organizations who are doing this work already, such as:
  - ASU Shaping EDU - https://shapingedu.asu.edu/project/universal-broadband-access-us
  - Utah and Eduroam - https://www.uen.org/tech/eduroam/
  - Look at examples around the nation - https://www.mcnc.org/
  - Speak with Northern AZ University (CIO Steve Burrell) regarding rural areas (i.e. tribal land for Arizona)
  - Join or serve on the California Broadband Council. Support adding a representative from the CCC, CSU and UC.
- Develop ==proof-of-concept pilot projects to assess feasibility==, based on other successful projects around the U.S.
  - Attached is a CENIC board presentation that lays out a number of solutions that may be applicable to the San Joaquin Valley.
    - CENIC-Wireless-Technologies_Board-Presentation-1.pdf
  - Other relevant information from CENIC can be found at:
    - https://cenic.org/blog/wireless-internet-technologies-for-access-equity-and-continuity
    - https://cenic.org/blog/fixed-wireless-solutions-to-extend-internet-connectivity
- ==Consider expanding EDUROAM as a first step==. CSU Stanislaus provides a good example. Relatedly, it may make sense to seek funding to support Radius installations and a rapid response team to set things up and provide support. The team could be comprised of staff from our institutions or even retired engineers.

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CETF Roundtable Discussion
December 18, 2020
Transcription of Meeting and Zoom Chat Comments

Key Question: *What can the Valley`s four public universities do to improve broadband infrastructure (access) and adoption, as well as digital inclusion, in the Valley, particularly in rural and urban underserved areas?*

Attending:

Sunne McPeak, CEO	California Emerging Technology Fund
Mark Keppler, Executive Director	The Maddy Institute
Juan Sanchez Muñoz, Chancellor	UC Merced
Ellen Junn, President	Stanislaus State
Lynnett Zelezny, President	CSU Bakersfield
Saúl Jiménez-Sandoval, Provost	Fresno State
Ben Duran, Executive Director	Central Valley Higher Education Consortium
Virginia Madrid-Salazar, Strategies Lead	Central Valley Higher Education Consortium
Angel Ramirez, Operations and Finance Manager	Central Valley Higher Education Consortium
Eduardo Gonzalez, Interim Executive Director	Fresno State Office of Community and Economic Development, and San Joaquin Valley Regional Broadband Consortium
Brad Barker, Director of Technology Services	Fresno State
Orlando Leon, CIO, VP for Information Tech.	Fresno State
Tom Uribes, PIO – Public Affairs Specialist	Fresno State
Larry Salinas, Gov't Relations	Fresno State
Jase Teoh, Director, Academic Technology	Stanislaus State
Rafael Espinosa, AVP, Information Technology	Stanislaus State
Neisha Rhodes, Gov't Relations	Stanislaus State
Tom Carter, Dept. Chair, Computer Science	Stanislaus State
Dianne Vargas, Faculty, Advanced Studies in Education	Stanislaus State
Laura Rocco, Librarian	Stanislaus State
Christene James, CFO, VP Business and Finance	Stanislaus State
Alex Reid, Faculty	Stanislaus State
Faust Gorham, AVP, Information Technology and CIO	CSU Bakersfield
Michael Lukens, Gov't Relations	CSU Bakersfield
Melissa Danforth, Dept. Chair, Computer Science	CSU Bakersfield
Alberto Cruz, Faculty, Computer Science	CSU Bakersfield

Elaine Correa, Dept. Chair, Child, Adolescence and Family Studies	CSU Bakersfield
Sandra Bozarth, Assistant Professor, Library	CSU Bakersfield
Ann Kovalchick, CIO	UC Merced
Kurt Madden, Chief Technology Officer	Fresno Unified School District
Tara Adams, Field Representative	Office of Assemblymember Devon Mathis
Angela Vega-Hiyama, Director of Gov't Affairs, South Valley	Comcast
Walter Hughes, State and Gov't Affairs	Comcast
Louis Fox, CEO	CENIC
Jarret Cummings, Senior Advisor, Policy and Gov't Relations	Educause
Mark Johnson, Thomas F Hash Endowed Chair for Development	Clemson University, South Carolina
Su Jin Jez, Executive Director	California Competes
Devin Cox, VP of Business Development	EntryPoint
Nadine Hugg, Communications Associate	California Emerging Technology Fund
Amy Boam, Program Coordinator	The Maddy Institute

9:00 – 9:15
- **Welcome:** Mark Keppler, Exec. Director – The Maddy Institute
- **Opening Remarks:**
  - o UC Merced Chancellor Juan Sanchez Muñoz
  - o Stanislaus State President Ellen Junn
  - o CSU Bakersfield President Lynette Zelezny
  - o Fresno State Provost Saúl Jiménez-Sandoval

UC Merced Chancellor Juan Sanchez Muñoz

It is an honor to join my distinguished colleagues from the CSU in welcoming you all today. This is an extraordinary moment in the history of the Central Valley — the four major institutions of higher education coming together to jointly address a pressing public issue. When each of us was growing up, the internet was unheard of. Today it is at the center of almost all we do. Communications, public safety, medicine, shopping, even — these days — ordering a meal can require not only a device to connect to the internet but strong and reliable internet service.

And in this realm, as in so many others, the Valley has been left wanting by an economy and a politics that has focused so long on coastal California.

We can do better, and I know our institutions will. We can be at the forefront of expanding services like telehealth, for those in rural regions of the valley without ready access to medical care — another critical issue we are working hard to address in our region.

We know the digital divide cuts many ways — older folks are less likely to be well connected than younger ones; black and brown families are less likely to be connected than white families;

poor communities have poorer connections, and rural communities can often be passed by on the digital highway.

Covid-19 has of course accelerated this problem, with more people staying safe at home and thus unable even to travel to places where they might find better internet connections for their needs. At UC Merced, thanks to a generous donation from HP, we were able to provide some of our students with laptops and MiFi connections so they could continue to take courses and interact with faculty from their home circumstances. But these ad hoc solutions, while important, are neither scalable nor sustainable.

I am pleased that this discussion will help not only to bring this crucial issue to public attention but begin to suggest some ways forward, and I will be learning along with all of you. Thank you for your time and commitment to this effort.

Stanislaus State President Ellen Junn

Thank you, Mark for the opportunity to speak briefly today about the value of our four Central Valley universities working together at this remarkable and important event.

When Stanislaus State, Fresno State, CSU Bakersfield and UC Merced partnered with the Maddy Institute in 2019, a primary benefit of this alliance was the opportunity for our organizations to join forces and collaborate on public policy and social issues unique to the Central Valley.

It's important to note that *collectively*, our institutions of higher learning span across 250 miles of the San Joaquin Valley, which is home to more than 2.5 million people. But unfortunately, as we well know, many areas within our region lack the needed infrastructure to provide reliable internet access and connectivity to properly serve the Valley's residents and attract businesses.

The digital divide was already a problem in our rural region as a significant number of households either don't have internet connectivity, can't afford the cost of internet service or the needed devices. The arrival of COVID-19, which prompted schools and some businesses to transition to distance learning and telecommuting, further exposed inequities.

However, there is a potential silver lining as the pandemic has provided opportunities for us to be creative and develop innovative solutions to facilitate learning and continue to provide high-quality education to our students.

Our universities have the ability to harness the collective brainpower and talent of our faculty, researchers and scholars. We can pool our resources and leverage existing partnerships with industry.

We are in a unique period of time where we can explore new, innovative approaches to close the digital divide and develop transformational long-term solutions. It's a massive undertaking that will require an abundance of human capital, brainpower and funding.

The partnership between our institutions provides a unique opportunity to take what we've learned about expanding access for students using distance learning and apply those concepts to improve infrastructure and access focusing on regional areas where the digital gap is greatest.

In order for our region and our state to thrive, growth and opportunity needs to be inclusive. The Central Valley cannot be left behind. Strengthening these collaborative and innovative opportunities in our Valley will strengthen all of California.

CSU Bakersfield President Lynette Zelezny

Good morning, and thank you to the Maddy Institute for bringing us together to explore a towering hurdle to access to higher education today.

The Digital Divide has troubled and confounded educators, communities, lawmakers, parents and students for years.

We know that students who do not have reliable access to the internet are disadvantaged in their pursuit of a life-changing education.

For millions of Americans, the road to that life runs through the public colleges and universities in this nation.

For Valley families, that road leads to CSU Bakersfield, Fresno State, Stan State and UC Merced.

Here at CSUB, we are celebrating a truly remarkable milestone in the Southern Valley. Fifty years ago, we opened our doors to the first of thousands of students, many of whom never would have considered college if it meant having to leave their families and community.

For 50 years, the question has been: How do we get students to come to our university?
The question now - in this great Digital Age - is how do we get our university to our students?
Before March of this year, we were on the threshold of a new Digital Era in education. But by the end of the month, everything had changed. We were no longer on the threshold. We were inside, searching for the light switch.

But we have been resilient and resourceful. Our students, faculty and staff have adapted. We are learning as we go, and I am proud of what we have accomplished together at CSUB.
Yet many of these access challenges cannot be addressed with tenacity and the innovations of a single campus. Building an infrastructure for broadband access requires us to work together.

We need California to understand what is at stake.
A movement to level the playing field.
A movement to ensure that all participants in our democracy get the opportunity to soar.

And a reminder of the strength and tenacity of the California Central Valley:
Here in this Valley, the movement for farmworker justice was born.
And here in this Valley, the great beating heart of California, we know that our students deserve every opportunity afforded to their peers elsewhere in the state.

Thank you again, Mark, and the rest of the Maddy Institute Team for convening this crucial session.

Together, we are Valley proud and Valley united.

Together, we will expand access to every student in this Valley.

Fresno State Provost Saúl Jiménez-Sandoval

I'm very glad to be here today; thank you, Mark for your invitation, and Sunne, it's great to meet you. Like you, I was raised in the Valley; 15 miles south of Fresno, in Fowler. I'm also honored to follow President Zelezny's remarks.

It is clear, that now more than ever, access to broadband is critical to the economic and social vitality of the Valley. This critical need came to the foreground during this pandemic. Fresno State's DISCOVERe program distributed over 8,500 devices to our students; that's 4,000 hotpsots and 4,500 devices.   75% of all our faculty received training in virtual delivery of instruction.

And our DISCOVERe program was novel back when it was initiated at Fresno State: Provide the students with a tablet, encourage the professor to use the table to teach, and create an eco-system within the classroom that would promote dialogue, incentivize learning, and further the assimilation of knowledge through a medium that was familiar to our cyber natives.

This program leveled the playing field: Free-sourced materials meant that everyone had the same resources, and the tablet empowered our students to harbor a sense of belonging like no other.

We are now working with DISCOVERe 2.0, a program that will incorporate this concept of the eco-system to the whole campus –where resources will be at the fingertips of students –from tutoring, counseling to health and activities with clubs and organizations. Currently, over 18,000 students are enrolled in DISCOVERe, and our goal is to fully enroll all our students and faculty within the next two years.

DISCOVERe 2.0 will only work if the connectivity is there –within Fresno State, our students are connected to our network… Yet, the challenges lie outside Fresno State –mostly in the rural communities of our region that are either lacking high speed broadband, or the access to it is prohibitively expensive. Currently, we have deployed 4,000 hotspots to sustain our virtual mode of instruction; that constitutes approximately 16% of our student population. And the cost to Fresno State has been steep, as we have invested 1.2M since March to meet this basic need. While the University can assist our students during this time of need through the use of its CARES funding, this expense is not sustainable in the long-term.

Broadband is a resource the opens doors of opportunities –discussion of or answers to any and all questions in any fields are posted on the web, and access to this vital resource will be the key to economic startups, telehealth, and a stronger democracy. In my conversations with both Senator Borgeas and Caballero, they along with other members, have introduced legislation dealing with this issue of digital services, and access to broadband. I believe that the future of California rests within our Valley –our population is growing, with a young demographic that is teeming with creativity. Our professors and students in the Craig School of Business are ready to carry out a feasibility and needs study, and we're also ready to collaborate on an inter-campus team that will explore broadband availability and speeds in our rural communities. Once our broadband is secured, the next natural step would also be to launch a cyber literacy campaign, though, that's a topic for a future discussion. Thank you for your attention, and collaboration, and I look forward to our future partnerships on this matter.

9:10 am – 10:00 am: Access (Deployment & Building Broadband Infrastructure)
Goal = 98% of the population "connected" by 2022
● **Discussion Regarding Possible Actions:**

  o **Have an interdisciplinary, inter-campus team explore crowdsourced data collection to more accurately measure broadband availability and speeds.** *(Note: FCC measurements are aggregated to the census block level, which often misrepresents the availability of broadband. If one home within a census block has access to broadband, the entire block is counted as served.)*

Fresno State Provost Saúl Jiménez-Sandoval: *I think that without knowing where the weak spots are, we cannot really build anything without that knowledge. For example, my brother lives on Temperance and Jensen. He has the family farm and cannot get broadband in his house. As a teacher he relies primarily on HotSpots. This is a very clear example regarding where farm communities are and what their specific needs are. It's not just the towns. It's the rural communities where the needs are the greatest.*

Faust Gorham (CSU Bakersfield): *This could be a place where we could partner with our ISPs if they're willing to share certain levels of data – not people but "we stop at this road" or "we have really good access within this certain region but not over here." If we could start to assemble that data, we could start working with it. I think there are different ways we might be able to get this data if we could develop this partnership.*

Fresno State Provost Saúl Jiménez-Sandoval: *There was a student who came to me who said that "across the road from where I live, they have broadband, but on my side of the street we do not have broadband and have to use hot spots. When I told the company about this, they told me "if you want broadband to come to your side of the street, you will have to pay for the infrastructure for the entire line."*

Mark Keppler (Maddy Institute): *Are there any privacy issues? What are the costs of doing that?*

Mark Johnson (Clemson): *One thing we did (that can be done by the universities) is mapping all of the university population against the FCCs Map of Broadband Availability to get an idea of how big the problem was (we had their home addresses since everybody has been home due to COVID and we had that data.) As you note the FCC data is not great and overstates the availability but I am aware of another project that would incorporate speed test data into that so that the maps that you produce could be enhanced with the people's service. I think that's a good first step in understanding the magnitude of the issues that you have.*

It cost us about $1,500 for the entire university so it was not an expensive thing. The data for those addresses gets geocoded and there are ways to make that a little bit fuzzy so that you can't trace it back to an individual person. Privacy is an issue but there are techniques for dealing with the privacy aspects.

- **Have faculty and/or graduate students (e.g., business, economics, IT, etc.) do an analysis of best practices and strategies of successful broadband deployment projects nationwide** (i.e., something local leaders can use in the planning phase of a community network that includes recommendations for identifying goals, prioritizing digital inclusion, choosing success metrics, etc.) (see: https://nextcenturycities.org/becomingbroadband-ready/)

Fresno State Provost Saúl Jiménez-Sandoval: *I think that's great but that implies that we have the infrastructure in place already. That implies that we have a way in which to implement the broadband. We need the infrastructure; we need the actual cables to go to the communities and then after that we need to then say "how is this going to be delivered to our communities?" That's the next step.*

Another thing I want to highlight is that often times, we think of immigrant communities that are not connected to the internet – they are connected, they are very much connected or they want to be connected. If they're not connected, they know about it and want to access this. The point case is my dad who is going to be 90 years old next year, has been in the States since 1945, worked in the fields throughout tending the family farm and has very limited English skills. He can carry a conversation in English in a very basic manner but he was never digitally anything. I gave him an iPad and he accesses YouTube for anything to do with fixing the washing machine to looking for ways to better his crops in back garden to anything in between. We think that these communities are not going to access it – they will access it. If the resources are there. In the future, we will have a population that accesses the broadband and comes up with startups or comes up with ideas that are innovatively, economically fruitful to our economy. I think that's really the key to all of this. If we have this, they will use it. If you build it, they will come, essentially.

Ann Kovalchick (UC Merced): *I think this would be a really helpful endeavor. There are so many really good examples nationally of rural or underserved communities developing collaborations among private partnerships to build out the infrastructure. I think one thing this approach could do is give us a good portfolio of different models for collaboration, as well as (in terms of those partnerships because this is a complex of ISP providers, regulated municipal entities, educational institutions, libraries). I think these different models have pulled on different kinds of technical solutions to get to the infrastructure issue: things like wifi on wheels in the Coachella Valley in which school busses are located in underserved communities and provide satellite wifi. Or the White Space Project in which the white space television frequency can be used to provide wireless connection over six to ten mile distances. I think doing this project would allow us to see a portfolio of models of collaboration and different implementations of technology and also expose faculty and students to the actual problem and build awareness.*

Sunne McPeak (CETF) [chat]:
And the Family Farmhouse often is the "corporate headquarters" for agriculture. We need law changed to allow a broadband signal to be broadcast into the fields as well as drive to reach all unserved households. CSUF SJV Regional Broadband Consortium, led by Eduardo Gonzalez has identified at least 47,000 households in SJV without access to high-speed Internet access. This will cost at least $43M and that is the CETF commitment to the San Joaquin Valley--we will help you go get our fair share of State funds for the Valley. And, as we partner with ISPs to deploy to all the unserved households, we will upgrade and connect all locations along the path of deployment. The united leadership of all your Universities will be very helpful.

<u>Jarret Cummings (Educause) [chat]:</u>
With a broadband availability project, it would be important to also assess effective availability within towns and cities, too. There are often significant problems in low-income areas with actual end-user access being extended to apartment buildings, for example, or lines being available in a neighborhood but the cost of connecting a home and sustaining service being out of reach for homeowners or renters.

<u>UC Merced Chancellor Juan Sanchez Muñoz</u>: *One of the things that our faculty and graduate students do very well is study things. I think that the obvious answer "could faculty and graduate students undertake some kind of analysis whether or not the infrastructure exists would be obviously something discoverable in the analysis" I think the answer is "yes." How do you coordinate what schools (because you can't do it across 4,500 colleges and universities), what schools and what regions of the country would you involve with the expertise and the funding, what kind of disciplinary backgrounds (would it be in the areas of mechanical engineering or computer science or some other related areas)? The idea, the principle itself, is rather actually quite sound and I think there are will be quite a number of schools that would be interested in participating because as Lynette said earlier, this is a longstanding, pernicious issue. People have been grappling with "the digital divide"- the digital cliff for a long time. I think you would garner quite a bit of interest from universities studying this issue in their region and having someone consolidate and create some aggregation of that analysis because we keep talking about this over and over. The one thing that faculty do exceedingly well (better than anyone) with their graduate students is examine things very carefully.*

If you were to divide the country into six regions (four coastal and a couple of Midwest regions) and you identify six prominent universities and you create a team at each university of one faculty member and four graduate students, you would then take the amount it would take for a graduate assistant, full-time, part-time, number of hours, stipend for the faculty member, it probably wouldn't be crippling. It wouldn't be the millions of dollars that Saul is having to spend right now on supporting his students and their families in terms of hardware (and he is probably underestimating the actual expense that Fresno State has incurred to provide this service) and you multiply that over several thousand colleges and universities… our study would be nowhere near that amount.

- o **Have faculty and/or graduate students (e.g., business, economics, IT, etc.) do a feasibility study** (i.e., can the product and projects be cost-justified)**.**

<u>Fresno State Provost Saúl Jiménez-Sandoval</u>: *I think we need to focus our attention on what the need is and what the need is is the access to broadband. For the most part, when we speak to the companies who have to build the infrastructure to our communities, they will look at this and they will say the following: "what will be the rate of profit if I build a system there?" We need to veer away from that and say "it's not about the immediate or future profits that the company will see but it is about the benefit that we will see in these rural communities when they have access to broadband." I think the question needs to be "what is going to be the benefit overall to our communities" rather than "what is going to be the profit to a particular company or industry." We have to think about the role of the state in the one hand and what is the role of industry for the sake of the community as a whole because in the end it's beneficial and productive if we have an informed citizen rate that has access to broadband for the sake of the state, the fifth largest economy in the world.*

Mark Keppler (Maddy Institute): *Maybe asking the ISPs to do that is going too far.*

Jarret Cummings (Educause) [chat]:
A feasibility study would need to take into account the state's public policy environment in relation to municipal broadband and rural cooperative options for building and sustaining at-cost or below cost service to end users.

Rafael Espinoza (Stanislaus State): *I think the idea is a very good one. ISPs have a very difficult time with that last mile from their antennas or their infrastructure (fiber connectivity) to the last mile and that is what we really need to address going forward. The infrastructure we can make the argument that government can support that and finance that – the last mile is really where we have a critical problem.*

Mark Johnson (Clemson) [chat]:
Think about alternative service providers. Some of the most successful high-speed broadband providers in the country e.g. Chattanooga, TN and Wilson, NC are municipalities that are using alternative methods.

Kurt Madden (FUSD): *I think that USAC was created which became e-rate because it took a little bit of money off of everybody's phone bill so that we could reach everybody in the rural area with a phone. Way back when, they said having everybody in the country have a dial tone is important. To me, internet is the new dial tone and everybody needs to have dial tone (rural and urban) and I think the way they solved it back then (when AT&T couldn't justify going out in the rural areas) but that was subsidized by a whole bunch of subscribers. I do think it's a government deal. I like these questions because in order for government to say we need to do this, you have to have these feasibility studies and information to go and say "this is what it costs and you can afford this." Until we get organized and collaborative and get this down on paper and present it to them, we're not going to get past the subsidizing and things that we need to have happen.*

Ben Duran (CVHEC): *The last two comments were exactly where I have been thinking about this for some time now. We no longer need to make the case; the case has been made. We now need to move forward about that last mile. We need to literally see the legislation that our legislators are putting together, hopefully have them all come together, and get behind something that ultimately takes this to the last mile. When we've been talking about it at the Central Valley Higher Education Consortium, we've also been talking about it in the broader sense about it being the new dial tone that literally everyone needs that. We not only need it for education (I'm not going to go on and make the case for it) but also with respect to telemedicine and agriculture.*

Ultimately when the advocacy comes, we really need to get medicine, agriculture and education and everybody else behind this thing to the point where the conversation from this point on should be "how do we get to that last mile" not "what's the feasibility of doing so" (that we need to do.) The ISPs need to either partner with us or be willing to accept what comes from the legislation. I was on a national webinar about a month ago where they talked about some of the things that are already being done (in terms of a feasibility study and best practices). There are people in the United States, in rural areas, who have handled this thing. They are doing hubs in schools, libraries, churches, and community-based organizations that have five-seven mile signals that people can log on to. Just down the street, the school district put up their own tower so we know this can be done. We know that it can be done. From my perspective and what we're

going to hopefully be working on with our university and college partners is really taking this thing in the Spring and having conversations around how to take this thing to the last mile.

Eduardo Gonzalez (SJVRBC) [chat]:
In partnership with CETF, the San Joaquin Valley Regional Broadband Consortium completed a Agtech broadband pilot project that demonstrated the importance and need of broadband infrastructure in Agtech, including precision irrigation, etc. The information was shared with the ISPs and the last mile was the issue, none of them wanted to provide the last mile connectivity.

Sunne McPeak (CETF) [chat]:
CETF and our partners statewide support increased collections into the California Advanced Services Fund to secure at least $1B for broadband infrastructure and another $6B in a G.O. Bond in 2022--at least $7B to subsidize deployment (ISPs and other community providers) when there is no ROI in rural communities and very low-income urban neighborhoods. We also are pursuing $100B from the federal government. This conversation is intended to get our fair share for SJV.

Orlando Leon (Fresno State): *I'd like to throw out an idea for us to consider. How do we get the attention of people like McKenzie Scott who just gave $4.7B away and many to colleges? How do we get the attention of Elon Musk who's disrupted the entire automobile industry and now space travel where people like NASA couldn't do what Elon Musk has done in such a short time. I know Google and SpaceX are all kind of involved in these broadband efforts in some way but I think it'd be great for them to be at our table, here, and we can start to explore what are some things that ISPs could not have done because we're not thinking innovatively enough.*

Ann Kovalchick (UC Merced): *I would have to agree with Orlando's comment. I think we can't really rely on the ISPs. They can be partners and respond to the legislation but they are for-profit entities. The time has passed historically in terms of connectivity being a innovation or a new thing – it's now just a mainstream necessity. It may not have reached many places but we're not going to be able to leverage the goodwill to any great extend of a commercial service provider. I think getting the right combination of partners and pulling in folks who really understand the value of investing in a region to address the fundamental problem as a key partner is a lucrative way to go.*

Tom Carter (Stanislaus State): *It's interesting that people talked about getting the dial tone. Today, you don't need wire to have a dial tone. Northern Arizona addressed the conversation of getting "broadband" onto the reservations and they had big projects to get copper wires and then realized that's the last generation, not the next generation. Today, more people on the planet have cellphones than have toothbrushes. Broadband is a capability, it's not a hardware infrastructure. We need to think in terms of wireless communication – that's the way to bridge that last mile. Trying to put wire cable to every house is 20th century technology, not 21st century technology. It's important to think about that direction.*

Sunne McPeak (CETF) [chat]:
Tom's comments prompts me to clarify that when CETF uses the term "broadband" it a generic reference to high-speed Internet infrastructure, including both wireline and wireless. There must be flexibility for last-mile connection and consumer choices for their household service. We do need to be future looking.

Devin Cox (EntryPoint) [chat]:
You need to discuss separating infrastructure (including last mile) from services. Infrastructure should be managed as a utility and services offered in a competitive way.

Rafael Espinoza (Stanislaus State)*: Some places like Africa only ever had wireless...that's what we need to look at now as opposed to the cables.*

Kurt Madden (FUSD) [chat]:
@Sunne - I agree, the funding is out there. It seems like what is missing is a comprehensive and viable plan that takes ISPs, customers, students, cities and government into account. I believe your efforts are pushing us towards a collaborative plan that can eventually be funded. I know you won't stop until we get there. Thank you!

Louis Fox (CENIC) (email):
It occurs to me that to address broadband issues in the Central Valley, one needs to know (a) who currently has (and provides) access to broadband, (b) and where there is no access and why. Is it a market failure, or are the barriers geography, economics, culture…? An inventory/shared understanding of the problem to be solved.

What would be a fascinating win is if the four universities could come together to create some kind of shared action agenda, common platform for addressing this issue. Probably pie the sky.

Eduardo Gonzalez (SJVRBC) [chat]:
@Sunne @Saul I agree for years the ISPs as an industry have directed the way California deploys broadband technology and California needs to start taking the lead on how the ISPs do business in California with an equitable distribution of this PUBLIC UTILITY.

Mark Johnson (Clemson) [chat]:
Ultimately even wireless service requires fiber to the antenna locations. The closer to the home you can get fiber the more future-proof you will be.

- o **Have faculty and/or graduate students (e.g., business, economics, IT, etc.) make recommendations regarding the type of system that should be built to accommodate future needs.**

Fresno State Provost Saúl Jiménez-Sandoval: *I think this goes back to my initial statement with the companies. If a company has invested so much money into the infrastructure that requires wires (to Tom's case and point), will the company want to build a tower, if they are still wanting to profit or wanting to protect profits within the infrastructure that belongs to the 20th century? We go back to "what is the intention of all of this?" Is it telehealth? Great – if we have telehealth, somebody will contact their doctor that will prevent an illness that might later on costs the state or the taxpayers much more than if we had just treated it at the beginning. What is at stake here is not only the empowerment of the community but also the health of the community in various levels.*

Rafael Espinoza (Stanislaus State): *I think it's really important to think about and consider "leap-frogging" the technology. If we put in old infrastructure (to Saul's point) you're continuing the status quo. For example, in Africa, they never had the wires to all of the villages but now they have cell service – they leap-frogged that whole infrastructure and didn't need to*

spend billions of dollars installing that. If we can be innovative in what we propose for solutions for our rural areas, we may be better advantaged.

Ann Kovalchick (UC Merced): *I'd like to circle back to the initial question about the feasibility study. It's not going to be a problem to find out all of the technologies that we can invest in currently or that we see coming around the next curve and looking at those hardware infrastructure pieces, but really understanding these use cases. I think any feasibility study (in addition to mapping) should have some effort to identify the lived experience of folks who are not getting connectivity. You may have service to an area and one person experiences it with no problem and another family does not because they have more individuals with a greater number of devices needing to pull on a signal. How we represent, recognize and identify the way individuals need to use connectivity now and how we can imagine in the future will provide some compelling stories. Stories are always good; they capture attention. Then we engineer backwards from there the actual hardware technical solutions.*

- o **Are there any specific issues that should be addressed by the Valley's universities regarding improving broadband <u>access</u> in the Valley through a public-private partnership from the perspective of:**
  - ▪ **Public sector response:**
  - ▪ **Private sector response:**

- o **Miscellaneous: Are there any specific issues that should be addressed by the Valley's universities regarding improving broadband <u>access</u> in the Valley— particularly in underserved areas (rural and urban)—as it relates to:**
  - ▪ **Distance learning?**
  - ▪ **Telework?**
  - ▪ **Telemedicine?**

Elaine Correa (CSU Bakersfield): *I'd like to comment about shifting the discourse from it being a privilege to being a right. I think that's what's missing. We're talking about this as if it's something that's a privilege but it's really a right in terms of access, improving the livelihoods and the wellbeing of individuals. If we start from that point, we would be looking at it from the vantage point of the things that are going forward are not going to be reactions but actions that are going to be taking the first step rather than responding and reacting. I feel this is the mode we're in right now – we're reacting to the situation rather than being proactive and saying "these are the first steps that individuals have the right to."*

Fresno State Provost Saúl Jiménez-Sandoval: *I think that the comments that I had before regarding a basic need of electricity and water goes towards what Elaine is pointing to. It's the basic need for this right (rather than a privilege as she presented it).*

Mark Keppler: Summarize Discussion/Priorities on "Access"

Ann Kovalchick (UC Merced): *I would say the last mile is a priority in order to deliver equitable education, health and economic opportunity.*

Ben Duran (CVHEC): *I would echo that. I would pose this to one side of the legislature as an equity issue (which it is) but we could pose it to the other side of the legislature as an economic development issue – that it will raise the wellbeing of the valley economically and socially. The*

argument can be made to both sides of the house with respect of the importance of that last mile in terms of both equity and economic development.

Kurt Madden (FUSD): *I would agree with the last mile thing. I also think that there's probably not a silver bullet. When they wired all the phones, you just had phone lines and that was it. But there's wireless and there's wired and there's fiber so any approach that we have is going to be different between the rural (flat areas) and the mountain range. It is that you can get to your hubs more easily but let's make sure we don't do just one prescription as it's a layered effort, not a silver bullet.*

Walter Hughes (Comcast): *There is great danger to the valley in some of the state proposals around rural broadband funding. Just last year, there was a proposal that given their definition of "unserved," you (the Valley) would have to compete with cities like San Francisco and San Jose for the same bucket of money. What's critical is anybody on the whole definition of what's "unserved." We have folks on the other side (groups like the Electronic Frontier Foundation) who will try to argue on an "unserved" definition that would make you compete with very dense, populated, urban centers. I would hope the group comes back with a definition that really meets rural needs.*

Ann Kovalchick (UC Merced): *I am a member of the Scenic Board and have reached out to Louis Fox and he is very supportive of these efforts and principles. I don't have any doubt that they are willing to be an engaged partner in some form. They have a very specific mission as well but again this is such a complex problem that it's really a question of how do we bring these different components together and represent the ability of our partners to contribute something to the solution.*

This issue of economic development – the last mile is really the flywheel here. What's happening and will continue to happen is because there is no broadband connectivity and there is no economic development, then people leave the area because there is no opportunity and then you have lower population density which makes it less economically viable to serve the area with broadband. Breaking that cycle of depreciated service is going to be important and going to require an economic mindset to understand that until you bring broadband, you're not going to get the economic development that's going to bring the people that's going to make this economically viable.

Sunne McPeak (CETF) [chat]:
Chat comment to support Walter Hughes when Session 1 ended. He is right. We need to be very alert to ensure that available funding is not diverted away from the SJV for broadband deployment.

Walter Hughes (Comcast) [chat]:
The Maddy Institute could be a great resource for the Legislature as they develop rural broadband deployment and adoption policies. I hope we can work on any recommendations that are offered. The Legislature will not really begin policy hearings on this issue until late February early March.

10:00 – 10:15 – Break

Goal = 90% by 2022 = 500,000 adoptions in 5 years—from 2018-2022

Note: It also takes targeted strategies and intensive outreach efforts in-language and in-culture by "trusted messengers" to overcome three primary barriers for low income households: (1) cost, (2) relevance, and (3) digital literacy. CBO's can assist households in signing up for affordable home Internet service. (70% available residents are not aware of these offers.)

- **Discussion Regarding Possible Actions:**

  o **Have marketing faculty or students generate a marketing plan.**

Mark Keppler (Maddy Institute)*: We need to have trusted information...would a marketing plan that is focused on these rural communities make sense?*

Virginia Madrid-Salazar (CVHEC)*: Can you clarify?*

Mark Keppler (Maddy Institute)*: Digital literacy, privacy concerns? I would think you would need to be aware of those unique situations in those communities.*

Rafael Espinoza (Stanislaus State): *I think it's a valid point and important piece of the puzzle. At Stan State, we've been trying to communicate the internet essentials package that Comcast has put together and we get a lot of suspicion and questions about privacy protection, undocumented people, etc. These communities are nervous and hesitant. They recognize the need for having broadband but are very hesitant. We've been trying to market in different languages and with different advocates to get that communication and resource out there.*

Virginia Madrid-Salazar (CVHEC): *It sounds like what you're thinking about is an overarching campaign about how to properly use or be secure.*
Mark Keppler (Maddy Institute)*: Is that a concern, or a barrier to adoption?*

Christene James (Stanislaus State): *Yes (this -security- is a barrier.)*
Ben Duran (CVHEC): *I think it's a barrier but it's a barrier that needs to be addressed along the way. I don't think they're mutually exclusive, you do it as you go along. The notion of digital or cyber literacy is different that the security/trust thing. The Great Valley Center used to do a considerable amount of digital literacy when I was there. It's relatively easy to do. It's simply a matter of getting out there. There are models already existing out there for us to deliver digital literacy so these folks can help themselves or their children when trying to work online.
I think there are two different topics and marketing is an important one (as is this notion of delivering digital/cyber literacy.) I think both things need to be addressed. It would be a broader marketing plan throughout the Valley.*

Walter Hughes (Comcast): *We could spend 100 hours on this topic. So many socio-economic reasons as to why someone who has access to broadband nonetheless chooses to not take the service.*

<u>Kurt Madden (FUSD) [chat]:</u>
Comcast's Internet Essentials is a tremendous service for our families. We've been working with Angela Hiyama on the idea of a "Student Internet Essentials" that would be more focused on education - sort of like CENIC for the last mile

<u>Sunne McPeak (CETF) [chat]:</u>
Rafael is so right: It takes a trusted messenger in language and in culture. The sweet spot is if we combine advertising by ISPs (especially through community media channels) with CBOs to do outreach to inform residents about affordable offers and provide digital literacy.

<u>Kurt Madden (FUSD):</u> *When we pushed out 60,000 laptops to students homes, we got a lot of questions. We created the FLAT (Family Learning and Technology) Center support and we're handing anywhere from 600-1,000 calls a day from parents who are trying to make their technology work at home. It's a huge need. We provided 10,000 hot spots to folks. Part of people being able to adopt the technology is having a place they can call and get help on it.*

- o **Have marketing, communications and/or foreign language faculty or students generate an outreach and/or communication plan (different languages).**
  For example:
  - ▪ Awareness-building campaign:
    - ✔ Make community aware of network plans.
    - ✔ Build the brand and communicate the network's values and goals.
    - ✔ Provide communication platforms to engage with potential customers, dispel any network myths or concerns and build relationships.

  - ▪ Ongoing campaign once the network is established:
    - ✔ Continued growth of customer base.
    - ✔ Advertisement of new services.
    - ✔ Brand and relationship-building with customers.

<u>Virginia Madrid-Salazar (CVHEC):</u> *Only if it's culturally appropriate. You can't take something that you would write in English and translate it and expect it to translate culturally. It has to be culturally appropriate for the communities. It's very complex and not an easy turnaround. You need a lot of research and understanding of the communities that you're communicating to. It would be appropriate for the advertising and marketing students to do as this is their wheelhouse but they would need to make sure that the communication they're putting out is culturally appropriate. There would be a lot of focus testing involved, research brought to the forefront prior to the development of the messages and wherever it will be used ensure that the people who are going to receive it have an opportunity to review and provide feedback.*

<u>Ann Kovalchick (UC Merced):</u> *I would expand the terminology of marketing and outreach to include education because I think helping people become their own advocates is really the end goal instead of marketing to them. Engaging them in helping them become experts will create a more sustainable initiative.*

<u>Tom Uribes (Fresno State):</u> *I think that the answer to this question is "yes." For many years we've done college fairs for campuses everywhere in English. It's only been in the past few years that we've thought about doing it entirely in Spanish. It's very successful and has been done in three-four campuses. You need buy-in from a lot of partners in order to drill down to those*

communities to connect with them in a way that they don't feel is just another agency not connecting with them. Get a lot of the cultural institutions involved.
Culturally appropriate is not just a question of something that they'll relate to and understand but taking the extra measures to really embrace it to get the institutions to buy in so when the families show up, they see things they're comfortable with – most important being Spanish speaking staff making them feel welcome. It definitely needs to happen (in terms of marketing and reaching out to them) but getting partners throughout the community to be part of it.
The Outreach Office is active in this. They bring in other clubs and organizations on campus that have connections in the community.

Mark Keppler (Maddy Institute): *Are there specific organizations on campus?*

Tom Uribes (Fresno State): *yes - the campus structure has been built up pretty strongly, the community partners too.*

Dianne Vargas (Stanislaus State): *To Tom's point, one of the things we did here in Stanislaus County, our Office Of Education hosted an online financial aid workshop and our counseling candidates who are working on 600 field work hours are more than equipped to be able to help with financial aid services as most of them do speak Spanish in our community and they earn hours for that. It is definitely related to counseling and education.*

Eduardo Gonzalez (SJVRBC): *One of the key things that help communities adopt to broadband is that they need to learn the benefits of it. A lot of our communities have cell phones but don't understand the benefits of owning a computer and adopting to internet service. When that's explained to them, rather than giving them a flyer with a number to call, they need to make sure they're aware and culturally appropriate services that are provided to them so they can understand the points of adopting to the internet. Obviously, technology and affordable offers is a key component to that.*

Sunne McPeak (CETF) [chat]:
Rafael is so right: It takes a trusted messenger in language and in culture. The sweet spot is if we combine advertising by ISPs (especially through community media channels) with CBOs to do outreach to inform residents about affordable offers and provide digital literacy.

Melissa Danforth (CSU Bakersfield) [chat]:
Cost is a large concern. Having grown up in a family where the conversation frequently revolved around how to feed the family for the next week until payday, and knowing the growing demands on food banks during the pandemic, the cost factor cannot be ignored.

Jarret Cummings (Educause) [chat]:
The end user's cost/benefit analysis depends heavily on the intersection of service cost and digital literacy. If cost is high and the potential user doesn't recognized the value to her or him, then adoption is extremely unlikely.

Eduardo Gonzalez (SJVRBC) [chat]:
Digital Literacy + technology + affordable offers = Adoption   The Fresno State Parent University program is at 64 school district throughout the SJV and now have been asked to reach central coast and imperial valley with virtual digital literacy. That tells us that there is a BIG NEED.

Kurt Madden (FUSD) [chat]:
@Eduardo - I like your formula. It can't be just about the technology- that's the easy part. digital literacy is a critical piece

Sunne McPeak (CETF) [chat]:
Yes, Virginia. Culturally-appropriate generally means working with a trusted CBO for outreach and completing adoptions.

Christene James (Stanislaus State) [chat]:
That's assuming we have the resources to actually do that marketing and translation.

Eduardo Gonzalez (SJVRBC) [chat]:
The Fresno State CONNECT staff by University students (Call center) handle 200-300 calls a day for adoption purposes, only 20-25% of those who have broadband available in their community actually adopt. We have 28 students who work at the Call Center.

Elaine Correa (CSU Bakersfield) [chat]:
Digital Citizenship necessitates Digital Literacy for individuals to exercise their right to participate otherwise there will be greater issues of Digital Distress. simplistically Access + Opportunity should = Outcome. However, there are many layers that need to be considered - the intersectionality of differences will impact levels of active digital citizenship.

Eduardo Gonzalez (SJVRBC) [chat]:
The CSU system should include a Parent University program at each campus that provides opportunities for college students to teach digital literacy classes to the community in various languages.

Kurt Madden (FUSD) [chat]:
It used to be that if you wanted to get a message out, putting it in the newspaper and a few radio stations took care of it. But today, there are many layers of communication, including the cultural considerations that Virginia is talking about. It a huge challenge for everyone

Dianne Vargas (Stanislaus State) [chat]:
@TOM. Thank you for your comments. Students helped families fill out their FAFSA in break out rooms and it worked very well.

Melissa Danforth (CSU Bakersfield) [chat]:
Again, the cost consideration is important.

- o **Have IT faculty, staff or students provide free workshops to the public.**
    - ▪ Topics (through Extended Ed?)
        - ✔ How to buy and sell on-line
        - ✔ How to do research on-line (school, job, etc.)
        - ✔ How to talk to your doctor on-line
        - ✔ Etc.

Eduardo Gonzalez (SJVRBC): *One of the things that happened on March 13th this year, a lot of rural communities didn't know how to access healthcare or their bank accounts online. There's a need for workshops to happen; this would be a great program.*

Kurt Madden (FUSD): *I would also suggest videos. Saul is talking about his father watching YouTube videos on every kind of topic. We have a lot of things we can provide over video to help instruct folk. You do sometimes need a personal thing but not all staff are good teachers (and not all teachers are good teachers). Sometimes taking somebody who could really communicate a message make a series of short 2-minute videos that folks can watch online or download to be helpful and scale beyond a small classroom or community. There are different experts that different cultures recognize and it they had those in different languages, that could be very powerful and it could scale.*

Mark Keppler (Maddy Institute)*: Like a personality that is well-known in the community?*

Kurt Madden (FUSD): *And the cultural side - different languages, Spanish, Hmong, etc. and people will share it.*

Mark Keppler (Maddy Institute): *So the face of the message would be the personality, with the university providing workshops?*

Angela Hiyama (Comcast): *I'm entering the link to our Internet Essentials Website. We have a Learning Center that has free modules and videos on a whole host of digital literacy topics that's free to anyone who visits the website and available in roughly seven different languages to be used as a resource in any of the trainings for various communities.*
We are always happy to help explore partnership opportunities to get this information out to groups. We have organizations that use this curriculum for GED students.

Angela Hiyama (Comcast) [chat]:
Please feel free to utilize the free training videos are modules offered on our Internet Essentials Learning Center: https://www.internetessentials.com/learning

Mark Keppler (Maddy Institute)*: We have the information, how do we drive people to that information?*

Angela Hiyama (Comcast)*: We are willing to explore partnerships…*

Eduardo Gonzalez (SJVRBC) [chat]:
Great idea, the valley did that with the importance of wearing a face mask ….we can do that for the importance of adoption including accessing adult education, telehealth, social services, etc.

Mark Keppler (Maddy Institute): *Perhaps Joe Castro- University Presidents are well-known in their communities and maybe we could use them to reach people.*

Angela Hiyama (Comcast): *We did feature a Fresno State student previously who was a veteran, it was a great highlight.*

Tom Uribes (Fresno State) [chat]:
Actually, the students may be our best "soldiers" out in the field for this campaign. They are the real "geniuses" as digital users so let's put them to work training our community and showcase their individual stories promoting these messages.

- o **Have IT faculty, staff or students provide "help desks" for individuals who need assistance.**
  - ▪ **Types of Assistance?**
    - ✔ Example...
    - ✔ Example...

Mark Keppler (Maddy Institute): *ISPs don't want to be bogged down with basic questions; perhaps we can expand univ resources (help desks) to those folks who might need a little help.*

Ann Kovalchick (UC Merced): *I'm certainly willing to explore that. There are a number of constraints (but there always are). There is opportunity there to partner in meeting that need in a such a way that also supports the campus and undergraduate learning experience. There are also things like the GeekSquad service that would allow up to partner on deploying students and other resources into the community on an as-needed, on-demand basis.*

Mark Keppler (Maddy Institute): *I'm thinking we could give students internship credit for serving on the helpdesk.*

Brad Barker (Fresno State) [chat]:
Hugo Morales (CSU Trustee) could potentially partner with a number of these activities.

Melissa Danforth (CSU Bakersfield) [chat]:
We talk about cultural taxation for faculty, but we also have to consider this factor for students and not ask too much of the college students. They need to focus on their studies, and also balance their family demands, work demands, and school work.

Eduardo Gonzalez (SJVRBC) [chat]:
@mark GREAT IDEA   Press 1 Faculty/staff support ...Press 2 Student support ....Press 3 Community Support
@TOM - I agree! Many of these students are used to filling out applications and FAFSA forms and up to date on the newest technology. Speaking the native language of the user is key to making sure they are successful in this online world. The best part is our Graduate students who are earning hours are providing these services for free! Win-Win!

Ann Kovalchick (UC Merced) [chat]:
Libraries can also partner here

Christene James (Stanislaus State) [chat]:
Yes Libraries could be a great resource and a place to share information on these issues.

Tom Carter (Stanislaus State): *A group that's not represented here today is the community colleges. Back when I started teaching at Stanislaus Community College, tuition was free. One of the things that did was promote lifelong learning. If an older person was interested in watercolor painting, you would connect them with the community college, you would use that as outreach to engage them with a certificate in digital literacy. Perhaps we could use that as an idea of lifelong learning as a central education element in California.*

Ben Duran (CVHEC): *The community colleges are the higher ed institutions most closely connected with the community. They are connected and can deliver this sort of training in a non-credit modality which has been done for years and years and I would reach out to them. As we*

continue to work with the Institute, one of the things we want to talk about in terms of Central Valley is bringing in all of the higher ed institutions including the independents. I think the community colleges are a wonderful place to communicate to the community. A lot of the population we're talking about are also taking courses there so there is that notion of the community college maybe being trusted in ways the university is not.

<u>Melissa Danforth (CSU Bakersfield) [chat]:</u>
Going back to part 1 topics, there should also be a consideration of municipal services when the finances of the "last mile" are of concern

- o **Are there any specific issues that should be addressed by the Valley's universities regarding improving broadband <u>adoption</u> in the Valley through a public-private partnership from the perspective of:**
    - ▪ **Public sector response:**
    - ▪ **Private sector response:**

<u>Mark Keppler (Maddy Institute):</u> *Is there a different perspective between private and public organizations? Is there a role to play in this area for the adoption of broadband?*

<u>Christene James (Stanislaus State):</u> *One of the important areas that we look at here when we're working with facilities project with partners: for example, they're building an apartment complex right next to us at Stan State and various other places in the city and we've been making it clear that they need to make sure there is broadband available in those apartment complexes so people don't have to bring them in separately. That's one way we've been working with some of our local partners.*

<u>Kurt Madden (FUSD):</u> *In the past, public-private partnerships required a lot of attorneys and we've gotten past that. It is now very common and there are MOUs established. I see lots of public-private partnerships. That does provide a different way of solving a problem that neither one can provide on their own.*

<u>Ben Duran (CVHEC):</u> *With respect to the public housing folks, there's an owner of a company out of Stockton (Carol Hernales) when they build a complex, not only do they insist with building it with broadband access to all of the units but they also build into it a computer lab (a center) where families can go in, get trainings, and students can do some work. Those models are starting to emerge in some of the public housing opportunities that are being built up and down the Valley. There are models out there that lend themselves nicely to this very conversation about the public and private partnership providing access that families may not have had before.*

<u>Rafael Espinoza (Stanislaus State):</u> *We've been focusing on that last mile. On our campus we have a tower and allow ISPs access to that tower to give more broadband availability to the local community. We're building a second tower on the other end of the campus to increase that broadband. The issue here is the ISPs. Partnering with ISPs sometimes is difficult because they don't have the infrastructure in place but there are many small, local ISPs that are thirsty for that availability as they don't have the resources to build their own tower. Partnering with them has been very lucrative for them and also very beneficial for our students.*

We're also partnering with our school district to put antennas on our schools to get the reach farther.

<u>Mark Keppler (Maddy Institute)</u>: *When you think of examples, please send them to us so we can take a look at them.*

<u>Rafael Espinoza (Stanislaus State):</u> *Some of the smaller ISPs are thirsty for expansion and could be good partners.*

- o **Miscellaneous: Are there any specific issues that should be addressed by the Valley's universities regarding improving broadband <u>adoption</u> in the Valley— particularly in underserved areas (rural and urban)—as it relates to:**
  - ▪ **Distance learning?**
  - ▪ **Telework?**
  - ▪ **Telemedicine?**

<u>Ann Kovalchick (UC Merced):</u> *I think that's a natural extension of the mission. If the infrastructure is there, it further exploits the expertise. As that program is built out (which is several years from being executed) I think that's certainly a reasonable assumption to think that we can extend our services in those ways, and will.*

<u>Orlando Leon (Fresno State):</u> *I apologize I missed most of this conversation. Universities do have access to an educational broadband service spectrum. Are we using that to the best of our ability? Many of us have leased it out so we can get income to support other aspects of academia. Can we renegotiate that? Can we look into the use of that? I think this is another topic we can address.*

<u>Mark Keppler: Summarize Discussion/Priorities Regarding "Adoption"</u>

<u>Kurt Madden (FUSD):</u> *We are doing a private LTE network for our students. We're in the process of awarding a successful bidder on it and we're going to have pilot projects starting in the Spring. We're working with the City of Fresno, the county, Fresno State because pulling all of our resources together will help make it not just for our students but for citizens of Fresno. That effort of creating that private LTE for students that don't have a wired connection or any connection is one of the layers that need to be addressed.*

<u>Orlando Leon (Fresno State):</u> *We've been working on this and this semester we have about 4,000 total deployed hot spots. This might be one of the largest numbers in the nation in terms of one university and we're really proud of that but it's costing us a lot of money and is not sustainable. It's providing some good data that could help all of our efforts. In May, we plotted about 1,000 hotspots in the state of California and many of them are deployed withing the city boundaries, not the rural areas. We have to filter out that noise as we think about advocacy to get the right information. This is something we'd be happy to dig deeper into and plotting this into some platform to look at the date together.*

<u>Tom Carter (Stanislaus State):</u> *The third piece of this is NGOs (Non-Governmental Organizations). One of the things the faculty of my department are working on is having students of the software engineering course work with a local, charitable organization and help them entre the digital age, helping them with their websites to be viable and useful. An outreach from the universities to local, charitable organizations that are not government funded but have an interest in low-cost infrastructure support.*

Sunne McPeak (CETF) [chat]:
Mark: The water tower is a great question. Use of University land for towers and co-location also are good examples of public assets that can be leveraged to attract private investment.

Eduardo Gonzalez (SJVRBC) [chat]:
@Orlando yes EBS is a great resource

Walter Hughes (Comcast) [chat]:
On the issue of water towers and other co-locations keep in mind there is associated equipment needed including commercial power and a fiber connection that needs to be factored in.

Sunne McPeak (CETF) [chat]:
Yes, Orlando, please do dig deeper into that data around the 4,000 hotspots.

Jarret Cummings (Educause) [chat]:
The National Educational Broadband Service Association (NEBSA) provides a good body of information on the status and use of EBS across educational entities: https://www.nebsa.org/index.cfm

11:00 – 11:15 – Break

SESSION 3

11:10 to 11:55 – Institutionalization of Digital Inclusion (Building capacity with other institutions by incorporating digital inclusion policies and practices into ongoing operations and programs)

Note: The goals is high speed Internet connectivity and digital literacy for all Californians

- **Possible Actions:**

  o **Have universities develop reports on local broadband policies that would expand fast, affordable, and reliable Internet access (i.e., "future proofing").** *(Note: The growth of bandwidth demand over time has been studied and quantified in "Nielsen's Law of Internet Bandwidth" which states that a well connected user's bandwidth grows by 50% each year and is consistent with data from 1983 to the present." Therefore, it is "important to ensure that solutions deployed today are designed to scale to future demand.")*

Orlando Leon (Fresno State): *I think it would be great for us to be involved. I think it would be great if we could partner with K-12 and the community colleges because I think there is so much we can do together on influencing policy. I'm really sad that we'll have Larry Salinas move to the Chancellor's Office as I would have looked to him. We did invite people like Jerrod Cummings from EduCause and others. I'm not a policy expert; I'm going to look to this group here but I think we could work together and it would be really great because we can create something that's really powerful and influential especially coming from the Central Valley where we have so many people who have this need.*

Walter Hughes (Comcast) [chat]:
The issue of "future proofing" can be very challenging with innovation happening every day. Comcast uses Hybrid Fiber Coax (HFC) and is consistently finding ways to push more data through our existing pipes.

Walter Hughes (Comcast): *I'll just give you another example with recent attempts at "future proofing" deployment of networks. Recent years there's been this new concept of symmetrical networks which is a fancy way of saying the download speeds that an ISP offers should equal the upload speeds that they offer. Of course it make sense that you should increase the upload amount because of COVID, people are working from home more and using Zoom and Microsoft Teams so there is more of a need for upload speeds.*

We've had to really educate the elected officials on this concept because even with the increase of upload speeds, it still nowhere matches what our end-use customers are using which is really their download speeds – primarily you're using the network to download high-def video. When policymakers went down this road of trying to require symmetrical networks it was going to create added cost for no customer benefit. As you're thinking through these ares of future-proofing, we would love to work with you on what we see as far as network needs from our end users to help drive that policy discussion.

Melissa Danforth (CSU Bakersfield) [chat]:
The technical challenges of upload on coax are difficult. So I suppose future-proofing should consider technical limitations

<u>Orlando Leon (Fresno State) [chat]:</u>
On the same thought, when we build out new buildings, future-proofing usually means building in large and enough "pipes" for future expansion of low-voltage cabling. Do we need to rethink this?

- **It has been reported that "...there are four digital inclusion activities considered necessary for helping low-income individuals and families adopt broadband in ways that were most appropriate to their personal needs and contexts....**
  - **providing low-cost broadband;**
  - **connecting digital-literacy training with relevant content and services;**
  - **making low cost computers available; and**
  - **operating public access computing centers."**

  Have universities provide a checklist of what activities they can do in regard to each (see: https://www.benton.org/sites/default/files/broadbandinclusion.pdf)

<u>Ann Kovalchick (UC Merced):</u> *Speaking for UC Merced, we can certainly provide this information if it will illustrate a data point. I think one of the things that we have to be aware of is not exacerbating the homework gap that often exists where school children or adults in educational context have access to these resources outside the home but then get back home and don't have the ability to continue homework assignments or study or exploration because they don't have broadband at home. I think that's an unintended consequence of often creating alternate sites that folks can access. As long as it's part of a wholistic picture certainly the kind of examples provided here can be useful in understanding adoption patterns.*

<u>Melissa Danforth (CSU Bakersfield) [chat]:</u>
By "providing low cost broadband", does that mean providing access into existing infrastructure, expanding infrastructure, or both?And are we considering universities providing access to their students or to the community as a whole?

<u>Rafael Espinoza (Stanislaus State):</u> *We do provide computer labs that are open to our students on a regular basis. I don't know if we want to do that or provide that resource to the community at large simply because we don't have the resources to meet our current demand of our students. I can see the benefits of it to a certain extent but don't want ot create a situation where this is used to not go that final mile to the residences as I think that's really important. The final mile is the real challenge in my mind. The infrastructure pieces, the ISP partnerships, and towers are all of the things we have a certain amount of control over and resources that we can control but it's that last mile that's the real challenge.*

<u>Mark Keppler (Maddy Institute):</u> *Is that last mile prohibitively expensive?*

<u>Rafael Espinoza (Stanislaus State):</u> *It [the last mile] involves a lot of advocacy and acceptance by the users themselves. It is expensive. In the past we've done that with telephone systems, electricity and gas and if we start thinking of broadband as a utility that's universal and a necessary for all, it's a slightly different way of thinking about it.*

<u>Sunne McPeak (CETF):</u> *We were exploring with all of you if that's possible – working with students or student projects that might be doing outreach. Clearly, there has to be affordability*

of the product for the students and the residents in the community. That's one of the big issues that you cited, Mark, in terms of the four barriers (we usually cite three). We include the cost (which is the service and the device – which has to be usable), there has to be relevance (people have to understand why it's useful to them), and then there has to be the digital literacy (no one subscribes to service if they can't afford it and don't know how to use it.) So we were talking about the students (and getting all students online and being able to afford that service) and also the community.

When all of us were developing or negotiating the affordable offers (and when internet essentials was first promulgated) we did not anticipate or include as an eligibility category a higher education student qualifying for financial aid. Internet essentials set the benchmark (Comcast was the first), National School Lunch program is a category, CalFresh is a category. This year, the governor's office and the Department of Education actually raised the issue that all higher education (statewide organization, statewide system) said "why not if you qualify for a CalGrant Financial Aid in California" and that is under discussion this session; it's one of those issues we're also trying to take up and address.

Orlando Leon (Fresno State): *My colleagues Faust [Gorham] and Rafael [Espinoza] have been discussing within the CIO Group – many institutions around the world participate in this open network that's open only to educational institutions that I'm aware of (higher ed) and so if you travel from campus to campus you can just turn on your phone and see that you already have internet if you have done it at your home campus. Could we provide that more openly to others? That's outside of higher ed and perhaps to the general public. There are probably some implications and this is where we can have some discussion with Scenic which is the organization that oversees the infrastructure and implementation.*

Faust Gorham (CSU Bakersfield): *To Orlando's point, we have a lot of students who are travelling and not in the Bakersfield region who are able to come close to other higher educational institutions and get access. In addition, we've worked with the community college system here to bring them over so now we have all four of our community colleges coming over. It is expanding and this is again another place where we can look to get access into new communities that don't have it before.*

Louis Fox (CENIC): *In Europe, in particular, educational institutions have implements a Eduroam in civic spaces, transportation hubs and a variety of places. What it allows you to do as a member of some education community, you authenticate to that community and you're known (it's a way to do this security) and when you go anywhere that has Eduroam available you can access the internet. In Europe, they've even done this in commercial spaces as well. It's a really powerful technology. It would take some investment and some doing to have this on scale at places like libraries and for K-12 places but it's not impossible.*

Rafael Espinoza (Stanislaus State): *Our school district in Turlock is already implementing Eduroam across the municipality and using the local schools as access points for that which has been thus far very successful. We're not speaking to them about making it broadened across the entire city and to Melissa's point to transportation hubs and buildings; it's another avenue we're trying to explore.*

Brad Barker (Fresno State) [chat]:
Is there something that can be learned from what exists in much of Western Europe. They seem to have amazing connectivity (speed and availability) and it's priced very reasonably.

Orlando Leon (Fresno State) [chat]:
We should consider access in the context of what CENIC and Eduroam provide to us. Could we open this up to the public?

Walter Hughes (Comcast) [chat]:
I'm not sure that it's universally accepted that Western Europe does it the best. They have had several issues with network performance since COVID shutdown.

Laura Rocco (Stanislaus State) [chat]:
Outside of higher ed, I think that public libraries could provide a lot of insight into community user needs as well as being important outreach partners for digital literacy training

Eduardo Gonzalez (SJVRBC) [chat]:
During the pandemic the data cap was a great issue. Families who qualified for low cost internet were getting monthly bills up to $700 dollars. Once again it is important to inform families on the services they subscribe to. Old data caps might have been enough prior to COVID-19 but not now. how do we eliminate data caps for college students, and/or everyone.?

Walter Hughes (Comcast) [chat]:
On data caps and just speaking for Comcast we have had a 1.2 terabyte data cap in place and 98% of our customers never come close to using all of that and that includes post covid lockdown. The majority of customers who go over that threshold are heavy "gamers" that download large gaming files.

Louis Fox (CENIC): *You're authenticating to the network that you're already a part of. If you could access Eduroam in say a Starbucks… basically that ISP would be handing the traffic off to the Scenic network. It's like a lot of things in the background of the internet; it's a network of networks and there is an exchange of traffic going on. Some are free and some smaller ISPs have to pay the larger ISPs but this would be invisible to the user.*

Walter Hughes (Comcast): *Louis is spot on. There are CDNs (Content Delivery Networks), there are pairing arrangements (that are settlement free), there's paid connections, paid transit costs – there are so many different elements that go into delivering that traffic.*
It adds to costs. It's one reason why larger ISPs can offer (in relative terms) lower cost because scale in these situations matter so it might be more difficult for CENIC or somebody like that to have the same transit rates because scale matters in these types of scenarios.

Louis Fox (CENIC): *We're actually fortunate in that regard; we're moving exabytes of data now. In the internet scale, we're on the tier of many tier 1 networks. It's managing the directory infrastructure that's really complicated. Not every school district can get their arms around the directory issue. It's not like you're going to be using social security numbers; it's a complicated infrastructure to manage. Manageable at a district level but if you try to think about this at the state level, it's a very complex thing. Other states are doing this: Utah is in the process of doing eduroam across the state. They're not as populous as we are but they have some of the same complexities in geography. In my nearly 10 years at Scenic, this comes up every couple of years but I think there is more momentum right now because more individual institutions have moved to this direction.*

Mark Keppler (Maddy Institute): *I wonder if the Valley could be a project program along the lines of what Utah is doing.*

Louis Fox (CENIC): *I think it would be great. You have people with talented technology staff on here. I know there was a conversation about students doing help desks for the general population and so on but if you could take talented technology staff and create sort of a help desk for a school district around implementation of Eduroam (and work with community college) – I think it's a pretty fascinating palette to think about how you would do this in such a geographically disperse nine-county area. If you could do it in the Valley, you could do it for all of California.*

Walter Hughes (Comcast) [chat]:
On data caps and just speaking for Comcast we have had a 1.2 terabyte data cap in place and 98% of our customers never come close to using all of that and that includes post covid lockdown. The majority of customers who go over that threshold are heavy "gamers" that download large gaming files.

Eduardo Gonzalez (SJVRBC) [chat]:
@walter families are now dealing with new technology, last month we saw families with large bills because they installed security cameras, additional equipment for education, Wi-fi thermostats, google and nest devices, etc. These devices are running 24-7, Its not gamers, its regular online TV service now, Netflix etc. one customer has to be on telehealth/tele medicine calls on a weekly basis and the Data cap was reached twice already. We appreciate Comcast that allows customers to go over the data cap twice, but what happens after that?

Orlando Leon (Fresno State): *I wanted to come back about whether we include the general community. I would say generally short answer – yes, and especially with the first session where we talked about making this a right and not a privilege (having access to broadband.) During the pandemic when libraries shut down – those were the only places where people without computers at home base trusted to use computers but couldn't. Universities have a bigger footprint and maybe a little more resources to do this and I think it would be great to do this if we can provide internet to the whole community.*

When I was at my previous institution, I was at Stanford and I oversaw their public computing networks – they had a requirement (because I believe they accepted some federal funding from the government relating to government documents) so they had to provide a certain number of public computers to the general public (anyone who wanted to walk on to the campus.) There were complications and resource challenges in providing that as a regular service but of course they made that commitment and carried that through. I wonder if there's some federal funding that could be tied to this.

Laura Rocco (Stanislaus State): *I totally agree with that last point and I think while the public libraries especially might lack some of the infrastructures that we would have access to, they have been one of the services at the forefront for these issues for decades as people come in to use their services when they don't have reliable internet or technologies at home. I know that the libraries would be great research resources when we're talking about gathering information about the community experiences but also then for that outreach piece. Once some of these solutions exist and we need to get the word out, those are already trusted locations by the community. Librarians are already providing digital literacy training for their various resources. I think they would be a great partner when we're talking more at the community level of this issue.*

- o **Are there any specific issues that should be addressed by the Valley's universities regarding improving <u>digital inclusion</u> in the Valley through a public-private partnership from the perspective of:**
  - ▪ **Public sector response:**
  - ▪ **Private sector response:**

- o **Miscellaneous: Are there any specific issues that should be addressed by the Valley's universities regarding improving <u>digital inclusion</u> in the Valley— particularly in underserved areas (rural and urban)—as it relates to:**
  - ▪ **Distance learning?**
  - ▪ **Telework?**
  - ▪ **Telemedicine?**

<u>Mark Keppler: Summarize Discussion/Priorities Regarding "Digital Inclusion"</u>

<u>11:55 – Noon – Mark Keppler: Next Steps</u>

Elaine Correa (CSU Bakersfield): *I want to raise something that we're doing at the CSU and that is the Affordable Learning Solutions Initiative which is to reduce the textbook costs for students. This year, our program went completely without textbook costs so we could reduce the cost for our students (the idea of having access but also being affordable). One thing we didn't think about is what happens when the internet is down? What do you do if you're putting everything online?*

I want everyone to keep in mind as we're putting forward these solutions for using access, we also need to think about issues when access is not available and affordability as well. Solutions require finances. These are all intertwined and intersecting so while we're thinking about things, we need to think about access, affordability and the time our students have to do things. I know that a lot of people have been proposing student time towards things and a lot of our students are financially strapped and food insecure. Yes, they might want to contribute to the university but they also have to keep these realistic components at the forefront of their decisions.

Brad Barker (Fresno State): *I want to add on to what Louis said about Eduroam which is a great thing that works in many places. We've been trying to partner with the community colleges and the smaller school districts and they would love to partner with but don't necessarily have the bandwidth or the technical expertise to do so. Something to consider would be augmenting those technical resources to work with those individuals. We do have the knowledge at Fresno State but we don't necessarily have the partnership in place and I think that would be an important component and that would be almost zero cost really and they have outdoor wireless and a lot of resources that our students who are not necessarily able to come to our campus (pandemic or no pandemic).*

Walter Hughes (Comcast): *I would suggest (I think you already know this), the Maddy Institute could be a powerful voice on this debate of rural deployment. At the most strongest I could urge this group, stay close to this process. The legislature has done some things in the past – they attempted to do things last year that I wholeheartedly believe would have negatively impacted our region of the state and you have to stay close to Sunny and stay close to the process. As*

you're developing your white paper proposal, especially on rural deployment issues where you're getting the network to these unserved areas, the upfront construction costs is just one component. In many ways, that's the easiest to overcome. What you have to consider is the ongoing maintenance and upgrade costs that unfortunately large companies like Comcast (a for-profit company), we look at those ongoing costs when we try to balance where we're going to expand our network. We would always support subsidies or subsidized programs to those areas that just don't make economic sense for for-profit companies. You have to be guarded in your analysis that there are so many costs beyond initial construction.

Jarret Cummings (Educause) [chat]:
Helpful background on UDelaware's Eduroam project:
https://www.udel.edu/udaily/2020/may/eduroam-wi-fi-now-available-at-all-delaware-libraries/#:~:text=Members%20of%20the%20UD%20Community,8%20a.m.%20and%2010%20p.m.

Orlando Leon (Fresno State): *I'm glad this is happening now; it's perhaps more important than ever. We've seen the effects of the pandemic.*

Rafael Espinoza (Stanislaus State): *I think this is incredibly important and we have the potential to be incredibly impactful. We have a lot of great minds here and when we work together we can accomplish great things. A few technical points or issues that I want to call out once again are those technical resources to the community colleges – the universities have the power, ability and skill and should be reaching out to the community colleges. Jobs for our students and I think call centers managed by the students would be a really beneficial thing for the university, the community and the university. That last mile is the greatest challenge we have.*

Jarret Cummings (Educause): *I think the key element of the Eduroam discussion is that it highlights the value of partnership and networking among community anchor institutions and recognizing colleges and universities among community anchor institutions like schools, libraries and healthcare facilities. When we talk about the issue of public access to continue services and support, that's a traditional emphasis among the public libraries but when it's leveraged in partnership with institutional support from universities, when it's leveraged through connection with local schools and school districts, it can create a web of access that's otherwise might not be available. It's important to think in the context of community anchor institutions as a whole and how universities are a part of that context.*

Faust Gorham (CSU Bakersfield): *We have these competing aspects that we need to keep in mind where amazing anchor institutions (libraries, county buildings K-12) and other anchor institutions within their parts of their communities, but as we can see during this pandemic and during what may happen in other situations, we're all closed. The access that we're able to provide whether it's through our sophisticated wireless networks or the compute that we have on campus is just not accessible. That last mile is so critical, but last mile isn't just the physical location – it has to be where our students need to be so it has to be able to be mobile for them. For our community members, having that connectivity at home is critical. We have to figure out how to balance those two things which is 1: something more tied to a physical location and 2: something that can be used anywhere.*

Jase Teoh (Stanislaus State) [chat]:
Nothing to add other than echoing the sentiments of Rafael, Laura, Dianne, and Tom from Stan State. I look forward to future partnerships and am grateful that our President invited us for such

an important get-together. Looking forward to getting to know everyone on this call/meeting as well. Wishing you all a Happy Holiday and Safe Season.

Melissa Danforth (CSU Bakersfield): *We do have to consider all the different pressures that are affecting the communities – food insecurity, housing insecurity. This is yet another basic need that may need to be met through basic needs initiatives. I like the idea of considering broadband as a utility which gets into the reliability and the access issues. Just as we rolled out power and natural gas infrastructure perhaps it's time to roll out broadband infrastructure. Being a child of the Valley from a lower socio-economic class, I really do want to echo those competing pressures. Growing up as a kid in this area, I remember my parents having the conversations of "how do we eat for the rest of the week until the paycheck comes" and in that sort of pressure, broadband or even power or water or other utilities may not be as prevalent as just meeting those basic needs. If we think of this as a utility and basic needs perspective and how can we build up that support… and then focus on the education and the marketing and outreach but first focus on the basic needs.*

Virginia Madrid-Salazar (CVHEC): *As I'm listening to our conversations, it does take me back to when I managed the California Lifeline Telephone – the services, the statewide marketing contract reaching out to our communities of color and encouraging families to take advantage of the discounted Lifeline Telephone program allowing families at the time landline services for $10 if they qualified. That was made possible because of the Public Goods Charge that we all pay in to. That concept of charging that also happens in our utilities. It would be great to see those kind of systems that are already in place be utilized for broadband. When we talk about marketing, there are a number of things that we'll have to communicate but ti will take resources. The Public Good Charge allowed for marketing as well as for those utilities to come together with community organizations to have conversations about how to get this information out there. We don't need to recreate the wheel, there are systems in place and legislation that has proven itself for utilities (telephone and energy efficiency) and we can utilize that for broadband.*

Walter Hughes (Comcast) [chat]:
The state already collects a surcharge for broadband deployment and adoption programs. It's the CASF program.

Tom Carter (Stanislaus State): *A thing that strikes me as I'm reminded of the amazing diversity of the Central Valley. It's a difficulty in certain respects but it's also an amazing strength. It's going to bring challenges but it's also going to bring new insights.*

Tom Uribes (Fresno State): *We will be doing a summit in the spring, perhaps we can continue this conversation there.*

Alex Reid (Stanislaus State): *Students will have the resources they need. It should have already been done, but the crisis really put it into fast forward.*

Eduardo Gonzalez (SJVRBC): *Please continue the conversation with the Regional Broadband Consortia. Make sure there is follow-up and things happen. Thank you everyone for these great think tank sessions. I agree we have to follow up on every great idea that has been mentioned today. Let's make things happen and meet up again to get an update on what has been implemented based on these conversations.*

Walter Hughes (Comcast) [chat]:
Sunne - why such a quick turn around? As you know the legislative process is long. Does it make any sense for Maddy Institute to take more time?

END OF MEETING: 12:00 pm

ADDITIONAL Comments:

From: **Louis Fox** <lfox@cenic.org>
Date: Wed, Dec 16, 2020 at 12:38 PM
Subject: Re: Invitation - Roundtable Discussion: Closing the Valley's Digital Divide (Fri, Dec. 18)
To: Mark Keppler <mkeppler@csufresno.edu>

Let me get to the specific now that I have a moment between zoom sessions. It feels as though the past nine months have been one interminable zoom session.

For each of the areas, I would try and find out who has strengths and interest in making a commitment, assuming there will be representation beyond the presidents. Specifically:

1. Crowd sourced data.   I'd turn this into a competition wither among the universities or within each to see who can get the most data points, with the "reward" being pizza or some such.   (As my college-aged children would say, "there is no such thing as bad food, only better food, and "free food" is in a special category of its own.")

2. A good source of broadband deployments and data would be those from the previous administration's Broadband Technology Opportunity Program (BTOP) administered by the Department of Commerce, which now have been in operation for 5-10 years, and so success measures could be longitudinal. For California, the California Advanced Services Fund (CASF) administered by the CPUC.   Also organizations like mine or Merit are good sources of data and there are roughly 40 regional R&E networks in the US.

3. Feasibility studies of infrastructure require a particular skill set, and telecommunications even more particular. Perhaps an urban planning department would be a good source.

4. Future technologies for telecommunications networks are probably best done via interviews with orgs like mine and a variety of providers — Fiber to the Home, wireless (all flavors), and now Low Orbit Earth Satellite (Starlink, though Google and Amazon will be rolling out their versions as well).   Expertise would most like come from computer science and engineering, though one could imagine breaking this out into applications areas: technologies for transportation, agriculture, manufacturing, education, health care, employment (here I imagine work-from-home which will likely be a model that persists on some scale even after the pandemic), etc.

5.   There are number of publications that document public-private partnerships around the US and elsewhere in the world in the telecommunication sector. Whether these are a good fit for communities in the valley, isn't something I can comment on beyond that BTOP funded CVIN (dba Vast Communications) was one such partnership: CENIC wrote the grant (and benefited from it), the money went to a consortium of telecommunications companies from the Central Valley.

6.   See #4 above.

7. Marketing plan. More up your alley than mine but it isn't clear to me who is being marketed to and what is being marketed. Need some clarity here.

8. Ditto for communications plan (see above).

What I would do for #7 and #8 is to take a look at projects funded by the CPUC's CASF fund and determine what has been successful and what not, how it was communicated and marketed. It's a tough business, particularly in rural under-served areas: it takes a long time even for pent up demand to manifest itself. The language piece is a big one and one that your institutions will have great talent in addressing.

9.   For workshops, partnering with public libraries might be a great approach.   It also gives an ongoing place where individuals can get access to computers connected to a broadband network (CENIC).

10. Overstretched IT staff are probably not going to applaud this one.

11.   Adoption is an interesting issue — one that might be interesting for business students joined by anthropology students — given the importance of culture in this arena.

12.   The inclusion and public policy issues are more in your wheelhouse (or your Institutes and related organizations) than mine. We just do the plumbing.

Hope this helps a bit. Good luck! Sorry if any of this verges on the illiterate; I have to type fast!

Louis