ANNUAL PERFORMANCE PROGRESS REPORT FOR SUSTAINABLE BROADBAND ADOPTION

General Information		
1. Federal Agency and Organizational Element to Which Report is Submitted Department of Commerce, National Telecommunications and Information Administration	**2. Award Identification Number** 06-43-B10584	**3. DUNS Number** 047120084

4. Recipient Organization

University of California, Davis 1850 Research Park Drive, STE 300, Davis, CA 95618

5. Current Reporting Period End Date (MM/DD/YYYY) 12-31-2012	**6. Is this the last Annual Report of the Award Period?** ◯ **Yes** ◉ **No**

7. Certification: I certify to the best of my knowledge and belief that this report is correct and complete for performance of activities for the purposes set forth in the award documents.

7a. Typed or Printed Name and Title of Certifying Official Sandra Stevens	**7c. Telephone (area code, number and extension)**
	7d. Email Address smstevens@ucdavis.edu
7b. Signature of Certifying Official Submitted Electronically	**7e. Date Report Submitted (MM/DD/YYYY):** 01-30-2013

PROJECT INDICATORS

1. Does your Sustainable Broadband Adoption (SBA) project foster a particular broadband technology or technologies? If so, please describe this technology (or technologies) (600 words or less).

For healthcare providers to effectively participate in a technology-enabled healthcare system, a reliable and cost effective broadband infrastructure must be developed and sustained. California is coordinating multiple, funded initiatives that will create a reliance on broadband applications, particularly in rural/low income regions, including electronic health records, telehealth, distance education, e-prescribing, home monitoring, and health information exchange that collectively establish a sustainable business model for providers, insurers, and consumers.

Access to Broadband Network: The California Telehealth Network (CTN) broadband architecture is comprised of an Internet Protocol (IP)-based, Multi Protocol Label Switching (MPLS) routed Virtual Private Network (VPN) with explicit quality of service, privacy and security. It incorporates a high speed, high capacity fiber core network that connects to multiple Incumbent Local Exchange Carrier/ Competitive Local Exchange Carrier (ILEC/CLEC)/ provider-based landline local loop services. Access to external networks is provided through peering points with various regional, statewide and national network service providers. CTN provides state-of-the art, peer to peer, MPLS, broadband services to health care sites (predominately rural and many serving low income consumers), county health offices and academic health centers throughout California and is operated by a vendor, selected through a competitive bid process.

Model eHealth Communities: The eHealth Broadband Adoption Project established 15 Model eHealth Communities (MCs) to demonstrate successful transitions to technology-enabled health delivery. The overarching vision for the MCs is to demonstrate a community-based transition model to technology-enabled health delivery. The 15 MC awardees span 26 counties in rural, urban and suburban regions, as well as areas in Northern, Central and Southern California and represent a spectrum of local organizations including rural and urban clinics and hospitals, libraries, county public health and behavioral health departments, public libraries, community colleges and universities, senior and low-income housing, and Indian Health programs. The 15 communities include over 100 sites from over 70 organizations that received a wide range of broadband dependent equipment.

Comprehensive eHealth Adoption Training: The comprehensive training partnership is an innovative collaboration between academia, community-based educators, instructional design experts and tribal representatives. Curriculum is designed to support the transition to technology-enabled health and health care. On-site and on-line courses have been developed or adapted to support the grant vision in the following curricula: Change Management; Broadband Adoption; CTN Broadband Orientation; EHR/HIE adoption; Telehealth Certificate Program; Consumer Health Informatics; and Clinician Health Informatics. Curricula will be leveraged for consumer education through public libraries, community colleges and local extension centers.

2a. Please list all of the broadband equipment and/or supplies you have purchased during the most recent calendar year using BTOP grant funds or other (matching) funds, including any customer premises equipment or end-user devices. If additional space is needed, please attach a list of equipment and/or supplies. Please also describe how the equipment and supplies have been deployed (100 words or less).

Manufacturer	Item	Unit Cost per Item	Number of Units	Narrative description of how the equipment and supplies were deployed
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC	25,975	29	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, HDX MPPlus Software License Key	27,524	7	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.

Manufacturer	Item	Unit Cost per Item	Number of Units	Narrative description of how the equipment and supplies were deployed
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Global Media CapSure 1.9 Software	29,941	6	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, dual 22" monitors, PC	26,820	3	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, TotalExam Camera	29,423	13	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, dual 22" monitors, PC, TotalExam Camera, CareTone Stethoscope – Patient side	33,172	2	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Patient Side	27,770	4	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.

Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Doctor Side)	27,295	1	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Patient Side), TotalExam Camera	31,765	2	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Patient Side), TotalExam Camera, Derm-O-Collars for TotalExam Camera	31,235	1	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, TotalExam Camera, Derm-O-Collars for TotalExam Camera	29,682	2	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.

Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Doctor Side, TotalExam Camera, Derm-O-Collar for TotalExam Camera, TotalENT JedMed Light Source, Otoscope	40,402	1	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Patient Side, TotalExam Camera, TotalENT JedMed Light Source, Otoscope	40,634	1	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Global Media Telehealth Cart, includes Polycom HDX 8000, 26" monitor, PC, Electronic Stethoscope Steth One – Patient Side, TotalExam Camera	30,976	1	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Cisco	Global Media Telehealth Cart, includes Cisco C-40, 26" monitor, PC, wireless bridge	30,710	4	Telehealth carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.

Cisco	Video Medical Interpreter Carts, Global Media cart with EX60 and wireless bridge	13,226	7	Carts were delivered to Model eHealth Community end user sites (e.g. clinics, hospitals, etc.) and installed by the vendor. On-site training was provided at each site.
Polycom	Mobile Media Cart VFI PL3070 with Polycom 8000 and single 46"display	15,609	6	Media carts were delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	Mobile Media Cart VFI PL3070 with Polycom 8000 and single 46"display, HDX MPPlus Software License Key	17,158	9	Media carts were delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	Mobile Media Cart VFI PL3070 with Polycom 8000 and dual 46" displays	16,598	2	Media carts were delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	Mobile Media Cart VFI PL3070 with Polycom 8000 and single 55"display	16,074	2	Media carts were delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	Mobile Media Cart VFI PL3070 with Polycom 8000 and dual 55" displays, HDX MPPlus Software License Key	19,079	2	Media carts were delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	Mobile Media Cart VFI PL3070 with Polycom 6000 and single 55"display	9,777	7	Media carts were delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	Mobile Media Cart VFI PL3070 with Polycom 6000 and single 46"display	9,311	1	Media cart was delivered by the vendor and installed at the Model eHealth Community end user location (e.g. clinics, hospitals, schools, housing facilities, non-profits, etc.)
Polycom	HDX 8000	11,161	2	Units were drop shipped to Model eHealth Community end user locations.

Polycom	HDX 8000, HDX multipoint license key	12,711	2	Units were drop shipped to Model eHealth Community end user locations.
Polycom	HDX 8000, single 46" monitor	12,010	7	Units were drop shipped to Model eHealth Community end user locations.
Polycom	HDX, two 46" monitors	12,858	1	Unit was drop shipped to Model eHealth Community end user location.
Polycom	HDX, single 55" monitor, wall mount	12,620	1	Unit as drop shipped to Model eHealth Community end user location.
Polycom	VBP 5300 E25	8,465	1	Unit was drop shipped to Model eHealth Community end user location.
Tandberg	EX60	5,632	2	Units were drop shipped to Model eHealth Community end user locations.
AMD	950 Non Mydriatic Camera	30,195	6	Cameras were drop shipped to Model eHealth Community end user locations; vendor then came and did on-site installation and training.
InTouch	RP-Lite	53,230	2	RP Lites were delivered by the vendor to Model eHealth Community end user locations; on-site training was also provided.
Advantage Home Health	Mobile Health Kiosk: 5" Touch Tablet computer, software	6,062	7	Kiosks were delivered by the vendor to Model eHealth Community end user locations and on-site training provided.
Toshiba	Digital Live Read Ultrasound	163,170	1	Ultrasound was delivered to the Model eHealth Community end user location; installation and on-site training provided by the vendor.
Cisco	7206VXR with NPE-G2 includes 3GigE/FE/E Ports and IP SW	12,000	1	Shipped to Model eHealth Community end-user.
NEC	V651 Professional 65" LCD Display 1080p	5,255	2	Delivered to Model eHealth Community end-user and installed by vendor. Room integration equipment – labor to integrate paid by end site.
Totals		925,525	148	

Add Equipment	Remove Equipment

2b. To the extent you distribute equipment/supplies to beneficiaries of your project, please describe the equipment/supplies you distribute, the quantities distributed, and the specific populations to whom the equipment/supplies are distributed **(600 words or less)**.
In addition to the equipment noted above, the following supplies (items with a unit purchase price less than $5,000) were also purchased: Stethoscopes (6 blue-tooth as well as 1 patient side and 1 doctor side), LCD monitors (18) and sound stations (9) conference microphone/speaker (25), spirometers (3), PC based resting ECG (1) bluetooth enabled home health monitor (6), home health monitor peripherals (12), PC education kiosks (5), kiosk peripherals (12), glucose monitor strips (20), desktop PC (63), laptops with webcams (13), printers (10), HD Cameras (251), HD webcams (24), 3-D home theater system (2), portable tabletop projector/ Screen (1), Wall mount for LED monitors (4), wifi routers and switches (12), SMARTnet Onsite 8x5xNBD Threat Defense Bundle (6), Power Supply with Power Over Ethernet (Both system & spare) (44), HIE integration appliance (1), video player (1), microphone mixer with telephone echo canceller (1), ceiling microphones (6), ceiling speakers (4), D45 Single Space Amplifier for Broadcast (1), camera mount (1), control system wireless touch panel and docking station (1), fan panel assemblies (1), and surge surpressor (1).

Equipment and supplies were distributed to a wide range of Model eHealth Community end-user sites (quantities specified above). Organizations included: federally qualified health centers and rural health clinics (33), hospitals and critical access hospitals (24), libraries (7), non-profits (7), County agencies (4), Indian Health Clinics (12), Universities and Community Colleges (4), regional fire district (1), senior/disabled housing facilities (2), local health plan (1). All equipment will be used to support the use of broadband dependent technology to increase access to health care services by implementing specialty and primary care telehealth consultations, provider education, consumer education, remote patient monitoring, video interpretation and other eHealth applications in rural and

medically underserved organizations. Populations served include incarcerated youth, children with developmental disabilities, incarcerated adults, residents of rural and frontier communities, low income residents in rural and urban communities, low income seniors and disabled people living in subsidized housing, Native Americans living on Indian reservations and in other communities, and people with and at risk for diabetes.

3. For SBA access and training provided with BTOP grant funds, please provide the information below. Unless otherwise indicated in the instructions, figures should be reported <u>cumulatively</u> from award inception to the end of the most recent calendar year. For each type of training (other than open access), please count only the participants who <u>completed</u> the course.

Types of Access or Training	Number of People Targeted	Number of People Participating	Total Training Hours Offered
Open Lab Access	1,000	697	0
Multimedia	0	0	0
Office Skills	0	0	0
ESL	0	0	0
GED	0	0	0
College Preparatory Training	0	0	0
Basic Internet and Computer Use	0	0	0
Certified Training Programs	0	0	0
Other (please specify): In-person eResources; Community College eHealth courses & Telemedicine Education Program	1,721	1,555	71,020
Total	2,721	2,252	71,020

4. Please describe key economic and social successes of your project during the past year, and why you believe the project is successful thus far (600 words or less).

Access to Broadband Network: The award continued to increase the momentum and growth for California Telehealth Network (CTN). California is one of the most successful states at successfully leveraging FCC subsidy dollars with other federal and foundation support. It is viewed as a best practice model by the Federal Communications Commission (FCC). As of year end 2012, CTN had successfully enrolled 302 sites, an increase of 134 sites over the previous year for participation in the FCC Rural Health Care Pilot Program (RHCPP). CTN is the largest single state participant in the program based on site enrollment. In addition, CTN successfully activated broadband connectivity to 527 health care sites by the close of 2012 including 362 logically connected sub network sites through partner organizations such as the Corporation for Education Network Initiatives in California (CENIC)/University of California sites, California Rural Indian Health Board (CRIHB) and Indian Health Services (IHS). CTN has now fully encumbered its total $22.1 million FCC RHCPP award and is now making preparations to launch the FCC's recently announced Healthcare Connect Fund as the successor and permanent broadband subsidy for safety net health care providers.

Model eHealth Communities: All fifteen communities are engaged in adopting and/or expanding eHealth activities. One of the key successes has been the increase in access to behavioral and psychiatric services in rural communities. Rural communities face a significant shortage of psychiatrists and mental health providers, and the telehealth equipment has enabled many of the organizations to contract with providers outside of their communities. Additionally, many of the Model eHealth Communities also have increased access to specialists using the telehealth equipment such as pain management, neurology, nephrology, dermatology, and endocrinology. In some communities, there is improvement in access to primary care, e.g. senior residents of a low income housing facility now are able to be monitored for basic vital signs remotely, as well as have a consultation with a primary care provider from their housing facility using the technology provided by the grant. Many incarcerated youth no longer have to leave their facility to obtain mental health services, and some are now able to receive specialty consultations from Children's Hospital of Oakland. The diversity of broadband-dependent technology applications is expansive and over a hundred facilities in California are participating in this initiative.

eHealth Broadband Adoption Training: Education and training is a key factor for successful eHealth adoption. The extensive content made possible by this BTOP award is unprecedented in that it spans beyond telehealth and meets the needs of learners from multiple disciplines. Providers, as well as technical staff and consumers, have been engaged as follows: workforce development through community college eHealth curriculum content; in-person and on-line eRources trainings for library staff and other community service workers; consumer health education kiosks to support health care literacy via broadband. The majority of these trainings are available online, allowing participants to access training materials remotely. In addition, all training has been made available at no charge to

learners.

5. Please estimate the level of broadband adoption in the community(ies) and/or area(s) your project serves, explain your methodology for estimating the level of broadband adoption, and explain changes in the broadband adoption level, if any, since the project began.

5a. Adoption Level (%):	Narrative description of level, methodology, and change from the level at project inception (600 words or less).
0	Measuring the level of adoption is not applicable for this project. The project is health focused and the metrics for broadband adoption relating to the California Telehealth Network (CTN) differ from those noted above. As stated in the original proposal, funding from the Federal Communications Commission (FCC) was estimated to allow enrollment of 863 Community Anchor healthcare sites to the CTN for medical grade, secure access. Of these 575 will be medical and healthcare providers, 262 will be public safety entities, and 26 will be institutions of higher education. In addition to these healthcare sites, 55 community colleges and 480 libraries will be involved with the eHealth Training component. At the end of December 2012 the total number of anchor sites involved with the project is 651. In addition to the 527 CTN sites, 100 sites (44 unique anchor sites) are involved through the Model Community initiative. These 100 sites include libraries, institutions of higher education, government and public safety facilities as well as non-profit organizations and tribal and non-CTN healthcare providers. An additional 80 anchor sites participated in training activities for public libraries, community college and other consumer health organizations.

6. Please describe the two most common barriers to broadband adoption that you have experienced this year in connection with your project. What steps did you take to address them (600 words or less)?

The most common barriers to broadband adoption continue to be site education of the benefits of broadband and providing the required technical support to enable the sites to install and effectively utilize the services. During 2012, CTN continued to utilize site outreach contractors to provide site education and drive awareness of the CTN broadband network. This tactic helped improve CTN adoption, fully encumbering the available FCC RHCPP funding. Also during 2012, CTN began providing on site technical support funded by United HealthCare to assist sites with on premise wiring and technical site assessment and preparation issues. Over 100 sites were assisted with an average of 18 hours of technical assistance per site. This tactic helped accelerate the pace of installations and will continue to be used as CTN targets to complete RHCPP site installations by the close of March 2013.

As stated in the original proposal, funding from the Federal Communications Commission (FCC) was estimated to allow enrollment of 863 Community Anchor health care sites to the California Telehealth Network (CTN) for medical grade, secure access. CTN still plans to reach this site goal but by diversifying the types of broadband connections to include encrypted cloud based video conferencing platforms that will accelerate the pace and lower the cost of medical grade deployment. These solutions will also enable mobile broadband devices to be used in a secure fashion. Vendor RFP review is currently being completed with plans for launch by March, 2013.

The biggest barrier to broadband adoption continues to be scarcity of resources at sites such as hospitals and clinics to dedicate to new initiatives. Many hospitals and clinics are in the midst of implementing EHR, which takes an incredible amount of time and resources and is typically viewed as a higher priority than implementing new telehealth activities. The other challenge organizations face is operational. Once sites receive equipment, they need to identify clinical and operational staff who will champion the initiative and technical staff who can support the equipment. They also need to develop workflows, policies and procedures, contracts with remote providers and learn about reimbursement. We have attempted to help sites address and overcome these barriers in a number of ways. First, we identified resources that enabled us to offer up to $5,000 for "Implementation Support grants" to sites to support their activities to address implementation barriers, such as paying a consultant to develop policies and procedures for specialty care consults. Second, we partnered with the California Telehealth Resource Center, who joined us in site visits to each site and has been able to provide customized and on-site training and consultation to sites on a wide range of topics including reimbursement, workflow and policies and procedures, credentialing, and developing contracts with remote providers. Finally, we identified some remaining funds in our equipment line item and offered sites an opportunity to request supplemental equipment (e.g. medical peripherals for telemedicine carts) to enhance their original equipment (max $15,000 per Model eHealth Community).

7. To the extent that you have made any subcontracts or sub grants, please provide the number of subcontracts or sub grants that have been made to socially and economically disadvantaged small business (SDB) concerns as defined by section 8(a) of the Small Business Act, 15 U.S.C. 647, as modified by NTIA's adoption of an alternative small business size standard for use in BTOP. Please also provide the names of these SDB entities. (150 words or less)

No subcontracts with SDB entities have been initiated.

8. Please describe any best practices / lessons learned that can be shared with other similar BTOP projects (900 words or less).

Successful implementation of the California Telehealth Network (CTN) to a diverse and large number of sites within a wide-ranging geographic area requires active leadership involvement and participatory collaboration with other organizations. The CTN leadership continues to work in a collaborative fashion to share best practices with other RHCPP participants from other states, and health care leaders throughout the State to ensure responsive and successful broadband and telehealth adoption. As an example of the most powerful collaborations, over the past year CTN consolidated operations with the HRSA funded California Telehealth Resource Center

(CTRC). CTN, CTRC and their contractors are in a unique position to assess broadband and telehealth readiness as broadband connections are installed. The CTN/CTRC consolidation enables better coordination of staff resources based on individual health care provider needs. CTN and the CTRC have also effectively pooled resources from multiple funding sources including the FCC, HRSA, United HealthCare, and this grant to meet the needs of safety net health care providers.

While it is still too early to describe specific best practices developed under this grant, the Model eHealth Communities project has provided an opportunity to glean a number of important lessons regarding the challenges that healthcare organizations in particular face in adopting broadband technology. 1) Organizations should include clinical, administrative/operational, and IT staff in the planning and launching of eHealth initiatives. Communication across these staff members is critical. 2) The provision of free equipment alone is insufficient to assure successful adoption of new technology. Health care organizations need resources for staffing, as well at technical assistance on a variety of operational and technical issues. 3) The final lesson learned thus far is that in order to support a Model eHealth Community that includes partners from multiple organizations and health care systems, it is best to have a Lead Agency that is not affiliated with any of the health care organizations, and a Project Manager whose time is clearly supported to coordinate the project. In several instances, Lead Agencies ended up hiring outside consultants midway through the project, as they recognized that it would be challenging for an existing staff person who already had a full-time job and responsibilities to coordinate the grant activities across multiple organizations.