CALIFORNIA ADVANCED SERVICES FUND

California Public Utilities Commission
Ryan Dulin, Director
Communications Division
April 2, 2015

Informal Broadband Strategy

- Infrastructure
- Adoption
- Cost/Affordability
- Service Quality/Capacity/Speeds

CASF Goals Overview

- Fund infrastructure projects that will provide broadband access to no less than 98% of California households by December 31, 2015
  - Identify unserved and underserved areas of the State
- Fund $25 Million in public housing broadband projects by December 31, 2016

CASF Broadband Deployment Initiatives

- Enhance the accuracy of broadband availability data
- Continue oversight of existing consortia and solicit applications for new consortia and/or projects using remaining funds in the CASF Consortium Grant Account.
- Implement SB 740 (Non-Telcos) and AB 1299 (Public Housing)
- Provide a second "right of first refusal" opportunity to existing providers that plan to expand their service availability
- Engage federal, state, and local agencies to address broadband deployment issues

Public Feedback of Lack of Availability (Comcast Wireline)

Public Feedback Implementation (Comcast Wireline Census Blocks Removed)
Improved Mobile Validation Method
Result: “Served” Areas Switched to “Under-served”

December 2013 Mobile Data (Averaged Speed)
June 2014 Mobile Data (Rhoa = 1 std deviation)

AB1299 Implementation Activities

DATES | ACTIVITY
--- | ---
November 13, 2014 | Proposed Public Housing Authority Notice issued.
December 11, 2014 | Notice due to apply for funding. CRF funding to be limited. CRF funds are to be held. A limit of 10% of the eligible area for infrastructure and 2% for other projects.
December 11, 2014 | Delays in CRF approval of applications, requiring that both the lab and CRF be involved in the approval of the submission.
January 15, 2015 | Delays in CRF approval of applications, with late deadlines.

SB 740 Implementation Activities

DATES | ACTIVITY
--- | ---
December 1, 2014 | EPA begins accepting applications for CASF Infrastructure Grant Award.
February 1, 2015 | EPA begins accepting applications for CASF Infrastructure Grant Award.
May 3, 2015 | EPA begins accepting applications for CASF Infrastructure Grant Award.
May 4, 2015 | EPA begins accepting applications for CASF Infrastructure Grant Award.

CASF Funding Status (as of November 2014)

<table>
<thead>
<tr>
<th>CASF Account</th>
<th>Remaining Funds (Approx)</th>
<th>Awarded Funds</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure Grant Account</td>
<td>$150 million</td>
<td>$669.27 million</td>
<td>45 Projects</td>
</tr>
<tr>
<td>Regional/Service Areas</td>
<td>$540 million</td>
<td>$29.26 million</td>
<td>8 Community/Regional</td>
</tr>
<tr>
<td>Regional/Service Areas</td>
<td>$9.87 million</td>
<td>$136,694</td>
<td>3 Projects</td>
</tr>
<tr>
<td>Reimburse Public Housing Authority</td>
<td>$300 million (Deployment)</td>
<td>50 Applications approved to begin Jan 2015</td>
<td></td>
</tr>
</tbody>
</table>

Challenges

- One size fits all (rural vs. urban)
- Costs relative to revenues dissuade some providers from CASF participation
- Regulatory requirements and conflicting priorities
  - CGSA compliance review requires two-stage funding and adds unknown costs and delay to projects
  - Permitting with federal agencies can be costly and problematic
  - Rights-of-way access for non-telecommunications providers is not guaranteed
  - No real coordination across multiple infrastructure projects (e.g., dig-once policies)
  - Lack of interconnection on shared infrastructure
- Limited resources
  - Concessions of funding needed
  - CASF funds are too inflexible to close the Digital Divide

Where do we go from here?

- Implementation of Informal Broadband Strategy
  - Infrastructure
  - Adoption
  - Cost/Affordability
  - Service Quality/Capacity/Speeds
- Defining Priorities
- FUNDING
- Defining Broadband Governance
- Broadband Beyond the Household
Seizing our Destiny

Riverside's journey to the most intelligent community in the world!

The Tribe

City Manager brings in new Management Team
City Council hires City Manager and appoints Economic Development from the County of Riverside
Mayor & Chairman of SmartRiverside and approve CIO as director

SmartRiverside

Non-Profit Corporation Serving the Community

Mayor – Chairman
CIO – Executive Director
30 members –
Higher Education
K-12
Private Sector Technology Companies
CEO Forum

Broadband

At&t wins RFP to deploy broadband WiFi
City has Utility to every City facility and serve WiFi
Access devices to smart lights
Charter
City expedites project for AT&T Smartgrid & creates Internet competition
Over 1600 access points installed providing Fibe WiFi

Mobile

City & Public Safety Mobile Applications

In Car Video

Capture Video and Audio in the field
Transfer Video back to enterprise storage over wireless
Video Security

Traffic Management

Digital Inclusion

Digital Inclusion

Innovation

Upgrade existing controllers to M211 big
Control/monitor traffic signals from central
facility.
Installing cameras at 374 intersections to
monitor traffic

McCain

Gang Intervention
Program hires youth and SmartRiverside
trains them in IT
certification

At the 6th hour,
SmartRiverside
delivers 1 system
per household

Collect e-waste and
exchange for working
systems and funds to
sell sustain program

Innovation Economy Corporation
commercializes innovations with global
impact potential. With a philosophy of
“Doing Good and Doing Well”, the mission
is to acquire innovative research,
technology, products/services and
transform them into high-growth businesses
with the potential to enhance the lives of
people across the globe.
Innovation

CE-CERT is the Center for Environmental Research & Technology (CE-CERT) as a model for partnerships among industry, government, and academia. CE-CERT's goals were to become a recognized leader in environmental education, a collaborator with industry and government to improve the technical base for regulations and policy, a creative source of new technology, and a contributor to a better understanding of the environment.

Innovation

Winston Chung Global Energy Center
As part of the Bourns College of Engineering and the Center for Environmental Engineering and Technology, the Winston Center complements existing energy research in the Southern California Research Initiative for Solar Energy (SC-RISE) and solar thermal research.

Innovation

Foreign Trade Zone
The Office of Foreign Trade focuses its efforts on exports, foreign direct investment, diplomatic relations and global business attraction. The office serves the international trade community with the ability to provide assistance with exporting, foreign finance, logistics, shipping, federal and international trade regulations, treaties and other areas directly linked to trade and investments. The Office of Foreign Trade has been asked to testify in support of trade and export bills in the Senate and Assembly of the State Legislature on a regular basis. It is sponsored by our Office of Foreign Trade helped California become eligible for federal funds for business exports, formally established California's support for EB 5.

Innovation

UCR provide the research and intellectual capital.

RIVERSIDE

Entrepreneurial get free consulting advice from industry experts

CEOs from High Tech companies collaborate with all tech companies

Investment in start-ups is strong

Room provide incubation space for start-ups

Knowledge Workforce

CalWorks GAIN - Greater Avenues for Independence

Project S.O.S: (Building Resources for the Intervention and Deterrance of Gang Engagement)

• First all electronic high school in CA
• Digital Dashboard for parent to monitor attendance, home work and GPA
• Starting kids in Kindergarten with Apple IPAD Touches
Advocacy

- Weekly E-mails
- Quarterly Mailings
- Freeway Billboards
- City Manager Blog
- Facebook/Twitter daily updates
- Top 10 Web Site in the US

Advocacy

- Champions Council
- Vision and strategy for our future
- Priorities of events and projects for focus

Intelligent Community of the Year 2012
California Emerging Technology Fund

Local Government Roundtable
April 2 - 3, 2015

The Mission Inn
Riverside, California

CPUC CASF 16 Statewide Consortia

Inland Empire Regional Broadband Consortium
Riverside County
and San Bernardino County

Inland Empire Regional Broadband Consortium

- INLAND EMPIRE BROADBAND INFRASTRUCTURE AND ACCESS PLAN
  - Closing the Digital Divide
  - Inland Empire as a "Smart Region"
  - Broad and Branded Areas
  - Local Government Broadband Solutions
  - Programs for Underserved and Disadvantaged Residents
  - Education
  - Health and Telemedicine
  - Broadband and Economic Development
  - Priority List of Action Items

The Inland Empire can be a "Smart Region"

What makes a region smart?
- Affordable High Speed Broadband
- Effective Income System
- Females in the Workforce
- Trees and Parks
- Technology Connection
- Legacy infrastructure
- Access to capital
- High School and College Graduates
- Ongoing Education
- Access to Community
- Education
- Barriers
- Economic Development
- Successful Companies
- Small Business/enterprises
- Environment
- Climate Change
- Smart Growth

Chattanooga, TN
www.thegigcity.com

What the BIG?
Inland Empire Regional Broadband Consortium

Lea Deesing
- Chair, IERB Executive Committee
- Chief Innovation Officer, City of Riverside
- Executive Director, Smart Riverside

General Assembly Meeting
November 19, 2013

MULTI-FACETED
- Digital Inclusion
  - Computers given away to low-income families
- At-risk Youth Mentoring
- STEAM Speaker Outreach
- New Coding Program
- Kids
- At Risk Youth
- Veterans
- Girls
- Fiscal Agent for smart initiatives
- IERB
- Hackathon

Digital Inclusion
- Helps narrow the digital divide
- Available to low-income families
  - Free Technology Training
  - Free PCs (over 7000 so far)
  - Free Microsoft Office
  - Free PC Support
  - Free Computer Labs
- Funded by grants, golf tournaments, donations

At-Risk Youth Mentoring
- SmartRiverside mentors at-risk youth
  - Project BRIDGES
  - Youth Opportunity Centers
  - Workforce Development on the job training
  - Role Models
- Jesse's story

Science, Technology, Engineering, and Math Outreach
- STEM Outreach
  - 900+ students in region in January
- Annual speaker at the 8th Grade Girls Math and Science Conference American Association of University Women (AAUW)
- Nontraditional Employment for Women (NEW) day at RCC
- Internship Program
Inland Empire
Regional Broadband Consortium

Cultural Program for Kids
- Coding programs for K-8
- Robotics Coding for 4-12
- Internships for College Level City Internships

FIscal Agent
- Fiscal Agent for Inland Empire Regional Broadband Consortium (IERBB)
- Sponsor & Fiscal Agent for ReCode
- Computer programming competition

Inland Empire
Regional Broadband Consortium

LOCAL GOVERNMENT SOLUTIONS
- Fiber Implementation Process and Requirements
- Deconstruction
- Planning Process - CQA
- Engineering Estimates - Budget in Project
- Capital Improvement and Major Infrastructure
- GIS Mapping
- Urgency for Action
- Funding

Inland Empire
Regional Broadband Consortium

BROADBAND AND ECONOMIC DEVELOPMENT
- Case Studies in the Inland Empire
- Economic Growth
- New business paradigm: Chef - Need for Speed
- Small business need Broadband availability, speed, and cost matters
- Business level Internet costs higher than you think
- Business class high-speed Internet is not so easy to get
- What about businesses that can't move?
- Economic Growth depends on business level Broadband speeds
- Prioritize:
  - Areas planned for economic growth need to have business level Internet service
  - Educate business about business Internet needs - speed, quality, and cost matters

Inland Empire
Regional Broadband Consortium

Are you getting enough Fiber in Your Diet?
- Broadband Economic Development Divide
- What is it? Who is involved?
- Commercial & Industrial Location Analysis
- Challenges of the Digital Divide
- Municipal and regional government organizations
- Call for a unified open source geographic information system
- What do we do?
- Policy initiatives at the local, regional and state level.
**Inland Empire Regional Broadband Consortium**

- **Riverside County Priority Community**
  - Mecca and Thermal
    - Population: 15,446
    - Housing Units: 8,164
    - Unserved and Underserved
    - Thermal Airport
    - Kern Worker Community
    - Multiple Anchor in Community that need Broadband

- **San Bernardino County Priority Community**
  - Phelan and Pinon Hills
    - Population: 34,000
    - Housing Units: 8,554
    - Unserved and Underserved
    - Phelan Pass Hills Community Service District
    - Volunteers will not expanded services
    - New High Desert Transportation Council Victorville to Palmdale

- **Aguanga**
  - Population: 5,600
  - Housing Units: 2,998
  - Unserved and Underserved
  - Camp Ronald McDonald
  - Skyfield Arts Academy
  - Calvillo Band of Indios
  - Santa Rosa Band of Cahuilla Indians
  - Agua Electric Cooperative
  - Multiple Anchor in Community that need Broadband

- **San Bernardino County Priority Community**
  - Morongo Basin
    - Population: 34,776
    - Housing Units: 59,228
    - Unserved and Underserved
    - Indian Fine Vision Unit
    - Morongo Corps Area Command Center
    - JB Desert Medical Center
    - Morongo Regional School District
    - Small, Tribal and Free Stations
Inland Empire
Regional Broadband Consortium

San Bernardino County Priority Community
- Red Mountain, Victor Valley, Trona
  - Population: 5,000
  - Housing Units: 1,500
  - Unerved and Underserved
  - Title I Average of "Digital Divide"
  - Red Mountain is Ironically Digital Divide Poor
  - Victor Unified School District
  - Community Access - Should Fix Station
  - Star Trek & The Final Frontier was Film in Trona

Healthcare and Telemedicine
- Doctors Visit Online
- Medical Records
- California Telemedicine Network

Education
- Online Education - connectivity breached at home and school - Other Ideas!
  - Satellite: Cajon Valley Unified School District
  - Will on all School Sites next year
  - Students will have their own computer in their home and classroom
  - School Sites will be part of next generation of digital neighborhoods and urban parks
  - Connect with School Board - Internet Infrastructure - Parks, Plan for new Internet
  - San Ynez School District - "Virtual School" - grades up to High School
  - Bellows Academy - K-12
  - CETI School Site
  - School District Technology Plans - E Rate
  - San Bernardino Community College Digital Connections
    - Distance Learning and Digital Media Access Resources
    - Helps align resources with the needs of California in our region

Local Government Broadband Solutions
- Oceanside Connected Community Program
  - Helps local areas with broadband infrastructure
  - City Infrastructure
  - Municipal service-oriented Economic Growth

Circuit of the Americas (T-Area Digital Revolution)
- Oceanside Connected Community Program
  - Oceanside is our key - All South San Diego
  - High Speed Internet always on and for next 500 years

Circuit of Oceanside middle class Plan & Beyond
**What Is SmartRiverside?**

- Digital Inclusion
  - Helps narrow the digital divide
  - Available to low income families
    - Free Technology Training
    - Free PCs (over 7000 so far)
    - Free Microsoft Office
    - Free PC Support
    - Free Computer Labs
  - Funded by grants, golf tournament, donations

- At-Risk Youth Mentoring
  - SmartRiverside mentors at-risk youth
    - Project BRIDGE
    - Youth Opportunity Centers
    - Workforce Development on the job training
    - Role Models
  - Jesse’s story

- STEM Outreach
  - 700+ students in region in January
  - Annual speaker at the 8th Grade Girls Math and Science Conference American Association of University Women (AAUW)
  - Nontraditional Employment for Women (NEW) day at RCC
  - Internship Program

- Coding Program for Kids
  - Coding programs for 4 – 8, partner with school districts
    - Google CS First Robotics Coding
      - Raspberry Pi Kits
    - Internships for College Level
    - City Internships
Fiscal Agent

- Fiscal Agent for Inland Empire Regional Broadband Consortium (IERB)
- Sponsor & Fiscal Agent for RivCodes
  - Computer programming competition
Loma Linda’s Ordinance

- Data Cabinet in Master Bedroom
- 2 Cat 6 in each living space
- Fiber into Data Cabinet and Community MDF
- Fiber throughout the development.
- Build a community MDF
- Deed the infrastructure over to the City once completed.
- Cost to the Builder ~ $3,500 per unit

Developer Reaction

- Guarded at first
  - Concerned about cost
  - Concerned infrastructure would not be utilized
- Today
  - See infrastructure as a value added product
  - Sell smart home components
  - Easily recover the cost of infrastructure on sale price

Underground Construction

- Four self-healing metropolitan fiber rings.
- Each ring covers a quadrant of the city.
- Automatic failover.
- Single mode fiber.

Micro Fiber Construction

Micro Trench

- Fast
- Little Restoration
- No Traffic Control
Cut through depth of asphalt into base

Pass under curb and gutter

Micro Duct to pull box and duct splice

24 strand cable inside Micro Duct
What we learned

- Construction method is fast, requires little restoration and is scalable
- Materials are easy to use and require little training or specialized knowledge
- Some traditional conduit construction is still necessary
- Residents are responsive to the program
- Over 50% of residents signed up

$3200 per House Connected

- $2500 Construction
- $200 Distribution
- $500 Electronics

Why do we need it?

Connected Community Program

City Services

Provides for economic growth

Inland Empire
Inland Empire

- Population: 4.2 Million
- Phoenix Metro Area: 4.3 Million
- Seattle/Tacoma Metro: 3.6 Million
- Oklahoma City Metro: 1.2 Million

- 13th Largest Metro Area in US
- No Television station
- 20% are college grads
- Median Household income: $59,900

Today's 21 year olds

- Watched 20,000 hours of TV
- Played 10,000 hours of video games
- Talked on the phone for 10,000 hours
- Sent 250,000 emails or text messages
- 50% have Created content on the web
- 70% of 4 year olds have used a computer
What Where When Why How

Internet searches per month 6.4 billion searches per month
Google 2,733,000,000
Yahoo 1,792,000,000
MSN 845,000,000
AOL 486,000,000
Ask 378,000,000
Others 166,000,000
Total 6,400,000,000

Who answered these questions before the internet?

Shared Knowledge

At the end of 2013 there were more than 750,000 Wikipedia articles in English

Less than 1/3 of Wikipedia’s content is in English

Wikipedia is now the 8th most popular website in the world.

Despite this, Wikipedia has only has 10 fulltime positions

The amount of technical and scientific information doubles every 2 years

½ of what a student starting a 4 year degree learned in the 1st year is outdated by the 3rd year

By 2020 it will double every 72 hours

The US Department of Education estimates today’s high school student will have 10-14 jobs....

By age 38

1 of 4 workers works for a company where they have been employed less than 1 year

Less than 1 in 2 have worked for the same company for 5 years

• We are preparing students for jobs that don’t yet exist

• Using technologies that haven’t been invented

• In order to solve problems that have not been discovered
Designing and Installing Fiber Optics to Maximize Your “Smart Community”

What is Fiber Optic cable?
Fiber Optic cable is made of super-thin filaments of glass that can carry beams of light. Because a fiber optic cable is light-based, data can be sent through it at the speed of light (almost unlimited capacity). Using a laser transmitter that converts frequency signals into pulses of light, ones and zeros are sent through the cable. The receiving end of the transmission translates the light signals back into data which can be read by a computer. Because fiber optics are based entirely on beams of light, they are less susceptible to noise and interference than other data transfer mediums such as copper wire or telephone lines.

Designing and Installing Fiber for the “Smart Community”

Installing Fiber will:
1. Improve services offered in any community by providing fast Internet service, more communication options, existing, and better customer service.
2. Differentiate and future-proof your communities through technology.

Design Factors to Consider:
1. “Proven” (not requiring power) designs are the most reliable and will future-proof the network plant.
2. Installing Active (requires power) components reduces the amount of fiber required in the network plant but adds components that will require maintenance and possibly require upgrading when more bandwidth is needed.

How Greenfield Provides Communication Services

Greenfield offers high-speed Internet, digital telephone, and video packages:
1. Internet speeds starting at 25 Mbps up to 1 Gbps.
2. Phone packages starting at $19 per month.
3. Greenfield is a certified dealer for both DirecTV and Dish Network. We can provide both satellite and IPTV services.
4. Greenfield has a California State Video Franchise allowing us to deliver traditional cable TV packages over fiber in public streets.

Marketing and Pricing:
1. Having the best fiber optic infrastructure already installed is not enough. A sound marketing strategy is critical to getting the word out about the value and benefits.
2. Greenfield typically bundles an Internet package as a hook offering whether to single-family residences, apartments, or condominiums. This allows further price discounts.

Premium, Concierge Customer Service

Greenfield delivers all fiber optic communication services with the highest level of customer (concierge) service. Concierge service means:
- After hour service calls (nights, weekends)
- No four or six-hour service windows, if we say 4 PM we’re there at 4 PM.
- 24/7 call center.
- Dedicated and knowledgeable field reps for each project
- Become an integral part of the community

Our Team in Action

Setting a Cabinet for an Ethernet Access Point (right)

Including a fiber-grade optical MUX (bottom)
WHAT IS CITYLINKLA

- A 1 Gigabit connection for City residences at ~$70/month with 5Mbps for free
- WiFi in developed areas of the City for free
- Business class broadband options everywhere at competitive prices

WHAT the RFI told LA...

- Permitting Process Needs Improvement (must be expedited)
- Access to Right of Way
- Access to LADWP Fiber & Poles
- Access to Street Lights
- Access to City Facilities
- Single Point of Contact

DEPARTMENTAL COMMITMENT - DIPG

City split into 4 Zones
WHAT WE ASKING FROM CITY DEPARTMENTS

- Collaborative teamwork and resources
- Improved permitting
- Access to Rights of Way, data, city infrastructure and facilities

DEPARTMENTAL COMMITMENT - DATA.LACITY.ORG

What Does A Network Look Like?

What Does A Network Look Like?

What Network Facilities Look Like?

One per 20,000 residences

GOAL: Identify whether these could be placed at corporate parks, parks, parking lots without planning issues
What Do Above Ground Facilities Look Like?
One per 200 residences

GOAL: Identify whether these could be placed adjacent to other facilities without planning issues.

186 Proposed Sites
- Street Lighting
- LAPD
- Ports
- Street Services
- Animal Services
- HACLA
- LAPD
- LAFO
- DOT
- Sanitation
- Recreation & Parks

WHAT BENEFITS TO LOS ANGELES
- Requesting free broadband to the 186 STOP Training facilities (many Recreation Centers)
- Lower cost, higher speed Internet services
- WiFi across LA

Goal: Streamline Following Processes

- Regulatory Permits/Policies
  - Access to City Right of Way (streets, PUE)
  - Street lights, underground facilities, etc.
  - Work hours, night time work, etc.

- Land Use Approvals
  - City assets outside of ROW (land, buildings)
  - Private Property

- Digital Infrastructure Permitting Group and Single Point of Contact
Expediting Leasing - Types
- Access to LADWP fiber and poles (fiber)
- Access to Bureau of Street Lighting streetlights (wireless)
- Access to City facilities (fiber/wireless)

Could LADWP be the fiber backbone?

TIMELINE FOR CITYLINKLA
- RFP Release – April 2015
- RFP Responses due – September 2015
- Contract Award – Q1 2016
www.citylinkla.org

ourcycleLA

"Digital Inclusion & eWaste Recycling Pilot"
Launched in February 2015

Background
- Implement an 18 month pilot leveraging 10,000+ City PC's
- Provide approx. 3,500+ free refurbished computers to low-income families and communities where people have limited computer access.
- Provide job training for disadvantaged and hard to employ for refurbishing and recycling.
- Expand program in the future through partnerships with private sector & community for PC donations for ongoing sustainability.

OurCycle LA Team
- Leadership: Mayor Garcetti, Council President Wesson, ITGS Chair Blumenfeld
- Supporting Depts: ITA, GSD, Sanitation and City Attorney
- External Partners: Non profits & social enterprises
- Funding Partners: CETF, RedF & Citibank
Goals

- Increase digital and internet access for low-income communities;
- Establish a framework for a burgeoning e-waste management sector in LA;
- Provide job training and career paths for the disadvantaged and hard to employ;
- Minimize LA's e-waste footprint; and
- Implement a self-sustaining business model.

10,000 Sq. Ft. Space

10,000+ Computers & Growing...

Public Private Partnership

ourcycle LA

“OurCycle LA” Digital inclusion & E-Waste Program
City of Los Angeles

CETI & REDF/COR

LA Clean Tech Incubator, SDCEC (City e-Waste Reseller)

reThink (Refurbisher)

ISDC, TPI, Everyone On, Com-Build, KIWA, Best Buy

Green Deeds

Low Income Recipients

Classified/Wildlife Development Center Recipients

REDF

CETF

CITI

human-I-T

LACLEANTECH INCUBATOR

everyone.org

Southeast Community Development Corporation

ISIDORE
Pilot Computer Distribution

- Baldwin Village and Koreatown Adoptions.
- Non Profits in the City serving the low income community with existing public access or workforce computer centers.

Grant Funding

- Digital Literacy - $150,000 in grant funding from the California Emerging Technology Fund (CETF), for digital literacy start up and operational costs for the Pilot Program for the period September 1, 2014 to January 31, 2016.
- Job Training - $100,000 in grant funding from REDF & Citibank ($50k ea) for job training and employment opportunities for disadvantaged and hard to employ.
- Program Expansion - The Mayor's Fund has selected the OurCycle LA Pilot as one of its priority programs.

Outcome Metrics - 2015

- Refurbish 2,500+ computers
- Facilitate 1,500+ new broadband Internet subscriptions at home
- Provide digital & financial literacy training to 2,500+ individuals
- Train 75 youth/adult volunteers assisting with computer refurbishing-related work
- Distribute 1,250+ refurbished computers to individuals/families
- Distribute 1,250+ refurbished computers to non-profit organizations

Timeline

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<tbody>
<tr>
<td>Project initiation</td>
<td>Council approval of digital inclusion program</td>
<td>Ety Council approves digital inclusion program</td>
<td>Launch of digital inclusion program</td>
<td>Outcomes assessed and strategy refining</td>
<td>Outcomes assessed and strategy refining</td>
<td>Implementation and tracking of outcomes</td>
<td>Program end and decommission</td>
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February 27, 2015 Launch Event

CETF Funding Partner
The Digital 395 Experience
CETF – Local Government Roundtable
Michael Ort
April 2, 2015

Digital 395 Project

- Spans Eastern Sierra: Reno to Barstow
- $109M Fiber Optic Middle Mile Project
- Funding: NTIA / CASF
- 423 Strand Underground Cable
- 11 Node Sites for Local Distribution
- 275 Anchors and 49 Points of Interconnection
- Presently: 1560bps (2 Strands) – 8.17b

Challenges: Time

- Lead, Funding, Cost, and Schedule
- Trenching: 170 Miles
- 300MAV for Environmental Impact Credit
- 350,000 of Environmental Impact Credit

Challenges: Environmental

- Federal / Consultants / Agency Control
- Unmanaged Agency Environmental Guidelines
- Cultural Sites / Archaeology
- 165 Species / Critical Species (no “Paper"
- 15% 395B of Environmental Impact Credit

- Resource-Constrained agencies "Ship-It"
- Acquired ROW and Environmental Staff
- Adjusted Study from Mitigation Measures
- Final Counseling Miss
- Developed close, personal relationship with Agencies
- Affordable mitigation as necessary (that is: no "Shovel"
- Excavation issues to District Limps
- Governor’s office if necessary
- Governor’s office if necessary
- Secretary of the Navy

Proposed Digital 299 Project

- Digital 299 – Complete Route
- Digital 299 – Complete Route
- Digital 299 – Complete Route
- Digital 299 – Complete Route
- Digital 299 – Complete Route
Digital 299: Applying Lessons

- Stakeholder Alignment
- Funding
- Permits
- Timing
- Broadband Adoption
- Applications Development

Digital 299

A New Conversation: Sustainability

Inyo Networks

Challenge: Make a Difference

- Market Strategy: Be Disruptive
  - Wholesale Model: GSM Anchor & Last Mile
  - Flood the region with broadband to stimulate application use and development
  - Establish rates by pricing and product offering
  - Many points of interconnection, share costs among users
- Last Mile Channel Strategy
  - Assess model of "Co-ops, not competitive"
  - Symmetries, relationships - Mutual Benefit
  - Last Mile Projects must stimulate demand
  - Encourage expansion of Last Mile solutions

- Results
  - Immediate: Bandwidth Hughes Lifted
  - No increase in bandwidth, no additional costs

Typical Digital Educational Solution

ILEC Solution
- 3 Mb (2 Bonded T-1s)
- $3,000 Per Site
- Net Local Cost: $300
- $ 1500 / Mb ($150 local)

Digital 299 Solution
- 100 Mbps Ethernet
- $400 Per Site
- Net Local Cost: $40
- $ 4.4 per Mb (40g local)
- $ 2 per Mb (20g local)

Adoption: Connected vs. Adoption

Number of Adapters

Wideband - 90
Medium - 60
Consumer - 30
Public - 10
City - 5

Average Monthly Revenue

Average Revenue (By Agency Type)

- Education
- Public Safety
- Medical
- Community
- Federal
- State
- County
- City
- Utility
CETF Local Government Roundtable and CENIC

April 2, 2015
Louis Fox, President & CEO

CENIC: California’s Research & Education Network

- CENIC is a 501(c)3 created to serve California’s K-20 research & education institutions with cost-effective, high-bandwidth networking
- Five Charter Associates: California Community Colleges, California K-12 System, California State University System, Private Universities, and the University of California System

CENIC: California’s Research & Education Network

- 3,800+ miles of optical fiber
- Members in all 58 counties connect via fiber-optic cable or leased circuits from telecom carriers
- Over 10,000 sites connect to CENIC
- 20,000,000 Californians use CENIC
- Governed by members on the segmental level

CENIC: California’s Research & Education Network

- Three networks operate simultaneously as independent layers on a single infrastructure
- CalREN-Digital California (DC): daily use for e-mail, web browsing, videoconferencing, etc.
- CalREN-High-Performance Research (HPR): high-performance research for big-science “power users”
- CalREN-xperimental Developmental (XD): bleeding-edge research on network itself

CalREN and the US

- 68 other peering partners (inc. Google, Microsoft, Amazon)
- Enables worldwide collaboration through international peering (Pacific Wave)

CalREN and the World
2015 CENIC Initiatives

- California Community Colleges
- K12 Last Mile
- California Public Libraries
- 100G Backbone and Research Initiative
- New Commercial Partnerships
Local Government Roundtable
RURAL WIRELESS BROADBAND INFRASTRUCTURE STRATEGY OPPORTUNITIES

Robert Tse
USDA CA Rural Development
Mision Inn Hotel
Riverside, CA
April 2, 2015

California Ag Exports Pass $18 Billion Continue Growth and Nearly Triple

California Agricultural Statistics Review 2013-2014

Economic Impact of Travel in CA

State Impact of Tourism

California Tourism Commission

Disruptive Events

DROUGHT
Invasive Species
Shrinking Farm Labor Pool

Disruptive Technology
New Ag Technology

Product

Food Safety

Ag Tech

Water

Energy

Environment

Your Future 21st Century Agriculture Technology

Ag Drones

Multi-spectral Imagery (visible and aerial)

Variable Rate Irrigation

Wireless Soil Sensors

Drip Irrigation

Precision Input Application

Positive Disruptive Events

Digital 395

FirstNet

Plan Development Process

FirstNet Consultation

Engagements

State Plan

Draft State Plan Review

Results

Outreach and Education

Review and Inform

Starting Coverage Objectives Data


2. Public Safety High Risk Areas - Area at Internet

3. US Population

4. Developed Areas / Buildings (source: NIST - April 2015 estimated)

5. Roadways

6. Tribal Land

7. Rural Metrics

8. Federal Land

March 14, 2016

Robert Tse USDA RD
Platform for Rural Prosperity

RURAL WIRELESS BROADBAND
NEW AGRICULTURE TECHNOLOGY
PRODUCTION WATER ENERGY
ENVIRONMENT FOOD SAFETY
RURAL TELE-HEALTH / TELE-MEDICINE
Distance Learning Public Libraries
TRANSPORTATION & LOGISTICS
PUBLIC SAFETY - FirstNet
DIRECT MARKET ACCESS TO GLOBAL MARKETS
Rural Agro Tourism & Recreation

Mobile Broadband

Un/ Under Served Geographic Area

Un (der) Served

Served

CPUC 2014 Survey of Households and Land Area

Apps for Ag

April 17 - 19, 2015
West Hills Coalinga Community College
For More Information:
http://www.apps-for-ag.com
Yolo's Broadband Strategy
CETF Regional Roundtable – April 3, 2015

Cecilia Aguiar-Curry, Mayor City of Winters
Don Sayler, Yolo County Board of Supervisors

Catalysts
• Realization of the Problem
• Missed opportunities (CRTC audit through Yolo, Woodland-Davis Water Project, KRRB grant, etc.)
• Needed unified effort
• Partners for grant funding
• Frustration re CPUC mapping
• Collaboration to bring state attention to local issues
• Economic Development imperative – both urban and high tech agriculture

Creating Synergy
• Local leaders sounded the alarm
• Became "Yolo Leaders" topic (in May 2013)
• Decided YRSP was needed
• LAFCo would lead effort
• Regional Consortia
• CETF
• School 2 Home
• USDA
• CPUC

Yolo Broadband Strategic Plan Process
• Hired consultant via RFP process
• Extensive surveys/speed test data
• Outreach
• Stakeholder Engagement
• Culminated in Yolo Broadband Strategic Plan
• Action Plan for each city and the County

Strategic Plan Goals
• Educate the community on broadband
• Positively affect broadband infrastructure and services
• Identify key short, mid and long-term initiatives
• Unified technology policy
• Identify key strategic broadband investments
• Identify broadband gaps
Strategic Plan Tasks
- Community Profiles (i.e., Davis, West Sacramento, Winters, Woodland, and unincorporated areas of Yolo County):
  - Inventory of Existing Broadband Assets
  - Needs Assessment – Identify Broadband Gaps
  - Identify Broadband Demand – goals for economic development, agriculture, social justice, etc.
- Validate/Correct CPUC Coverage Map
- Outline and Prioritize Community Strategies including "middle mile" and "last mile" access
- Action Plan and Resources – a "road map" for each community's next steps for planning, funding, grants

Monthly Cost Versus Speeds (in Mbps) Reported

Findings
- 1,000+ speed test survey results
- Residential - half of survey results indicate underserved where CPUC maps show served (includes cities)
- Businesses - larger businesses can pay to get service they need, but small to medium just make due
- Disparity in service – even in cities
- Agriculture industry reports broadband is #1 need
  This is not just a rural issue!

Positive Outcomes
- Broadband has become a council/BOS priority issue
- Staff awareness - cultural shift to plan for broadband as essential public infrastructure
- No more missed construction opportunities!
- Agencies will adopt broadband policies into their General Plans to create framework for:
  - Project coordinates
  - Road standards
  - Impact fees
- Some cities have already begun building segments of a network
- Advocacy and funding (School2Home in Winters)
- State/investor attention to Yolo issues

What's Next?
- Joining Next Century Cities
- Marketing Yolo to providers
  - Winters
  - Knights Landing
- Building capacity in local agencies
  - Feasibility/market analysis
  - Community networks?
  - Public financing?
  - Grants?
Questions?

Cecilia Aguilar-Curry cecilia@cityofwinters.org
Don Saylor don.saylor@voloccounty.org
Christine Crawford christine.crawford@voloccounty.org

Thank you!
Innovation
The Industrial revolution ushered in the first Machine Age. Steam started it all, but it took several decades to unfold. The second Machine age has computer hardware, software, and networks at its core. "The Second Machine Age" by Erik Brynjolfsson and Andrew McAfee.

Lit San Leandro
What this is...
- A dark fiber loop
- Wholesale service for large commercial users with a possible retail component
- Significant capital investment in infrastructure
- Private Investment
- A partnership
- An opportunity to attract next generation high-tech businesses

What this is not...
- High speed connectivity for all
- A broadband solution for residents or small Internet users
- A revenue source for the City in short to mid-term
- A public project
- A significant risk to the City
- A guarantee that businesses will relocate to the City

Public Private Partnership
Main goal was to connect businesses, not fiber to the homes, to drive economic development:
- Private Investment
- City Conduit
- Government Grants – EDA for Conduit Installation
- Involve Agencies External to the City
- School Districts, ERATE
- County Facilities
- Health Care

Target Areas
- Mapping
  - Existing Infrastructure
  - Broadband Maps showing broadband deficient areas
- Keep Initial Loop to Manageable Size 10-15 miles – It can grow in phase 2, 3, ...
- Work with Economic Development and Developers to identify areas

Want Versus Need
"People do not need a gigabit")
- Conversation with competitor
- Conversation with a convention center

Wow, this is really fast
- Conversation with Application Developer, Next Door at Hyatt M2M App Challenge Event

Apple
Customer Comments

- Customer 1:
  "It would take 8-9 hours to download approx 256GB to the NFL, now it’s about 20 minutes."
- Customer 2:
  "It all comes down to time, this saves time, time is money. Our productivity is greatly enhanced. Did not realize the construction required, once the connection was in, it worked great!"

Before/After

- Connecting buildings make them more attractive for business to locate and expand
- Multiple Downtown buildings went from 40% vacancy to 5% - enabling landlords to invest in improvements
- Health Care and Technology companies locating in San Leandro due to fiber

On going work

- Expanding the Network into adjacent cities
- WIFI to enable citizens to "use" the fiber
- Partnerships with Education, Airports, Shipping Ports, Transportation
Find a need and fill it
Riverside, California 2 April 2015

Tellus Ventures Associates

How do you find gaps & opportunities?
Relatively isolated anecdotes or a flood of data?

Broadband report card

A Native or Sonic) and/or Comcast and/or AT&T offering their best levels of service

B Comcast Xfinity cable modem service and mid-level AT&T Uverse DSL

C AT&T DSL and Comcast cable modem service

D Only one provider e.g. AT&T or Comcast or Winds Broadband; repeats spec.

F Service via outdated DSL equipment or nothing at all

D 1.1
Riverside County
Questions?

Maps make the case

Primary broadband infrastructure analysis

- Only looked at carriers that actually own last mile, wireline infrastructure
- Consumer broadband infrastructure is a generally reliable indicator of all types of service availability and core infrastructure.
  - For example, most AT&T and Comcast construction to date is based on expected revenue from consumers.
- Evaluation is based on grading according to advertised download and upload speeds, which provides a relative comparison even when ground truth differs.
- Secondary providers are business oriented and do not file reliable service reports.
  - If you call, we'll tell you if we can serve you and how much it will cost.
CALIFORNIA PUBLIC UTILITIES COMMISSION

CALIFORNIA ADVANCED SERVICES FUND (CASF)

[Signature]
Boyle Singh
CASF Consortium Project Manager

What is CASF?

- California Advanced Services Fund (CASF) promotes deployment of high-quality advanced communications services to all Californians.

Funding is allocated to four CASF accounts

- $270 M - Broadband Infrastructure Grant Account
- $10 M - Rural and Regional Urban Consortium Account
- $15 M - Broadband Infrastructure Loan Account
- $25 M - Broadband Public Housing Account

Consortia Account

- Rural and Urban Regional Broadband Consortium Account (Consortia Grant program) is intended "to fund the cost of broadband deployment activities other than the capital cost of facilities, as specified by the Commission."

Promote ubiquitous broadband deployment and to advance broadband adoption in unserved and underserved areas by

- Increasing sustainability of broadband infrastructure and projects;
- Promote broadband deployment (availability) for residences in California;
- Promote broadband access and adoption (knowledge of service options and ability to utilize services as well as subscription of services) for residences in California;
- Increase the rate of broadband adoption by facilitating the impact of consumer education, outreach, and training;
- Support local community-based parties, especially anchor institutions, who are working to increase deployment, access, and adoption.
Benefits of Consortia Program

1. Collaborating with Internet Service Providers (ISPs) to develop regional strategic plans for broadband infrastructure priority investments, aimed at increasing access to broadband.
2. Promotion of increased access, utilization, outreach and adoption of broadband with minority.
3. Promotion of increased awareness and understanding among policymakers of the importance of broadband access for economic development and regional wellbeing.
4. Verifying, troubleshooting and increasing the accuracy of the California Interactive Broadband Map, by way of conducting mobile and wired speed tests in their regions as well as providing feedback to update the map.
5. Creating regional initiatives to improve quality, speed, and coverage of wireless, wireless and fiber broadband infrastructure in the region.
6. Implementing a regional approach to broadband issues and increasing the program’s efficiency by reducing duplicative efforts. For example, one consortium encouraged a CASF applicant to combine multiple applications into one, resulting in reduction of overhead while serving more households.

Future Proposed Legislation for CASF

- $5 Million in future funding for Regional Consortia. AB1262(Wood)
- 25 (Mbps) down stream and 3 (Mbps) upstream – California to consider PCC recent adoption of the 25/3 benchmark in its 2015 Broadband Progress report. AB238(Stone)