Welcome
Introduction of New Members
CalTrans New Contacts
Monica Kress-Wooster, Interim Broadband Manager
CalTrans Broadband Program

Monica Kress-Wooster

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- 916 654-2729
Staff Changes Since October

- Mike Keever, Deputy of Project Delivery
- Cory Binns, Deputy of Maintenance and Operations
- Monica Kress-Wooster, Interim Broadband Manager
- TBD, Broadband Coordinator
Activity

Successful meeting with Industry in January 2020
Facilitating Standalone Projects:
- Improving clarity of permitting policy and processes
- Developing template for Complex Utility Partnership Agreement (CUPA)
Facilitating Partnership Projects
- Improve website information: maps, contacts, guidance
- Updating conduit and construction methods standard plans and specifications
Facilitating a proactive approach with internal team
Guest Speakers:
Susan Strachan and David Espinoza

CAPABILITIES ASSESSMENT OF PUBLIC SAFETY
BROADBAND INFRASTRUCTURE AT FAIRGROUNDS
SERVING AS
EVACUATION CENTERS
Capabilities Assessment of Public Safety Broadband Infrastructure at Fairgrounds Serving as Evacuation Centers

• Public Review Draft Report
Issue and Objective

**Issue** – Fairgrounds serve as both emergency response command centers and evacuation centers, with increasingly large-scale evacuations needing improved communication infrastructure.

**Objective** – Develop a deployment plan that will inform policy makers about upgrades necessary to establish sufficient communication infrastructure and the costs associated with these upgrades.
Tasks

- Measured mobile broadband performance at 74 fairgrounds.
- Measured fixed broadband performance at 54 fairgrounds.
- Gathered cost data from Internet service providers on provision of 10 Gbps symmetrical and developed costs estimates for a wireless network capable of serving 10,000 evacuees.
- Recommended an approach to implementing infrastructure upgrades.
Why 10 Gbps Symmetrical?

- Provides communications for large numbers of evacuees
- Sufficient to transfer large video files – upload and download
- Achievable through multiple technologies: fiber optics, cable model and fixed wireless
Process to Develop Cost Estimates for High Capacity Backbone

1. Identify Potential Providers
   - Using California Interactive Broadband Map

2. Request for Information
   - Cost to provide 10 Gbps symmetrical with specified performance metrics

3. Net Present Value Analysis
   - 1 Year and 5 Year
Process to Develop Cost Estimates for Fixed Wireless Network

- Develop model network
  - Using EDX

- Gather cost information
  - NTIA and vendor websites

- Develop 3 scenarios
  - Fairground size
Responses to RFI provided two approaches

- Monthly recurring costs only
- A combination of upfront deployment costs and monthly recurring costs thereafter

One respondent offered the ability to ramp service down from 10 Gbps symmetrical during on-emergency periods.
## Cost Estimate – Fiber Backbone

<table>
<thead>
<tr>
<th></th>
<th>Lowest Pricing Option Backbone NPV Year 1 Adjusted (Lower Range Value)</th>
<th>Second Lowest Pricing Option Backbone NPV Year 1 Adjusted (Lower Range Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost for 74 Fairgrounds</td>
<td>$8,628,906</td>
<td>$43,388,389</td>
</tr>
<tr>
<td>Minimum</td>
<td>$64,002</td>
<td>$43,566</td>
</tr>
<tr>
<td>Maximum</td>
<td>$555,594</td>
<td>$13,386,088</td>
</tr>
<tr>
<td>Mean</td>
<td>$116,607</td>
<td>$586,330</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>$107,436</td>
<td>$2,167,154</td>
</tr>
<tr>
<td>Median</td>
<td>$110,090</td>
<td>$191,457</td>
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</tbody>
</table>
Fixed Wireless Network
## Cost Estimate - Fixed Wireless Network

<table>
<thead>
<tr>
<th>Deployment Cost – Low (Nonrecurring Cost)</th>
<th>Deployment Cost – High (Nonrecurring Cost)</th>
<th>Deployment Cost – Average (Nonrecurring Cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$22,027,200</td>
<td>$81,001,800</td>
<td>$51,514,500</td>
</tr>
</tbody>
</table>
## Cost Estimate – Total Deployment Year 1

<table>
<thead>
<tr>
<th></th>
<th>Deployment Cost – Backbone and Wireless Networks Low (Nonrecurring Cost)</th>
<th>Deployment Cost – Backbone and Wireless Networks High (Nonrecurring Cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost 74 Fairgrounds</td>
<td>$30,656,106</td>
<td>$124,290,189</td>
</tr>
</tbody>
</table>
Monthly Recurring Costs

Removing outliers of

- Humboldt ($15,000)
- Placer County ($7,500)
- Trinity County ($23,513)
- Tule Lake-Butte Valley ($23,513)

<table>
<thead>
<tr>
<th>Range of Monthly Costs</th>
<th>Average Monthly Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,150 - $4,659</td>
<td>$3,733</td>
</tr>
</tbody>
</table>
Request for Proposals provides cost effectiveness by leveraging competition, nearby infrastructure.

- **Technical specifications** – determine that competing proposals provide equivalent quality.
- **Resiliency** – will the proposed technology function during natural disasters (rain, smoke, multiple fire locations)
- **Redundancy** – can the provider reroute if resiliency fails
- **Potential tradeoffs** – between high initial capital costs and lower monthly costs over time
- **Flexibility** – can 10 Gbps be ramped up during disasters and back down for typical use
- **Bundling** – how to evacuate cost proposals that are contingent on being awarded a minimum number of sites
Most sites likely to qualify for Categorical Exemptions

Four sites with particularly high costs should be evaluated to determine what likely project is

- Humboldt, Placer, Trinity, Tule Lake – Butte Valley
- Will these sites require an EIR?

Cost estimate if no EIR and work through California Fair Services Authority likely in the range of $650,000
Mobile Testing Caveats

- Mobile testing is just a snapshot in time
- Can indicate limited patterns, but actionable conclusions need additional data
Excluding failed tests, FirstNet has the highest percentage tests over the 3.2 Mbps / 2.6 Mbps recommended speeds for two-person video calls.
Rural fairgrounds are 15-20% less likely to have connection speeds capable of two-person video.
Excluding locations with failed tests, FirstNet also has the highest percentage of tests over the FCC standard of 25 Mbps /3 Mbps.
FirstNet does not see a reduction in test locations with service at 25/3 in rural areas
Questions regarding FirstNet Failure Rates

- 100% failure rates at Trinity and Modoc
- 100% failure rates at Amador, Calaveras, Mother Lode, and Placer
  - Parent network AT&T did not experience failure
  - Potential technical issue during testing?
- Mariposa, Nevada and Tehama fairgrounds experienced test failures at 45%, 14%, and 36% respectively
54 of 74 fairgrounds deployed CalSPEED boxes

21 of those provided their subscription plan information

Most fairgrounds received subscribed speeds

Sonoma County, Santa Clara County, and Alameda County Fairgrounds had measured download speeds falling well below the subscribed service
Public Comment
Thank You!