



WiFi Enabled Solar Shade Structures

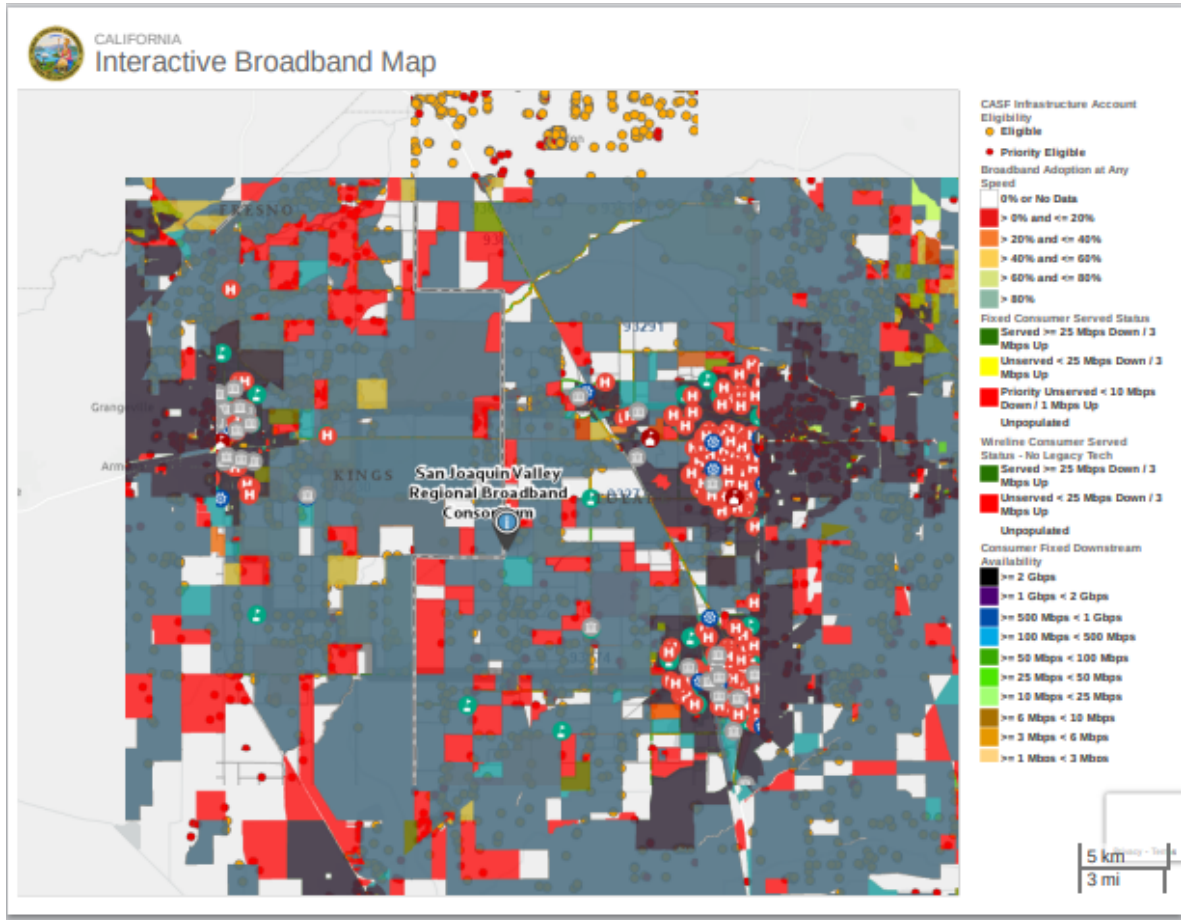
Public Utilities Commission Of the State of California
California Advanced Services Fund

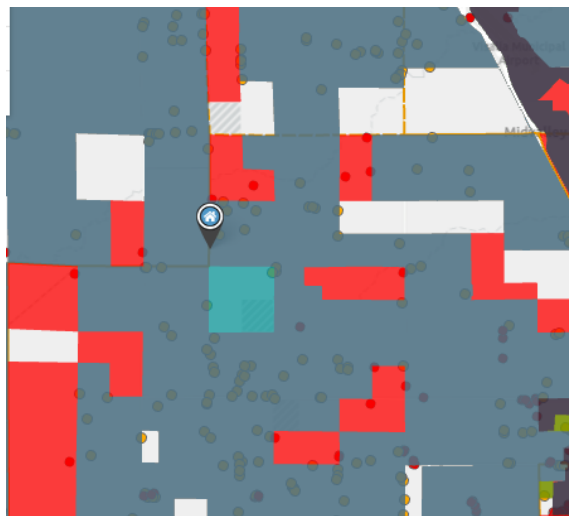
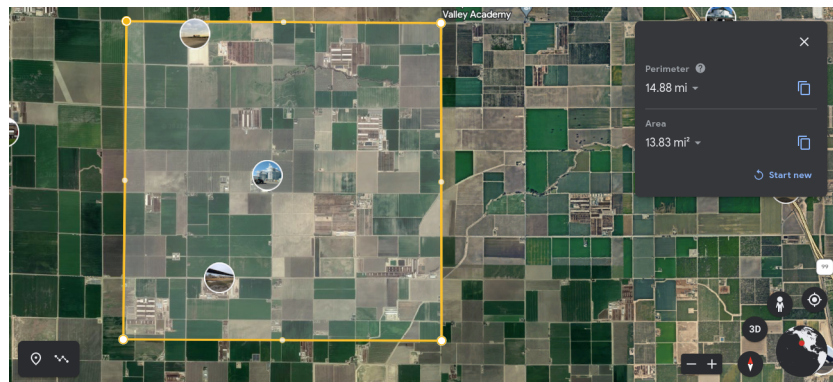
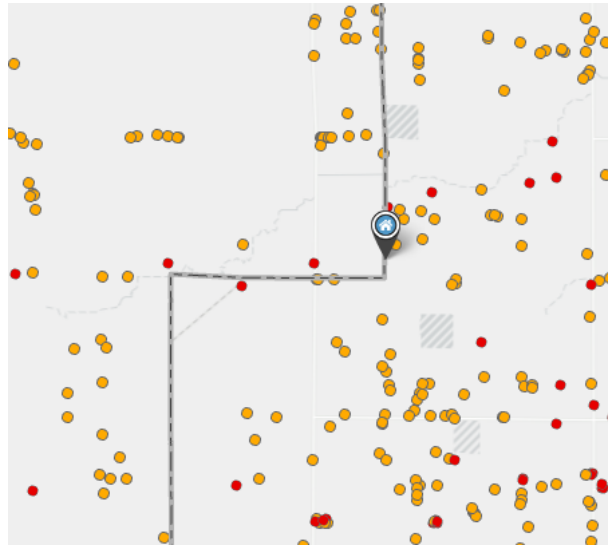
Broadband Infrastructure Grant Account Application
Project Summary

Applicant Name	Cow Shades
CPCN Number	None
Contact Person	Francie Finn (415) 571-4117 franciefinn1@gmail.com
Project Title	Cow Shades Supernetwork Embracing Digital Equity and Community Justice
Project Location	Hanford, CA San Joaquin Valley
Project Type	Last Mile
Project Cost/Amount Requested	\$1,027,925
Map of Proposed Project Area	Farm Locations and farmer families in Hanford Area
Handford, CA	15 Sq Miles surrounding Nichols Ranch 13762 1st Ave, Hanford, California 93230

1. A detailed map of the project area, including, geography, terrain, arterial transportation, urban and suburban development, and that includes the existing and proposed infrastructure for the project. 15 Sq Miles surrounding Nichols Ranch, 13762 1st Ave, Hanford, California 93230, serving farm communities with a serviceable, addressable market of 704 residences.

Anchor Institutions Interactive Broadband Map; There are 2 hospitals, 3 clinic in the service area in Hanford.





Name: Kings

Full Census Tract Code:

06031001200 Census Tract 12

06107002100 Census Tract 21

200% Federal Poverty Level: 35.2%

Median Household Income: \$67,841.00

The project will provide service in a rural community in the Hanford area of San Joaquin Valley of California. This region is classified as underserved, state-designated disadvantaged communities.

Description of the Project:

Leverage the current 4G and Fixed Wireless middle-mile networks for last-mile broadband coverage in a 15 mile rural community in Hanford, located in Kings County.

Remote, rural areas lack resources to provide adequate broadband signal (electric grid access, fiber networks). Cow Shades provides an alternative rural network utilizing a combination of Fixed Wifi and 4G networks powered by off-grid solar and battery storage for broadband coverage.

Service offerings will include minimum speeds of 100 Mbps down/ 20 Mbps up and maximum speeds of up to 1Gbps down/1Gbps up without data caps.

Proposed Broadband Project Plan:

The Cow Shades Project plans to use a combination of WiFi, BPL and Point to Point technologies leveraging current mid-mile fiber networks to extend the coverage to remote rural communities.

Construction of the core fixed wireless network involves mounting repeaters/radios on Cow Shades off-grid solar structures strategically placed in a mesh network in the rural town and mounted to existing or built 20 FT utility poles on designated property locations within the network. A receiving radio connected through an ethernet cable or wifi router will be attached to subscribers' homes in the community. Cow Shades' independent IoT network supports local access (2G – 5G, LTE-M, NB-IoT) over radio and BPL network operators through strategic partners reducing costs for providing service in rural communities and acting as a backbone for other needed services.

Project Expenditures:

CASF Infrastructure Application Item #8_Template (v.1 March 2023)

CAP/EX Category	Unit of Measurement	Quantity	Total Cost
Permitting			
Engineering and Project Management (Labor)	Labor Hours	25	\$2,500
Full Engineering Design (Includes Fiber Engineering, Wireless Engineering, Fielding & Mapping)	Labor Hours	30	35,000
Project Management	Labor Hours	1	40,000
Outreach Programs	Labor Hours	5	5000
Make Ready Engineering (Poles)	Labor Hours	30	30,000
Permit Application Fees (Includes all permit application fees)	N/A		10,000
Permit Support (Labor Hours)	Labor Hours	5	250
Number of Permits submitted.	Each	10	
Outside Plant Construction (Material)			
Fiber count (dropdown)	Per Foot		\$
Coax Cable (dropdown)	Per Foot		\$
Handhole	Each		
Outside Plant Construction (Labor)			
Placing Aerial Fiber/ COAX	Per Foot		\$
Placing Underground Fiber / COAX	Per Foot		\$
Placing Underground conduit.	Per Foot		\$
Trenching (Includes directional bore, open cut trench, tunneling)	Per Foot		\$
Handhole Shipping and Handling	Each		\$
Placing Handhole	Each		\$
Splicing Journeyman	Labor Hours		\$
Splicing Laborer	Labor Hours		\$
Surface Restoration Concrete	Sq Ft		\$
Surface Restoration Asphalt	Sq Ft		\$
CO/HUB/Remote/Node Equipment/Wireless (Material)			
(OLT) Optical Line Terminals	Each		\$
Fiber Optic Distribution Frames	Each		\$
(FDH) Fiber Distribution Hubs	Each		\$
(ONT) Optical Network Terminals	Each		\$
Above Ground Cabinets	Each		\$
Antennas	Each	10	100,000
Radios/Mounting Kits/Connectors	Each	10	550,000
BACK Up Power Equipment / Electrical	Each	10	525,000
Towers	Each	10	35,000
Applicants Additional Items not Provided Above			
550 Solar Panels			150,000
10 inverters			40,000
10 Battery Storage			150,000
Racking			100,000
Labor			55,175

7. Deployment Schedule

A schedule for obtaining necessary permits prior to construction. The schedule must include the timeline required for the California Environmental Quality Act (CEQA) review, as applicable

A schedule for project construction following receipt of permits, to complete the project within 24 months, or within 12 months if the project is categorically exempt from CEQA.

Construction Drawings Submitted 7/10/23

CEQA Review 8/4/23

Permits to Kings County 9/20/23

Begin Building Solar Structures 11/1/23

Communication Network Begins 1/23/2

Summary

Utilize existing infrastructure to deploy a last-mile broadband network to serve rural farms in the Hanford area. This last-mile broadband project is categorically exempt from CEQA requirements because Cow Shades will be installed on private land.

The residents who will benefit from this project are listed as “priority unserved” on the Broadband Map (applicant is not disputing the Broadband Map). The project meets program eligibility requirements offering a low-income broadband plan at a co-pay amount of \$18 per month per household.

The total grant request is below the \$25,000,000 threshold for Ministerial Review. Applicant believes the project is CEQA-exempt. The proposed project costs approximately \$1,460 per serviceable location and is below the \$4,500 unit threshold cost for Ministerial Review and does not contemplate any middle-mile infrastructure.

Please provide responses to the following:

1. A detailed map of the project area, including, geography, terrain, arterial transportation, urban and suburban development, and that includes the existing and proposed infrastructure for the project. 15 Sq Miles surrounding Nichols Ranch, 13762 1st Ave, Hanford, California 93230, serving farm communities with a serviceable, addressable market of 704 residences.

2. A detailed description of the project, including, project location (city, county, community, neighborhood, etc.), length of project, and roadways along the project alignment.

Description of Proposed Broadband Project Plan

Cow Shades proposes installation of off-grid solar shade structures to house repeaters and other communication devices in rural areas within Hanford, CA. The Project will consist of up to 550 solar panels including panel racking, inverters, installation, operation & maintenance (O&M) across 10 sites/rural farms,

The proposed Cow Shades project to deliver 1,000 Mbps download and 1,000 Mbps upload broadband speed to unserved locations in Hanford, CA in the Central Valley at a total cost of \$1,027,925 or \$1,460 per household serviceable area 704 residents. These residents currently have no broadband access and designated “priority unserved” by the FCC with Median household income of \$60,925.

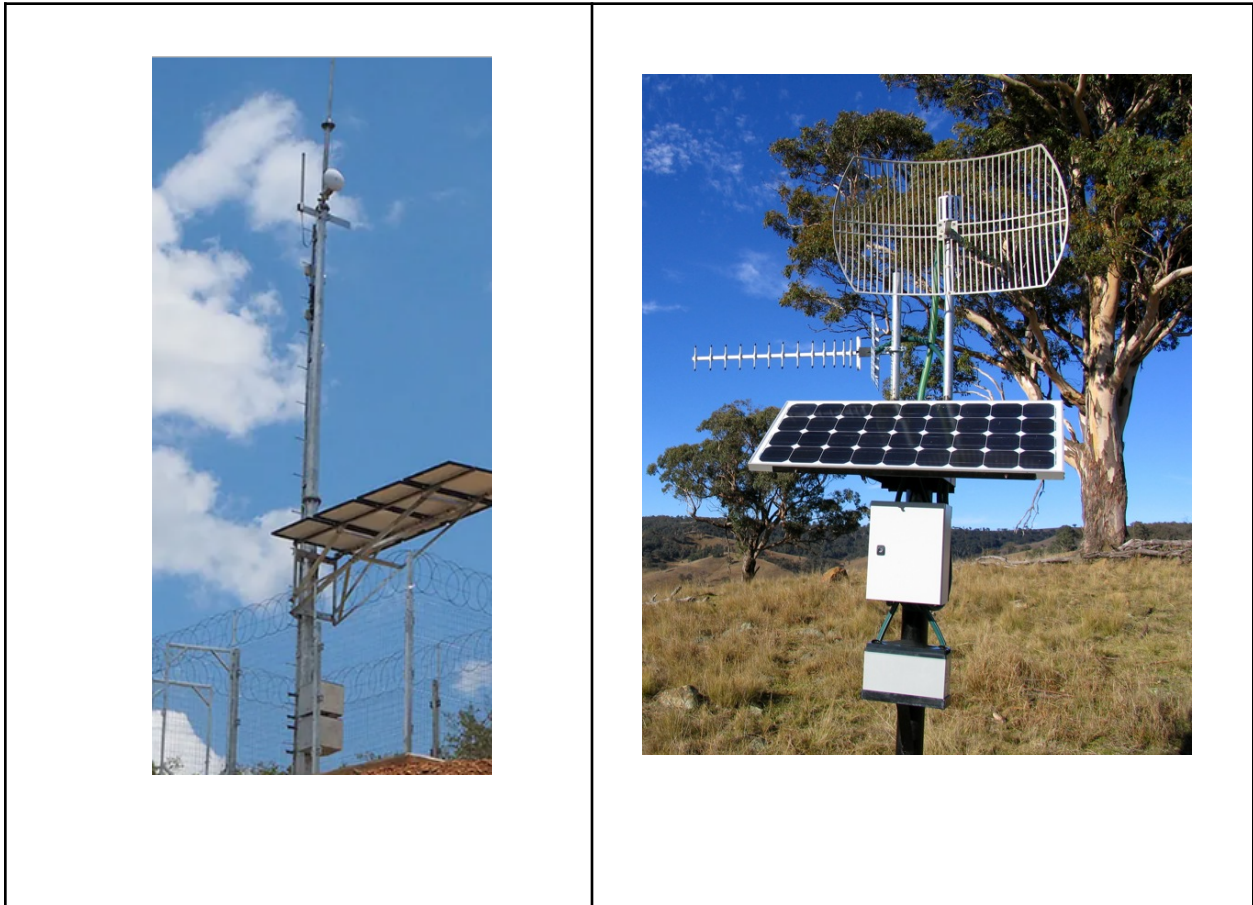
Cow Shades Virtual Power Plant (VPP) Networks; Embracing Digital Equity and Community Justice

Cow Shades are innovative solar shade structures that provide shading for cows, power for off-grid charging, irrigation, and pumps, and wireless signals that enable resilience, security and connectivity in hard-to-reach rural communities.

Cow Shades strategically placed solar structures enable a mesh network for shared data and power infrastructure to act as a small-scale, aggregated energy and wireless resource to support resilience, cybersecurity, and emergency response in disadvantaged communities. Cow Shades cloud-based distributed data network also enables distributed power sharing to wirelessly provide vital services when needed (large pumps for flooding, vehicle charging, power outages).

3. A detailed description of the project setting, including, land use, geography, terrain, arterial transportation, urban and suburban development, etc. The Cow Shades network will be a mesh network of equipment geographically placed to cover the entire area with a combination of large towers (housed at solar shade structures) and smaller remote routers to extend the signal.

Using a 4G signal wireless internet connection routes the signal to Cow Shade structures with a telephone mast and a 4G adaptor remotely solar powered, i.e. Telstra NextG USB + router with a wifi link to the second router in repeater mode.



Capturing mobile reception: Grid Antenna connected by a cable to a broadband mobile modem connected by USB to a router connected by a cable to an antenna powered by Cow Shades using solar panels, a Regulator & Battery storage to power the unit at night and cloudy days.

Solar shades are to be installed on dairies in Hanford, and will be used to power telecommunication devices and also power for irrigation and pumps needed for emergencies.

4. Provide photos of the Key Observation Points for the project and a preliminary design of the project. Current coverage

Unwired Broadband Inc

Maximum Advertised Downstream Speed (Mbps):

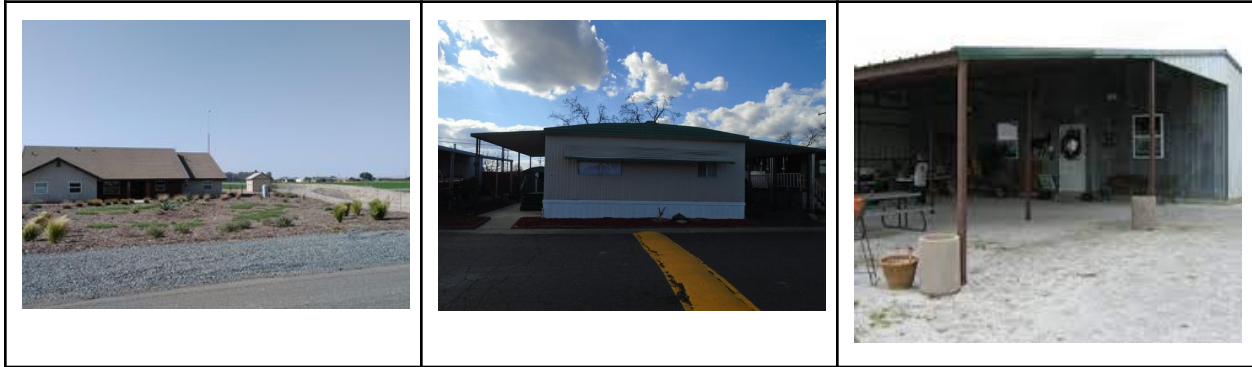
100

Maximum Advertised Upstream Speed (Mbps):

100

Technology Type:

Terrestrial Fixed Wireless



5. Assumptions used regarding which type of CEQA review is anticipated and any citations to CEQA sections and exemptions as appropriate. Cow Shades will work with advanced mapping tools to align the proposed infrastructure with existing environmental conditions and protections.
6. Does the project consist of the installation of new facilities primarily in new conduit or within new Right-of-Way or previously undisturbed ground? No
7. Does the project consist of minor physical changes to existing facilities or the placement of facilities in or on existing buildings? Yes
8. Will new fiber be installed in existing conduit, on existing utility poles, or placed underground? If underground, will it be located along an existing roadway? No
9. If placing fiber on existing poles: will the project comply with the pole loading requirements of General Order 95? Yes
10. Does the project involve the installation of underground or at-grade hand-holes, pull-boxes, and conduit vaults?
no
11. What is the total length of the fiber runs? What are the height/dimensions of any facilities (e.g., conduit, poles, cabinets, dishes, antennas or vaults)? 20 FT Antennas are required
12. Are any other permits required for the project? What are they and which agency, local, state and federal, will issue them? Off grid solar does not require an upgrade of utility infrastructure
13. Have there been any environmental studies/technical reports completed for the project? Please provide. No, but in talks with a technology that will provide advanced gis mapping of proposed equipment locations
14. Is the applicant aware of any sensitive environmental habitat, scenic highway or cultural resources near the project site? No
15. Does the budget cover a PEA and possibly a Mitigated Negative Declaration or EA/EIR? Yes