SHOPP Asset Management Pilot Request Form

SHOPPCPR: Ver 3 11/14

Submittal Date 08/14/2015

Caltrans

Division of Transportation Programming
State Highway Operation and Protection Program (SHOPP)

Project Manager: Steve Tran

Phone: (213) 897-0126

Dist	County	Route	Prefix	PM	Prefix	PM	EA	PPNO	Project ID
07	Los Angeles	5	R	85.6	R	88.5			

☒ Includes Multiple Locations (Complete Page 2 of this Form)

MPO: SCAG

Project Location/Description (Include the nearest city, town or landmark)

In Los Angeles County, from South of Gormon UC to County Line, and in Kern County, from Los Angeles County line to Fort Tejon OC. LA -5, PM 85.6 to 88.5 and Kern 5 - PM 0.0 to 5.02.

Need for project and proposed improvements (Elaborate using PID language)

Install solar energy generation system on roadway right of way. To provide electric power to support Rest area facilities, Electric Vehicle charging station, traffic control and other services. This project will take advantage of existing topography to provide remote power supply. This will eliminate running long wire networks and wire theft problems. This proposal will be very helpful in case of natural disaster that interrupts existing power supply.

PA&ED / M200	01/15/2018	R/W Cert / M410	11/01/2020	CCA / M600	08/01/2022
PS&E / M380	09/01/2020	RTL / M460	12/01/2020	END Project / M800	02/01/2024

Capital ($1,000)
(Escalated to FY of Programming)

	FY	Cost
R/W	2021/22	
Construction	2021/22	$2,500
	Total Capital	$2,500

Support ($1,000)

	FY	Cost
PA & ED	2018/19	$200
PS & E	2018/19	$350
R/W	2020/21	$70
Construction	2021/22	$500
	Total Support	$1,120

Legislative District Numbers
(Separate multiple Districts with a comma)

State Assembly	34, 36
State Senate	16, 21
Congressional	23, 25

☐ Approved ☐ Denied

CAPITAL CONSTRUCTION COST ESCALATION RATE: 0%

District SFP (Print)	Robert So	District SFP (Sign)	Robert So	Phone	(213) 897-0691
District Director (Print) for	Carrie Bowen	District Director (Sign)	Shirley Choate	Phone	(213) 897-0362
SHOPP Exec. (Print)		SHOPP Exec. (Sign)		Phone	

SHOPP Long Lead Request Form Attachment

07 -	Los Angeles	- 5
EA:	PPNO:	
EFIS:		

Multiple Locations Listing

Location	Perf Measure #	Performance Measure	County	Route	Prefix	PM	Prefix	PM	Bridge Number If Applicable
1	30	Location(s)	Los Angeles	5	R	85.6	R	88.7	
2	54	Location(s)	Kern	5				5	
3									
4									
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SHOPP Asset Management Pilot Project Nomination

Solar Energy Grid Upon Operational Highway:

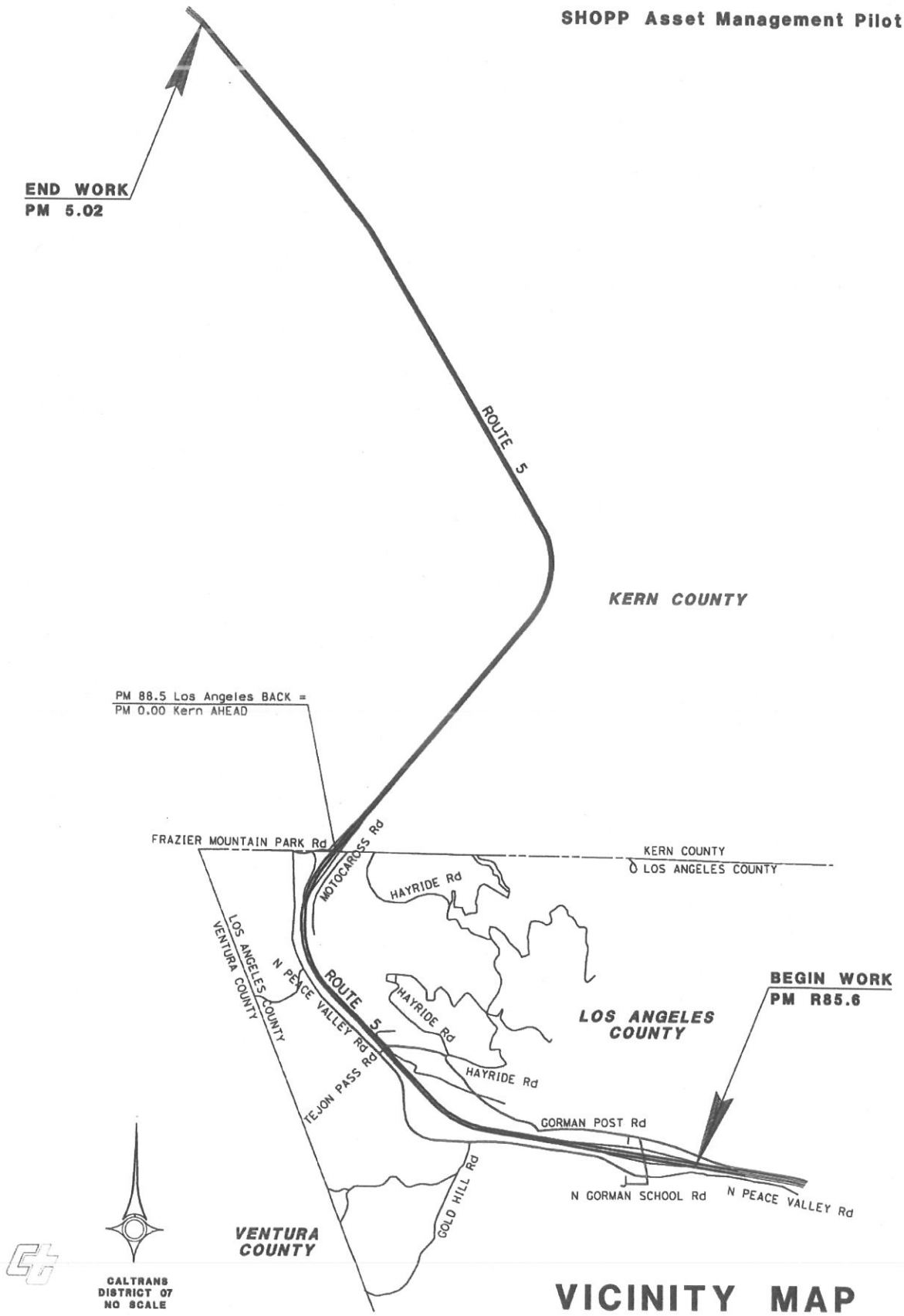
I-5 Golden State Freeway PM 85.6 to PM 88.5 in Los Angeles County

and PM 0.0 to PM 5.02 in Kern County.

August 14, 2015

07-LA-5 PM R85.6/R88.5

SHOPP Asset Management Pilot Project



VICINITY MAP

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SHOPP Asset Management Pilot Project Nomination

Solar Energy Grid Upon Operational Highway:

I-5 Golden State Freeway PM 85.6 to PM 88.5 in Los Angeles County and PM 0.0 to PM 5.02 in Kern County.

Introduction:

The proposal in this pilot project is to install solar energy grid system within state right of way, specifically on the roadbed or roadside. This project, based on asset management principles, is anticipated to make contributions towards the departments strategic goals of Safety and Health, Sustainability and System Performance. Developing this innovative project will require partnering between Caltrans District 7, Caltrans HQ and industry. This pilot project will accommodate mobility improvements, roadside and roadway enhancement.

The new power available is to be either directly used or placed in the overall grid of the existing power chain.

Project Background:

Route 5 is a major North-South arterial for commercial goods movement and handles heavy traffic. The portion of Route 5 impacted by this project, stretches from south of Gorman UC Bridge (PM 85.6) in Los ageless County to Port Tejon OC (PM 5.02) in Kern County. It has four standard 12 feet lanes and 10 feet outside shoulders on both directions. It has wide center median that is typically sloped 1:2 or flatter. The project limits are under the Maintenance jurisdiction of Caltrans District 7. The pilot project will take advantage of the topography of the area and the constant exposure to sunlight. Within the limits of this project is the Rest Area with facilities that are expected to make use of the electric power supply from the solar system installation made as a result of this pilot project.

The objective of this project is to implement a model of infrastructure features on operational right of way for the purpose of establishing solar power and the many uses it can provide including; Electric Vehicle (EV) charging station, lighting, energy cost reduction and service to the public at large.

The Project Initiation Document (PID) for this pilot project can be completed on time for programming into the 2018 SHOPP cycle. All work is anticipated to be within State right of way and the expected environmental documentation should be a categorical exemption.

Sustainability, Livability and Economy:

The generation of electric power, by use of solar energy systems, has a place presently and in the future operations of state right of way to reduce existing carbon footprint of transportation facilities. A critical primary objective is to provide remote charging stations for fleet needs of Caltrans, the CHP and Local County Agencies who patrol freeway corridors as part of their routine work area. These three fleets of vehicles are expected to reduce their carbon footprint as each year produces higher investment of Electric Vehicles (EVs). This then improves the sustainability of evolving infrastructure needs, and provides livability to be able to rely on smart highways for EVs. All these along with the growth of smart

corridor technology will reduce stress from commuting. The induction and dispersal of generated electrical power is a concerted effort to promote the automotive industry to produce more electric vehicles and motorcycles for transportation needs. These increases in EV production will create jobs and support the economy.

System Performance:

Cost effective and efficiently placed solar charging stations will be a beneficial fixture for Caltrans fleet and others to access routinely along the freeway corridor. Availability of Solar power will result in other added features such as power station service sheds, charging stations and, in case of an emergency or natural catastrophe, provide energy to support communications. In emergency situations, Broadcast System, two way radios, closed circuit television, traffic control systems, lighting, pump stations and other highway information systems can be maintained and operational.

The success of this pilot project will encourage the installation of other energy dependent infrastructures that will improve mobility, safety and operations within the corridor.

Safety

This pilot project, by installation of the solar energy system, will provide power on demand. Services such as additional CCTV stations to increase real time observation locations for TMC dispatch to inform OES vehicles of potential hazards while in response to accidents or the rescue of injured and or medical emergencies. Rural conditions throughout the mountain pass will always need additional communication services, Road Condition Freeway Message Boards and more lighting. The additional service will definitely improve the overall safety of the stretch of freeway corridor in question.

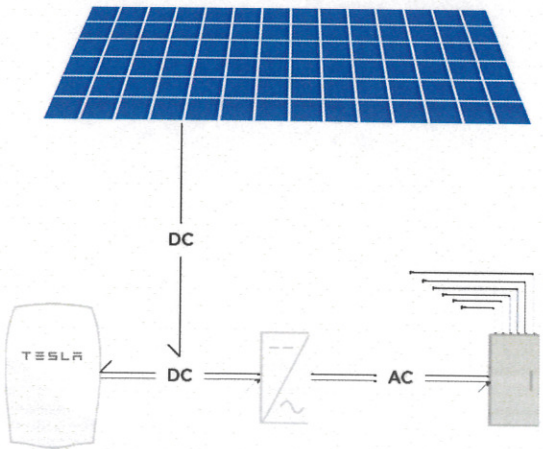
Safety services during the winter time and daylight savings time would include roadside charging stations for electric vehicles, additional lighting and roadway freeway condition signs to inform drivers stuck in snow that help is one the way.

Project Proposal Formation and Cost Table:

Install solar power generating devices on freeway shoulder, median or embankment to harness electric power to be transferred directly to the electric load or stored in a power bank for eventual distribution. Shown below are the three types of solar power generation devices to be tested simultaneously. The need to test all three devices rises from the monitoring of electricity generated, conducted and then dispersed under the same evironmental conditions within a 3 mile stretch of freeway. Cost tables below are calculated by the amount of devices and cluster

Type 1:

Standard for the industry mounted panels upon post or truss style supports. Panels to have dimensions of 4 ft x 8 ft, mounted 4 feet high and 8 feet long at 35 to 45 degrees facing the southwest. This will provide 256 square feet of solar surface to achieve 600 volts of power. The generated power will be transmitted to a converter and then distributed to power cells or power wall for each station and shed.



Item 1: panel = cost per panel $1093.75 x 32 each = $35,000.00

Item 2: Shed Battery = cost per battery $6000.00 x 6 =$36,000.00

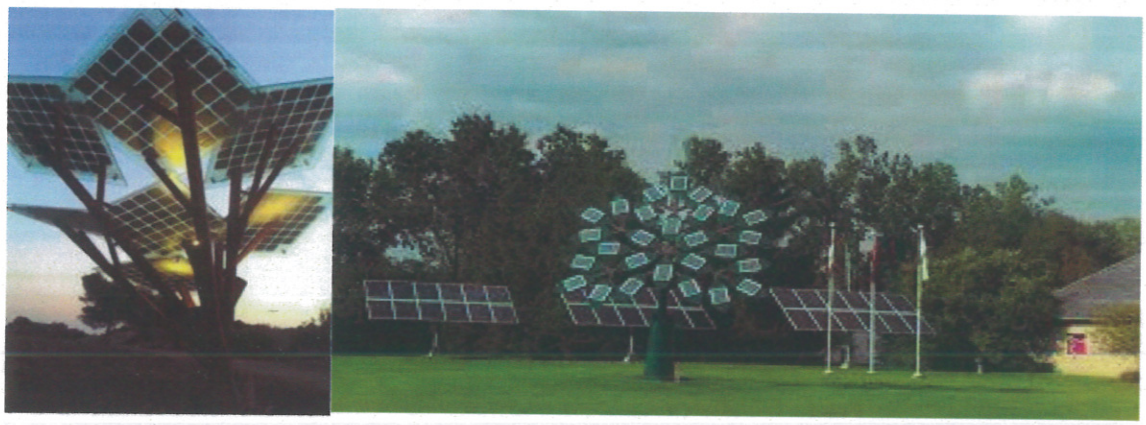
Regulator and Inverter package included with cost of battery and panel.

Labor wiring and Converter/Inverter installation $160.00 per installations x 5 = $800.00 to $1000.00

<u>Panel Total Cost $72,000.00</u>

Type 2 SOALR TREE

These would be solar panels customized and shaped to create a solar tree grove with the same amount of square footage surface (256 sq.ft.) as type 1. This will generate the same amount of voltage that will be transmitted through existing utility cables, or new lesser gauge cables, to move the electricity over a 1.5 mile distance and back for a total distance of 3 miles.



1 Tree custom made $12,500 x 6 trees in formation of row or grove = $75,000.00
Price extended to have 2 groves or rows of solar trees x $75K = $150,000.00
Labor to construct and wire trees state forces labor $22,000.00

Custom Solar Trees Grand total = $247,000.00

Type 3

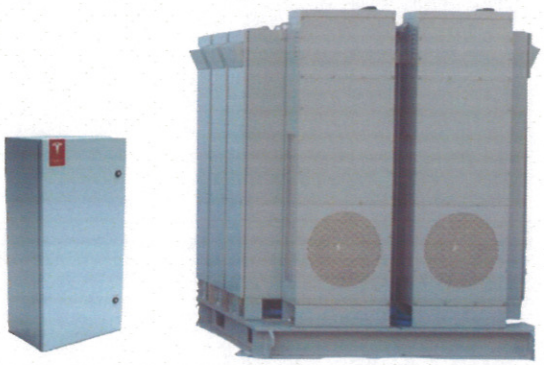
Install a solar ribbon into the pavement of either the center median shoulder lane or right shoulder lane with utility lines connecting to existing Power towers and/or direct current connections to pertinent electric loads. .

Solar ribbon set in pavement AREA : ½ mile long dimension: 4 ft wide by 2640 ft long

2640 linear ft / 32 linear ft = 82.5 sections of panels or ribbon Cost is equal for pavement installations at $8200.00 per section or slab. **Cost benefits:** Either cost is equal $676,500.00. **Grand total Cost of pilot solar corridor: $995.500.00 per 1.5 miles of WB roadway and 1.5 miles EB $1,353,000.00 $2,706,000.00 for project limits.**

POWER STATON CLUSTER:

These clusters are designed to hold up to 4 KWh for 18 hours. These clusters can be installed next to existing California state fuse boxes and power line dump to disperse energy into the state equipment spaced out 1 mile apart. Each power cluster can send energy to the next available box.



1 Cluster Box cost is $12,500 negotiable if more than 2 are purchased.
6 boxes are needed to spaced out 1 ea / 1mile apart
12,500.00 x 6 = $72,000.00

Summary of cost estimate;

The estimated total cost of this project is 3.92 million dollars. This includes a construction cost of 2.5 million dollars in 2015 dollars and a support cost of 1.1 million dollars. The support cost was estimated at 45 percent of the construction cost.

Funding Plan:

It is anticipated that all funding for this project will come from the SHOPP program under the SHOPP Asset Management Pilot Program. The intention is to program the project into the 2018 SHOPP cycle for funding in FY 2020/21. The detail breakdown of the construction cost estimate and the support cost will be provided in the PID document.

Recommendation:

It is recommended that this project be nominated for the SHOPP Asset Management Pilot Program and programmed into the 2018 SHOPP cycle. This is an innovative project that, if successful, will pay for itself in less than ten years of installation and open a new tool for transportation management in California. This proposal to install solar power grid within operational highway right of way will support the Departments strategic goals of safety and health, sustainability, livability and economy, System Performance etc.

Project Personnel

Vincent Moreno	Maintenance Superintendent	213 897 1660
Godson Okereke, STE	Program Advisor	213 897 2667
Hamid Saadatnejadi	Chief, Office of Maintenance Engineering	213 897 1662
Deborah Wong	Deputy Director, Maintenance	

Attachments

Attachment 1: Aerial of work location

Attachment 2: Typical Center median shoulder to develop

Attachment 3: Typical right shoulder and embankment to be developed for panel installation

Attachment 4: Center median solar ribbon stretch

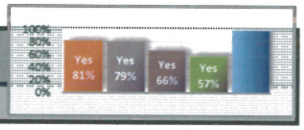
Attachment 5: Open field for grove solar trees installation

Attachment 6: Rest area development for solar features with shed and power grid battery cluster.

Envision Rating System
Self-Assessment Checklist

Sustainability Goal points minimally includes Green Assessment Questions on 5 Tabs (Quality of life, Leadership, Resource Allocation, Natural World, and Climate & Risk). One point is earned for each "Yes" Answer (50 points possible) and bonus points for additional question may be considered (93 additional points). Projects will be ranked for the Sustainability Goal based on these points.

Leadership



1. Collaboration

	Corridor=C	Project nomination= PN	Project=P
	X	X	X
	X	v	v

LD1.1 Provide Effective Leadership and Commitment

	Yes	No	N/A	
Intent: Provide effective leadership and commitment to achieve project sustainability goals.				
Metric: Demonstration of meaningful commitment of the project owner and the project team to the principles of sustainability and sustainable performance improvement.				
Assessment Questions:	**Yes**	**No**	**N/A**	
Has the project team issued public statements stating their commitment to sustainability?	○	●	○	?
Is the project team's commitment to sustainability backed up by examples of actions taken or to be taken?	●	○	○	?
Does these commitments and actions demonstrate sufficiently that sustainability is a core value of the project team?	●	○	○	?
Total	2	of	3	

LD 1.2 Establish a Sustainability Management System

	Yes	No	N/A	
Intent: Create a project management system that can manage the scope, scale and complexity of a project seeking to improve sustainable performance.				
Metric: The organizational policies, authorities, mechanisms and business processes that have been put in place and the judgment that they are sufficient for the scope, scale and complexity of the project.				
Assessment Questions:	**Yes**	**No**	**N/A**	
Does the project team intend to establish a sound, workable sustainability management system that meets the requirements of the project?	●	○	○	?
Total	1	of	1	

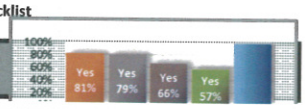
LD 1.3 Foster Collaboration and Teamwork

	Yes	No	N/A		C	PN	P
LD 1.3 Foster Collaboration and Teamwork					X	X	X
Intent: Eliminate conflicting design elements, and optimize system by using integrated design and delivery methodologies and collaborative processes.					X	X	X
Metric: The extent of collaboration within the project team and the degree to which project delivery processes incorporate whole systems design and delivery approaches.					X	X	X
Assessment Questions:	**Yes**	**No**	**N/A**		X	X	X
Are the project owner and the project team intending to take a systems view of the project, considering the performance relationship of this project to other community infrastructure elements?	●	○	○	?	X	X	X
Will the project owner and the project team establish a collaborative relationship on the project to achieve higher levels of sustainable performance?	●	○	○	?	X	X	X
Will the project owner and the project team institute a whole systems design and delivery process with the objective of maximizing sustainable performance?	●	○	○	?			X
Total	3	of	3		X	X	X
					X	v	v

LD 1.4 Provide for Stakeholder Involvement

	Yes	No	N/A		C	PN	P
LD 1.4 Provide for Stakeholder Involvement					X	X	X
Intent: Establish sound and meaningful programs for stakeholder identification, engagement and involvement in project decision making.					X	X	X
Metric: The extent to which project stakeholders are identified and engaged in project decision making. Satisfaction of stakeholders and decision makers in the involvement process.					X	X	X
Assessment Questions:	**Yes**	**No**	**N/A**		X	X	X
Will key stakeholders in the project be identified and lines of communication established?	●	○	○	?	X	X	X
Does the project team plan to engage with stakeholders and solicit stakeholder feedback?	●	○	○	?	X		X
Will the project team establish a strong stakeholder involvement process designed to involve the public meaningfully in project decision-making?	●	○	○	?	X	X	X
Total	3	of	3		X	X	X

Leadership



	Corridor=C	Project nomination= PN	Project=P

2. Management

LD 2.1 Pursue By-Product Synergy Opportunities

Intent: Reduce waste, improve project performance and reduce project costs by identifying and pursuing opportunities to use unwanted by-products or discarded materials and resources from nearby operations.

Metric: The extent to which the project team identified project materials needs, sought out nearby facilities with by-product resources that could meet those needs and capture synergy opportunities.

Assessment Questions:	Yes	No	N/A	
Will the project team establish a program to locate, assess and make use of unwanted by-products and materials on the project?	◉	○	○	?
Total	1	of	1	

LD 2.2 Improve Infrastructure Integration

Intent: Design the project to take into account the operational relationships among other elements of community infrastructure which results in an overall improvement in infrastructure efficiency and effectiveness.

Metric: The extent to which the design of the delivered works integrates with existing and planned community infrastructure, and results in a net improvement in efficiency and effectiveness.

Assessment Questions:	Yes	No	N/A	
Will the project team seek to optimize sustainable performance at the infrastructure component level?	◉	○	○	?
Will the project team seek to optimize sustainable performance by designing the project as an integrated system?	○	◉	○	?
Will the project be planned and designed so that its operation and functions are fully integrated with all infrastructure elements in the community?	◉	○	○	?
Total	2	of	3	

3. Planning

LD 3.1 Plan For Long-term Maintenance and Monitoring

Intent: Put in place plans and sufficient resources to ensure as far as practical that ecological protection, mitigation and enhancement measures are incorporated in the project and can be carried out.

Metric: Comprehensiveness and detail of long-term monitoring and maintenance plans, and commitment of resources to fund the activities.

Assessment Questions:	Yes	No	N/A	
Will the project have a plan for long term ecological monitoring and maintenance?	◉	○	○	?
Will that plan be sufficiently comprehensive, covering all aspects of long-term ecological monitoring and maintenance?	◉	○	○	?
Total	2	of	2	

LD 3.2 Address Conflicting Regulations and Policies

Intent: Work with officials to Identify and address laws, standards, regulations or policies that may unintentionally create barriers to implementing sustainable infrastructure.

Metric: Efforts to identify and change laws, standards, regulations and/or policies that may unintentionally run counter to sustainability goals, objectives and practices.

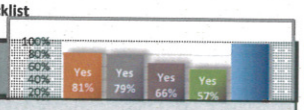
Assessment Questions:	Yes	No	N/A	
Will an assessment of applicable regulations, policies and standards be done, identifying those that may run counter to project sustainable performance goals, objectives and targets?	○	◉	○	?
Do the owner and the project team intend to approach decision-makers to resolve conflicts?	○	◉	○	?
Total	0	of	2	

LD 3.3 Extend Useful Life

Intent: Meet energy needs through renewable energy sources.

Metric: Extent to which renewable energy resources are incorporated into the design, construction and operation.

Leadership



Assessment Questions:	Yes	No	N/A		Corridor=C	Project nomination= PN	Project=P
					X	X	X
Will the project be designed in ways that extend substantially the useful life of the project through use of renewable energy resources?	◉	○	○	?	X	X	X
Total	1	of	1		X	X	X

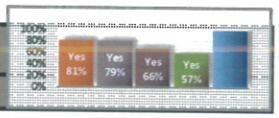
CONTINUE ON TO TH E RESOURCE ALLOCATION CATEGORY →

MaryBeth

Envision Rating System
Self-Assessment Checklist

Sustainability Goal points minimally includes Green Assessment Questions on 5 Tabs (Quality of life, Leadership, Resource Allocation, Natural World, and Climate & Risk). One point is earned for each "Yes" Answer (50 points possible) and bonus points for additional question may be considered (93 additional points). Projects will be ranked for the Sustainability Goal based on these points.

Resource Allocation



1. Materials

		Corridor=C	Project nomination=	Project=P
		X	X	X

RA1.1 Reduce Net Embodied Energy

Intent: Conserve energy by reducing the net embodied energy of project materials over the project life.

Metric: Percentage reduction in net embodied energy from a life cycle energy assessment.

	Assessment Questions:	Yes	No	N/A	
* *	Does the project team plan to conduct an assessment of the embodied energy of key materials over the project life?	○	◉	○	?
*	Will the project achieve a significant reduction in net embodied energy over the life of the project?	○	◉	○	?
	Total	0 of 2			

RA 1.2 Support Sustainable Procurement Practice

Intent: Obtain materials and equipment from manufacturers and suppliers who implement sustainable practices.

Metric: Percentage of materials sourced from manufacturers who meet sustainable practices requirements.

	Assessment Questions:	Yes	No	N/A	
1	Will the project team establish a preference for using manufacturers, suppliers and service companies that have strong sustainable policies and practices?	○	○	◉	?
1	Will the project team establish a sound and viable sustainable procurement program?	◉	○	○	?
1	Does the project team intend to source a significant proportion of project materials, equipment, supplies and services from these companies?	◉	○	○	?
	Total	2 of 2			

RA 1.3 Use Recycled Materials

Intent: Reduce the use of virgin materials and avoid sending useful materials to landfills by specifying reused materials, including structures, and material with recycled content.

Metric: Percentage of project materials that are reused or recycled.

	Assessment Questions:	Yes	No	N/A	
1	Will the project team consider the appropriate reuse of existing structures and materials and incorporated them into the project?	◉	○	○	?
1	Will the project team specify that a significant amount of materials with recycled content be used on the project?	◉	○	○	?
	Total	2 of 2			

RA 1.4 Use Regional Materials

Intent: Minimize transportation costs and impacts and retain regional benefits through specifying local sources.

Metric: Percentage of project materials by type and weight or volume sourced within the required distance.

	Assessment Questions:	Yes	No	N/A	
1	Will the project team work to identify local/regional sources of materials?	○	◉	○	?
1	Does the project utilize a significant amount of locally sourced materials?	◉	○	○	?
	Total	1 of 2			

RA 1.5 Divert Waste from Landfills

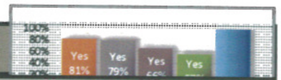
Intent: Reduce waste, and divert waste streams away from disposal to recycling and reuse.

Metric: Percentage of total waste diverted from disposal.

	Assessment Questions:	Yes	No	N/A	
1	Will the project team identify potential recycling and reuse destinations for construction and demolition waste generated on site?	○	◉	○	?
1	Will the project team develop an operations waste management plan to decrease and divert project waste from landfills and incinerators during construction and operation?	◉	○	○	?
1	Will the project divert a significant amount of project waste from landfills?	◉	○	○	?
	Total	2 of 3			

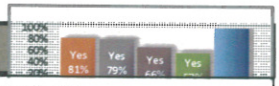
MaryBeth

Envision Rating System
Self-Assessment Checklist



	Item	Yes	No	N/A		Corridor=C	Project nomination=	Project=P
	Resource Allocation							
	RA 1.6 Reduce Excavated Materials Taken Off Site							X
	Intent: Minimize the movement of soils and other excavated materials off site to reduce transportation and environmental impacts.							X
	Metric: Percentage of excavated material retained on site.							X
	Assessment Questions:	Yes	No	N/A				X
P	Will the project be designed to balance cut and fill to reduce the amount of excavated material taken off site?	◉	○	○	?		X	X
P, 1	When necessary, will the project team taken steps to identify local sources/receivers of excavated material?	◉	○	○	?			X
P, 1	Will the project reuse a significant amount of suitable excavated material onsite?	◉	○	○	?		X	X
	Total 3 of 3							X
	RA 1.7 Provide for Deconstruction and Recycling							v X
	Intent: Encourage future recycling, up-cycling, and reuse by designing for ease and efficiency in project disassembly or deconstruction at the end of its useful life.							X
	Metric: Percentage of components that can be easily separated for disassembly or deconstruction.							X
	Assessment Questions:	Yes	No	N/A				X
* 1	Will the project team assess whether materials specified can be easily recycled or reused after the useful life of the project has ended?	◉	○	○	?			X
* 1	Will the project be designed so that a significant amount of project materials be easily separated for recycling or readily reused at the end of the project's useful life?	◉	○	○	?			X
* 1	Will the project team incorporate methods for increasing the likelihood of materials recycling when the project is operating?	◉	○	○	?		X	X
	Total 3 of 3							X
	2. Energy							v X
	RA 2.1 Reduce Energy Consumption							X
	Intent: Conserve energy by reducing overall operation and maintenance energy consumption throughout the project life cycle.							X
	Metric: Percentage of reductions achieved.							X
	Assessment Questions:	Yes	No	N/A				X
* 1	Will the project team conduct reviews to identify options for reducing energy consumption during operations and maintenance of the constructed works?	◉	○	○	?			X
* 1	Will the project team conducted feasibility studies and cost analyses to determine the most effective methods for energy reduction and incorporated them into the design?	◉	○	○	?			X
* 1	Is the project expected to achieve significant reductions in energy consumption?	◉	○	○	?		X	X
	Total 3 of 3							X
	RA 2.2 Use Renewable Energy							v X
	Intent: Meet energy needs through renewable energy sources.							X
	Metric: Extent to which renewable energy resources are incorporated into the design, construction and operation.							X
	Assessment Questions:	Yes	No	N/A				X
* 1	Will the owner and project team identify and analyze options to meet operational energy needs through renewable energy?	◉	○	○	?			X
* 1	Will the project meet a significant amount of its energy needs through renewable energy?	◉	○	○	?			X
	Total 2 of 2							X
	RA 2.3 Commission and Monitor Energy Systems							v X
	Intent: Ensure efficient functioning and extend useful life by specifying the commissioning and monitoring of the performance of energy systems.							X
	Metric: Third party commissioning of electrical/mechanical systems and documentation of system monitoring equipment in the design.							X
	Assessment Questions:	Yes	No	N/A				X
* 1	Does the owner and project team intend to conduct an independent commissioning of the project's energy and mechanical systems?	○	○	◉	?			X
* 1	Will the project team assemble the necessary information needed to train operations and maintenance workers in a way that facilitates proper training and operations?	◉	○	○	?			X

Resource Allocation



		Yes	No	N/A		Corridor=C	Project nomination=	Project=P
* 1	Will the design incorporate advanced monitoring systems, such as energy sub-meters, to enable more efficient operations?	◉	○	○	?			X
	Total 2 of 2							X

3. Water

RA 3.1 Protect Fresh Water Availability

Intent: Reduce the negative net impact on fresh water availability, quantity and quality.

Metric: The extent to which the project uses fresh water resources without replenishing those resources at its source.

	Assessment Questions:	Yes	No	N/A				
* 1	Will the project team assess project water requirements?	◉	○	○	?		X	X
* 1	Does the project team plan to onduct a comprehensive assessment of the project's long-term impacts on water availability?	◉	○	○	?		X	X
* 1	Will the project only access water that can be replenished in both quantity and quality?	◉	○	○	?		X	X
* 1	Will the project consider the impacts of fresh water withdrawal on receiving waters?	○	◉	○	?		X	X
Pn, P	Will the project discharge into receiving waters meet quality and quantity requirements for high value aquatic species?	○	◉	○	?		X	X
* 1	Will the project achieve a net-zero impact on water supply quantity and quality?	◉	○	○	?			X
* 1	Will the project restore the quantity and quality of fresh water surface and groundwater supplies to an undeveloped native ecosystem condition?	○	◉	○	?			X
	Total 4 of 7							X

RA 3.2 Reduce Potable Water Consumption

Intent: Reduce overall potable water consumption and encourage the use of greywater, recycled water, and stormwater to meet water needs.

Metric: Percentage of water reduction.

	Assessment Questions:	Yes	No	N/A				
* 1	Will the project team conduct planning or design reviews to identify potable water reduction strategies?	◉	○	○	?			X
* 1	Will the project team conduct feasibility and cost analysis to determine the most effective methods for potable water reduction and incorporated them into the design?	◉	○	○	?			X
* 1	Will the project achieve a substantial reduction in potable water consumption?	◉	○	○	?			X
* 1	Will the project result in a net positive generation of water, and water up-cycling, as a result of on-site purification or treatment?	○	◉	○	?			X
	Total 3 of 4							X

RA 3.3 Monitor Water Systems

Intent: Implement programs to monitor water systems performance during operations and their impacts on receiving waters.

Metric: Documentation of system in the design

	Assessment Questions:	Yes	No	N/A				
QMP	Will the owner and project team conduct an independent commissioning/monitoring of the project's water systems in order to validate the design objectives?	○	○	◉	?			X
* 1	Will the project design incorporate the means to monitor water performance during operations?	○	○	◉	?			X
* 1	Will the project integrate long-term operations and impact monitoring to mitigate negative impacts and improve efficiency?	○	○	◉	?			X
* 1	Will specific strategies be put in place to utilize monitoring and leak detection in order for the project to be more responsive to changing operating conditions?	○	○	◉	?			X
	Total 0 of 0							X

* **Items noted with an asterisk should be developed by the other sustainabilty sub teams such as resiliency, energy and recycled materials.**

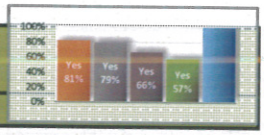
1 These could be construction contract incentives; need to be developed by sustainability goal sub teams.

Amy

Envision Rating System
Self-Assessment Checklist

Sustainability Goal points minimally includes Green Assessment Questions on 5 Tabs (Quality of life, Leadership, Resource Allocation, Natural World, and Climate & Risk). One point is earned for each "Yes" Answer (50 points possible) and bonus points for additional question may be considered (93 additional points). Projects will be ranked for the Sustainability Goal based on these points.

Natural World



1. Siting

		Yes	No	N/A		Corridor=C	Project nomination= PN	Project=P
	NW 1.1 Preserve Prime Habitat					X	X	X
	Intent: Avoid placing the project – and the site compound/temporary works – on land that has been identified as of high ecological value or as having species of high value.					X	X	X
	Metric: Avoidance of high ecological value sites and establishment of protective buffer zones.					X	X	X
	Assessment Questions:					X	X	X
all (PN ?)	Will the project team take steps to identify and document areas of prime habitat near or on the site?	○	◉	○	?	X		X
P	Will the project avoid development on land that is judged to be prime habitat?	◉	○	○	?			X
P	Will the project establish a minimum 300 ft. natural buffer zone around all areas deemed prime habitat?	◉	○	○	?			X
PN, P	Will the project significantly increase the area of prime habitat through habitat restoration?	○	◉	○	?		X	X
all	Will the project improve habitat connectivity by linking habitats?	○	◉	○	?	X	X	X
	Total 0 of 0					X	X	X
	NW 1.2 Protect Wetlands and Surface Water					X	X	X
	Intent: Protect, buffer, enhance and restore areas designated as wetlands, shorelines, and waterbodies by providing natural buffer zones, vegetation and soil protection zones.					X	X	X
	Metric: Size of natural buffer zone established around all wetlands, shorelines, and waterbodies.					X	X	X
	Assessment Questions:					X	X	X
PN, p	Will the project avoid development on wetlands, shorelines, and waterbodies?	◉	○	○	?		X	X
p	Will the project maintain soil protection zones (VSPV) around all wetlands, shorelines, and waterbodies?	○	◉	○	?	X		X
PN, p	Will the project restore degraded existing buffer zones to a natural state?	○	◉	○	?	X	X	X
	Total 1 of 3					X	X	X
	NW 1.3 Preserve Prime Farmland					X	X	X
	Intent: Identify and protect soils designated as prime farmland, unique farmland, or farmland of statewide importance.					X	X	X
	Metric: Percentage of prime farmland avoided during development.					X	X	X
	Assessment Questions:					X	X	X
pn, p	Will this project avoid development on land designated as prime farmland.	◉	○	○	?		X	X
	Total 1 of 1					X	X	X
	NW 1.4 Avoid Adverse Geology					X	X	X
	Intent: Avoid development in adverse geologic formations and safeguard aquifers to reduce natural hazards risk and preserve high quality groundwater resources.							X
	Metric: Degree to which natural hazards and sensitive aquifers are avoided and geologic functions maintained.							X
	Assessment Questions:							X
p	Will the project team identify and address the impacts of sensitive or adverse geology?	○	○	◉	?			X
p	Will the project be designed to reduce the risk of damage to sensitive geology?	○	○	◉	?			X
p	Will the project be designed to reduce the risk of damage from adverse geology?	○	○	◉	?			X
	Total 0 of 0							X
	NW 1.5 Preserve Floodplain Functions					X	X	X
	Intent: Preserve floodplain functions by limiting development and development impacts to maintain water management capacities and capabilities.					X	X	X
	Metric: Efforts to avoid floodplains or maintain predevelopment floodplain functions.					X	X	X
	Assessment Questions:					X	X	X
all	Will the project avoid or limit development within the design frequency floodplain?	○	◉	○	?	X	X	X

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Envision Rating System
Self-Assessment Checklist

Natural World

		Yes	No	N/A	?	Corridor=C	Project nomination= PN	Project=P
p	Will the project maintain pre-development floodplain infiltration and water quality?	○	○	◉	?			X
p	Will the project design incorporate a flood emergency operations and/or evacuation plan?	◉	○	○	?			X
all	Will the project maintain or enhance riparian and aquatic habitat, including aquatic habitat connectivity?	○	○	◉	?	X		X
pn,p	Will the project maintain sediment transport?	○	○	◉	?			X
pn,p	Does the project team intend to modify or remove infrastructure subject to frequent damage by floods?	○	○	◉	?			X
	Total 1 of 2					X	X	X

NW 1.6 Avoid Unsuitable Development on Steep Slopes

		Yes	No	N/A	?	Corridor=C	Project nomination= PN	Project=P
	Intent: Protect steep slopes and hillsides from inappropriate and unsuitable development in order to avoid exposures and risks from erosion and landslides, and other natural hazards.					X	X	X
	Metric: The degree to which development on steep slopes is avoided, or to which erosion control and other measures are used to protect the constructed works as well as other downslope structures.					X	X	X
	Assessment Questions:	**Yes**	**No**	**N/A**		X	X	X
all	Will the project team use best management practices to manage erosion and prevent landslides?	◉	○	○	?	X		X
p	Will the project team minimize or avoid all development on or disruption to steep slopes?	◉	○	○	?			X
	Total 2 of 2					X	X	X

NW 1.7 Preserve Greenfields

		Yes	No	N/A	?	Corridor=C	Project nomination= PN	Project=P
	Intent: Conserve undeveloped land by locating projects on previously developed greyfield sites and/or sites classified as brownfields.					X	X	X
	Metric: Percentage of site that is a greyfield or the use and cleanup of a site classified as a brownfield.					X	X	X
	Assessment Questions:	**Yes**	**No**	**N/A**		X	X	X
pn,p	Will the project team consider how the project can conserve undeveloped land?	◉	○	○	?			X
all	Will a significant amount of the project development be located on previously developed sites, that is, sites classified as greyfields or brownfields?	◉	○	○	?	X		X
	Total 2 of 2					X	X	X

2. Land and Water

NW 2.1 Manage Stormwater

		Yes	No	N/A	?	Corridor=C	Project nomination= PN	Project=P
	Intent: Minimize the impact of infrastructure on stormwater runoff quantity and quality.					X	X	X
	Metric: Infiltration and evapotranspiration capacity of the site and return to pre-development capacities.					X	X	X
	Assessment Questions:	**Yes**	**No**	**N/A**		X	X	X
p	Will the project be designed to reduce storm runoff to pre-development conditions?	◉	○	○	?			X
pn,p	Will the project be designed to significantly improve water storage capacity?	◉	○	○	?			X
	Total 2 of 2					X	X	X

NW 2.2 Reduce Pesticides and Fertilizer Impacts

		Yes	No	N/A	?	Corridor=C	Project nomination= PN	Project=P
	Intent: Reduce non-point source pollution by reducing the quantity, toxicity, bioavailability and persistence of pesticides and fertilizers, or by eliminating the need for the use of these materials.					X	X	X
	Metric: Efforts made to reduce the quantity, toxicity, bioavailability and persistence of pesticides and fertilizers used on site, including the selection of plant species and the use of integrated pest management techniques.					X	X	X
	Assessment Questions:	**Yes**	**No**	**N/A**		X	X	X
all	Will operational policies be put in place to control and reduce the application of fertilizers and pesticides?	◉	○	○	?	X		X
pn,p	Will the project include runoff controls to minimize contamination of ground and surface water?	◉	○	○	?		X	X
p	Will the project team select landscaping plants to minimize the need for fertilizer or pesticides?	◉	○	○	?			X
p	Will the project team select fertilizers and pesticides appropriate for site conditions with low-toxicity, persistence, and bioavailability?	○	◉	○	?			X
p	Will the project designed to eliminate the need for pesticides or fertilizers?	○	◉	○	?			X
	Total 3 of 5					X	X	X

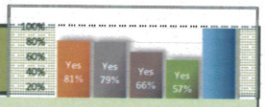
NW 2.3 Prevent Surface + Groundwater Contamination

X X X

Amy

Envision Rating System
Self-Assessment Checklist

Natural World



			Corridor=C	Project nomination= PN	Project=P
	Intent: Preserve fresh water resources by incorporating measures to prevent pollutants from contaminating surface and groundwater and monitor impacts over operations.		X	X	X
	Metric: Designs, plans and programs instituted to prevent and monitor surface and groundwater contamination.		X	X	X
	Assessment Questions:	Yes No N/A	X	X	X
p	Will the project team conduct or aquire hydrologic delineation studies?	○ ◉ ○ ?			X
all	Will spill and leak prevention and response plans and design be incorporated into the design?	◉ ○ ○ ?	X		X
p	Will the project design reduce or eliminate potentially polluting substances from the project?	◉ ○ ○ ?			X
p	Will the project team seek to reduce future contamination by cleaning up areas of contamination and instituting land use controls to limit the introduction of future contamination sources?	◉ ○ ○ ?			X
	Total	3 of 4	X	X	X

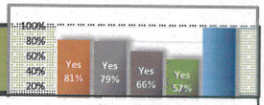
3. Biodiversity

	NW 3.1 Preserve Species Biodiversity		X	X	X
	Intent: Protect biodiversity by preserving and restoring species and habitats.		X	X	X
	Metric: Degree of habitat protection.		X	X	X
	Assessment Questions:	Yes No N/A	X	X	X
p	Will the project team identify existing habitats on and near the project site?	◉ ○ ○ ?			X
pn, p	Will the project protect existing habitats?	◉ ○ ○ ?			X
p	Will the project increase the quality or quantity of existing habitat?	◉ ○ ○ ?	X		X
pn, p	Will the project preserve, or improve, wildlife movement corridors?	◉ ○ ○ ?		X	X
	Total	4 of 4	X	X	X
	NW 3.2 Control Invasive Species		X	X	X
	Intent: Use appropriate non-invasive species and control or eliminate existing invasive species.		X	X	X
	Metric: Degree to which invasive species have been reduced or eliminated.		X	X	X
	Assessment Questions:	Yes No N/A	X	X	X
p	Will the project team specify locally appropriate and non-invasive plants on the site?	◉ ○ ○ ?			X
all	Will the project team implement a comprehensive management plan to identify, control, and/or eliminate, invasive species?	◉ ○ ○ ?	X		X
all	Will the project team implement a comprehensive management plan to prevent or mitigate the future encroachment of invasive species?	◉ ○ ○ ?	X	X	X
	Total	3 of 3	X	X	X
	NW 3.3 Restore Disturbed Soils		X	X	X
	Intent: Restore soils disturbed during construction and previous development to bring back ecological and hydrological functions.				X
	Metric: Percentage of disturbed soils restored.				X
	Assessment Questions:	Yes No N/A			X
p	Will the project restore 100% of soils disturbed during construciton?	○ ◉ ○ ?		X	X
p	Will the project restore 100% of soils disturbed by previous development?	○ ◉ ○ ?			X
	Total	0 of 2			X
	NW 3.4 Maintain Wetland & Surface Water Functions		X	X	X
	Intent: Maintain and restore the ecosystem functions of streams, wetlands, waterbodies and their riparian areas.		X	X	X
	Metric: Number of functions maintained and restored.		X	X	X
	Assessment Questions:	Yes No N/A	X	X	X
pn, p	Will the project maintain or enhance hydrologic connetion?	○ ○ ◉ ?		X	X
pn, p	Will the project maintain or enhance water quality?	◉ ○ ○ ?			X
pn, p	Will the project maintain or enhance habitat?	◉ ○ ○ ?		X	X

Amy

Envision Rating System
Self-Assessment Checklist

Natural World



						Corridor=C	Project nomination= PN	Project=P
pn, p	Will the project maintain or restore sediment transport?	○	◉	○	?			X
pn, p	Will wetlands and surface water be maintained or restored so as to have a fully functioning aquatic and riparian ecosystem?	○	○	◉	?			X
	Total	2	of	3		X	X	X

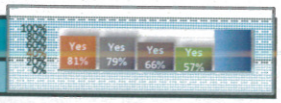
CONTINUE ON TO THE CLIMATE AND RISK CATEGORY→

Gina

Envision Rating System
Self-Assessment Checklist

Sustainability Goal points minimally includes Green Assessment Questions on 5 Tabs (Quality of life, Leadership, Resource Allocation, Natural World, and Climate & Risk). One point is earned for each "Yes" Answer (50 points possible) and bonus points for additional question may be considered (93 additional points). Projects will be ranked for the Sustainability Goal based on these points

Climate and Risk



		Corridor=C	Project nomination=	Project=P
	1. Emissions	X	X	X
	CR1.1 Reduce Greenhouse Gas Emissions	X	✓	✓
	Intent: Conduct a comprehensive life-cycle carbon analysis and use this assessment to reduce the anticipated amount of net greenhouse gas emissions during the life cycle of the project, reducing project contribution to climate change.	X	X	X
	Metric: Life-cycle net carbon dioxide equivalent (CO2e) emissions.	X	X	X
	Assessment Questions: Yes No N/A	X	X	X
*	Will a life-cycle carbon assessment be conducted on the project? ○ ○ ◉ ?	X	X	X
*	Based on that assessment, will the project be designed in a way that substantially reduces carbon emissions? ◉ ○ ○ ?	X	X	X
	Total 1 of 1	X	X	X
	CR 1.2 Reduce Air Pollutant Emissions	X	✓	✓
	Intent: Reduce the emission of six criteria pollutants; particulate matter (including dust), ground level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, lead, and noxious odors.			X
	Metric: Measurements of air pollutants as compared to standards used.			X
	Assessment Questions: Yes No N/A			X
P	Will the project be designed in a way that substantially reduces dust and odors on the site? ○ ◉ ○ ?			X
P	Will the project be designed in a way that substantially exceeds the National Ambient Air Quality Standards (NAAQS) for the six criteria pollutants? ○ ◉ ○ ?			X
	Total 0 of 2			X
	2. Resilience			✓
	CR 2.1 Assess Climate Threat	X	X	X
	Intent: Develop a comprehensive Climate Impact Assessment and Adaptation Plan.	X	X	X
	Metric: Summary of steps taken to prepare for climate variation and natural hazards.	X	X	X
	Assessment Questions: Yes No N/A	X	X	X
*	Will the project team develop a Climate Impact Assessment and Adaptation Plan? ○ ○ ◉ ?	X	X	X
	Total 0 of 0	X	X	X
	CR 2.2 Avoid Traps and Vulnerabilities	X	✓	✓
	Intent: Avoid traps and vulnerabilities that could create high, long-term costs and risks for the affected communities.	X	X	X
	Metric: The extent of the assessment of potential long-term traps, vulnerabilities and risks due to long-term changes such as climate change and the degree to which these were addressed in the project design and in community design criteria.	X	X	X
	Assessment Questions: Yes No N/A	X	X	X
*	Will a comprehensive review be conducted to identify the potential risks and vulnerabilities that would be created or made worse by the project? ◉ ○ ○ ?	X	X	X
*	Is there an intent by the owner or the project team to alter the design to reduce or eliminate these risks and vulnerabilities? ◉ ○ ○ ?	X	X	X
	Total 2 of 2	X	X	X
	CR 2.3 Prepare for Long-Term Climate Adaptability	X	✓	✓
	Intent: Prepare infrastructure systems to be resilient to the consequences of long-term climate change, perform adequately under altered climate conditions, or adapt to other long-term change scenarios.	X	X	X
	Metric: The degree to which the project has been designed for long-term resilience and adaptation.	X	X	X
	Assessment Questions: Yes No N/A	X	X	X
*	Will the project be designed to accommodate a changing operating environment throughout the project life cycle? ○ ◉ ○ ?	X	X	X
	Total 0 of 1	X	X	X
	CR 2.4 Prepare for Short-Term Hazards	X	✓	✓
		X	X	X

Gina

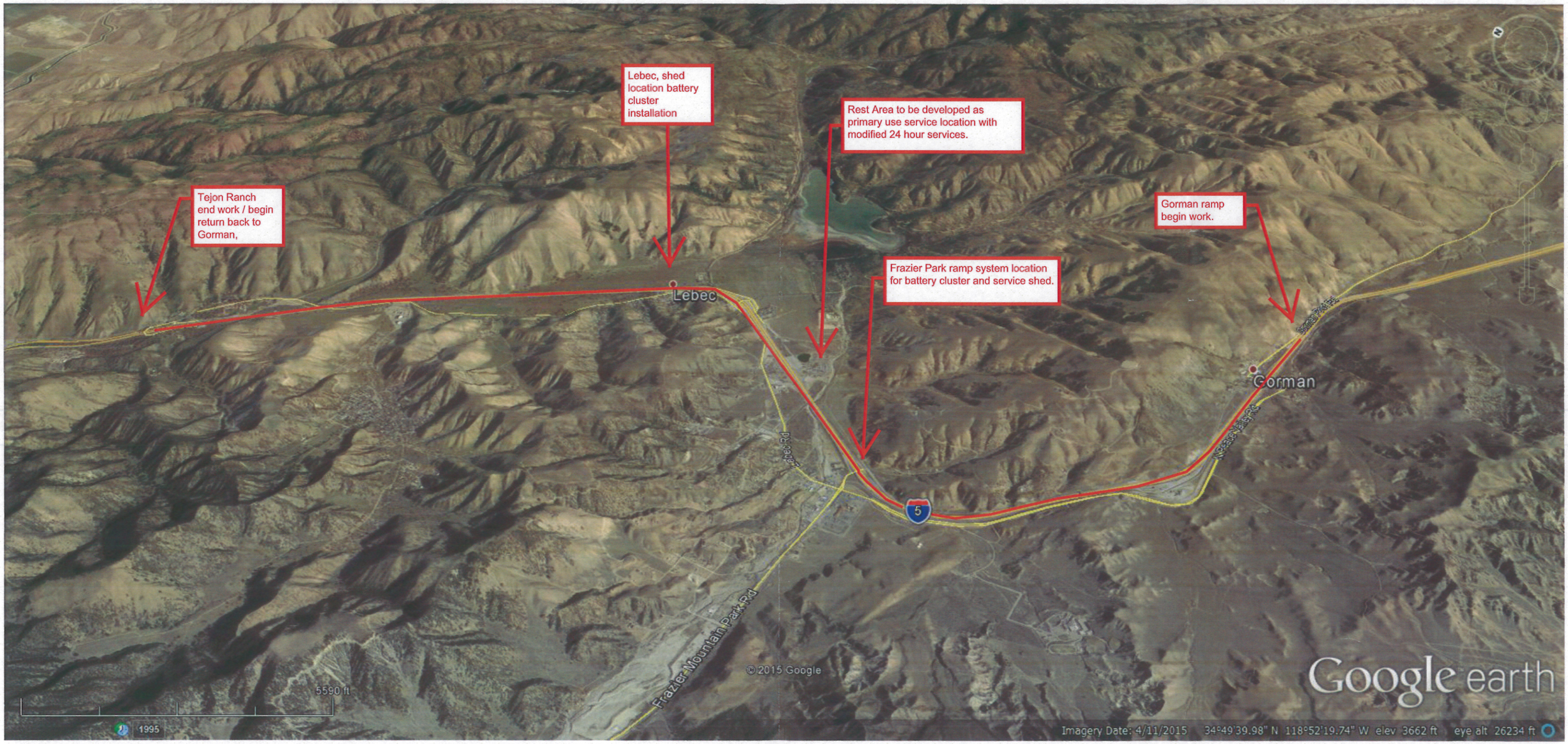
Envision Rating System
Self-Assessment Checklist

Climate and Risk

		Yes	No	N/A		Corridor=C	Project nomination=	Project=P
	Intent: Increase resilience and long-term recovery prospects of the project and site from natural and man-made short-term hazards.					X	X	X
	Metric: Steps taken to improve protection measures beyond existing regulations.					X	X	X
	Assessment Questions:					X	X	X
PN	Will a hazard analysis be conducted covering the likely natural and man-made hazards in the project area area?	◉	○	○	?		X	
P	Will the project be designed so that is it is able to recover quickly and cost-effectively from short-term hazard events?	◉	○	○	?			X
	Total	2	of	2		X	X	X

	CR 2.5 Manage Heat Island Effects					X	✓	✓
						X	X	X
	Intent: Minimize surfaces with a high solar reflectance index (SRI) to reduce localized heat accumulation and manage microclimates.					X	X	X
	Metric: Percentage of site area that meets SRI Criteria.					X	X	X
	Assessment Questions:					X	X	X
*	Will the project be designed to reduce heat island effects by reducing the percentage of low solar reflectance index (SRI) surfaces?	◉	○	○	?	X	X	X
	Total	1	of	1		X	X	X

* Items noted with an asterisk should be developed by the other sustainabilty sub teams such as resiliency, energy and recycled materials.


Lebec, shed location battery cluster installation
Rest Area to be developed as primary use service location with modified 24 hour services.
Tejon Ranch end work / begin return back to Gorman,
Gorman ramp begin work.
Frazier Park ramp system location for battery cluster and service shed.
Lebec
Gorman
Lebec Rd
Frazier Mountain Park Rd
5
© 2015 Google
5590 ft
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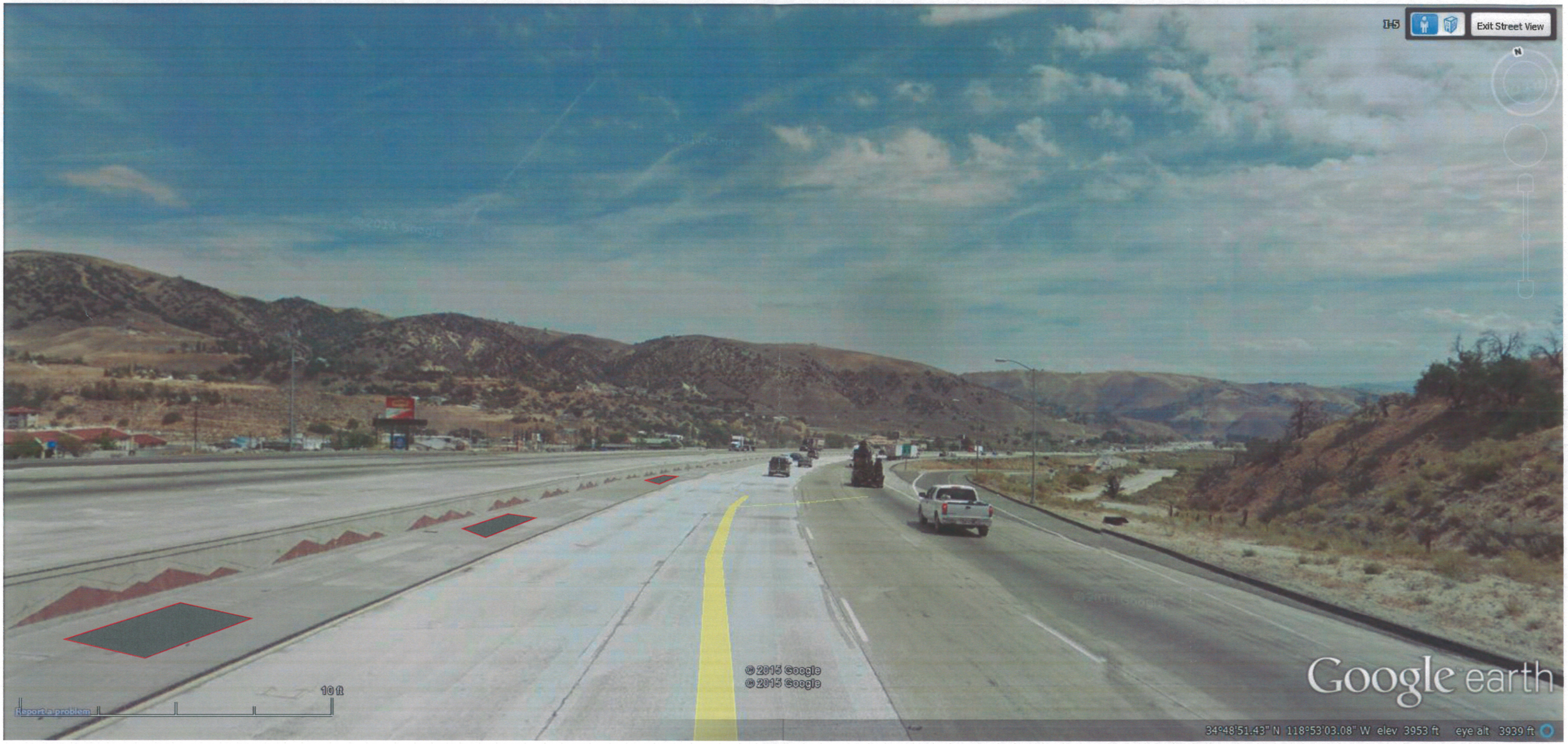
Google earth
Imagery Date: 4/11/2015 34°49'39.98" N 118°52'19.74" W elev 3662 ft eye alt 26234 ft


I-5
Exit Street View
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© 2015 Google
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10 ft
Report a problem
Google earth
34°48'51.43" N 118°53'03.08" W elev 3953 ft eye alt 3939 ft

I-5
Exit Street View
Nijjar
TRUCKING
SURREY B
NTL 744
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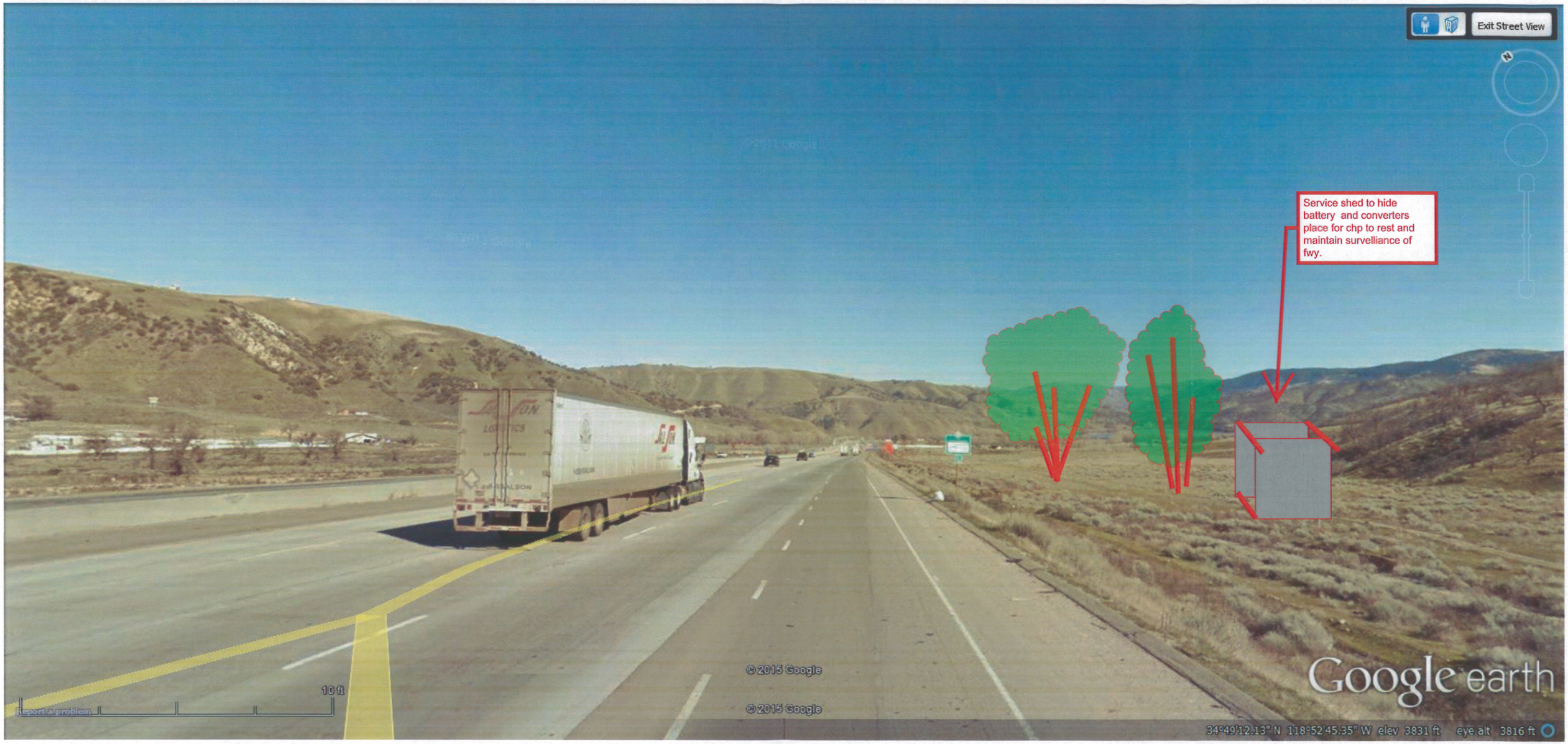
8 ft
Report a problem
Google earth
34°47'31.39" N 118°50'05.25" W elev 3655 ft eye alt 3660 ft

I-5
Exit Street View
4 x 8 solar panels set low profile for windy conditions nest to 4 x 8 panels set apart high profile for winter sun capture .
LODGING NEXT RIGHT
© 2015 Google
© 2015 Google
8 ft
Report a problem
Google earth
34°47'37.04" N 118°50'23.20" W elev 3707 ft eye alt 3707 ft

I-5
Exit Street View
4 x 8 solar panels set low profile for windy conditions nest to 4 x 8 panels set apart high profile for winter sun capture .
LODGING NEXT RIGHT
© 2015 Google
© 2015 Google
8 ft
Report a problem
Google earth
34°47'37.04" N 118°50'23.20" W elev 3707 ft eye alt 3707 ft


Exit Street View
Service shed to hide battery and converters place for chp to rest and maintain survelliance of fwy.
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10 ft
Report a problem
Google earth
34°49'12.13" N 118°52'45.35" W elev 3831 ft eye alt 3816 ft