

**From:** [REDACTED]  
**To:** [REDACTED]  
**CC:** [REDACTED]  
**Sent:** 11/17/2020 4:58:39 PM  
**Subject:** RE: System Hardening -- Follow Up Actions from Friday's (11/13) Wildfire Governance Meeting

**From:** [REDACTED]  
**Sent:** Tuesday, November 17, 2020 1:24 PM  
**To:** [REDACTED]  
**Cc:** [REDACTED]  
**Subject:** System Hardening -- Follow Up Actions from Friday's (11/13) Wildfire Governance Meeting  
**Importance:** High

I know you have gotten started on a number of the action items that came from the 11/16 Wildfire Governance Review.

Here is what will show up as action items, so I want to make sure it is on your radar and being worked on.

1. Do an in-depth dive review of all 27 in construction projects, bring [REDACTED] into the discussion to ensure the Public Safety Specialist view is provided on each project.

On this one, I am scheduling a meeting with the VP's, [REDACTED] yourself and [REDACTED], and yourself.

We need to get the following information on each project

- a. Where in the construction phase, the project is?
  - b. What is the perspective that [REDACTED] and his team provide on that specific project? Our Operational Observers are asking for pictures of the location
  - c. What is construction's view on these projects
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- a. Here are the 27 projects in construction below. The ones that have completed units were ones that stopped in 2020 due to other work pushing them out. The others are in Construction Status meaning that all the dependencies are met and they are ready to break ground.
  - b. Each of the orders below has pictures in its business case link. I really don't know what the governance team is looking for. I suggested that the PSS's would provide an opinion of whether there were wildfire safety benefits still associated with the project, but [REDACTED] said, no, that wasn't what they were looking for.
  - c. [REDACTED] has made it clear that construction would like to continue on all 27.

Order	KEEP	Status	Priority	Planned Units (SAP EST)	Residual Miles (SAP EST)	Primary Planned Year	Completed Units (SAP ACT)
35116800	CONS	PART	2020039	1.425	1.18	2020	0.25
35116391	CONS	PLAN	2020045	2.07	0.69	2020	1.38

35098621	CONS	PLAN	2020444	1.07	0.52	2020	0.55
74022384	CONS	PLAN	2020444	5.55	4.59	2020	0.96
35052821	CONS	PLAN	2020444	1.72	1.72	2021	
35052825	CONS	PLAN	2020444	1.17	1.17	2021	
35061206	CONS	PLAN	2020444	1.77	1.77	2021	
35056746	CONS	PLAN	2020444	2.02	2.02	2021	0
35061212	CONS	PLAN	2020444	1.79	1.79	2021	
35072360	CONS	PLAN	2020444	1.05	1.05	2021	
35094397	CONS	PLAN	2020444	1.07	1.07	2021	
35114040	CONS	PLAN	2020444	1.4	1.40	2021	
35114048	CONS	PLAN	2020444	1.40	1.40	2021	
35114100	CONS	PLAN	2020444	1.04	1.04	2021	
35115050	CONS	PLAN	2020444	1.61	1.61	2021	
35115053	CONS	PLAN	2020444	1.81	1.81	2021	
35115054	CONS	PART	2020444	1.43	1.40	2020	0.03
35115055	CONS	PLAN	2020444	2.13	2.13	2021	
35115151	CONS	PLAN	2020444	1.9	1.90	2021	
35116383	CONS	PLAN	2020444	1.38	1.38	2021	
35116395	CONS	PLAN	2020444	1.71	1.71	2021	
35116442	CONS	PART	2020444	2.1	0.31	2020	1.79
35116444	CONS	PLAN	2020444	2.1	2.10	2021	
35117443	CONS	PLAN	2020444	2.16	2.16	2021	
35157845	CONS	PLAN	2020444	1.27	1.27	2021	
35116384	CONS	PLAN	2020444	1.84	1.67	2020	0.17
35119965	CONS	PLAN	2020444	0.85	0.85	2021	0

2. Review the 3 ECOP Projects. For these projects (I sent a note earlier). The key information is
- What is the Ignition Prediction Score, What is the Consequence Score from Technosylva (and how does it show up relative to the other consequence scores for CPZ's in the top 20%)
  - What is the volume of EC tags that will be remediated by that project (provide a quick view of some of

the equipment relative to the tag from the inspection data) so that people can see the basis for your decision where the Ignition Prediction is not sufficient

- c. What mitigation (line removal, underground, overhead) is being considered --- rough if we don't have detail
- d. Rough cost of the project and rough cost of working the tags individually

a. See below for the two circuits (2 jobs on Diamond Springs) for their comparison of ignition probability, consequence and risk to the top 20%

feeder_name	device_operating_number	mean_ignition_probability	ignition_rank
DIAMOND SPRINGS 1107	1402	9.14E-05	1862
PUEBLO 2102	792	9.91E-05	1667
		Average: 0.000106772	Average: 1815
		Min: 1.55E-05	Min: 24
Top 20%		Max: 0.000549691	Max: 3583

b. See below:

Diamond Springs 1107-1402		ECOP-PUEBLO 2102-H01	
Zone Priority:	244	PROJECT TYPE	HARDENING
Total Tags	480	CIRCUIT	PUEBLO 2102
Total Existing Projects	0	ASSD (ZONE)	792
Existing EC Tags	0	SOURCE-SIDE DEVICE	102272006
% of Total EC Tags	0.00%	# OF PROJECT MILES	2.13
Total Hardening Projects	2	# OF STRUCTURES	27
Hardening EC Tags	85	# OF TOTAL TAGS	19
% of Total EC Tags	17.71%	# OF POLE TAGS	12
Total DER Projects	0	# OF SPANS WITH HIGH SPLICES	0
DER EC Tags	0	# OF OIL-FILLED EQUIPMENT	0
% of Total EC Tags	0.00%	# OF INSULATORS/CROSSARMS	0
Total Removal Projects	0	% OF STRUCTURES IMPACTED	44.44%
Removal EC Tags	0	CONDUCTOR TYPE	1-4AR, 1-4AR(PN)
% of Total EC Tags	0.00%	HIGH FIRE THREAT DISTRICT TIER	3
Remaining EC Tags	395	SNOW LOADING AREA	LIGHT
% of Total EC Tags	82.29%	CORROSION AREA	NON-CORROSION
Total Project Miles	4.77		
Total Circuit Miles in Zone	44.15		
% of Total Miles	10.80%		

c. Diamond Springs projects are overhead and Pueblo is combined OH and UG

d. Diamond Springs projects don't have costs yet, Pueblo is \$3.8M; Cost of an OH tag is [REDACTED] so rough costs for the Diamond Springs would be \$800K and for Pueblo it would be \$180K

3. What is the comprehensive list of reasons work is getting done in the System Hardening? This should be something you can bring to the meeting this Friday.

From what I know, here is the list of reasons

- a. Fire Rebuild work – reason, it does not make sense to rebuild like for like in a fire-prone area
- b. ECOP work – purpose, we would be doing these tags individually, bundling as one job and getting the system hardening done at the same time makes sense
- c. Wildfire Resiliency – the main reason for System Hardening
- d. PSPS Mitigation – where does it make sense and where does it not make sense (you can see this question coming up repeatedly).
- e. Other reasons that I have (these are all the right reasons, plus we get some Distribution Overhead Risk reduction benefits)

4. 2019 PSPS Projects – which ones will move forward and which ones will get shelved  
 2020 PSPS CPZ – which CPZ's got impacted multiple times, and are any of these going to be accelerated as System Hardening projects in 2021.  
 Along with this – we need to have [redacted] outline the framework for suggesting a section of a circuit is system hardened. – I will send [redacted] a separate e-mail with this item. We are asking for an initial view for Friday.

Here's the table from earlier. None of these circuits are in the current 2021 plan. Note that the Bucks Creek 1101 CB zone is in the top 50 miles, but looks like very limited PSPS potential with that one.



**22 circuits have seen at least five unique PSPS events in the 2019-2020 timeframe**

Seven PSPS Events

Circuit Name	County	Min Max CPZ Rank	Total Customer Events
ORD FINO 1101	BUTTE	2289-2420	25091
ORO FINO 1102	BUTTE	1050-2763	21561
PARADISE 1104	BUTTE	734-2954	14710
PARADISE 1105	BUTTE	2141-2912	12054
CLARK ROAD 1102	BUTTE	268-2032	10410
PARADISE 1103	BUTTE	2257-2955	5534
BUTTE 1105	BUTTE	1089-1979	3194
BIG BEND 1102	BUTTE	865-1288	2772
WYANDOTTE 1105	BUTTE	834-1833	2560
BIG BEND 1101	BUTTE	727-1950	2332

Six PSPS Events

Circuit Name	County	Min Max CPZ Rank	Total Customer Events
WYANDOTTE 1103	BUTTE	219-1849	13105
NOTRE DAME 1104	BUTTE	1877	4317
PARADISE 1106	BUTTE	2813-2933	3503

Five PSPS Events

Circuit Name	County	Min Max CPZ Rank	Total Customer Events
WYANDOTTE 1107	BUTTE	265-2033	14544
BANGOR 1101	YUBA	59-1567	12328
DOBBINS 1101	YUBA	193-3222	7096
CHALLENGE 1102	YUBA	793-1693	6719
KANAKA 1101	BUTTE	1180-2065	4572
BANGOR 1101	BUTTE	59-1567	4373
KANAKA 1101	YUBA	1180-2065	417
CHALLENGE 1102	BUTTE	793-1693	266
BUCKS CREEK 1101	PLUMAS	11	35

Indicates Some Circuit Segments in top 20% (Rank 1-727)

5. Why is the Risk Model not picking up PSPS impacted circuits – this one is for [redacted]. I have sent him a note asking for it. He will need the same thing – CPZ's affected by 2020 PSPS events
6. For System Hardening Work that will take place. Bring in [redacted] and [redacted] to outline alternatives to full undergrounding that could potentially reduce the risk significantly I will bring them in. I'm in ICS 300 training all week, but I'll reach out (I've left him a message).
7. FPL is doing undergrounding work as part of Storm and Hurricane Mitigation – Hold a call to understand what they are doing and what we can learn from them. I will ask [redacted] to set up.
8. This one did not come up directly. But I know [redacted] has messaged it a couple of times. We need to outline a view that we can show at the project level what mitigation method/methods are being proposed. It means a consistent layout and set of data needs to be shared. You and I spoke on this. We have to build some standard templates. Agreed. I did ask my team to develop it, but I'm hoping that we can learn more what they are looking for besides Total Cost of Ownership comparison of OH to UG, number of Strike Trees and PSPS Mitigation potential.

[redacted] | PG&E | Electric Operations – Business Operations | [redacted]

There is no such thing as a small act of kindness; every action creates a ripple with no logical end.