

California Wildfires, Utilities and Grid Resilience

By John Benson

October 2019

1. Introduction

I had planned this post for next Tuesday (11/5), but I have completed it as of today (10/31), and it has time-sensitive material, so I am posting it early.

Things are getting better for my home state (California). Unfortunately, the climate is getting worse, for all states and countries. The primary utility for Northern California, PG&E, apparently did not fully understand the latter in past-years so it is now in deep trouble, and may cease to exist as a single entity. This is covered in the first section below.

Although we have had many hundreds of wildfires this year, the most severe repercussions seem to have been avoided. This is part due to the Public Safety Power Shutoffs (PSPS) as used by PG&E and other California IOUs. Also CAL FIRE and other fire-fighting departments and agencies are getting much better at recognizing and quickly fighting the wildfires that have the potential to become monsters and evacuating residents early in their likely path. California is rapidly pouring resources into this battle, and plans to do much more – see section 3 below for details.

2. PG&E

I have worked with PG&E for almost 30 years, and I have a reasonable understanding of their good and bad traits.

Regarding their former, I have lucky enough to be part of teams that included PG&E engineers and technical middle-managers and that have successfully implemented world-class projects. I have nothing but respect for these PG&E professionals.

I will not dwell on the latter, but suggest readers review the following earlier posts:

<https://www.energycentral.com/c/cp/wildfire-2019-repercussions>

<https://www.energycentral.com/c/pip/pge-%E2%80%93-reasonable-judgement>

Recently PG&E has settled on Public Safety Power Shutoffs (PSPS) to make sure that their legal issues don't become even worse than they already are, but this strategy didn't quite work as intended. The good news is that the wildfires are not nearly as bad this year as they were in 2017 and 2018 (see the first paper linked above).

The bad news is the Kincaid Fire. Although it appears that CAL FIRE and other departments and agencies, will completely contain this in a few days (currently 45% contained), it has grown to Almost 77,000 acres with 266 structures destroyed, and (thankfully) only 4 injuries and no deaths. A series of high-wind events hindered CAL FIRE's valiant attempts to control this blaze. As I'm getting ready to post this paper, there were over 5,000 firefighters, 27 helicopters, 627 fire engines, 67 dozers and 48 water tankers are dedicated to this fight. Also (per Kincaid Cal Fire site) *"In support of its ground forces, the CAL FIRE emergency response air program includes 23 Grumman S-2T 1,200 gallon airtankers, 11 UH-1H Super Huey helicopters, and 14 OV-10A airtactical*

aircraft, from 13 air attack and nine helitack bases located statewide, aircraft can reach most fires within 20 minutes." I know that CAL FIRE has also contracted for DC-10 airtankers and 747 Supertankers, and they have been using these on this fire. The page below is the incident map from CAL FIRE. You can get details on any active fire from here.

<https://www.fire.ca.gov/incidents/>

And, oh yes, current indications are that a problem with a PG&E 230 kV transmission line sparked this fire. All distribution lines in the area had been shut off, but this transmission line feeds power from The Geysers 725 MW geothermal generating complex (link below) to the north bay area, and shutting this down would mean blacking out the whole area, and would make restoration much more complex.

<http://geysers.com/geothermal>

A big problem is that most of PG&E's customers already really dislike PG&E, and that was pre-PSPS. These customers understand that PG&E already has some of the most expensive rates in the U.S. Politicians will have a major vote when it comes to the solution to their current problems, and they are heavily driven by public opinion. Lately there has been an increasing call to break PG&E up, and the politicians that hold PG&E's fate in their hands, especially Governor Newsom, are starting to listen. In the next few days-to-weeks, I expect them to take a much tougher stand with PG&E.

3. Planned Additional Fixes

On October 2 California Governor Newsom signed 13 bills that are intended to "...Enhance Wildfire Mitigation, Preparedness and Response Efforts".¹ The process going forward is for one or more California Public Utilities Commission (CPUC) Administrative Law Judge(s) to review these as well as existing statutes and issue a ruling on how these are to be implemented. Implementation will then be performed by the responsible bodies and administered by the CPUC.

The following two subsections review these bills (briefly). Earlier related actions can be seen in section 2.3 of the recently updated paper linked below:

<https://www.energycentral.com/c/ec/fires-and-storms-%E2%80%93-part-1-rev-b>

3.1. Major Bills

In the judgement of the author of this paper, the following are major bills that are part of the package covered by this section. The next subsection below more briefly covers what I feel are lesser bills. I reviewed all of these bills, but I need to limit the length of this paper, so I'm only allocating significant text to the bills that I feel will be more impactful.

SB167, by Sen. Bill Dodd, D-Napa: requires utilities to mitigate the negative effects of planned power shutoffs. The following is the relevant text of this bill.

¹ Office of Governor Gavin Newsom's state Website, "Governor Newsom Signs Bills to Enhance Wildfire Mitigation, Preparedness and Response Efforts", Oct 2, 2019, <https://www.gov.ca.gov/2019/10/02/governor-newsom-signs-bills-to-enhance-wildfire-mitigation-preparedness-and-response-efforts/>

"Under existing law, the Public Utilities Commission has regulatory authority over public utilities, including electrical corporations and gas corporations. Existing law authorizes the commission to establish rules for all public utilities, subject to control by the Legislature. Existing law requires each electrical corporation to construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment. Existing law requires the commission, by January 1, 2020, to establish within itself the Wildfire Safety Division. Existing law requires each electrical corporation to annually prepare and submit a wildfire mitigation plan to the division for review and approval. Existing law requires those wildfire mitigation plans to include specified information, including protocols for disabling reclosers and de-energizing portions of the electrical distribution system that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure. Existing law requires the commission to designate a baseline quantity of electricity and gas necessary for a significant portion of the reasonable energy needs of the average residential customer and requires the commission to establish a standard limited allowance in addition to the baseline quantity of gas and electricity for residential customers dependent on life-support equipment, as specified, which is referred to as a medical baseline allowance.²

"This bill would require each electrical corporation, as part of those protocols, to additionally include protocols related to mitigating the public safety impacts of disabling reclosers and de-energizing portions of the electrical distribution system that consider the impacts on customers who are receiving medical baseline allowances. The bill would authorize electrical corporations to deploy backup electrical resources or provide financial assistance for backup electrical resources to those customers receiving medical baseline allowances and who meet specified requirements."

SB560, by Sen. Mike McGuire, D-Healdsburg: beefs up preparation for planned power shutoffs by requiring telephone companies to notify utilities and public safety agencies how a blackout could snarl their communications grid.

"Under existing law, the Public Utilities Commission has regulatory authority over public utilities, including electrical corporations and telephone corporations. Local publicly owned electric utilities are under the direction of their governing boards. Electrical cooperatives are subject to the regulatory authority of the commission, except as specified.³

"Existing law requires each electrical corporation to annually prepare a wildfire mitigation plan and to submit its plan to the commission for review and approval, as specified. Existing law requires each local publicly owned electric utility and electrical cooperative, before January 1, 2020, and annually thereafter, to prepare a wildfire mitigation plan and to verify that the wildfire mitigation plan complies with all applicable rules, regulations, and standards, as appropriate. Existing law requires that the wildfire mitigation plans include, among other things,

² California Legislative Information, Senate Bill No. 167, http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB167

³ California Legislative Information, Senate Bill No. 560, http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB560

appropriate and feasible procedures for notifying a customer who may be impacted by the de-energizing of electrical lines and requires that the procedures consider the need to notify, as a priority, critical first responders, health care facilities, and operators of telecommunications infrastructure.

"This bill would require that the procedures for notifying a customer who may be impacted by the de-energizing of electrical lines by a local publicly owned electric utility, an electrical cooperative, or an electrical corporation direct notification to all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential deenergization for a given event. The bill would require each electrical corporation to also include protocols for the deenergization of the electrical corporation's transmission infrastructure in the wildfire mitigation plan, for instances when the deenergization may impact customers who, and entities that, are dependent upon the infrastructure. The bill would require a facilities-based mobile telephony services provider to undertake specified steps in preparation for receiving notifications regarding the deenergization of electrical lines. The bill would require a facilities-based mobile telephony services provider, upon receipt of a notification regarding the deenergization of electrical lines, to communicate relevant situational information relative to communications capabilities during the projected outage to electrical corporations, local publicly owned electric utilities, electrical cooperatives, and appropriate public safety stakeholders, including, but not limited to, public safety offices and emergency response offices, for the affected area.

SB 247, by Sen. Bill Dodd, D-Napa: will give the state more control over efforts by PG&E and its counterparts to trim trees around power lines to prevent wildfires. That bill will allow the state to bring in an independent auditor to review utilities' tree trimming efforts.

"Existing law establishes the Wildfire Safety Division within the Public Utilities Commission to, among other things, oversee and enforce electrical corporations' compliance with wildfire safety requirements. Existing law requires the division to approve or deny each wildfire mitigation plan and plan updates submitted by an electrical corporation.⁴

"This bill would require an electrical corporation, within one month of the completion of a substantial portion of the vegetation management requirements in its wildfire mitigation plan, to notify the division of the completion. The bill would require the division to audit the completed work and would require the audit to specify any failure of the electrical corporation to fully comply with the vegetation management requirements. The bill would require the division to provide the audit to the electrical corporation and to provide the electrical corporation a reasonable time period to correct and eliminate deficiencies specified in the audit. The bill would authorize the division to engage an independent evaluator to conduct the audit. Within one year after the expiration of the time period to correct and eliminate deficiencies, the bill would require the independent evaluator to issue a report to the electrical corporation, the division, and the Safety and Enforcement Division of the commission specifically describing any failure of the

⁴ California Legislative Information, Senate Bill No. 247,
http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB247

electrical corporation to substantially comply with the substantial portion of the vegetation management requirements.

"This bill would require each electrical corporation to notify the commission of the date when it projects that it will have spent, or incurred obligations to spend, its entire annual revenue requirement for vegetation management not less than 30 days before that date.

"This bill would specify the qualifications for electrical line clearance tree trimmers performing work to comply with the vegetation management requirements in an electrical corporation's wildfire mitigation plan, and would require that qualified line clearance tree trimmers be paid no less than a specified prevailing wage rate."

SB70, by Sen. Jim Nielsen, R-Gerber (Tehama County): states that a utility's wildfire mitigation plans must include a description of where and how it considered moving electric lines underground, specifically in service territory with high wildfire risk. However, the bill doesn't require that any utility lines be put underground.

"Under existing law, the Public Utilities Commission has jurisdiction over public utilities, including electrical corporations. Under its existing authority, the commission requires certain electrical corporations to implement the California Overhead Conversion Program to provide financial assistance to local governments to facilitate projects that are in the public interest and replace overhead infrastructure with infrastructure in underground trenches. Existing law requires each electrical corporation to annually prepare and submit a wildfire mitigation plan to the Wildfire Safety Division of the commission for review and approval. Existing law also requires the division to oversee and complete a review of each electrical corporation's compliance with its plan."⁵

"This bill would require each electrical corporation's wildfire mitigation plan to additionally include a description of where and how the electrical corporation considered undergrounding electrical distribution lines within those areas of its service territory identified to have the highest wildfire risk in a commission fire threat map."

SB550, by Sen. Jerry Hill, D-San Mateo, rewrites the way California defines a "change in control" at an electric company that would trigger close regulatory scrutiny of such a deal. Higher oversight will no longer be required if a local government tries to buy part of a utility, as San Francisco wants to do with PG&E.

"(1) Under existing law, the Public Utilities Commission has regulatory authority over public utilities, including electrical corporations and gas corporations. Existing law prohibits a public utility, other than certain common carriers, from selling, leasing, assigning, mortgaging, or otherwise disposing of, or encumbering its assets that are necessary or useful in the performance of its duties to the public by any means with any other public utility, unless the public utility has secured an order from the commission to do so for a qualified transaction above \$5,000,000 or

⁵ California Legislative Information, Senate Bill No. 70,
http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB70

an approval from the commission through the filing of an advice letter for a qualified transaction at or below \$5,000,000.⁶

"This bill would eliminate the requirement that the above-described transactions be with another public utility to be subject to those conditions on approval. The bill would explicitly require the commission to approve or reject any voluntary or involuntary change in ownership of assets from an electrical or gas corporation to ownership by a public entity and would require the commission to determine whether that transaction is fair and reasonable to the affected public utility employees as part of that review.

(2) Existing law prohibits a person or corporation, including a public entity, from merging, acquiring, or controlling, as described, either directly or indirectly, any public utility organized and doing business in this state without first securing authorization to do so from the commission. Before authorizing the merger, acquisition, or control of any electrical, gas, or telephone corporation organized and doing business in this state, where any of the entities that are parties to the proposed transaction has gross annual California revenues exceeding \$500,000,000, existing law requires the commission to consider specified criteria and to find that the merger, acquisition, or control proposal meets certain requirements and is in the public interest, as specified.

This bill would require the commission, before authorizing a merger, acquisition, or change in control of an electrical or gas corporation, where an entity to the proposed transaction has gross annual California revenues exceeding \$400,000,000, to additionally consider specified elements relating to the safety activities of an electrical or gas corporation, including a non-punitive system for reporting potential safety incidents to the commission, and find, on balance, that the proposal is in the public interest. The bill would authorize the commission to delay the requirement that the commission consider these specified elements and find, on balance, that the proposal is in the public interest, until July 1, 2021, or until the commission adopts rules implementing this requirement, whichever is earlier. The bill would prohibit subjecting an employee of, or the employee of a contractor performing work for, the electrical or gas corporation to demotion, discharge, or any other form of retaliation or discrimination for participating in the non-punitive system for reporting potential safety incidents. The bill would eliminate the requirement for these reviews for a change in ownership in the assets of an electrical or gas corporation to ownership by a public entity.

SB 209 by Senator Bill Dodd (D-Napa): requires establishment of a new weather technology center modeled after the state's intelligence fusion centers. In addition to placing the text from this bill below, I will put my description of the facilities on which it's modeled below.

In 2008 the U.S. Department of homeland security created the facilities described here.⁷ *"State and major urban area fusion centers (fusion centers) serve as primary focal points within the state and local environment for the receipt, analysis, gathering, and sharing of threat-related information among federal, state, local, tribal, and territorial (SLTT) partners. Located in states*

⁶ California Legislative Information, Senate Bill No. 550,
http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB550

⁷ <https://www.dhs.gov/national-network-fusion-centers-fact-sheet>

and major urban areas throughout the country, fusion centers are uniquely situated to empower front-line law enforcement, public safety, fire service, emergency response, public health, critical infrastructure protection and private sector security personnel to lawfully gather and share threat-related information. They provide interdisciplinary expertise and situational awareness to inform decision-making at all levels of government. Fusion centers conduct analysis and facilitate information sharing, assisting law enforcement and homeland security partners in preventing, protecting against, and responding to crime and terrorism. Fusion centers are owned and operated by state and local entities with support from federal partners..."

California has a primary "California State Threat Assessment Center" and five other regional centers.

This bill's text is here:

"Existing law establishes, within the office of the Governor, the Office of Emergency Services, under the direction of the Director of Emergency Services. Among other things, existing law requires the office to establish and lead the California Cybersecurity Integration Center (Cal-CSIC) comprised of representatives of specified state and federal agencies and with a primary mission of reducing the likelihood and severity of cyber incidents that could damage California's economy, its critical infrastructure, or public and private sector computer networks."⁸

"This bill would require the office and the Department of Forestry and Fire Protection to jointly establish and lead the Wildfire Forecast and Threat Intelligence Integration Center, comprised of representatives from specified state and other entities. The bill would require the center to serve as the state's integrated central organizing hub for wildfire forecasting, weather information, and threat intelligence gathering, analysis, and dissemination and to coordinate wildfire threat intelligence and data sharing, as provided. The bill would also require the center to, among other things, develop a statewide wildfire forecast and threat intelligence strategy, as provided, and protect and safeguard sensitive information. The bill would make various findings and declarations in this regard."

3.2. Lesser Bills

AB38, by Assemblyman Jim Wood, D-Santa Rosa, increases state assistance to homeowners making structural upgrades and clearing vegetation around their property to reduce the risk of a fire.

SB 190 by Senator Bill Dodd (D-Napa) includes a specific requirement to develop best models for defensible space and additional standards for home hardening and construction materials to increase the resilience of communities.

AB 836 by Assemblymember Buffy Wicks (D-Oakland) establishes a program for retrofits of air ventilation systems to create community clean air centers, prioritizing areas with high cumulative smoke exposure burden.

⁸ California Legislative Information, Senate Bill No. SB 209,
http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB209

AB 661 by Assemblymember Kevin McCarty (D-Sacramento) requires the Sacramento Metropolitan Air Quality Management District to prepare a wildfire smoke air pollution emergency plan to serve as an informational source for local agencies and the public during an air pollution emergency caused by wildfire smoke.

SB 160 by Senator Hannah-Beth Jackson (D-Santa Barbara) will improve engagement with culturally diverse communities for local emergency planning.

SB 670 by Senator Mike McGuire (D-Healdsburg) will improve the coordination of emergency communication systems during 9-1-1 outages.

SB 632 by Senator Cathleen Galgiani (D-Stockton) sets a deadline for completion of CAL FIRE's vegetation management environmental review.

AB 1823 by Assemblymember Laura Friedman (D-Glendale) which facilitates fuel reduction and other forest health projects.

4. Climate Amplification

I've run well over my normal limit for the number of words for this paper, so I've put a link to another paper below, with some brief comments. Most of California rarely receives rain in summer. So the bushland that is prone to wildfires is very dry by fall. Our first rains used to come in October to November, but now are later, opening the door wider for dry high-wind events and wildfires. And then there is the recent effect described through the link below. These are making fires much more common, so we need to beef up our electric grid, eliminate other sources of ignition, and more aggressively manage fuels.

<https://www.energycentral.com/c/ec/emerging-negative-effects-climate-change>