

Northwest Power & Conservation Council
Approach to Modeling Operational Risk of Wildfire
March 7, 2025

Dor Hirsh Bar Gai, NWPCC, welcomed the room and reviewed the agenda. Chad Madron, NWPCC, reviewed how to best interact with the Zoom Webinar platform. Hirsh Bar Gai called for attendance.

Nicholas Garcia, WPUA, approved of embedding wildfire risk into overall planning [Slide 8]. Garcia wondered if it might be appropriate to continue running a scenario about transmission damage from wildfire. Hirsh Bar Gai said that kind of scenario would fall into the stress testing category for adequacy work. Hirsh Bar Gai said staff could test a challenging transmission-impact year, but wondered how many years should be tested.

Garcia thought it would be useful to identify the two or three super critical transmission lines so stakeholders could enhance the right-of-way for infrastructure protection. Hirsh Bar Gai said there will be slides that could help with this later in the presentation.

WECC Wildfire Data Analysis

Steve Ashbaker, WECC

There was no discussion.

Impact of Wildfire Smoke on Solar PV Systems and Power Grid Stability

Long Zhao, Ph.D.

South Dakota Mines

Melissa Buchler, PGE, wrote Was the MW impact quoted on [Slide 29] specific to "the wiggle effect" or was it the total effect of the smoke (reduced curve + "wiggle effect")? In the question pane. Zhao answered that this was purely based on the "wiggle effect."

Buchler confirmed that it is just the variability in the curve that is already reduced. Zhao answered yes moving to [Slide 23] to illustrate. Buchler asked if this is due to the accumulation of the curve being shifted down plus the variability that results in the smoke layer above. Zhao said that [Slide 20] is only the deviation—the pure wiggle effect—and the work did not consider any power reduction.

Connor Lennon, Tacoma Power, wrote Is the extra capacity need coming because of the frequency effect or a combination of the megawatt impact and the frequency impact? In the question pane [Slide 26]. Zhao said it was from the frequency deviation.

Garcia thought that the wiggle effect would be most concerning for co-located solar but not as much for solar that it is spread throughout the system. Garcia asked if that was true. Zhao did not know the answer as that was outside the scope of his work. Zhao did say it would depend on the size of the overall solar power system.

Garcia thought that locating four solar farms a few miles apart would help mute the wiggle effect. Zhao agreed, saying there are many factors to consider. Hirsh Bar Gai said staff are considering how to represent this in the models.

BREAK

Transmission

Ashbaker commented that PSPS is not the result of a fire but the act of taking a facility out to reduce or eliminate the risk of that facility starting a fire [Slide 12]. Hirsh Bar Gai thanked him for the clarification.

Tomás Morrissey, NWPCC, suggested staff not assume the worst year for developing a transmission derate scenario and instead choose a bigger sample set [Slide 19]. Hirsh Bar Gai asked if 2017-2024 would be appropriate. Morrissey said yes.

Garcia asked how confident staff is in getting a transmission line outside of the Pacific Northwest to agree to derate, pointing to Southern California to Arizona as example. Hirsh Bar Gai said the model can take any line out for maintenance and see how the system responds. Garcia said he was unsure if the owner of the line would delay if the model called for it. Hirsh Bar Gai said the goal is to have a wildfire representation of transmission derating and get to an estimate of what lines were derated, moving to [Slide 18] to illustrate. Hirsh Bar Gai said staff could use a historic value and play with different dates for when that happens.

Lennon confirmed that staff is proposing to take the last couple of years of fire season to identify lines in the buffer zone and then use GENESYS to find alternate lines and create derates. Hirsh Bar Gai said no, GENESYS is not going to re-optimize but simulate how the system would respond to address the challenge.

Lennon said this made sense, confirming that the analysis consists of moving the dates and times of the fires. Hirsh Bar Gai said that is a potential path.

Lennon then asked if staff evaluated the Forest Service's hypothetical [datasets of burn probability](#) to see what lines might be at risk as opposed to using historic data. Hirsh Bar Gai pointed to internal, ongoing conversations about various data sets, including burn probability.

Jason Sierman, ODOE, thought that if a wildfire already occurred in a location the odds of it happening again seemed slim. Hirsh Bar Gai agreed, saying GENESYS does not care where the fire happened so they are not focusing on the location of the fire but the line that was impacted because of the fire.

Garret Hartung, PGE, noticed the fires on the east side on [Slide 18] wondering if fuel type (grasslands versus forested areas) impact fire behavior. Hirsh Bar Gai said this has been considered and thought that going into burn probabilities would have a bigger impact. Hirsh Bar Gai said if the committee chooses to weight these staff would incorporate that into the work. Hirsh Bar Gai thought that probability forecasting would include fuel type, moisture levels, and temperature which would give a direct link to vegetation.

Hartung thought it would be important to associate that with impacts along the line, saying the Columbia Gorge area by The Dalles will have fire probabilities especially in early summer.

Essenberg wrote When you model intersections between fires and transmission lines, are you using the actual transmission line locations, in the question pane. Hirsh Bar Gai said not quite as they are the GENESYS lines which is why staff is choosing a bigger buffer.

Essenberg thought that GIS made it easy to model the actual transmission lines. Hirsh Bar Gai moved to [Slide of Actual WECC lines] while [Slide 18] shows a cluster of the WECC lines. Hirsh Bar Gai said this allows staff to add extra judgement as needed.

John Ollis, NWPCC, moved to [Slide 12] to illustrate further. Essenberg clarified that staff are assigning the dots on the slide to a GENESYS line. Hirsh Bar Gai said it is not quite that but something in between, offering to double check after the meeting for further clarity.

Lennon asked how did you assign the lines (and then the risks) back to the busses? Apologies if I missed that explanation earlier, in the question pane. Hirsh Bar Gai said assigning the risk is straight forward, if a fire is in the buffer it is flagged. Hirsh Bar Gai said there are estimates about buss location with a visual line connection.

Mike Hermanson, Avista, noted that Spokane, WA experiences a lot of smoke from wildfires located a hundreds of miles away. Hermanson said the information on [Slide 25] doesn't seem to capture this. Hirsh Bar Gai acknowledged the limitation, saying they can come back to the issue in the shape clustering.

Garcia recalled a similar phenomenon when Mount Saint Helens erupted in the 1980s and ash blew towards the east. Garcia wondered if was possible to have a shape other than a circle to represent the effect of prevailing winds. Hirsh Bar Gai asked for committee input on different smoke data sets.

Hermanson wondered if the EPA AQI index forecasts could be helpful. Hirsh Bar Gai said the AQI could be a good source but perhaps not the best. Hirsh Bar Gai offered to investigate further.

Essenberg wondered if putting a shape around the dots was a good approach or if it might be better to look at smoke density instead. Hirsh Bar Gai said he will look into that as well.

Devin Mounts, PGE, linked to [this paper](#) from an economist at the University of Oregon that modeled dispersion of particulates from coal plants.

Lennon wrote, MINX/Merlin from NOAA has data on smoke and height, if it helps, in the question pane. Lennon also wrote, Ed was my advisor :). One other place to look - I think AOD is present in the VIIRS fire data https://www.star.nesdis.noaa.gov/atmospheric-composition-training/python_viirs_level3_download.php in the question pane.

Sierman said [Slide 27] appears to be looking across a host of months wondering if it is the same for solar. Hirsh Bar Gai said the GIS file is too large and staff wanted to show the in-region solar shapes first.

Douglass Hart, PSE, asked if “one shape for that area” is a deterministic shape or if the area has a set of stochastic shapes [Slide 5 Regional Shapes?] Hirsh Bar Gai said the model uses 8760 unique, 0 to 1 capacity factors with multiple scenarios of them. Hirsh Bar Gai said staff add forecast error to the day- and hour-ahead stages of GENESYS.

Hart said since staff were doing stochastic analysis, the shapes on the slide were not a problem. Hart did say winds blow smoke from one region to another, which might require more stochastic games to gauge impact. Hirsh Bar Gai asked if staff should consider some scenarios that are across shapes and not just within shapes. Hart said yes.

Garcia did not think that Portland smoke could make its way up to Seattle. Hirsh Bar Gai clarified that these shapes have five solar references but said it was a good point, agreeing that there is an argument for six shapes.

Eric Graessley, BPA, wrote, Thanks for this! I came on a bit late, sorry if I've missed this. Did / are you considering changing loads in response to fires + smokes (distribution outages and smoke tending to lower loads, I believe), in the question pane.

Hirsh Bar Gai said staff have heard feedback about this kind of behind-the-meter load reductions but acknowledged that there might not be enough granularity for that kind of visibility, asking for committee comment.

Sierman asked about lower cooling loads due to less solar gain. Hirsh Bar Gai said that gets grouped under reduction of load and staff don't have a good sense on how to consistently capture this. Hirsh Bar Gai again asked for feedback.

Sierman asked if this meant the region would need more imports on smokey days. Hirsh Bar Gai said this is addressed on [Slide 33], saying staff plan to divide CA solar shapes into three areas. Hirsh Bar Gai then moved to [Slide 35] to explain further.

Hirsh Bar Gai asked for emailed feedback and ended the meeting at 12:00pm.

Attendees via Zoom Webinar

Dor Hirsh Bar Gai	NPWCC	Kevin Smit	NWPCC
Annika Roberts	NWPCC	Stephen Goodson	Idaho PUC
Christian Douglass	NWPCC	Brett Shearer	WA UTC
Jennifer Light	NWPCC	Vishvas Chalise	PNNL
John Ollis	NWPCC	Brad Westmoreland	PGE
Daniel Hua	NWPCC	Josh Haver	Idaho PUC
Steve Ashbaker	WECC	Jason Sierman	ODOE
Long Zhao	SDSMT	Nicolas Garcia	WPUDA
Rick Williams	PSU	Leann Bleakney	NWPCC
Brian Dombeck	BPA	Rob Del Mar	ODOE
Andres Valdepena Delgado	Idaho Power	Nathalie Voisin	PNNL
Ian McGetrick	Idaho Power	Terry Toland	Clark PUD
Ted Drennan	OR PUC	Katie Chamberlain	Renewable NW
Nicole Chan	E Three	Melissa Buchler	PGE
Andre Coleman	PNNL	Sanjeev Joshi	Critfc
Barbara Miller	US ACE	Barry Richardson	NWPCC
Casey Burleyson	PNNL	Ryan Egerdahl	BPA
Carol Loughlin	Lakeridge Resources	Devin Mounts	PGE
Alyssa Tavares	CA Dept of Energy	Guillaume Mauger	UW
Roberto Noguera	CA Dept of Energy	Eric Graessley	BPA
Anna Lindquist Union	SWCD	Mike Swirsky	Critfc
Douglass Hart	PSE	Ahlmahz Negash	Tacoma Power
John Purvis	Clallam PUD		
Ryan Bottem	Pub Gen Pool		
Kody McConnell	WA UTC		
Bret Stevens	OR PUC		
Carla Essenberg	BPA		
Verene Martin	SCL		
Pat Byrne	CPA		
George Lynch	WA Dept of Com		
Connor Lennon	Tacoma Power		
Jim Kreider	Camp Black Dog		
Craig Patterson	independent		
Garret Hartung	PGE		
Erik Pytlak	BPA		
Laura Burford	BPA		
Sohom Datta	PNNL		
Jared Hansen	Idaho Power		
Jake Kennedy	NWPCC		
Tomás Morrissey	NWPCC		
John Lyons	Avista		
Mike Hermanson	Avista		
Robert Diffely	BPA		
James Gall	Avista		
Bryan Neff	CA Dept of Energy		
Cindy Strecker	CLEAResult		