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September 8, 2021

## **MEMORANDUM**

**TO: Council Members**

**FROM: Ben Kujala**

**SUBJECT: BPA Transmission Wildfire Prevention and related Policies**

### **BACKGROUND:**

**Presenter:** Michelle Cathcart, VP Transmission System Operations, Bonneville Power Administration

**Summary:** Bonneville's [Wildfire Mitigation Plan](#) covers end-to-end activities related to the mitigation of wildfires across the Federal Columbia River Transmission System. Michelle Cathcart will update the Council on the details of this plan.



Working with Customers to Successfully Respond to Summer-Fire Activities

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*“BPA System Operations Post-Summer Update”*

— hosted by —

Michelle Cathcart

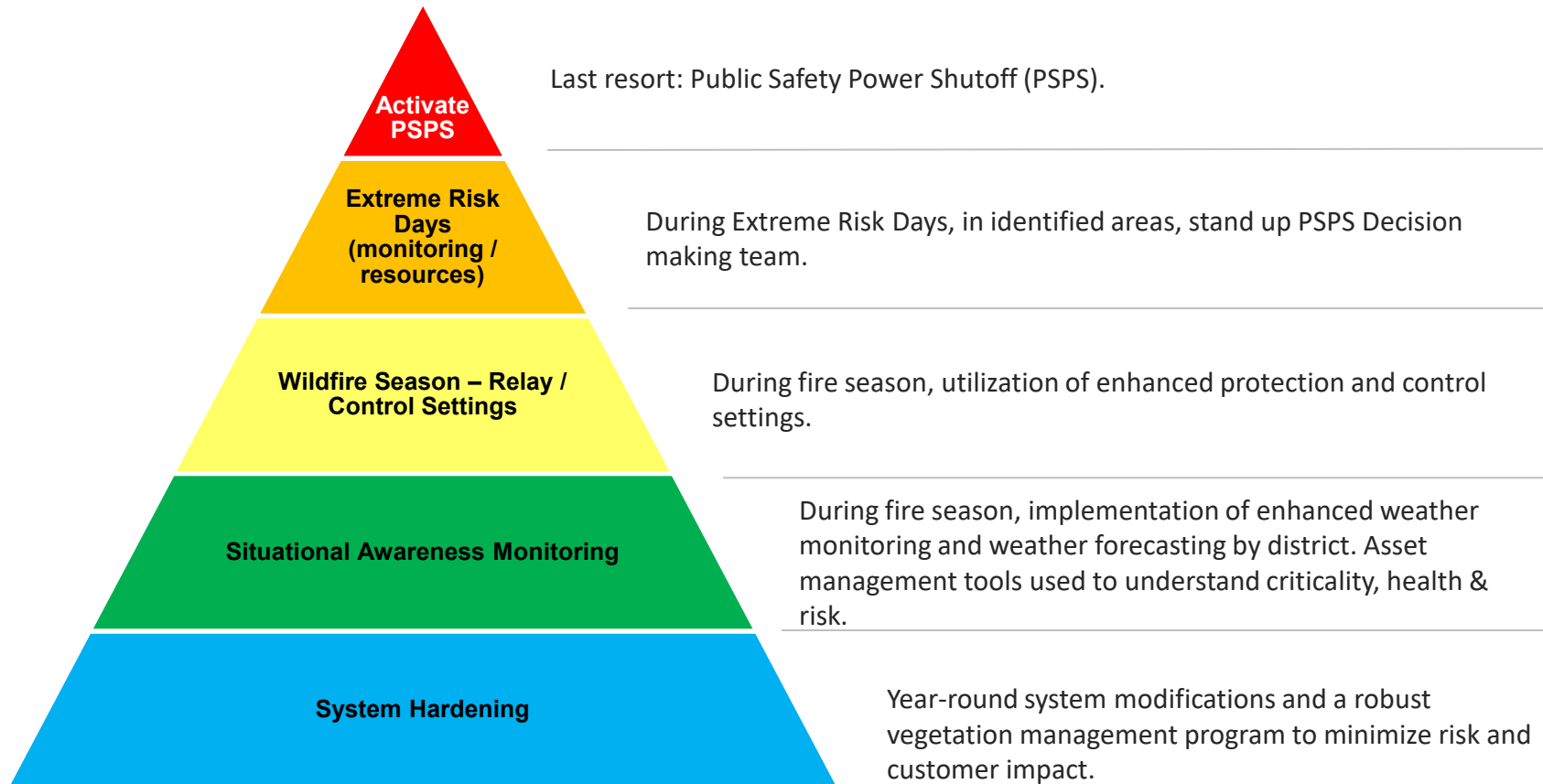
Vice President

BPA Transmission System Operations

September 15, 2021



# BPA's Wildfire Mitigation



# *Public Safety Power Shutoff*



## Brasada-Harney #1 115 kV Line - PSPS Activation

Date	Time	Action
6/21/2021	12:43	The PSPS Team received the weather alert
	13:00	The PSPS Team was triggered due to the Brasada-Harney was in a red flag area and winds were forecasted to be at 60 mph or above.
	16:00	Decision to de-energize Brasada-Best Lane section of Brasada-Harney #1 115 kV from 6/21/2021 1800 – 6/22/2021 0700
	16:45	Executives met with impacted customers (CEC and HEC)
	18:20	Brasada-Best Lane section of Brasada-Harney #1 115 kV de-energized, customer affected was CEC with loss of 4MWs of load.
	23:32	BPA's TLM crew completed patrol and line was re-energized

## Positive Observations

- ❖ *Considered asset characteristics and weather patterns in determining de-energization*
- ❖ *Minimized customer impact by sectionalizing line*
- ❖ *Proactively sent operator to sectionalizing point*
- ❖ *Ended PSPS early with updated weather report*

## Lessons Learned

- ❖ *Improved communications protocols:*
  - Notifying the potentially affected customers at the same time the PSPS Team is activated
  - Communicating with customers who are not directly affected by a potential PSPS, but who may be adjacent and still be concerned
  
- ❖ *Several internal BPA process improvements*

## PSPS “At Risk” Lines

- ❖ *“At risk” lines were determined based on analysis of the data available at the start of the wildfire season*
- ❖ *Any line on BPA’s system is subject to PSPS*
- ❖ *Mitigations:*
  - Expedited repairs
  - Rescheduled outages
  - Negotiation with tribe and use of Human External Cargo (HEC)
  - Partial repair to remove load risk

	Initial List	Final List
Asset Condition	9 lines	3 Lines
Vegetation	6 lines	6 lines



# *Heat Dome*

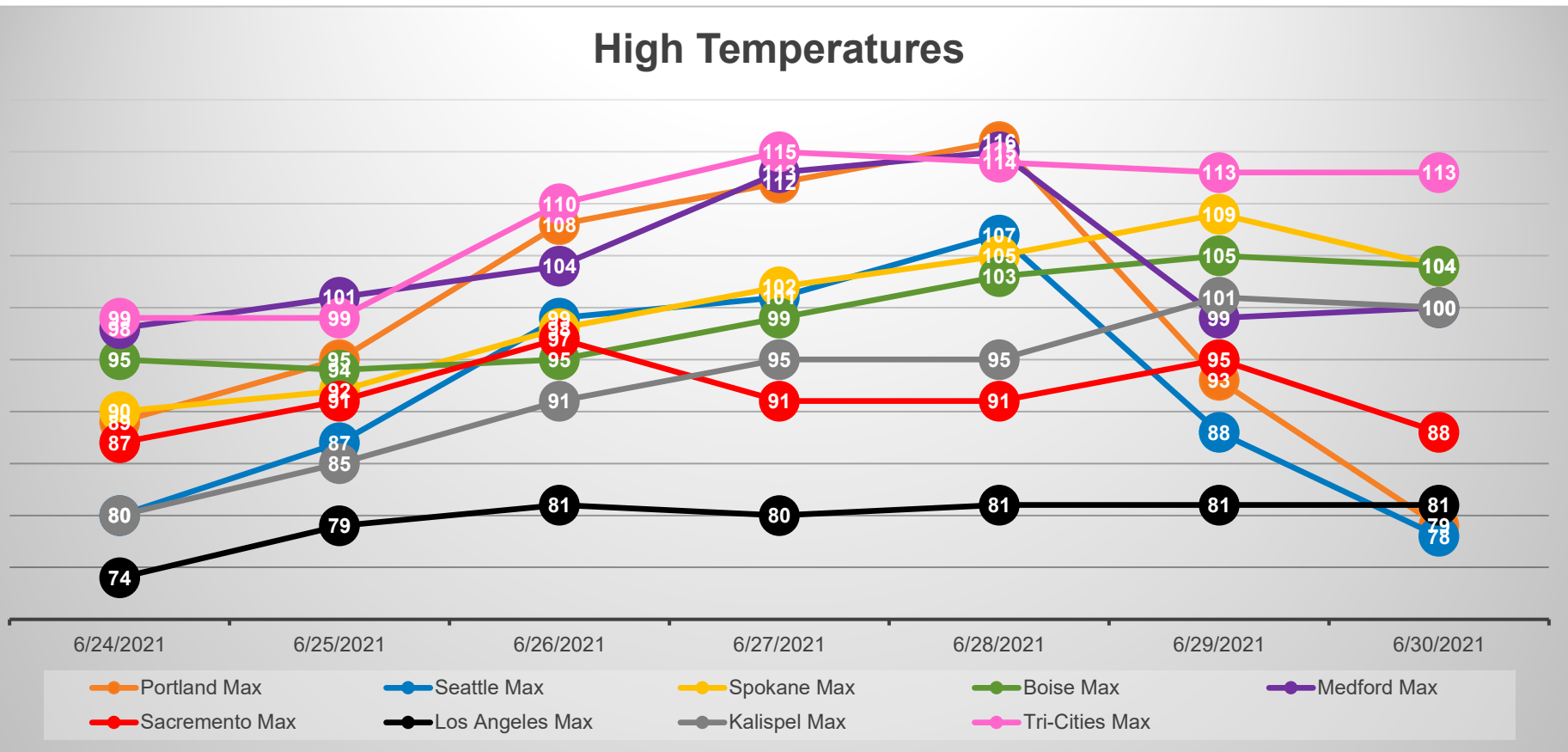
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June 24–30, 2021

# Temperatures Across the Pacific Northwest

## High Temperatures

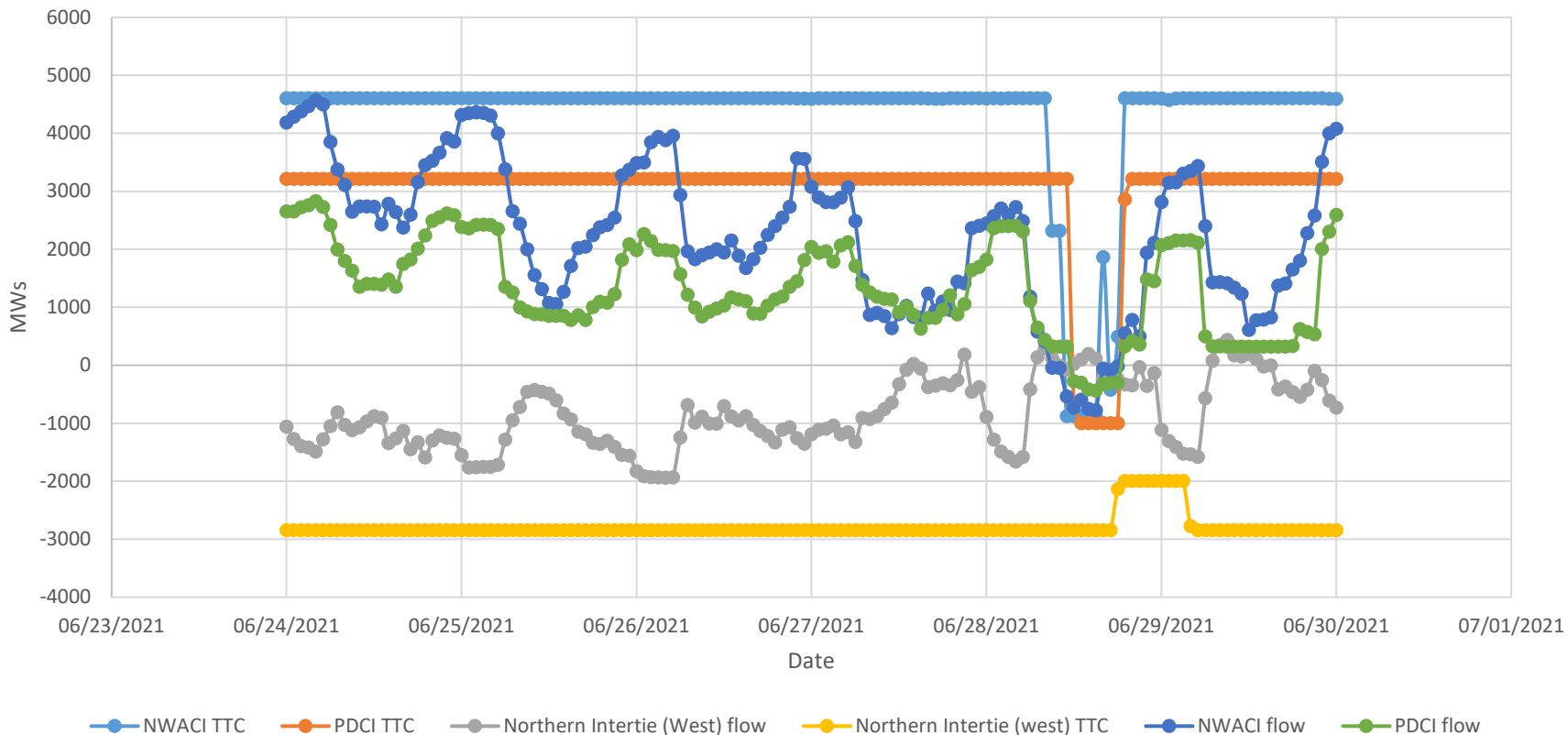


## Heat Dome: Actions Taken

- ❖ BPA declared a system-wide global Restricted Maintenance from Monday, June 28 at 0600 through Wednesday, June 30 at 2200
- ❖ Proactive planning in Tri-Cities to identify mitigations including load shed plans.
- ❖ Crews flushed radiators and watered equipment to reduce temperature
- ❖ Safety information and expectations for field crews

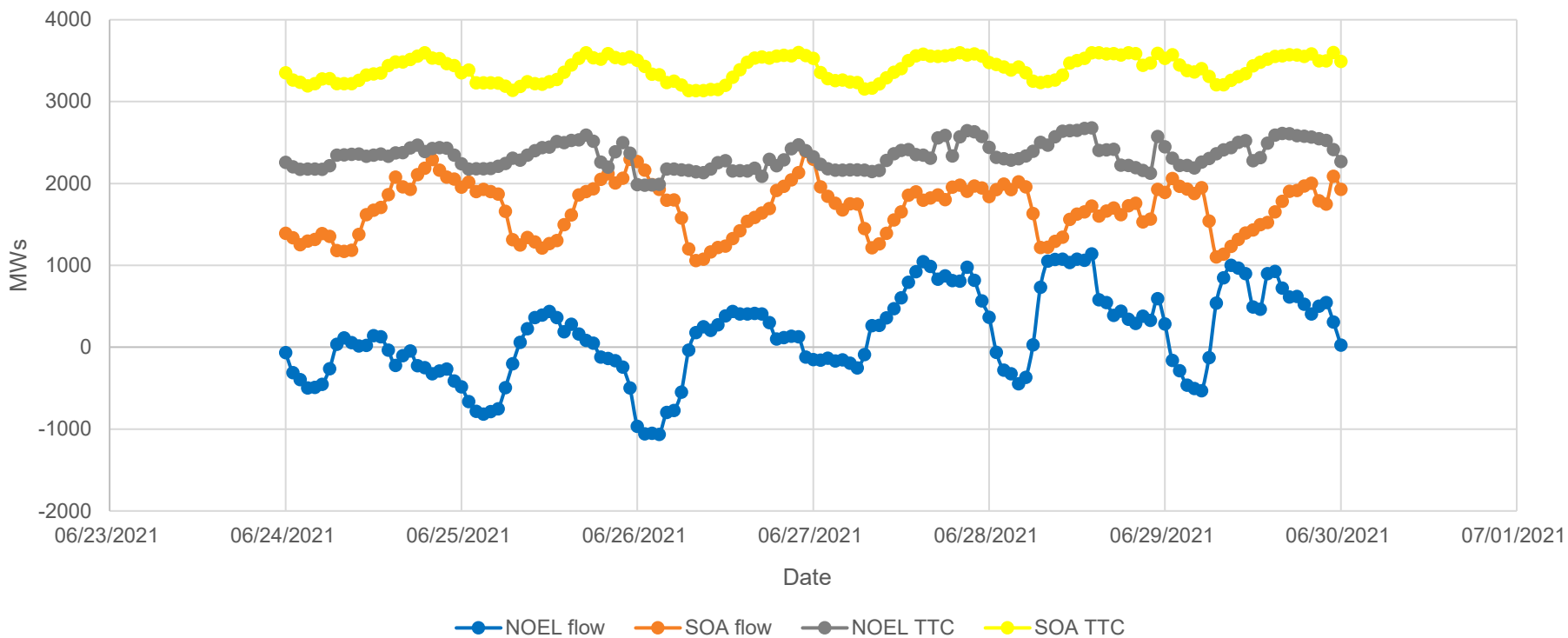
# Heat Dome: System Flows

NWACI and PDCI Flows and TTCs



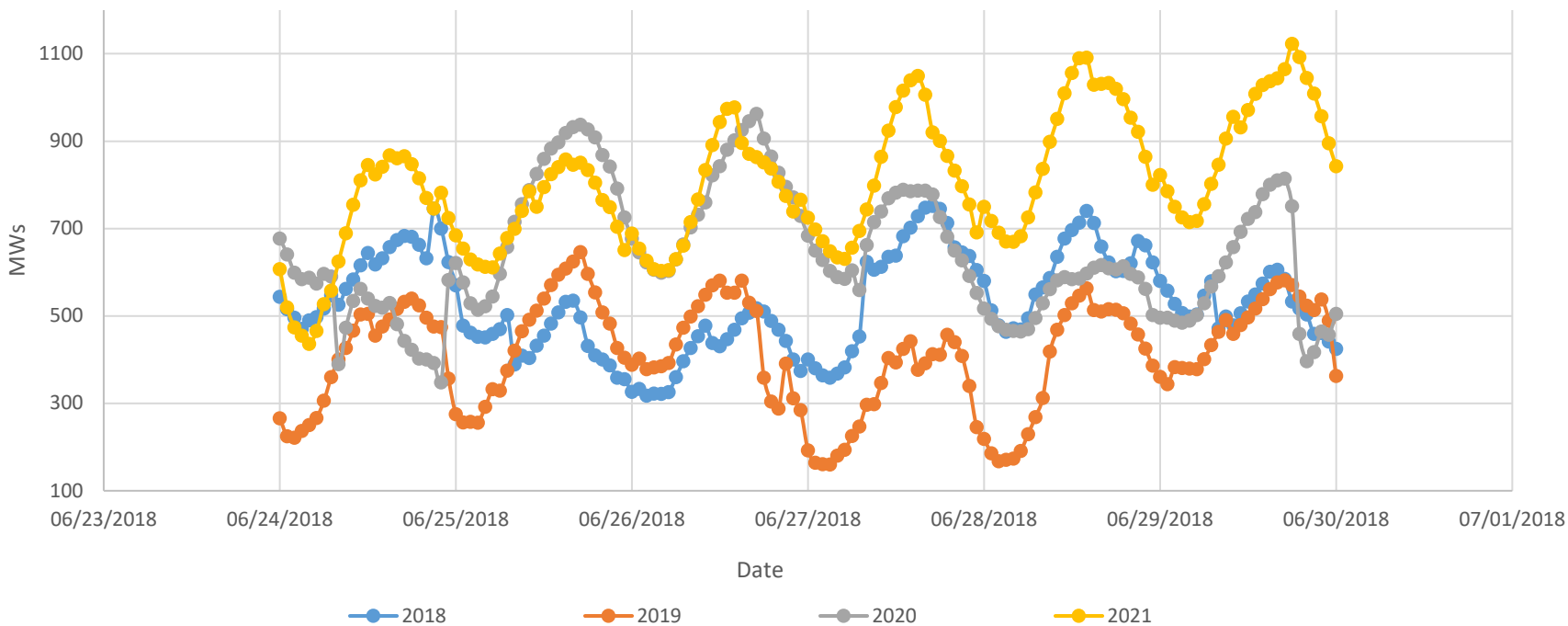
# Heat Dome: System Flows

NOEL and SOA Flows and TTCs



# Heat Dome: Tri-Cities

Tri-Cities Area Import



## Heat Dome: Tri-Cities

❖ *June 29, 2021, at 1719:*

- White Bluffs 230/115kV Bank 1 Temp Alarm (92 C on SCADA)
- 100 gallons sprayed to cool the bank:
  - Same loading (94 C to 91 C)
- More water was sprayed to clean the bank
- Similar loading the next day and only reached 80 C
- Benton 230/115kV Bank had similar issue

## Heat Dome: Tri-Cities

### ❖ *City of Richland:*

- Friday, June 25 sent message to conserve energy
- Tuesday, June 28 sent message to curtail energy:
  - ATI/Alvac (5MW plasma furnace titanium)
  - 3.2 MW Solar and 1 MW battery on White Bluffs-Steve Drive #1
  - City Water plants pre-filled hilltop reservoirs before the peak period
  - Reduced their voltages on all subs (.05% load reduction for each 1% voltage drop)



# *Bootleg Fire*

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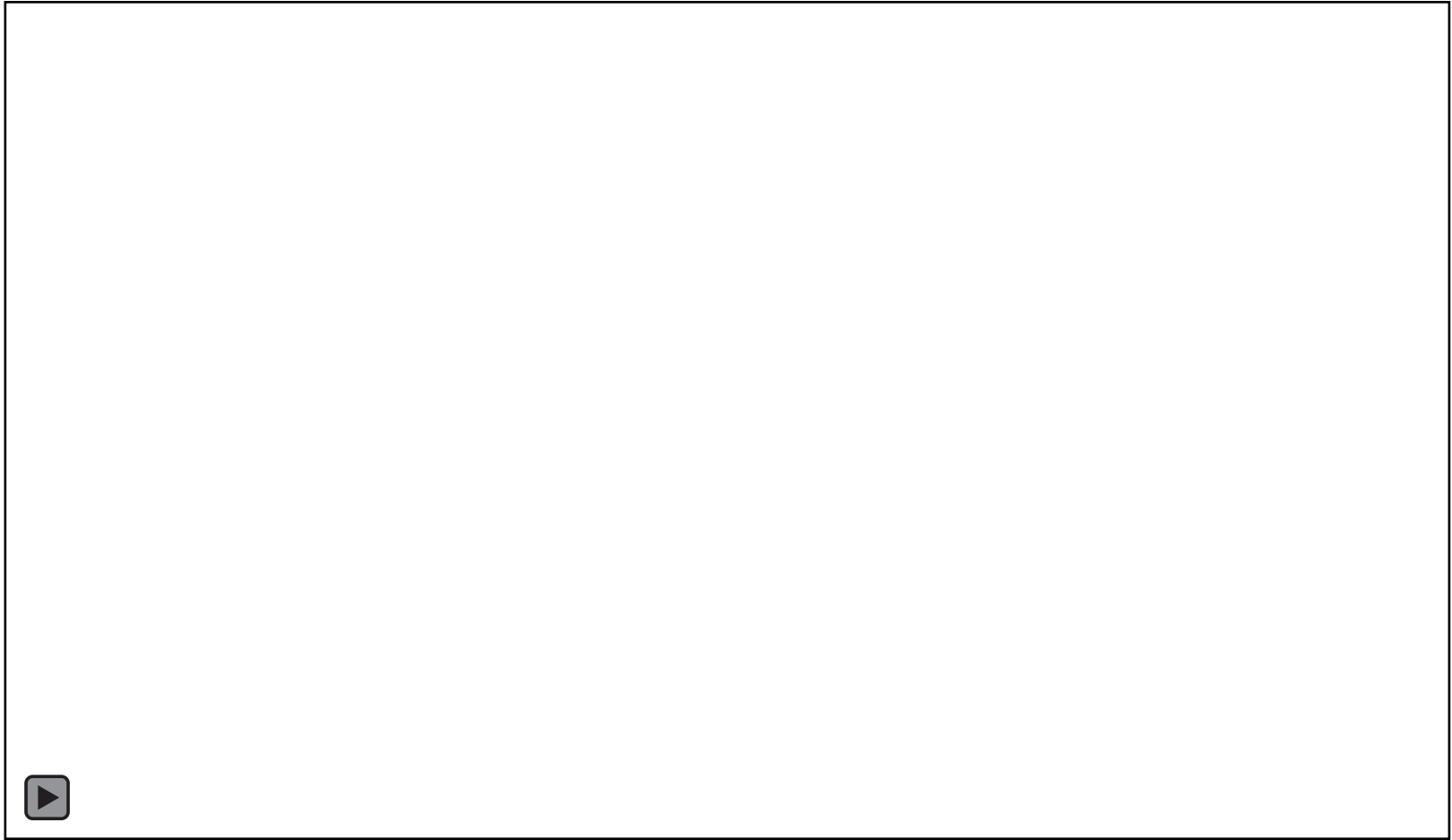


## Bootleg Fire: Timeline

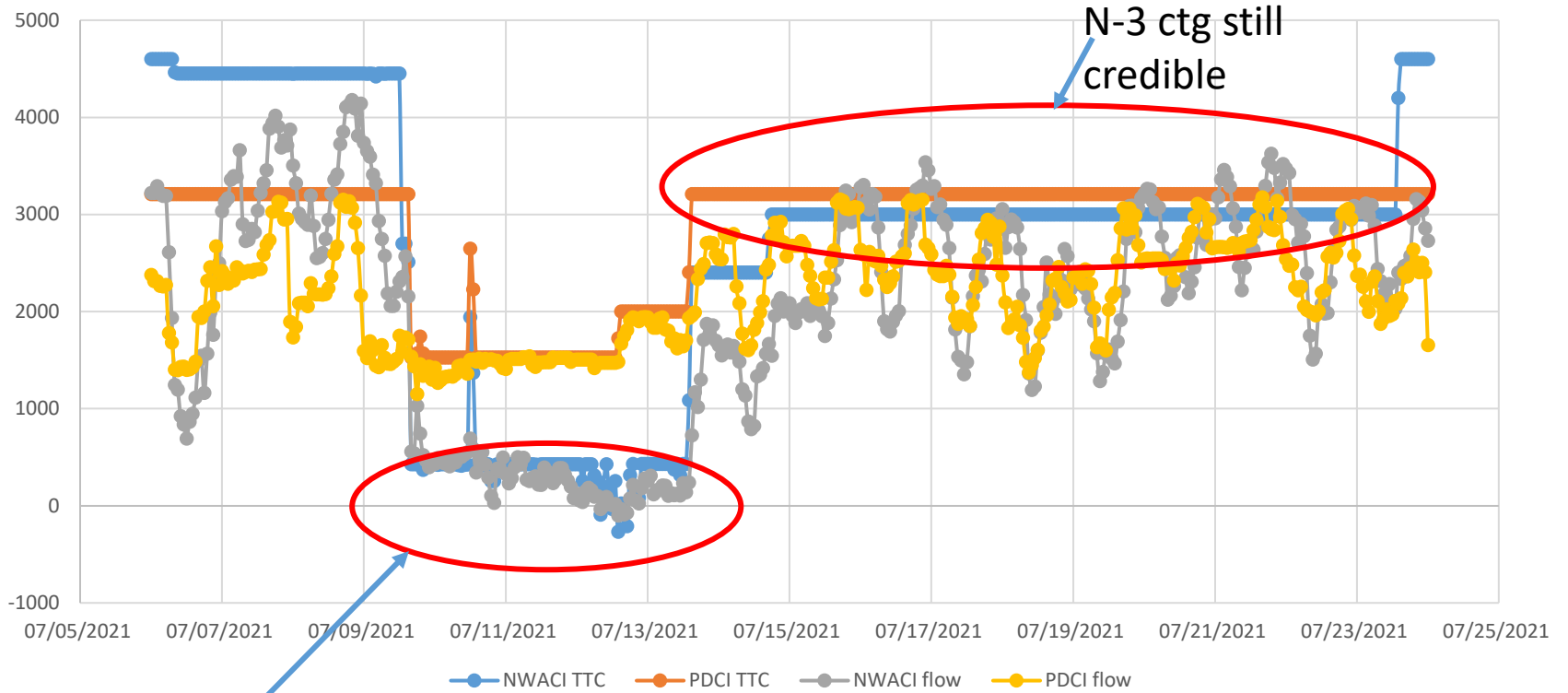
Date	Time	Details
7/6/2021		Bootleg Fire started
7/7/2021	10:49	Pacificorp contacted BPA Dispatch stating fire is currently 4-5 miles from the Grizzly-Captain Jack #1 500kV Line corridor (GRIZZLY-MALIN, SUMMER LAKE-MALIN). The fire is west of the 133 mile of the Grizzly-Captain Jack #1 500kV Line.
7/9/2021	13:00	Due to the high risk to the NWACI east corridor, new limits were produced for the NWACI N>S TTC: 2700MW.
7/9/2021	15:33	Grizzly-Captain Jack #1 500kV line relayed out of service
7/9/2021	15:38	Grizzly-Ponderosa Section of Grizzly-Captain Jack #1 500kV line restored
7/9/2021	15:40	Grizzly-Malin #2 500kV line momentary
7/9/2021	15:41	Grizzly-Malin #2 500kV line relayed out of service
7/9/2021	15:41	Summer Lake-Malin #1 500kV line relayed out of service
7/9/2021	15:41	Due to all three corridor lines being out of service: LIMITS: NWACI N>S TTC: 428MW, S>N TTC: 267MW, PDCI N>S TTC: 1525MW, S>N TTC: 0 MW. NORTHERN INTERTIE S>N SOL 2000MW WEST, 350MW EAST, 2000MW TOTAL.
7/9/2021	15:53	The Grand Coulee – Malin phase angle increased to 65 degrees (phase angle limit is 55 degrees). For HE17, implemented NWACI N>S ICRS curtailments for 1300MW relief, 2209MW firm schedules curtailed.
7/9/2021	17:51	The Summer Lake – Malin #1 500kV Line was tested and placed in service.
7/9/2021	19:12	Summer Lake-Malin #1 500kV line relayed out of service
7/9/2021	19:47	NWACI remains N>S TTC: 428MW, S>N TTC: 267MW. PDCI remains N>S TTC: 1525MW P.O., 1500MW NOB, S>N TTC 0 MW.

## Bootleg Fire: Timeline

Date	Time	Details
7/12/2021	9:39	Bootleg Fire is still uncontrolled, NWACI east corridor remains open.
7/13/2021	14:03	Grizzly-Captain Jack 500kV line in service
7/13/2021	14:08	Summer Lake-Malin 500kV line in service, NWACI N>S TTC 2400MW AND S>N TTC 707MW. PDCI TTC NOW 3100MW NOB N>S AND REMAINS 975MW NOB S>N.
7/14/2021	16:36	Grizzly-Malin 2 500kV line in service
7/14/2021	18:30	Due to fire still threatening the east corridor, the conditionally credible N-3 contingency of the Grizzly-Captain Jack, Grizzly-Malin, and Summer Lake-Malin was considered in setting the NWACI and PDCI limits. NWACI TTC REMAINS N>S 3000MW, S>N 1013MW. SOL REMAINS S>N 3675MW, PDCI TTC REMAINS N>S 3210MW P.O, 3100MW NOB, S>N 1000MW P.O, 975MW NOB. SOL S>N 2200MW.
7/23/2021	13:24	Bootleg Fire restriction was removed, a new NWACI Study was implemented starting 1400: NWACI TTC N>S 4600MW, S>N 881MW.



# NWACI and PDCI flows and TTCs



All three corridor lines  
out of service

## Bootleg: Actions Taken

- ❖ *Real-time operations had close coordination with Fire Marshal and Continuity's IMT*
  - Safety first
- ❖ *The NWACI Operations Planning team ran additional “what-if” scenarios in case the lines came back in at different times or if additional lines were removed from service*
- ❖ *Fire responders and BPA field crew tried to anticipate the fires behavior so they cleared vegetation around Sycan:*
  - PGE and PAC were in constant contact with BPA to plan patrols and coordinating when to test lines

# *Other Fire Activity*



## Other Fire Activity

❖ 14 lines removed from service to support fire fighting:

Date	Time	Fire Name	Line
6/28/2021	18:26		Echo Lake – Maple Valley #1&2 500kV Lines
6/29/2021	13:20		Covington – Maple Valley #1 230kV Line
7/2/2021			Goldendale: Klickitat Co PUD 115kV Feeder 1
7/7/2021	19:40		Walla Walla-Freewater #1 69kv Line
7/13/2021	17:47	Darlene	LaPine-Chiloquin #1 230kV Line
7/13/2021	16:36		Fort Rock: Midstate E COOP 115kV Feeder
7/14/2021	17:36	Oregon city HWY 99 Fire	Ostrander-Pearl #1 500kV Line
7/14/2021	17:36	Oregon city HWY 99 Fire	Big Eddy-Chemawa #1 230kV Line
7/18/2021	20:24	Franz Road Fire	Bonneville-Alcoa #1&2 115kV Line
8/6/2021	14:13	Hambone	Captain Jack-Olinda #1 500kV Line
8/7/2021	3:52	Mount Whitmore	Chicken Creek-East Omak section of the East Omak Tap to Grand Coulee-Foster Creek #1 115kV Line
8/10/2021	9:59		Blatchey Lane section of the Lane-Wendson 115kV Line
8/15/2021	15:23	Studebaker	Ross-Lexington #1 230kV Line
8/17/2021	11:12		Carmen Smith Tap to Cougar-Holden Creek #1 115kV Line



## Other Fire Activity

❖ *9 lines relayed out of service due to smoke/fire:*

Date	Time	Fire Name	Line
4/18/2021	17:38		Grizzly-Captain Jack #1 500kV line O/S
7/4/2021	15:33	Batterman Road Fire	Rocky Reach-Columbia #1 230kv Line
7/4/2021	15:33	Batterman Road Fire	Rocky Reach-Maple Valley 345kV Line
7/9/2021	15:33	Bootleg	Grizzly-Captain Jack #1 500kV line O/S
7/9/2021	15:40	Bootleg	Grizzly-Malin #2 500kV line O/S
7/9/2021	15:41	Bootleg	Summer Lake-Malin #1 500kV line O/S
7/9/2021	19:12	Bootleg	Summer Lake-Malin #1 500kV line O/S
7/9/2021	19:29	Bootleg	Grizzly-Captain Jack #1 500kV line O/S
7/9/2021	20:51	Bootleg	Summer Lake-Malin #1 500kV line O/S
7/10/2021	13:19	Bootleg	Summer Lake-Malin #1 500kV line O/S
7/11/2021	13:24	Bootleg	Grizzly-Captain Jack #1 500kV line O/S
7/11/2021	15:53		Horse Ranch Tap to Monroe-Snohomish #1&2 230kV Line
7/20/2021	13:10		Bridge: Raft River Elec 138kV Feeder 2
8/7/2021	12:26	Mount Whitmore	Grand Coulee - Goose Lake 115kV Line
8/11/2021	16:26	Bedrock	Hatwai-Dworshak #1 500kV Line

# Questions?

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Working with Customers to Successfully Respond to Summer Fire Activities

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