

# **Preliminary Review of July 24<sup>th</sup> Extreme Temperature Event & Implications for Pilot Capacity Standard**

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**PNW Resource Adequacy Steering Committee Meeting**  
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## What happened on July 24<sup>th</sup>?

### CALIFORNIA:

- CA ISO's forecasted peak load = 46,063 MW (based on average temperatures)
- CA ISO's actual peak on July 24<sup>th</sup> = 50,270 MW (called on 855 MW of interruptible load)
- CA ISO declared Stage 1 and Stage 2 emergencies, which means operating reserves  $\leq 5\%$

### NORTHWEST:

- NWPP's forecasted load  $\approx 52,000$  MW
- NWPP's actual load = 54,602 MW  $\rightarrow$  2,400 MW above normal
- In Pacific Northwest, PSE, PGE and PAC declared NERC Alerts 1 and/or 2, meaning all available resources in use, and/or load management procedures in effect, respectively
- **NWPP operating reserve requirements met at all times**

## Were CA and/or NW Resource Adequate?

### **CALIFORNIA:**

- CA ISO's Planning Reserve Margin (PRM) = 24.7%
- CPUC's Resource Adequacy Requirement = 15 – 17% PRM
- CA ISO was resource adequate

### **PACIFIC NORTHWEST:**

- Council's Presentation at 7/28 Steering Comm Mtg showed 58% PRM for 10 hour duration in July
- Pilot Capacity Standard → 15% PRM for July
- PNW was resource adequate (assuming IPPs in region)

## Overview of What Happened

- Temperatures were extreme in Northwest and in California – well beyond planning levels
- Loads were under-forecasted on Thursday and Friday when market positions for Monday were set
  - Prices on the 24th were at FERC caps (\$400 per MWh) or higher
- Few generation outages - Colstrip unit and Chehalis unit
  - Wind performed at lower level than expected
- Relatively limited demand response

## Overview of What Happened (con't)

- Approximately 3,500 MW of uncontracted NW IPP generation was included in our surplus assessment as available to the Northwest
  - Almost all sold to California - directly or through NW utilities
  - Interties were effectively full
- Bonneville set up river to maximize generation south of North of John Day constraint without violating fish constraints
  - Asked TMT for leeway to curtail spill, if necessary, though it turned out **not** to be necessary

# Temperatures

## CALIFORNIA:

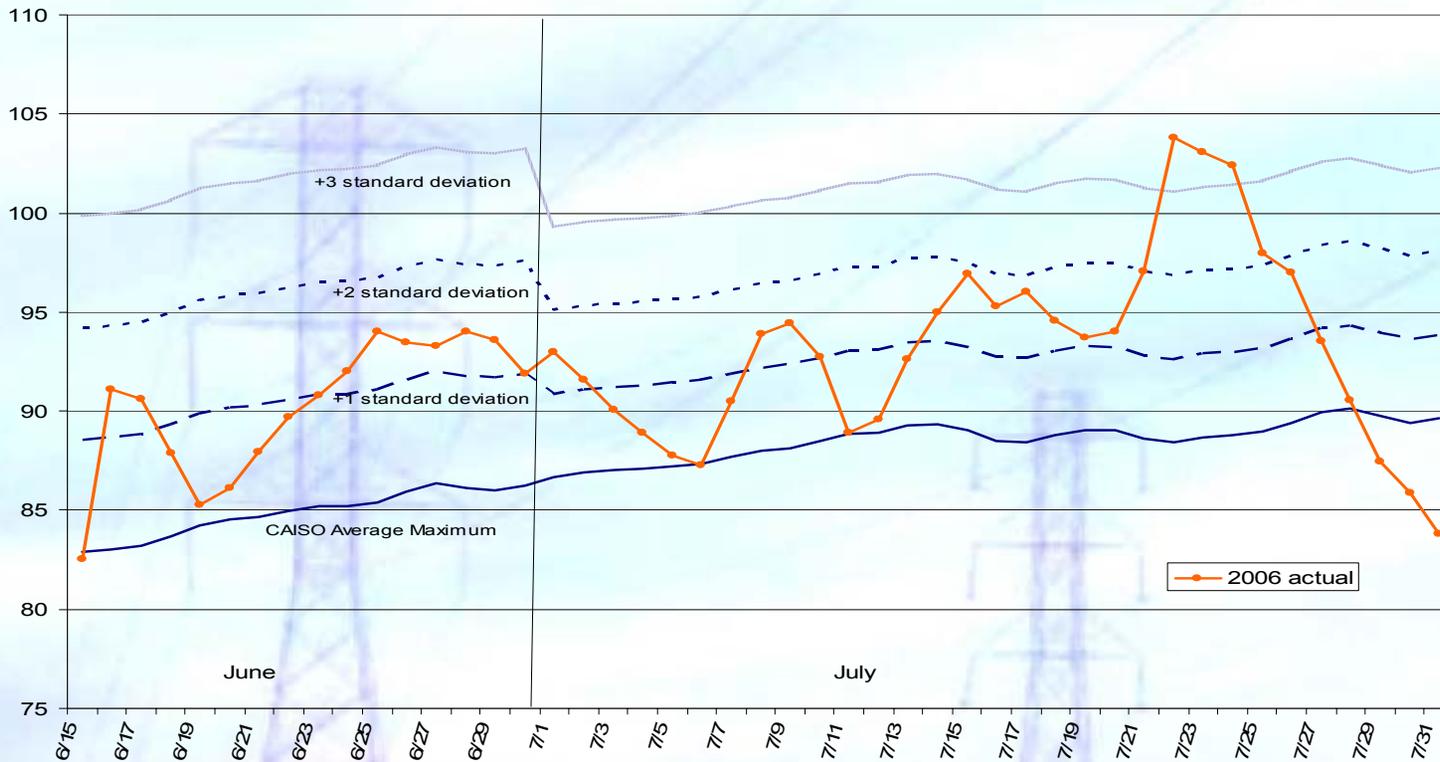
- CA ISO indicated combined probability of No. and So. California at simultaneous peak ~ 1 in 50 to 1 in 100 year event

## NORTHWEST:

- July 23<sup>rd</sup> was hottest day on record with July 24 only degree or two less. = 1 in 70 year event
- Combined probability of NW & CA experiencing record events = ???
- → **EXTREMELY RARE TEMPERATURE EVENT**
- Planning Standards are set perhaps for 1 in 10 or 1 in 20 year events, but not for such rare events

# CA ISO temperatures ≥ 3 standard deviations above normal

CAISO temperature comparison



## Stale Forecasts & Forward Marketing

- Loads were under-forecasted on Thursday and Friday when market positions for Monday were set
- Utility Anecdote: Snohomish had 60 MW > Load than Forecasted; on the hour Colstrip tripped, could not find MW in market, called on arrangements with neighboring utilities & their contract with SMUD
- BPA did not sell into market for economy reasons, only for reliability needs
  - Limited sales to Control Areas with declared NERC alerts or CA ISO with declared stage 1 & 2 emergencies

## Examples: PDX and SEA max temps (yellow) almost always exceeded forecasts

<b>Portland - Portland International Airport</b>	<b>07/20/06</b>	<b>95</b>	<b>100</b>	<b>98</b>	<b>95</b>	<b>90</b>
	<b>07/21/06</b>		<b>104</b>	<b>98</b>	<b>93</b>	<b>89</b>
	<b>07/22/06</b>			<b>93</b>	<b>95</b>	<b>90</b>
	<b>07/23/06</b>				<b>101</b>	<b>88</b>
	<b>07/24/06</b>					<b>97</b>
<b>Seattle- Seattle-Tacoma International Airport</b>	<b>07/20/06</b>	<b>87</b>	<b>92</b>	<b>89</b>	<b>88</b>	<b>84</b>
	<b>07/21/06</b>		<b>97</b>	<b>90</b>	<b>87</b>	<b>84</b>
	<b>07/22/06</b>			<b>96</b>	<b>89</b>	<b>84</b>
	<b>07/23/06</b>				<b>95</b>	<b>83</b>
	<b>07/24/06</b>					<b>92</b>

## PNW Resources

- Thermal resources forced out at time of afternoon peak:
  - Colstrip #4 ( $\approx$  600 MW)
  - Chehalis (one unit  $\approx$  250 MW)
- FCRPS sustained peaking cap (SPC) over 10 hour duration = 1,450 MW  $\gt$  Normal July Day SPC with same water conditions
- Demand Response (PGE, PSE, IPC, Snohomish, Avista, Chelan)  $\approx$  130 MW
- BPA wind at 6% cap factor on peak hour; but 12 – 15% cap factor over 10 hour sustained peaking duration
  - California saw about 5% over peak hours

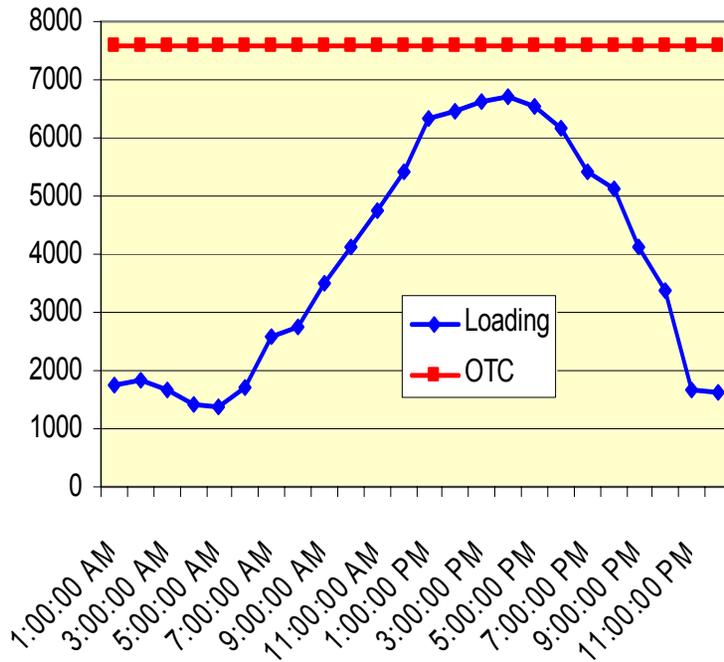
# FCRPS Performance on July 24<sup>th</sup> Compared to Average July Day

## Sustained Hydro Peaking Capacity

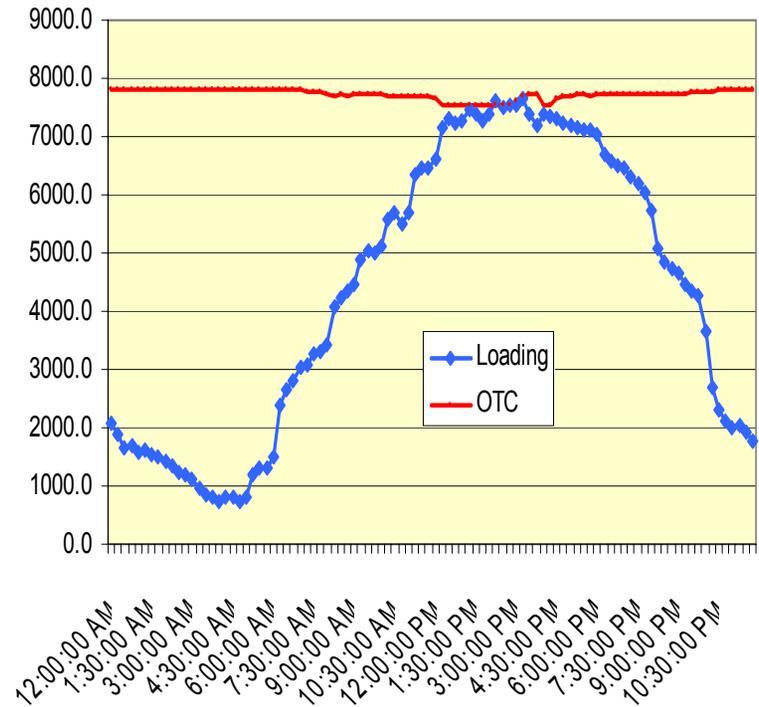


# Interties were close to full and limited by internal BPA path loadings (example below)

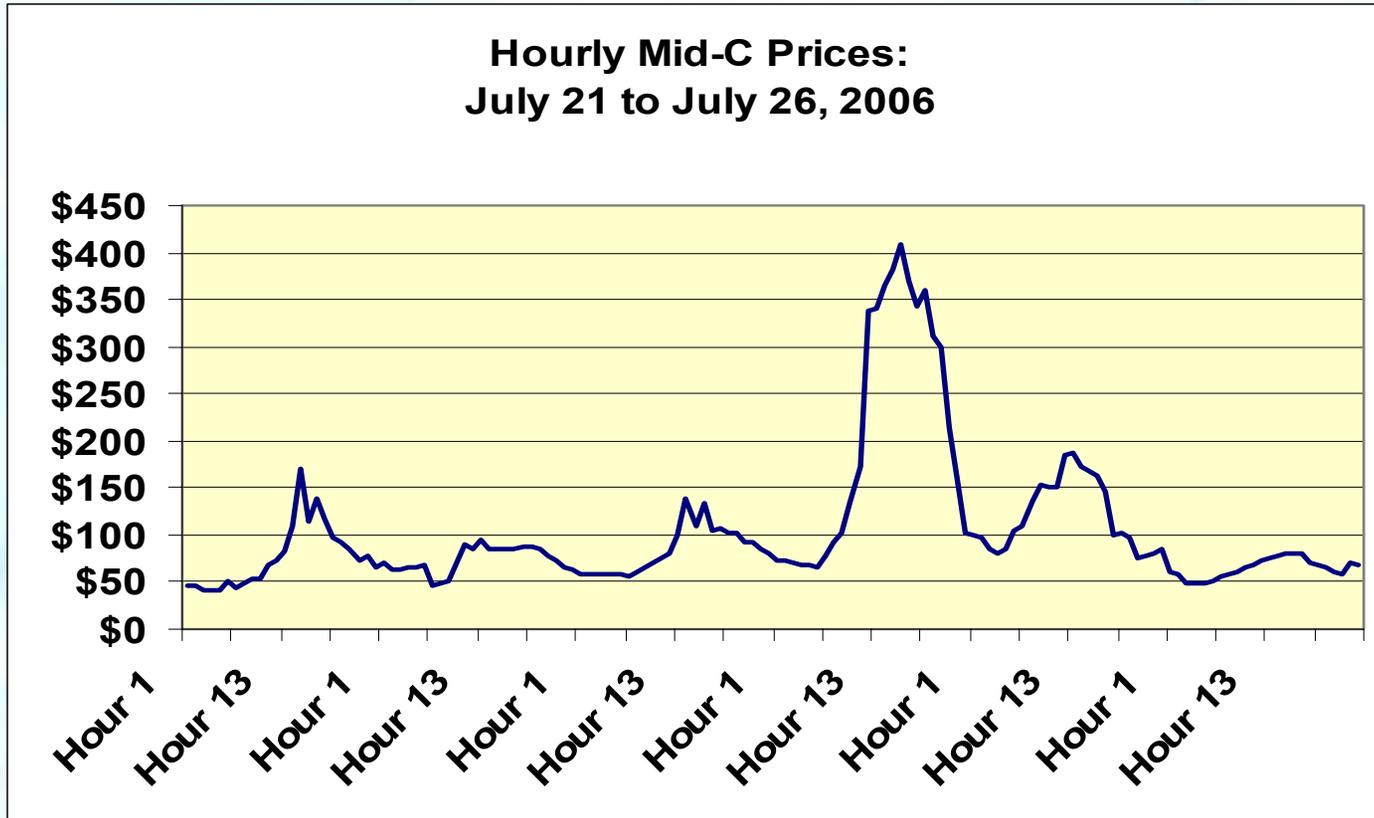
COI+PDCI Loading July 24



North of John Day Loading July 24



## Mid-C prices spiked on the 24th



## Uncontracted IPP Generation in PNW

- Approximately 3,500 MW of uncontracted IPP generation included in our surplus calculation as potentially available for meeting resource adequacy standard
- All of it (one Chehalis unit on forced outage) running and either sold to California or to NW utilities and probably resold to California

## Observations and Recommendations

- If sequence had not been over the weekend, forward selling would not have been so high - better for NW, worse for California
- On the other hand, loads might have been higher by the 4th day without the intervening weekend
- Technical Committee Recommendations regarding Operating Protocols
  - Define what constitutes Emergency
  - Convene NWPP Meeting to clarify Operating and Communication Protocols in Extreme Temperature or Emergency Events
  - Should ERT (Energy Response Team) have been convened on July 24<sup>th</sup>?

## Implications for Pilot Capacity Standard

- Reliance on uncontracted IPP generation in PNW Resource Adequacy Standard should probably be minimized in summer
  - Contracts with IPPs needed to allow for reliance to meet PNW peak loads in summer when there is competition for uncontracted IPP Generation
- Recommended Capacity Targets refined based on further work by Council Staff; however, no recommendation to use July 24<sup>th</sup> type of event as Adverse Temperature Design Event in Pilot Capacity Standard