

Resource Adequacy Capacity Target Intuitive Approach

Resource Adequacy Forum
Technical Committee
July 5, 2006
Portland, Oregon



Outline

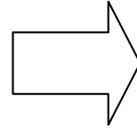
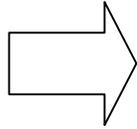
- Form of the capacity standard
- Intuitive approach for a target
- Temperature component of the target
- Preliminary capacity target(s)
- Current assessment of capacity reserve

Form of the Capacity Standard

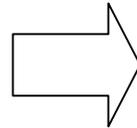
- **Metric** – Surplus sustained-peaking capacity (%)
 - over the highest load period (for each month)
 - load period duration is ??? hours
 - normal temperature
 - under critical hydro ('37 water)
- **Target** – ??? percent (i.e. reserve margin)

Capacity Target Intuitive Approach

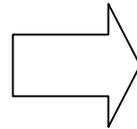
Z% for the
Sustained
Peaking
Capacity
Reserve
Margin



Y% for
Adverse Weather and
Load Forecast Uncertainty



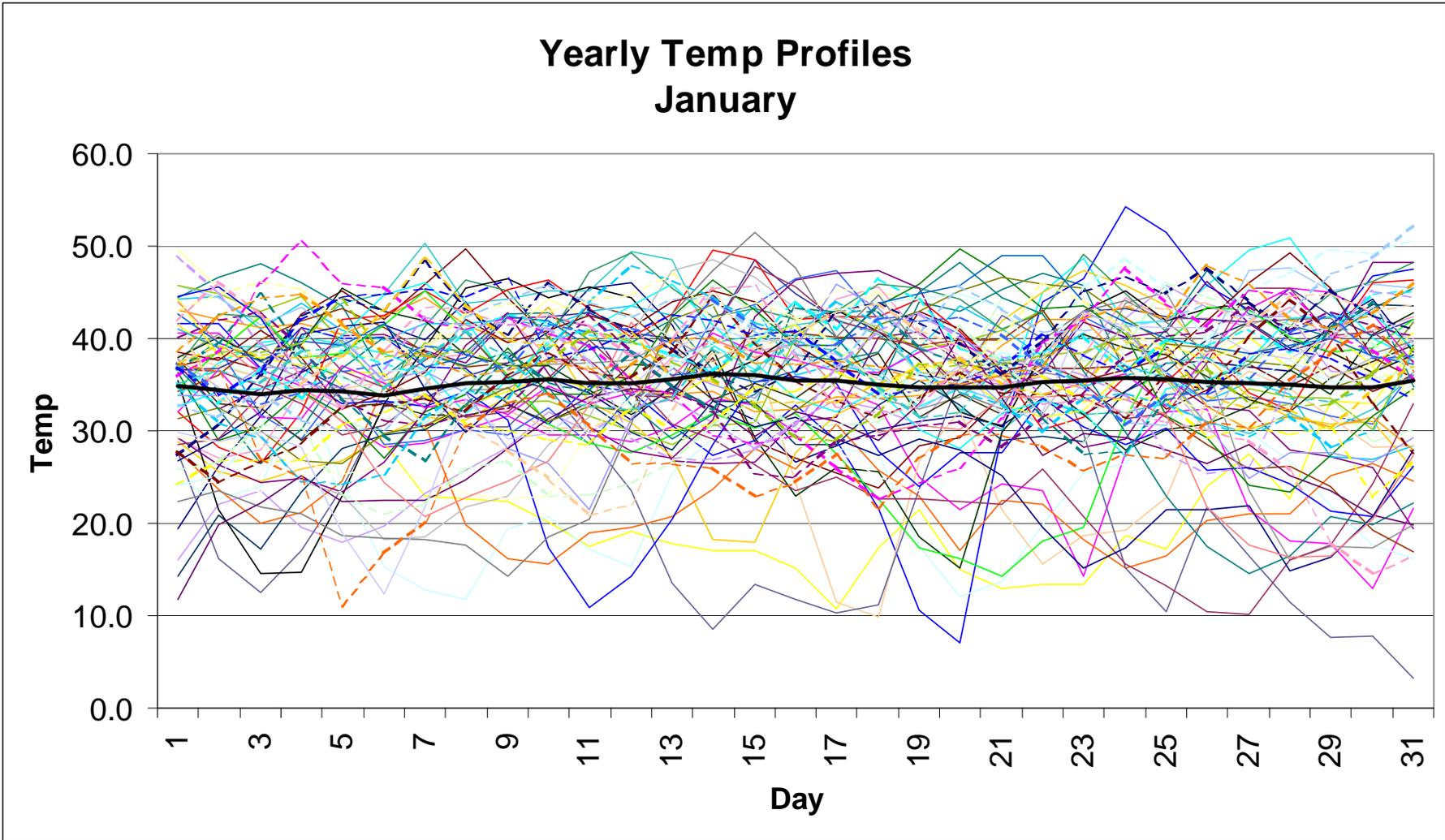
X% for
Outage Uncertainty



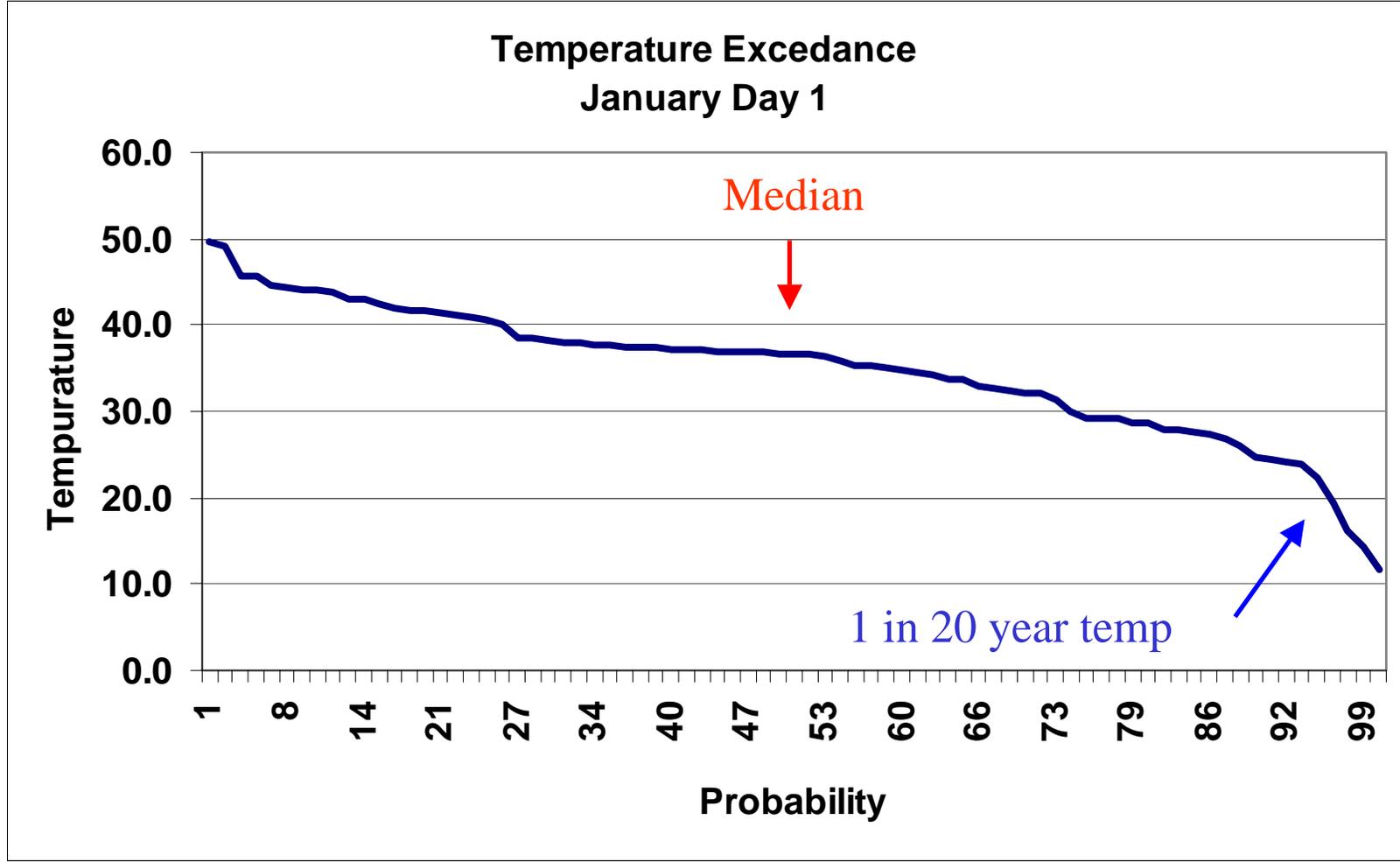
5-7% for
Contingency Reserve

Temperature Statistics

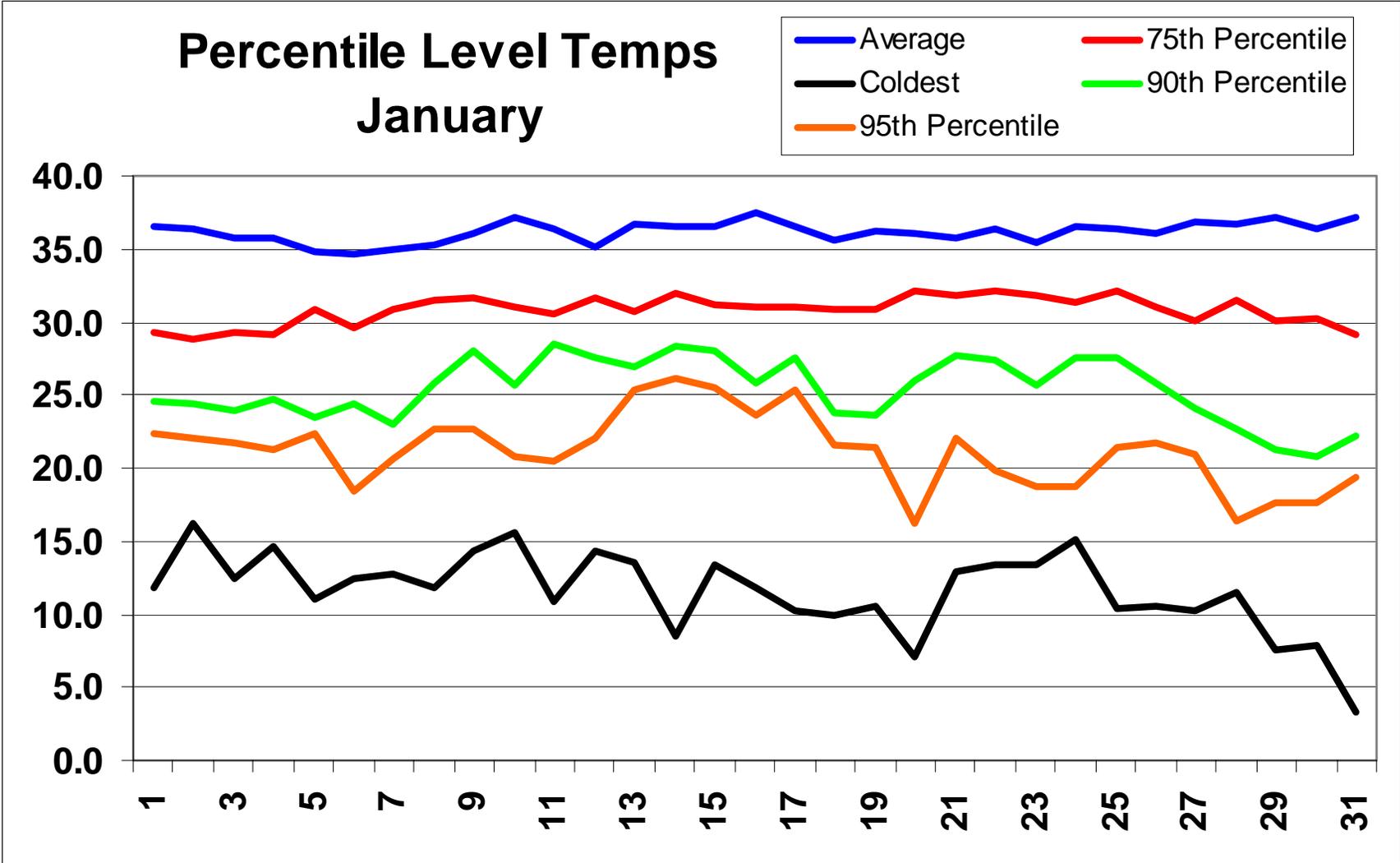
Yearly Temp Profiles
January



Temperature Statistics



Temperature Statistics



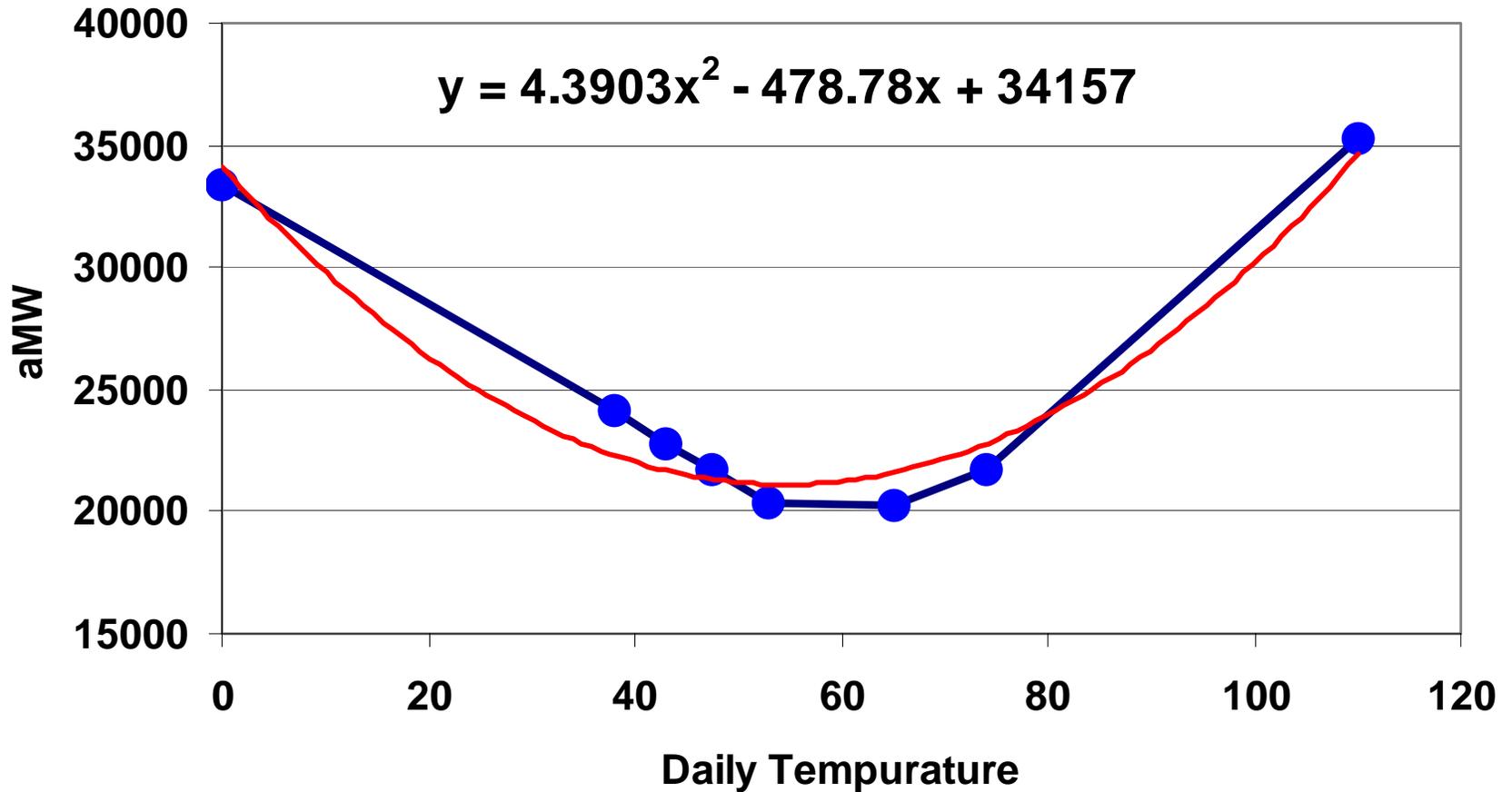
Winter Statistics

Winter	January		February		March		December	
	Avg	Diff	Avg	Diff	Avg	Diff	Avg	Diff
1 in 2	36.2		39.4		43.2		37.2	
1 in 4	30.8	-5.4	35.8	-3.6	40.2	-2.9	33.0	-4.2
1 in 10	25.4	-10.8	31.8	-7.6	37.7	-5.5	29.3	-7.9
1 in 20	21.2	-15.0	28.5	-10.9	36.0	-7.1	26.9	-10.3
1 in 100	11.6	-24.6	19.5	-19.8	31.1	-12.1	15.8	-21.4

Summer Statistics

Summer	June		July		August		September	
	Avg	Diff	Avg	Diff	Avg	Diff	Avg	Diff
1 in 2	60.3		66.2		65.8		60.4	
1 in 4	64.3	4.0	69.7	3.5	69.3	3.5	64.0	3.6
1 in 10	68.3	8.0	73.6	7.4	72.3	6.5	67.3	6.9
1 in 20	70.7	10.3	75.9	9.7	74.7	8.9	69.0	8.6
1 in 100	75.9	15.5	80.6	14.4	79.2	13.3	72.0	11.6

Temperature/Load Relationship (HELM data)



Change in Demand

Winter	January		February		March		December	
	Avg	Diff	Avg	Diff	Avg	Diff	Avg	Diff
1 in 2	22582		22112		21669		22424	
1 in 4	23572	991	22642	530	22000	331	23141	717
1 in 10	24830	2248	23373	1260	22344	675	23894	1470
1 in 20	25982	3400	24087	1974	22602	933	24460	2036
1 in 100	29194	6612	26477	4364	23509	1840	27691	5267

Change in Demand

Summer	June		July		August		September	
	Avg	Diff	Avg	Diff	Avg	Diff	Avg	Diff
1 in 2	21250		21701		21660		21255	
1 in 4	21524	274	22114	413	22062	402	21499	244
1 in 10	21936	686	22697	996	22492	832	21817	561
1 in 20	22245	995	23113	1412	22890	1229	22021	766
1 in 100	23100	1850	24093	2392	23764	2103	22447	1192

Margin Requirement for Temp

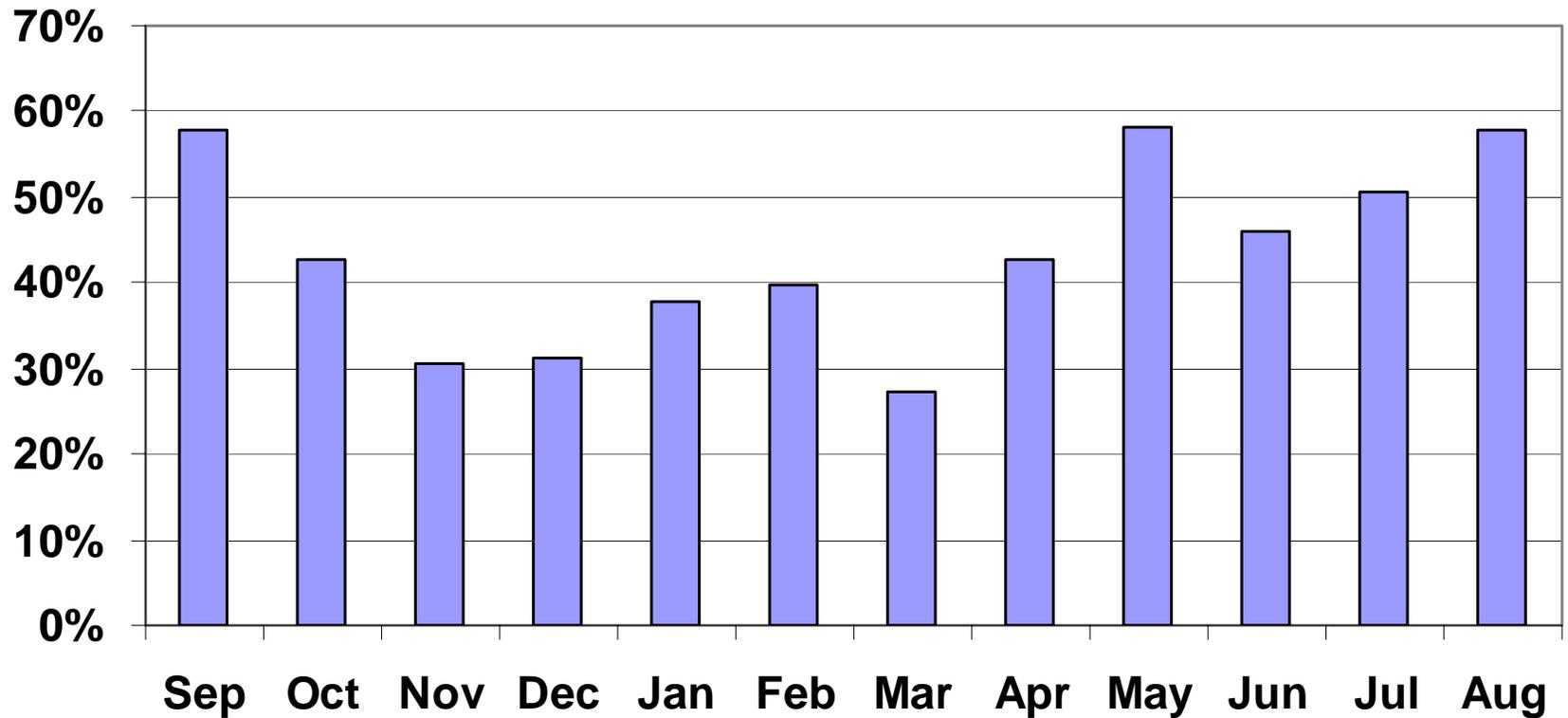
	Winter				Summer			
Percent	Jan	Feb	Mar	Dec	Jun	Jul	Aug	Sep
1 in 4	4	2	2	3	1	2	2	1
1 in 10	10	6	3	7	3	5	4	3
1 in 20	15	9	4	9	5	7	6	4
1 in 100	29	20	8	23	9	11	10	6

Preliminary Capacity Targets

- **Winter – 27%**
 - 7% contingency
 - 5% outage
 - 15% temperature
- **Summer – 19%**
 - 7% contingency
 - 5% outage
 - 7% temperature

Current Reserve Margin

**Min Reserve Margin 2007 Bal = 2100
1937 Hydro - Avg Temp**



RM for an LOLP 5% Scenario

Min Reserve Margin 2007 Bal = -1496
1937 Hydro - Avg Temp

