

Defining LOLP

Pacific NW Resource Adequacy
Technical Subcommittee Meeting
April 19, 2006

PDX Conference Center

Purpose

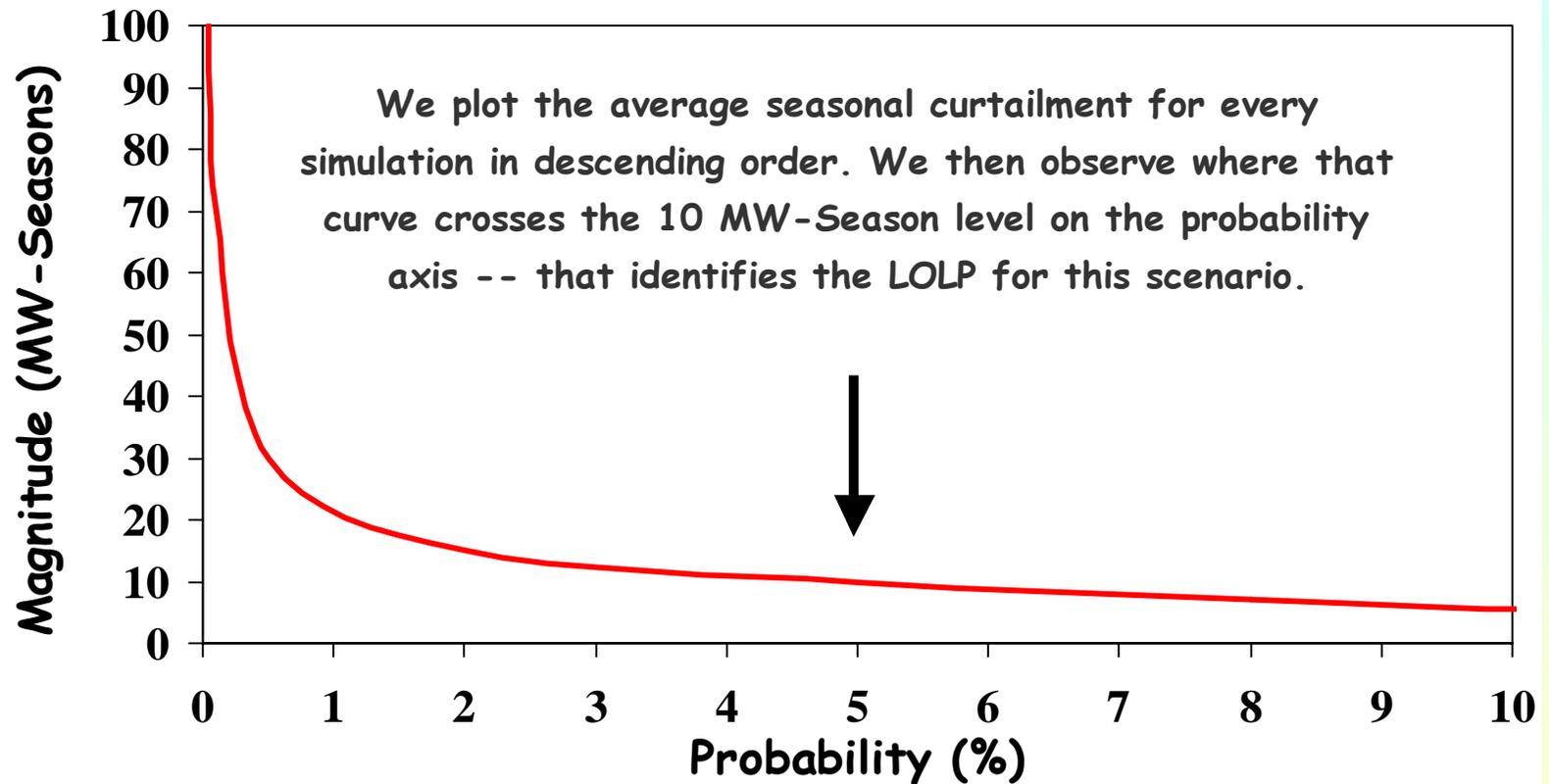
- Review how the current LOLP is calculated
- Examine the relationship between LOLP and the curtailment threshold
- Defining a “significant” curtailment event
- Discuss alternative ways to calculate LOLP

Review how the current LOLP is calculated

What do we Count?

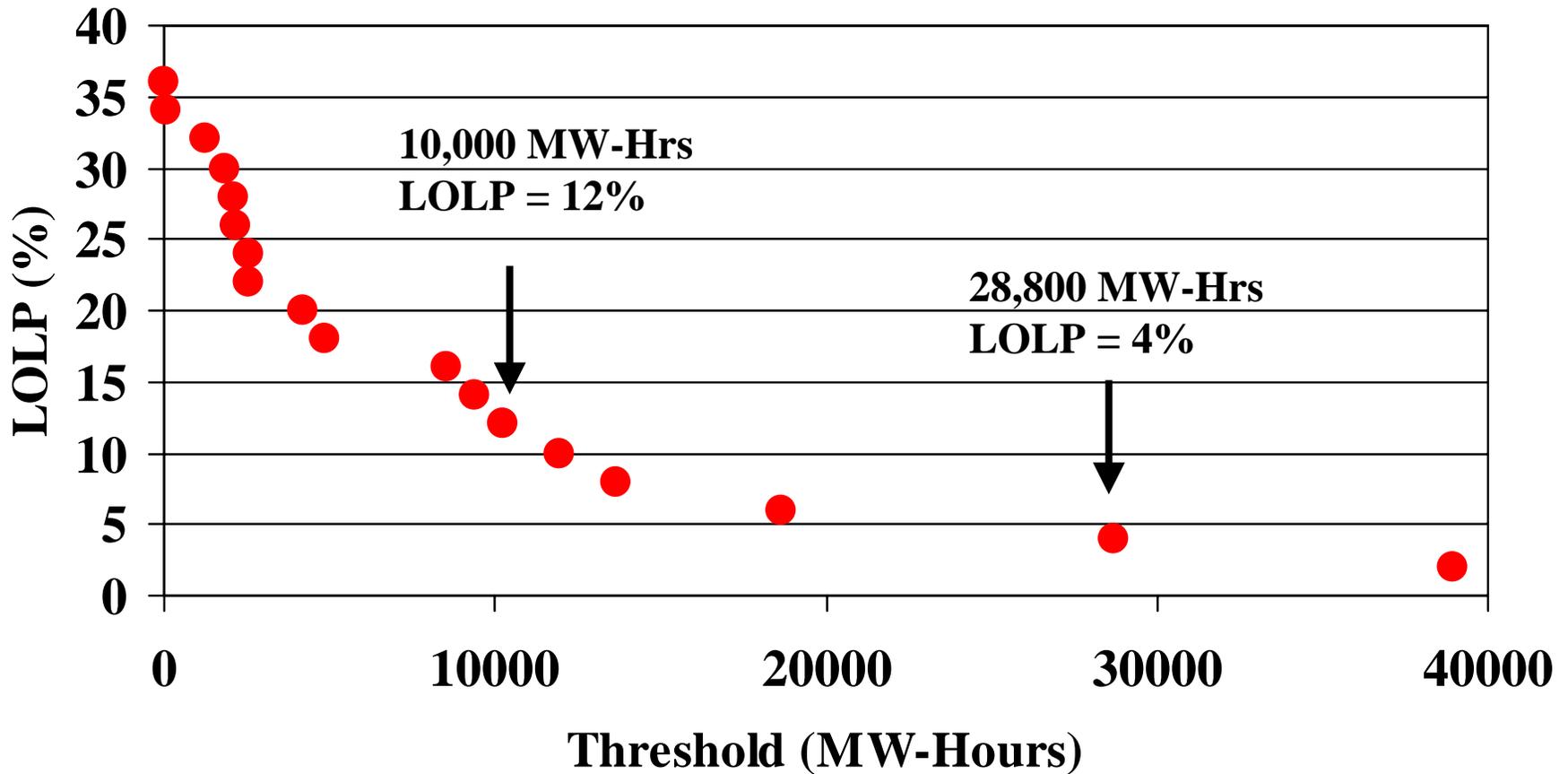
- Ideally, we count “significant” events (those that we do not want to occur).
- But, we have not yet defined what a “significant” event is.
- For now, calculate the energy of curtailing 1,200 mw for one day (28,800 mw-hours).
- This translates into 10 mw-seasons (across four months).

Loss of Load Probability (Sum of Curtailed Energy Method)



Examine the relationship between LOLP and the curtailment threshold

LOLP vs. Threshold



Defining a “significant” curtailment event

Study Statistics

Number of Simulations (Games)	50
Hours in the Dec-Mar period	2,904
Total number of hours simulated	145,200
Number of games with at least one hour of curtailment	18
Number of curtailment hours (over all games)	275
Number of curtailment events	83
Average magnitude per event	1,953 MW-hrs
Average duration per event	3.4 hours
Average number of events per game with curtailments	4.6

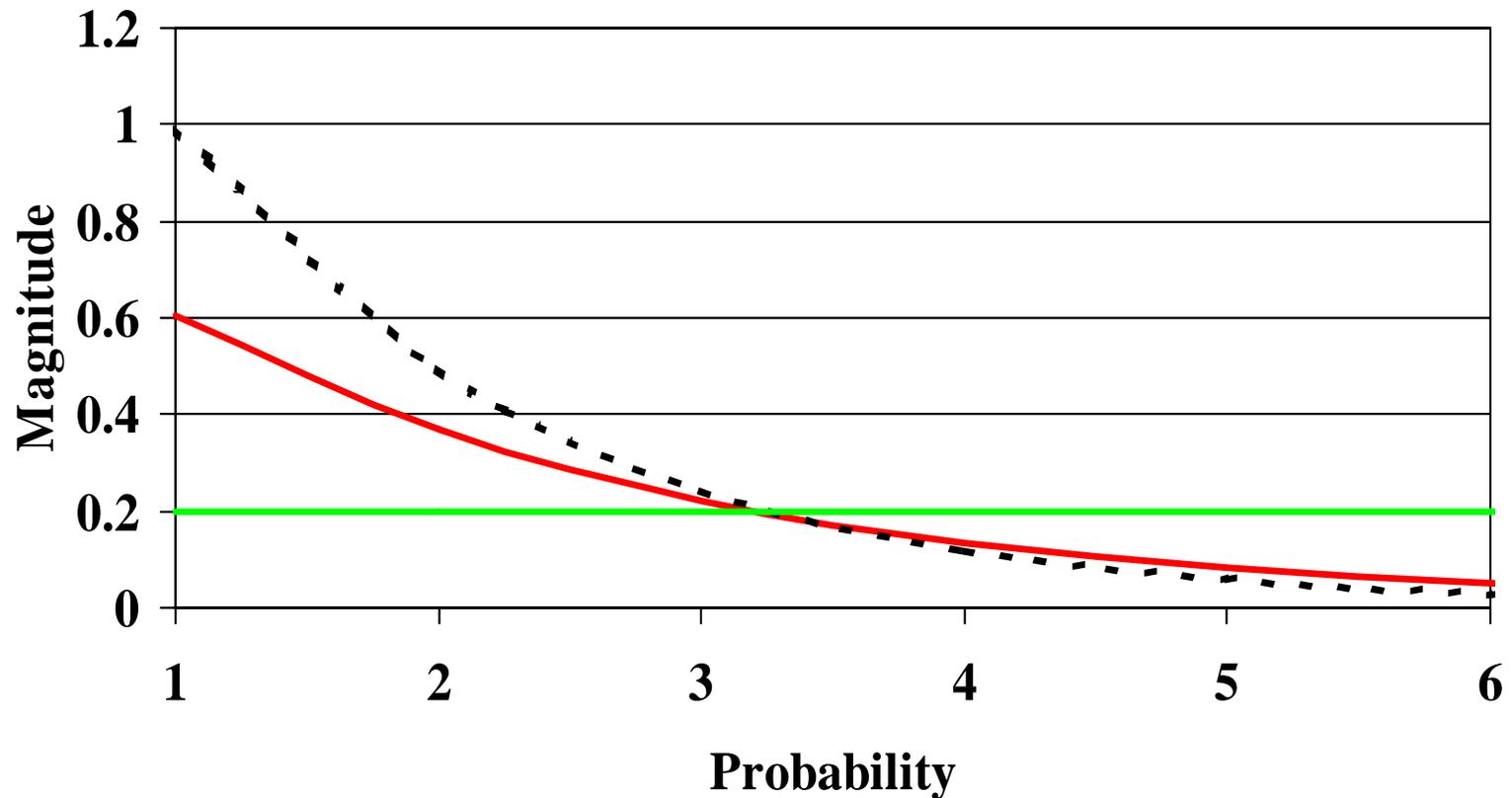
Alternative ways to calculate LOLP

LOLP Type Statistics

Types of events	No. of Games	LOLP (%)
At least 1 hour of curtailment	18	36
Total curtailment > 28,800 mw-hrs	2	4
Total curtailment > 10,000 mw-hrs	6	12
At least one event > 4 hours	13	26
At least one event > 4,000 mw-hrs	9	18
At least one event > 4-hour & > 4,000 mw-hrs	5	10
At least five hours with curtailment > 1,000 mw	5	10
At least ten hours with curtailment > 1,000 mw	2	4
At least one hour with curtailment > 1,000 mw	11	22

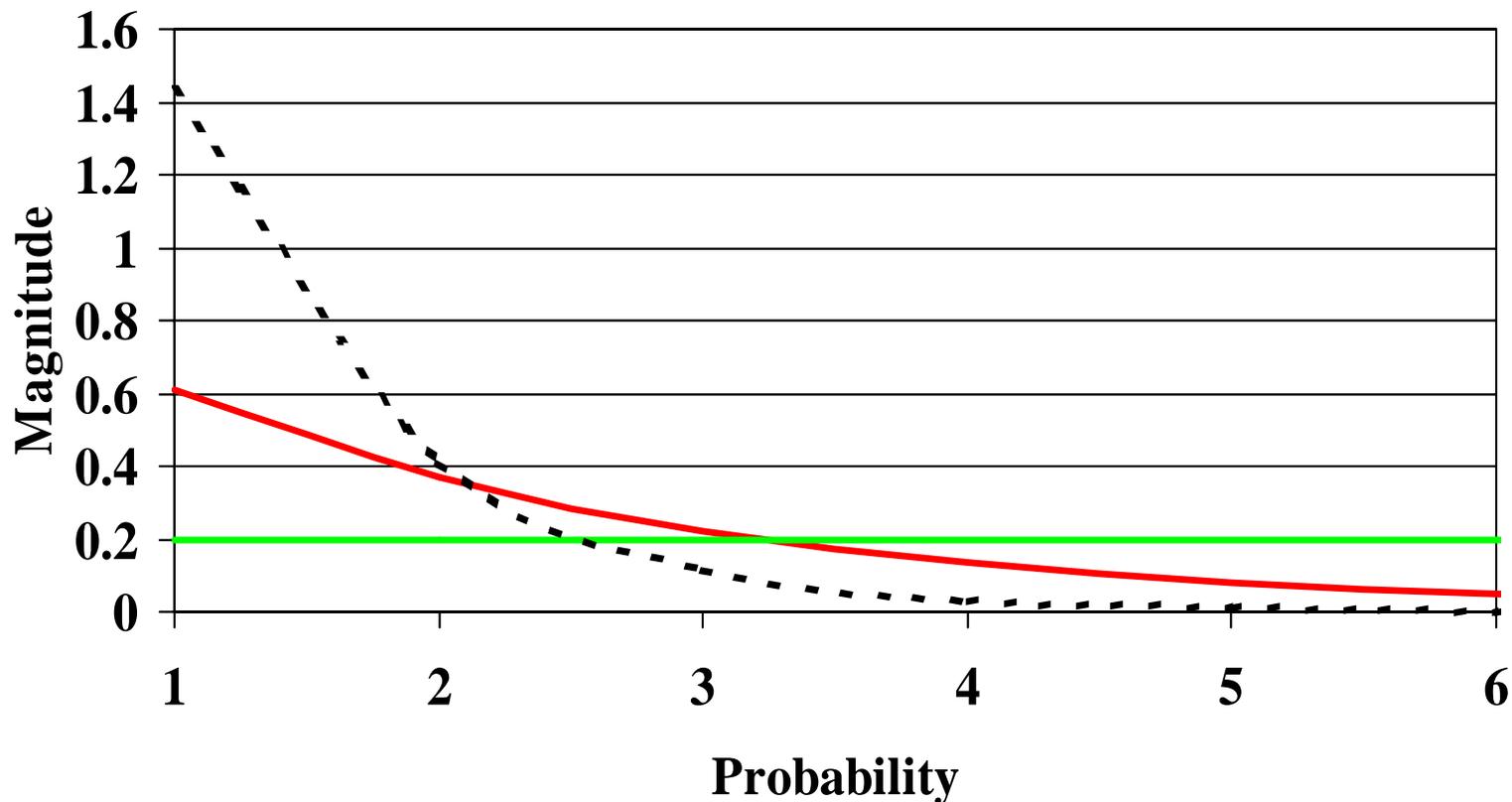
Potential Problem with LOLP

Same LOLP – Bigger Magnitude

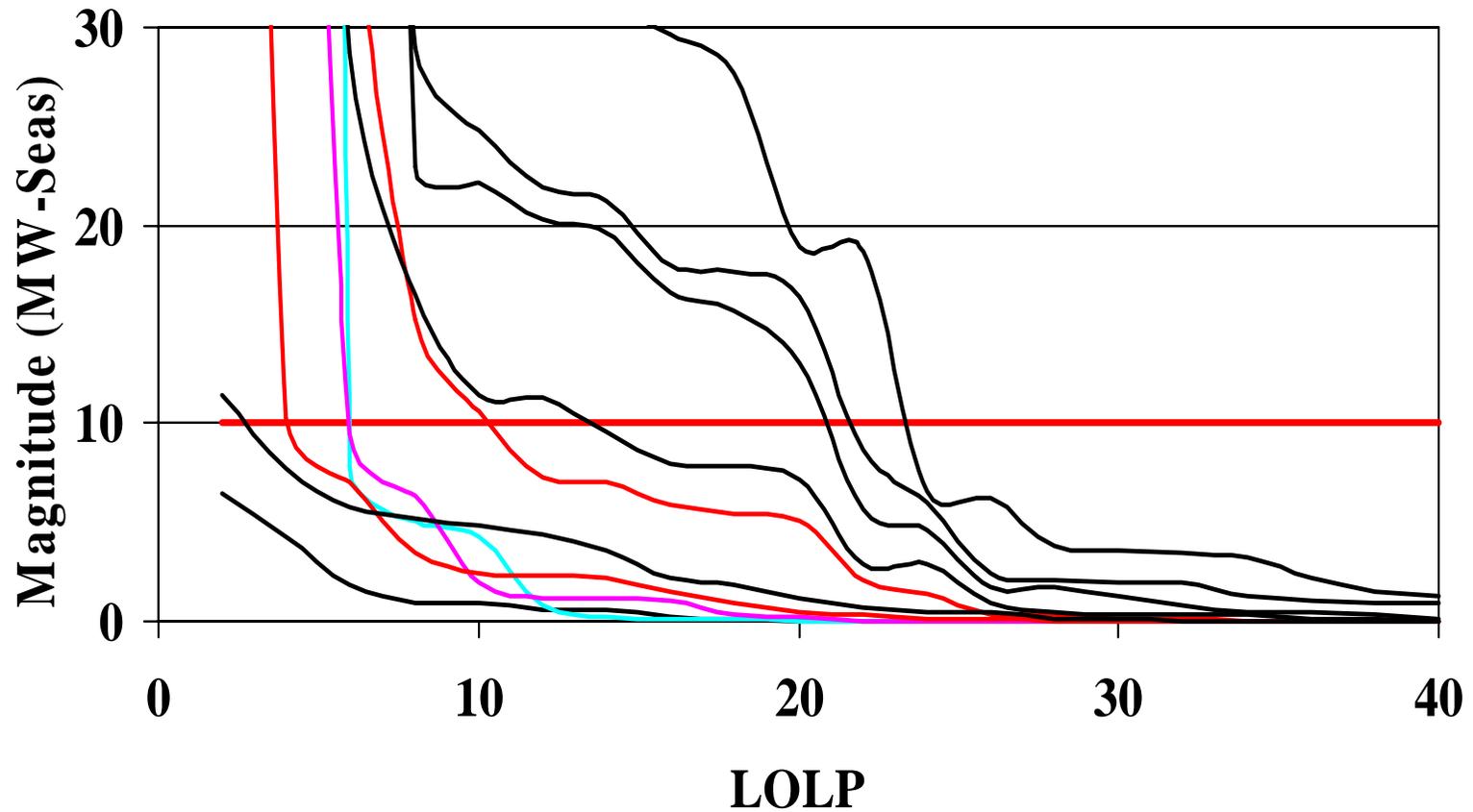


Potential Problem with LOLP

Lower LOLP – Bigger Magnitude

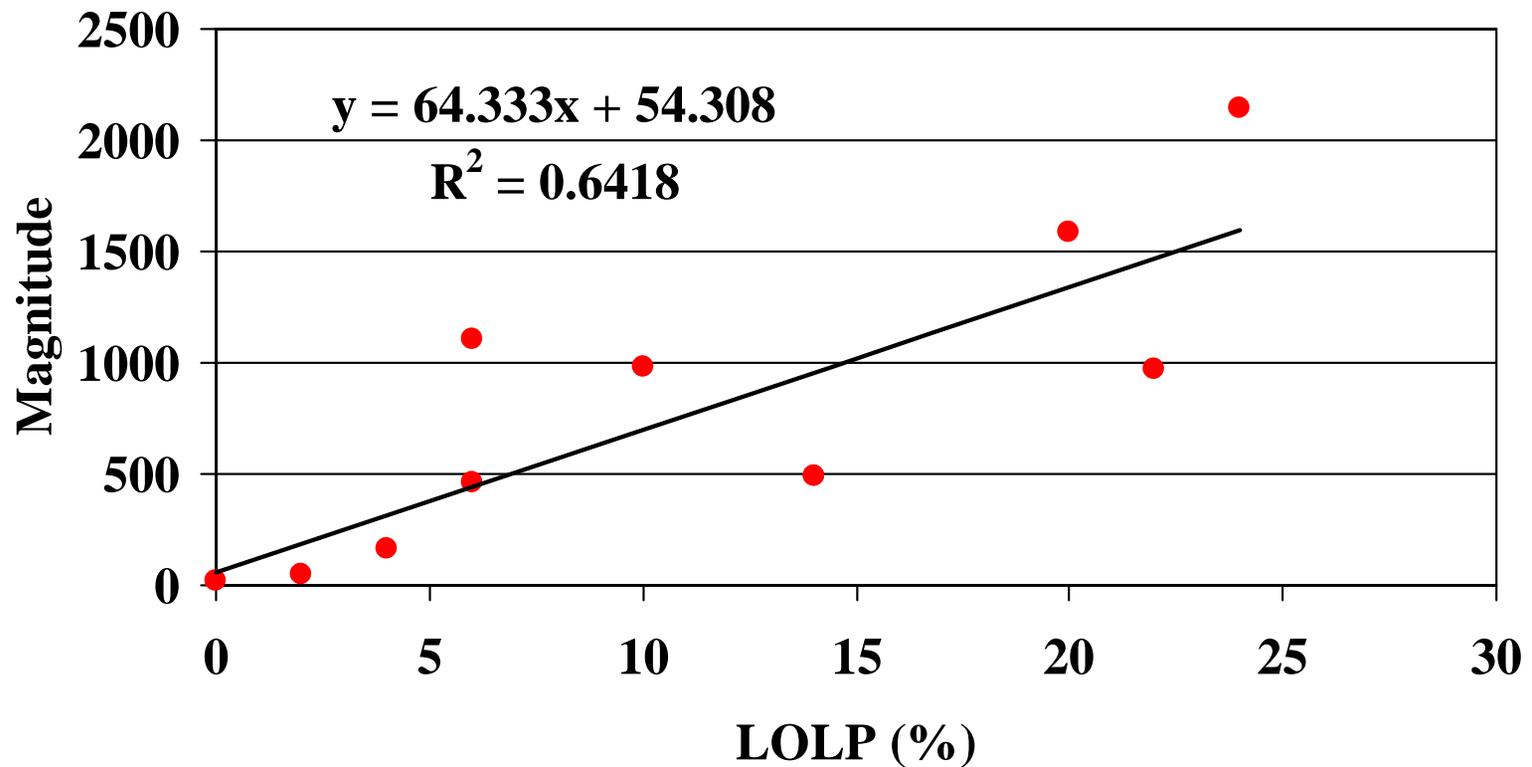


Are LOLP curves well behaved?



LOLP vs. Magnitude

(Generally, as the LOLP increases, so does the magnitude of the problem)



Action Items

- Assess whether capacity and energy events should be counted separately
- Revise analysis with updated information
- Determine what the L/R balance would be for an “economic” standard.