Northwest Power and Conservation Council

Resource Adequacy Forum
Technical Committee
February 5, 2007

Using the Regional Adequacy Standard to Develop Guidelines for Individual Utilities

Options

1. Use LOLP analysis
   - Allow utilities to develop their own analytical tools to assess LOLP
   - Provide utilities with “standard” analytical tools to perform their own LOLP analysis
   - Establish an entity that would provide LOLP analysis for individual utilities
2. Translate the regional standard into useful utility level metrics and targets

Using LOLP

- Use regionally defined and accepted threshold curtailment events
- Plan resources so that the likelihood of future years with bad events is no more than 5 percent
- Analytical tools used to assess LOLP should take hydro flexibility and the spot market into account

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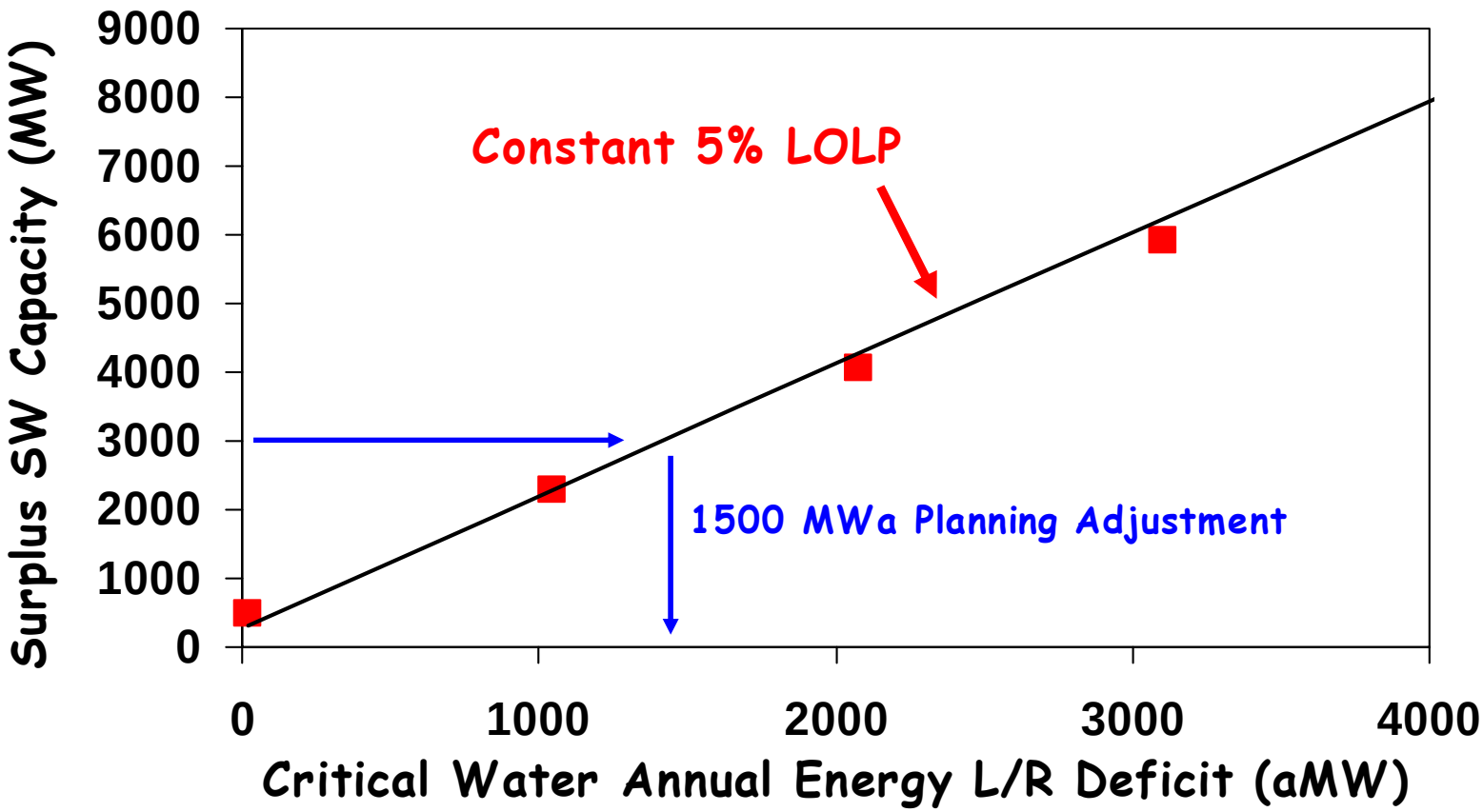
Translating the Regional Standard

- Must take a utility's dependence on hydro generation and on spot market purchases (non-firm resources) into account
- Can accomplish that by
  - Using regional targets and modifying the planning adjustments used in the energy and capacity metrics
  - Or, for utilities with hydro generation, using a non-critical hydro year

Energy Planning Adjustment



Adequacy Standard Planning Adjustments

- Energy
  - 1,500 MWa added to the resources
- Capacity
  - 4 % added to the winter planning reserve margin
  - 7 % added to the summer planning reserve margin
  - These reserve margins would be higher without hydro flexibility or access to a spot market

Possible Method to Assess Individual Utility Energy Targets

- Determine a utility's access to the spot market and to hydro generation, relative to regional values
- Define a utility's planning adjustment (PA) as a function of the regional PA, the utility's access to the spot market and to hydro generation
- A utility's annual L/R target remains zero but its planning adjustment (added to the resource calculation) will vary

Disaggregating the Energy Planning Adjustment (Step 1)

- Determine what the PA would be for the region without hydro generation and without access to the spot market
- The region would have to have sufficient resources to meet its highest monthly load
- This means that the NW would have to build to an annual L/R surplus

Step 1 (continued)

- For 2007, the NW's annual average load is 20,933 MWa
- The highest monthly load is in January at 23,256 MWa
- If the NW had no hydro and no access to the spot market, it would have to plan to an annual L/R surplus of 2,323 MWa
- The effective PA is -2,323 MWa

Step 2 – Disaggregating the PA

- The regional planning adjustment can vary from +1,500 to -2,300 MWa (a 3,800 MWa range)
- Three factors affect the PA
  - Spot market
  - Hydro energy
  - Hydro flexibility

Step 2 (continued)

- Run a study assuming no regional access to the spot market
- Calculate the PA
- The difference between this value and 1,500 is that portion of the PA Range due to the spot market or R(m)

Step 2 (continued)

- Run a study assuming no regional access to the spot market and no hydro flexibility
- Calculate the PA
- The difference between this value and the PA calculated with no spot market is the portion of the range due to hydro flexibility or R(f)
- The portion of the range due to hydro energy is then just R(h) = 3,800 – R(f) – R(m)

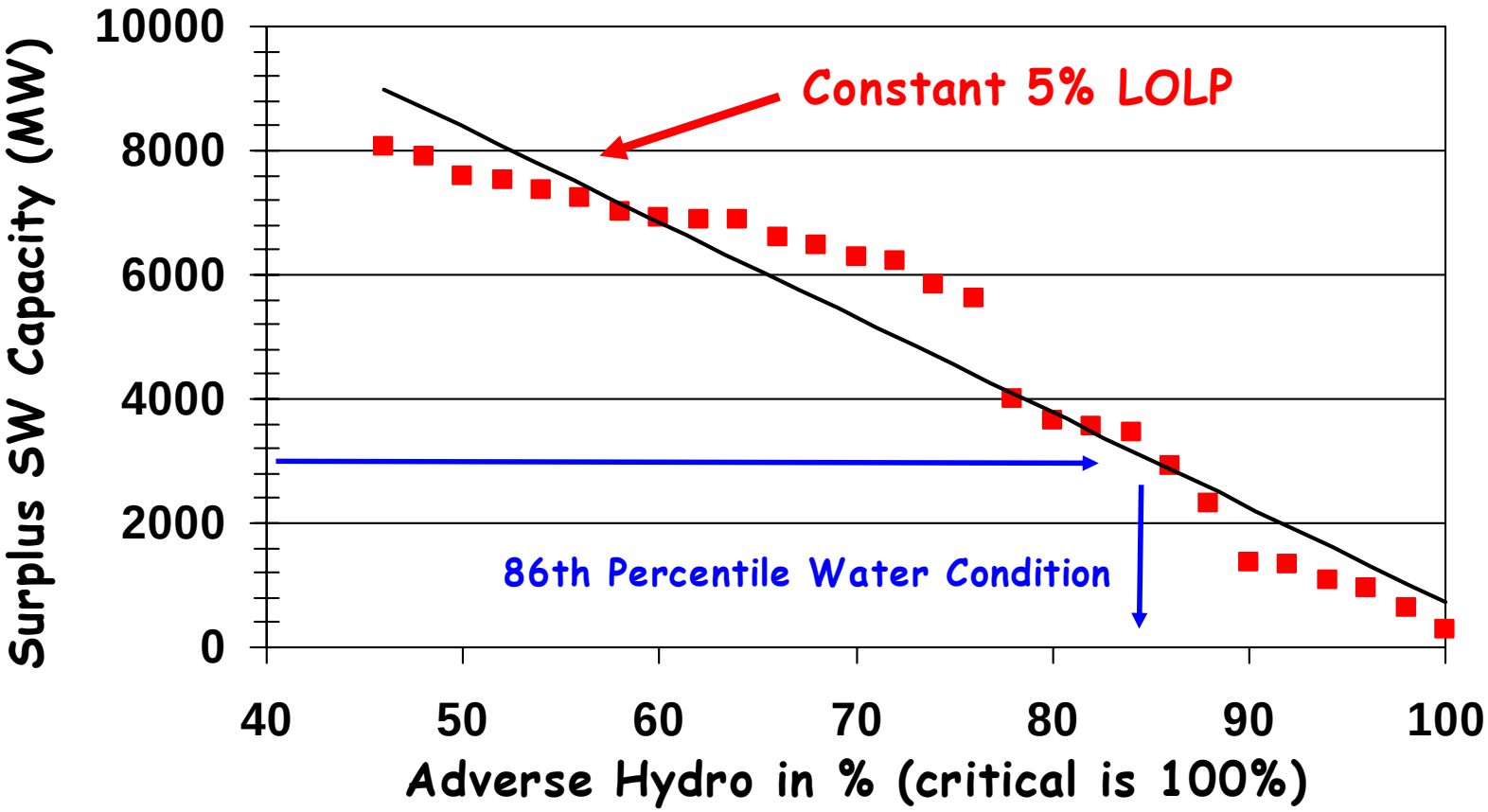
Step 3 – Translating the PA

- Multiply a utility's relative access to the market (a number less than one) by R(m)
- Multiply a utility's relative access to hydro generation by R(h)
- Multiply a utility's relative access to hydro flexibility by R(f)
- Add the three values to get a total adjustment for the utility R(t) = R(m)+R(h)+R(f)

Step 4 – Assessing the Utility's Target

- A utility's energy planning adjustment would be -2,300 MWa plus R(t)
- The less hydro generation a utility has access to, the greater its annual L/R balance
- The less access a utility has to the market, the greater its annual L/R balance

Step 5 – Testing the Methodology

- Sum up the planning adjustments for all regional utilities
- Compare the resulting total to the regional planning adjustment of 1,500 MWa

Using Non-Critical Hydro