DOCKETED	
Docket Number:	21-ESR-01
Project Title:	Energy System Reliability
TN #:	241251
Document Title:	Steve Uhler Comments Re Questions about analysis methods
Description:	N/A
Filer:	System
Organization:	Steve Uhler
Submitter Role:	Public
Submission Date:	1/21/2022 5:56:22 AM
Docketed Date:	1/21/2022

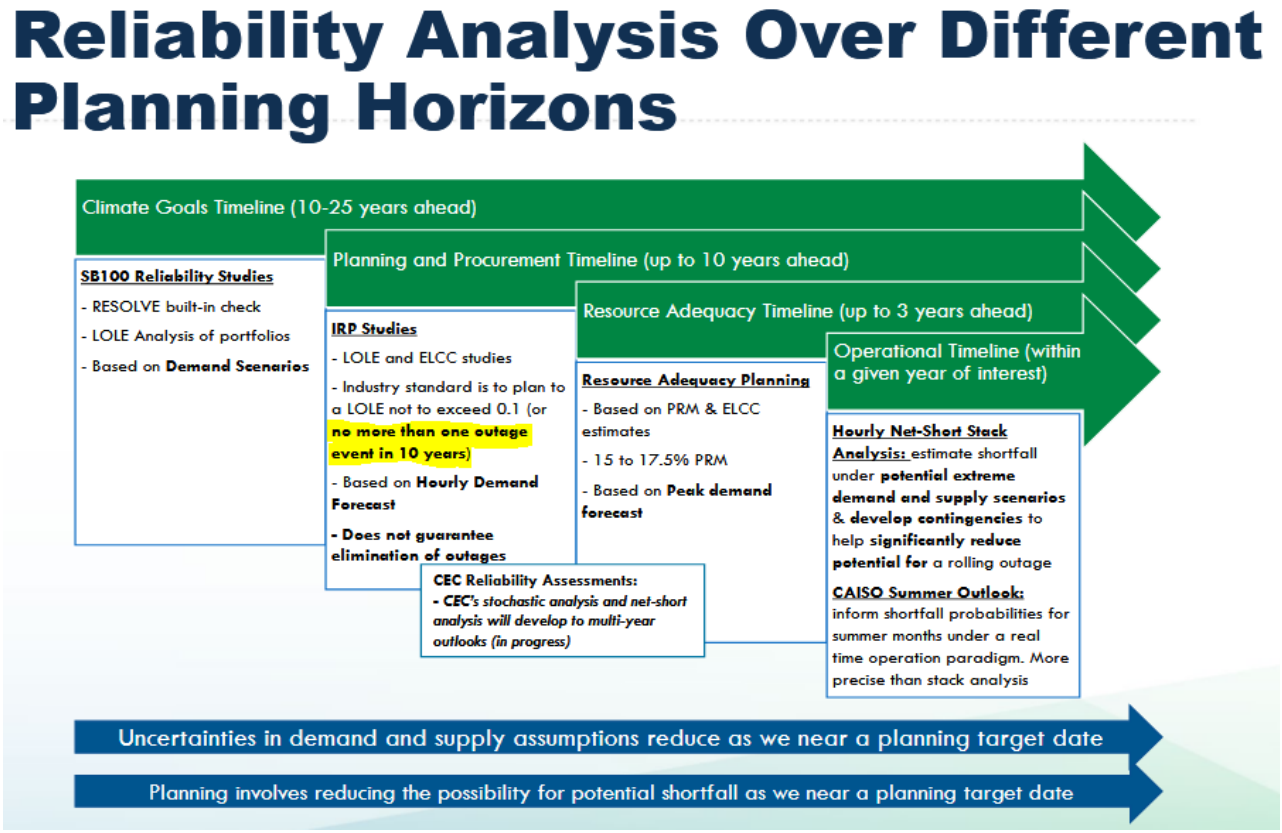
Comment Received From: Steve Uhler
Submitted On: 1/21/2022
Docket Number: 21-ESR-01

ESR-21-01 Questions about analysis methods

Additional submitted attachment is included below.

ESR-21-01 Questions about analysis methods

Please provide the logic and computational methods for loss of load expectation (LOLE) used in the reliability analysis. Based on the slide below from the January 14, 2022 presentation, you are using a industry standard of no more than one outage event in 10 years.



This use of LOLE differs from North American Electric Reliability Corporation (NERC) use of LOLE found on PDF page 236 of Probabilistic_Fundamentals_Workshop_Course_Materials_December_2017-1.pdf.

The reciprocal of the LOLE in years per day is often misinterpreted as a frequency index. As an example, the commonly used LOLE index of 0.1 days/year is often expressed as one day in ten years and extended to mean "once in ten years". This is not a valid extension and has a frequency of load loss connotation that is not present in the LOLE index. In order to illustrate this, a comparison of the LOLE (days/year) and LOLF (occ/year) indices was conducted using the two test systems.

The below NERC equation is found on PDF page 13. Does the equation the Energy Commission is using differ? Please provide the equation.

$$LOLE = \sum_{k=1}^{n} p_k t_k$$

The below NERC definition is found on PDF page 158. Does the definition the Energy Commission is using differ? Please provide the definition.

Loss of Load Expectation (LOLE) is the expected number of hours or days in a given period of time that the load exceeds the available generation.

From what other industry standard does LOLE mean "no more than one outage event in 10 years"?

Please provide the other standard's documentation by filing it in the docket.

Why was the standard the Commission is using chosen over the NERC's LOLE?

In staff presentations filed in the docket, they speak of models as approximations of the system and use simplified assumptions to increase the number of samples evaluated of a increased number of scenarios, in a short time period.

What is the preferred amount of time to run all scenarios?

How long does it take to run all scenarios when not using simplified assumptions?

What are the failure modes that the model assumes?

Does the model report the failure modes for each scenario?

Does the model have a failure mode matrix?

What hardware and software are used to run all scenarios?

Please file in the docket the hardware and modeling software documentation.

Please provide documentation for the methods used in a manner like this Energy Commission document, https://efiling.energy.ca.gov/GetDocument.aspx?tn=62696.

Please see that all results include power plant identification like this Energy Commission document, https://www.energy.ca.gov/sites/default/files/2019-05/2017_Planning_RNS.xlsx

Steve Uhler
sau@wwmpd.com