MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Simpson, Brown, Helgeson, Manning and Mital

FROM: Debra Smith, Assistant General Manager and Frank Lawson, Systems Engineering Supervisor

DATE: February 5, 2013

SUBJECT: Electric Reliability Measure Explanation

Background:

Commissioner Simpson requested an explanation of electric reliability measures for the new EWEB Board members. Currently EWEB measures and reports electric reliability through two industry standard indexes:

1. **System Average Interruption Frequency Index (SAIFI).** This index represents the percent of customers who experience sustained electrical outages on a system-wide basis. It is determined using a simple division calculation as follows:

$$\frac{\textbf{Total number of customers interrupted (numerator)}}{\textbf{Total number of customers (denominator)}}$$

2. **System Average Interruption Duration Index (SAIDI).** This index represents the average length of time, in minutes, that each customer would experience a sustained electrical outage on a system-wide basis. It is determined using a simple division calculation as follows:

$$\frac{\textbf{Minutes of total interruption time (numerator)}}{\textbf{Total number of customers (denominator)}}$$

SAIDI and SAIFI are the most commonly reported reliability indices by utilities, and are calculated using an Institute of Electrical Electronic Engineers (IEEE) standard. These reliability calculations take into account planned outages, and outages caused by large events (e.g. storms). However, they are statistical, and need context. For example, if 20% of a utility's customers experienced 2 outages during a year, the SAIFI index would be 0.40 for that year.

EWEB's reliability indices for 2012 were 0.45 (SAIFI) and 63.3 minutes (SAIDI). These results, while slightly above our 5-year average goal, places EWEB as one of the most reliable in the northwest. As a comparison, the northwest performance is higher than the national average of 1.1 (SAIFI) and 90 minutes (SAIFI).

EWEB's reliability performance is driven by both design and maintenance practices. Our system is designed with a redundantly looped transmission system, and feeders that have alternate sources. This allows EWEB to energize lines from multiple directions; reducing downtime if an outage does occur (reduces SAIDI). We also have a proactive tree-trimming program, which prevents outages (reducing SAIFI). Overall, EWEB has invested in assets and practices that place us high on the reliability scale, and we will continue to monitor these, and other reliability indices, in the future.

Requested Board Action:

None at this time.