Reviewer 2

This paper presents the Elemental platform—a low-cost open-source hardware and software to provide a comprehensive building monitoring solution. Many advantages are found from the work, however, it can be improved to enhance the quality and comparative study. For example, how the cost of proposed hardware (and/or including software)? How is it compared to the existing solution? The other concern is about the performance of network connecting a large number of nodes in term of energy, delay when deploying routing protocols?

Author response: We appreciate the review and constructive comments.

First, we have now added a cost comparison, comparing to an example of a few existing commercially available wireless solutions (see Table 3). We added the following text as well: “For comparison, Table 3 lists total kit costs for deploying Elemental wireless sensors compared to some existing commercially available solutions, using a typical package of 3-5 environmental sensors and a single gateway. Note that total kit costs for both the commercial solutions and an Elemental package will vary based on the quantity of sensors or accessories included. The total kit costs for deploying a simple 5 node wireless temperature, humidity, and light package with a gateway is $120 USD for the Elemental platform, while similar commercial packages range from approximately $500 to $1900 USD. In addition to costs, other differences to consider include major differences in wireless communication protocols, power requirements, and availability of both local and cloud data storage/access.”

Second, for concerns regarding large numbers of nodes, we had previously addressed in the text power draw and delay issues with large numbers of nodes (power on line 128 and in the paragraph beginning on line 201 in the original submission, and delay on lines 188 and 215-217). However, we have not deliberately pushed the network to its limits. Yet, currently, we have over 75 nodes deployed in the same campus building described in the paper, and we have no loss of data packets from the majority of sensors except some from those farthest away from the gateway with numerous walls in between and/or from those closest to exterior walls where extreme temperature changes occur during some very cold days in winter (the building is old—brick and uninsulated, and these losses did not occur in non-winter seasons). In good weather conditions, we have carried sensors as far as the next adjacent building. Fortunately, if delays or dropped data are experienced in a setup, more backhauls can easily be added.

We have now added explicit mention of these issues in the text, primarily in section 2.2 and in section 4.3.