

TO: Gary Werner, CRANES (Capital Region Advocacy Network for Environmental Sustainability)
FROM: Michael Barnett
DATE: January 15, 2019
SUBJECT: Consultant Response to CRANES 100% Renewable Report Comments

Dear Mr. Gary Werner,

On behalf of the consultant team that developed the 100% Renewable Energy Report, I wanted to thank you, Jon and the entire CRANES organization for submitting your recommendations to the Sustainable Madison Committee. We hope that our responses in this letter will address the comments presented in your review comments dated December 12th, 2018.

Page 2, Goals:

Comment: Eschew new fossil gas generation, new nuclear generation and close existing nuclear generation

Response: The focus of this report was to develop scenarios for the city operations to be powered 100% by renewable energy and action items for city officials to provide leadership for the larger community. City operations currently do not include plans for fossil gas or new or existing nuclear generation. We note that city officials or other stakeholders could raise these points with fossil or nuclear or generators. We included Section 4.2.4 Promote Clean Energy Policies for Wisconsin (page 61 of the document and page 38 of the pdf) which includes information about how stakeholders could advocate for policies such as those outlined in your letter.

Comment: 100% electricity forecast generation needs by 2050 were it not for sunk fossil fuel infrastructure costs

Response: In section 3.2.4 (page 44 of the document, page 29 of the pdf) we note that local utilities have publicly committed to reduce carbon emissions by 80% by 2050. This is the best information available to us about the utilities stated intentions at this time. As we write in the report, we expect that the policies and actions in the report will evolve over time as national, state and local energy policy continued to make rapid changes in this area.

Comment: Take the lead on offsetting historic emissions, setting an example for WI and the world

Response: The current scenarios do not include historic emissions or options to offset historic emissions. The consulting team is not aware of any city 100% renewable energy plan that includes historic emissions. SMC or policy makers could request information about this option from CRANES or ask the consulting team to learn more about it in subsequent research.

Page 2, Economic Analysis:

Comment: Report lacks a 360-degree economic analysis with full impacts on households

Response: Yes, a 360-degree economic analysis was not the focus of the report and that work was not completed as part of the analysis. Impacts on household budgets for energy, transportation and health expenditures would be good information to know and would likely bolster the case for Scenario 3. In the report, we included a reference to potential societal co-benefits, including public health using tools such as the EPA's Avert/COBRA tools and working with UW-Madison's Global Health Institute and other local experts to continue identify societal co-benefits.

Comment: Wisconsin's economy leaks \$16 billion/year for purchase of fossil fuels

Response: We will include a reference to fossil fuel leakage out of state (we note we have cited the same report on page 40 of the document, page 28 of pdf, but in a different context).

Page 2, Conservation:

Comment: There needs to be a goal and metrics for reduction in energy use overall, not just carbon emissions. The City should aim for a 50% reduction in energy use overall for city ops.

Response: In regard to building energy consumption and water pumping energy consumption, figure 3-2 on page 35 of the report targets a 1.25% annual energy reduction target. Extrapolating this number out to 2050, yields a target energy reduction of 40% by 2050, when using 2010 as a baseline. As an energy consultant, I can appreciate the challenge with achieving these goals. City Operations has been actively implementing energy efficiency strategies, while at the same time growing its footprint and serving more people in the community. We feel that the 1.25% annual energy reduction is quite aggressive, but technically feasible based on the measures we detailed in the report.

Comment: The city should incent decarbonization of its supply chains. It could advantage suppliers with low/no carbon profiles. The City could initiate an internal carbon fee.

Response: Yes, this is an option for city policy makers and we can include it in Section 4.

Page 3, RECs:

Comment: Maximizing conservation efforts reduces the need for energy.

Response: Agreed, we have included similar information in the report in Section 1.2.1 Energy Efficiency (page 3 of the document, page 9 of the pdf) and in the three principles of the report, found on page 13 of the document (page 14 of the pdf.)

Comment: Use of RECs to achieve the 100% RE goal should be limited insofar as possible.

Response: The three principles of the report, found on page 13 of the document (page 14 of the pdf) include a similar hierarchy – efficiency, renewable energy, RECs as a bridge strategy.

Comment: include a comparative economic impact of siting RE facilities within the city limits or county bounds versus less geographically proximate locations.

Response: Such a study would be interesting but was not part of the focus of the report. Were the city to proceed with further considering an off-site solar location, city officials could consider the possibility of conducting such a study at that time.

In Section 3.2, the report details over 7MW of behind the meter solar that the City can install on or adjacent to their buildings. This would meet approximately 17% of their current electrical needs. There are also various sites within the city boundaries that are feasible to utilize for off-site solar facilities. However, wind and solar development sites within Dane County are somewhat limited due to the high cost of land and siting issues. SMC determined that REC's purchased from facilities within Wisconsin, that also provide additionality, would be a reasonable goal. Madison has been an economic engine for the state and expanding these financial benefits to rural areas outside of Dane County was determined to be a positive outcome.

Page 4, Communications and Messaging:

Comment: Use evidence-based reasons to change the report's terminology to better inform both city elected officials and our community.

Response: For the report, we utilized the most common parlance that was most easily understood by Madison's residents and think it would be confusing to people to include the suggested terminology in the report or to advocate for its use in the county's strategic climate action plan.

Page 4, Miscellaneous:

Comment: To strengthen community resiliency, distributed renewable energy generation should be prioritized, transmission/distribution undergrounded, and power transformers/sub-stations hardened.

Response: Thank you, these are good examples, and we can include these examples in Section 4.

Comment: The report should be amended to include additional efforts, urban forest expansion, energy transmission and distribution undergrounding, fare free transit, Living Building demonstration project, eco-village demonstration project, albedo reduction through road and rooftop painting.

Response: Thank you, we can add this information into the report.

Comment: The report should discuss why city employee transportation and landfill emissions is omitted or accounted for elsewhere such as the Dane County climate action plan.

Response: Regarding the City employee transportation and landfill emissions, these emissions are included in the City Operation carbon inventory but were excluded from the pie charts on page A-4. City employee transportation emissions is addressed in the Mobility for Madison plan and Imagine Madison plan and was not a main focus of this report; however, we included suggestions to reduce employee emissions in Section 4.1.14 (page 57 of the document, page 36 of the pdf).

For landfill emissions, we reviewed potential strategies with the City of Madison hydrologist for reducing methane emissions from retired City landfills but could not identify strategies that were technically feasible. Looking to the future, the City and County are actively working on digesters and other

technologies that would reduce the amount of biomass materials deposited in the County's existing landfill, and therefore reduce the amount of non-capturable methane emissions released from existing landfills.

Please contact us with any additional questions or clarifications.

Sincerely,

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