



June 16, 2022

Anthony Doan
Council Chair
Washington State Building Code Council
1500 Jefferson Street SO
PO Box 41449
Olympia WA 98504

Regarding: WAPUDA Petition for Reconsideration

Dear Council Chair Doan,

The Washington Solar Energy Industries Association represents 6,000 employees statewide installing and maintaining over 315 MW of Distributed Energy Resources statewide. Our representatives on the Technical Advisory Group, Gavin Tenold and Jon Lang, tracked proposal 21-GP1-078 from its draft form, during technical review by the TAG, in breakout sessions between TAG members and before Council. I would like to offer this testimony in opposition of Mr. Nicolas Garcia's petition.

In his summary statement, Mr. Garcia writes that the "only "documentation" available to council members was a profoundly flawed and biased economic analysis¹ [sic]". Claims such as this ignore the thorough review that the TAG, TAG Chair, the Proponent, WASEIA, the Workgroup on Economic Impact and Council participated in.

This proposal was first heard by the TAG on August 23rd, 2021¹ in a conversation lasting roughly 35 minutes. Multiple TAG members including the representatives from Energy Modelers and Commercial Contractors expressed their concern for the preliminary economic analysis prepared by the Proponent. The Proposal was tabled, and sent back to the Proponents for a work on their economic analysis.

The following day the Proponents, the TAG Chair, Mr. Garcia, multiple interested TAG members and WASEIA participated in another 30 minute discussion specifically to review this matter. After a review of the question of capital costs where WASEIA provided documentation of a statewide survey of its members commercial rooftop installation prices, the preliminary cost analysis' use of the retail rate dominated the conversation. The use of the retail rate specified by the EIA was concluded by the members of the TAG in attendance to be the proper figure because the amount of energy produced by such small photovoltaic systems is so far below the building's base load that the energy would be consumed onsite.

¹ <https://www.youtube.com/watch?v=tx1kB2iAGs0> (discussion between 05:11:54 and 05:38.25)

This conclusion can be validated quite easily as shown on the table below based on the U.S. Department of Energy figures showing the present average electrical consumption of a commercial building is 22.5 kWh/sq ft. Solar installations under the proposal would simply replace a portion of the building's expected electrical load and average the retail rate for electricity is therefore the correct valuation for the energy produced by the solar array as documented in the proposal, and the preliminary cost effectiveness² study performed by Mr. Matthew Tyler of the Pacific Northwest National Laboratory for the Council's consideration.

Prototype	Floor Area (Sq Ft)	kWh Usage/Demand per DOE	kWh Generation under proposal	Percentage of Load Offset
Large Office	498,000	11,205,000	273,900	2
Medium Office	53,600	1,206,000	29,480	2
Small Office	5,500	123,750	NA	NA
Standalone Retail	24,700	568,100	13,585	2
Stripmall Retail	22,500	517,500	12,375	2
Primary School	73,960	1,109,400	40,678	4
Secondary School	210,900	3,163,500	115,995	4
Warehouse	49,495	445,455	27,222	6

Mr. Garcia continues to argue against this proposal despite these facts and reasons that Council should now use a new cost analysis, one that recovers utility costs as if the utilities were to own the systems, and prices electricity on an hour by hour basis. This is not a reasonable conclusion if the electricity is consumed on site. *It would seem* that Mr. Garcia must be arguing against installations of solar on new construction that could voluntarily exceed this modest new proposed code minimum, rather than arguing against the proposal itself.

The cost-effectiveness study reviewed by Council does, as pointed out by Mr. Garcia, not directly state that "degradation" is being considered. WASEIA would like to point out that this value is captured by the high (14%) system loss. Typical commercial system losses for Washington State in commercial applications are closer to 5-7% depending on climate. This accounts for a difference of 7%-9% lower expectation in year 1 than is typical in the industry. Additionally, as Mr. Garcia points out, PV systems do degrade in output at a rate of 0.25% to 0.5% per year. When considering that the rate of inflation is (in normal circumstances) expected to be 2% per year, it's easy to conclude that inflation outpaces PV degradation by a considerable margin. Between high system losses, and inflation, the cost effectiveness study considered by Council would in fact seem to be undervaluing the solar array.

Contrary to Mr. Garcia's contention, maintenance and replacement costs are indeed included in the cost effectiveness study. While the value imputed is not available at this time, WASEIA's experience has been that this is a very low figure, with solar panels expected to last 40 years (typical warranty period of 25 years), and inverters expected to last 20 years (typical warranty period of 10 years).

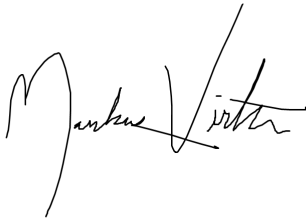
² <https://sbcc.wa.gov/sites/default/files/2022-03/WA%20renewables%20cost-effectiveness%20memo.pdf>

Two LCC scenarios⁴ are analyzed with the inputs shown in Table 3 and the differences are outlined here:

- Scenario 1: represents publicly-owned buildings, considers initial costs, energy costs, maintenance costs, and replacement costs without borrowing or taxes. These LCC results per square foot are shown in Table 4 by building type and climate zone. The proposal is considered cost-effective as all values are positive in this scenario.
- Scenario 2: represents privately-owned buildings, adds borrowing costs (financing of the incremental first costs) and tax impacts (such as loan interest and depreciation deductions using corporate tax rates). These LCC results per square foot are shown in Table 5 by building type and climate zone. The proposal is considered cost-effective as all values are positive in this scenario.

I want to conclude by recalling that, as discussed on multiple occasions in the TAG, our state cannot likely reach its statutory goals without the inclusion of PV systems. This proposal's small incremental increase will go a long way to solidifying our State's workforce should future code cycles choose to increase the amounts required by the Energy Code. Its adoption by council was done after thorough process, deliberation, **and its adoption was reasonable.**

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "Markus Virta". The signature is fluid and cursive, with a large initial "M" and a long, sweeping underline.

Markus Virta
President of the Board
Washington Solar Energy Industries Association

Cc: Bill Will, WASEIA
WASEIA Policy Committee
Stoyan Bumbalov, SBCC