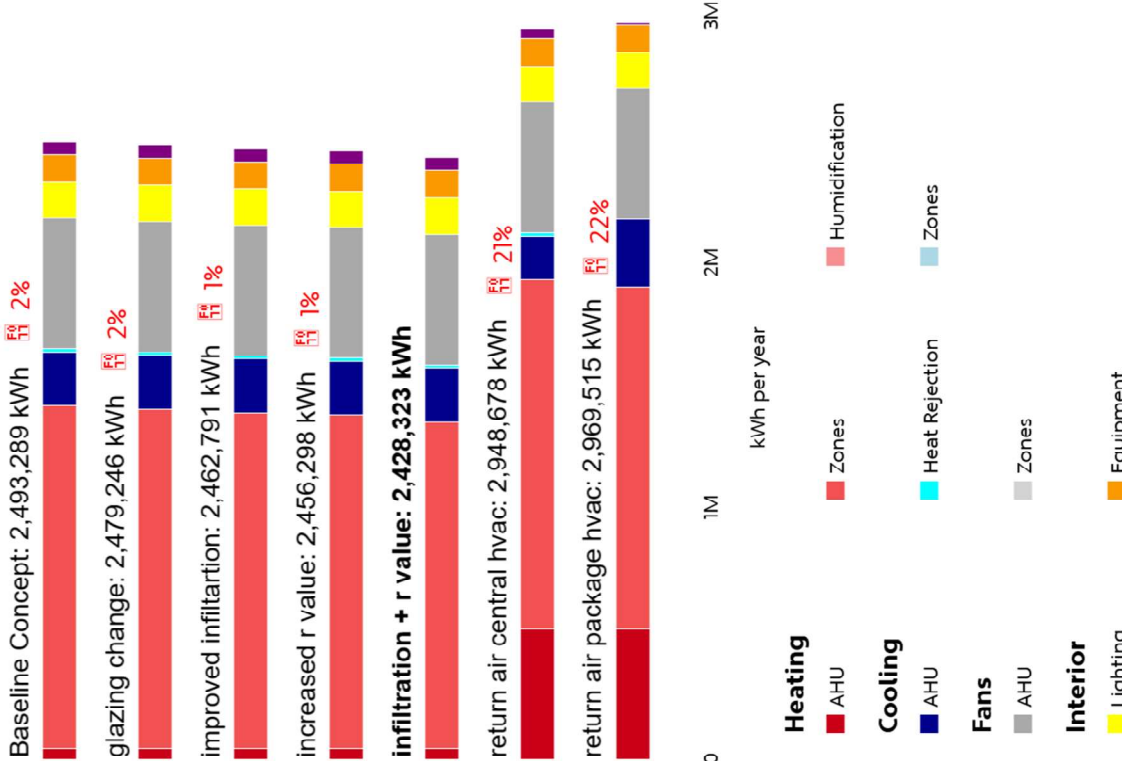


MEASURABLE IMPACTS AND OUTCOMES

In investigating the measurable impacts, I first looked at the building construction. Through a series of simulations compared on Sefaira, I discovered that with my window to wall ratio at only 0.16, the higher rated windows make very little impact on the performance of the building. On the other hand, both an increased r-value in the wall construction and reduce the infiltration rate of the building envelope lead to a more significant reduction on the annual energy use, which is then further reduced when both are put into place. Furthermore, I was looking at the environmental impacts of the different HVAC system types. I already knew I was using a VAV system, but I found that a VAV 100% OA Central Plant has a 35% lower annual energy usage than a VAV Return Air Central Plant or VAV Return Air Package.

Annual Energy Use - Comparison



		AHU Design Airflow	Cooling Equipment ...	EUI	Annual Energy Cost
<div>Baseline Concept</div> <div>27,696 ft²</div> <div><div>Clone</div><div>Del</div><div>Export Idf</div></div>	HVAC System Type	36,447 (cfm)	231.1 ton	307 kBtu/ft ² ·yr	\$136,792
<div>glazing change</div>	VAV - 100% OA Central Plant	36,447	231.1	0%	\$136,425
<div>improved infiltration</div>	VAV - 100% OA Central Plant	36,447	231.8	0%	\$135,808
<div>increased r value</div>	VAV - 100% OA Central Plant	36,447	231.0	0%	\$135,830
<div>infiltration + r value</div>	VAV - 100% OA Central Plant	36,447	230.3	0%	\$135,079
<div>return air central hvac</div>	VAV - Return Air Central Plant	37,173	313.8	1%	\$144,967
<div>return air package hvac</div>	VAV - Return Air Package	38,038	313.8	4%	\$149,039