

# NET ZERO EMERGING LEADERS INTERNSHIP

APRIL 4, 2024



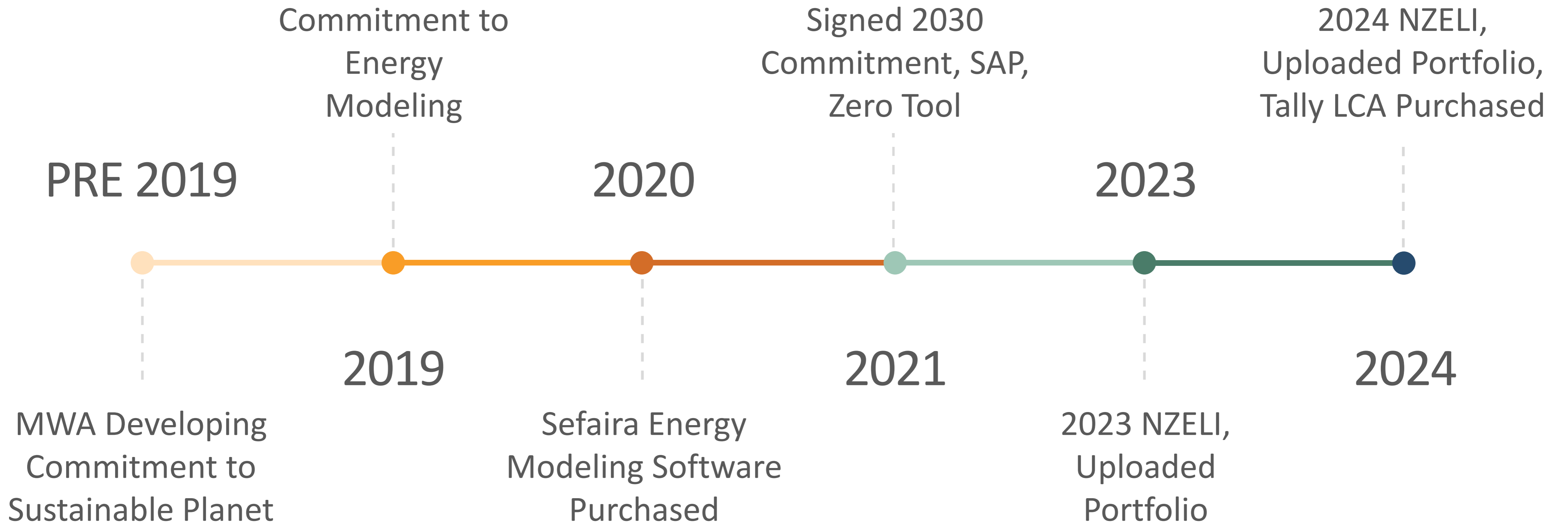
# INTRODUCTION

University of Oregon – 5<sup>th</sup> Year Undergraduate

MWA Sustainability Studio – Architectural Intern

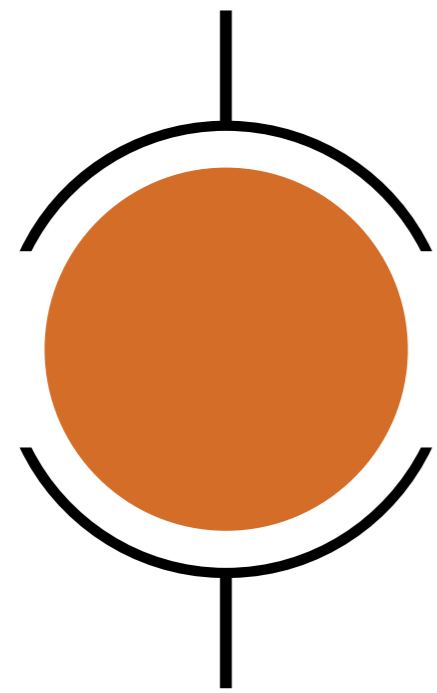
*“A society in which all benefit from beautiful and healthy architecture.”*

# MWA'S 2030 TIMELINE



# HIGHLIGHTED PROJECTS

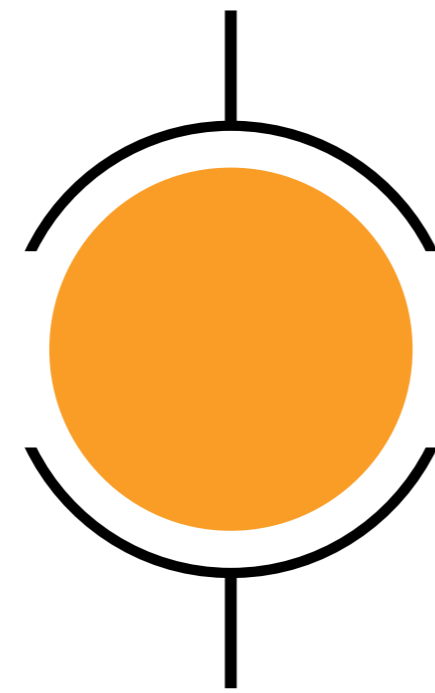
BULL RUN  
FILTRATION



17,797 ft<sup>2</sup>

Portland, OR

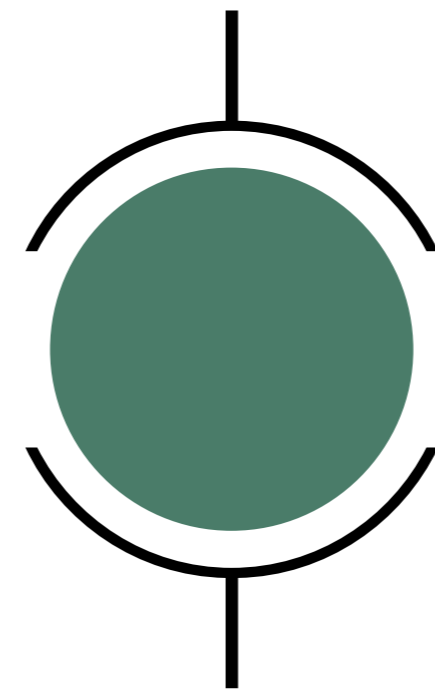
WEST POWELL  
APARTMENTS



33,674 ft<sup>2</sup>

Gresham, OR

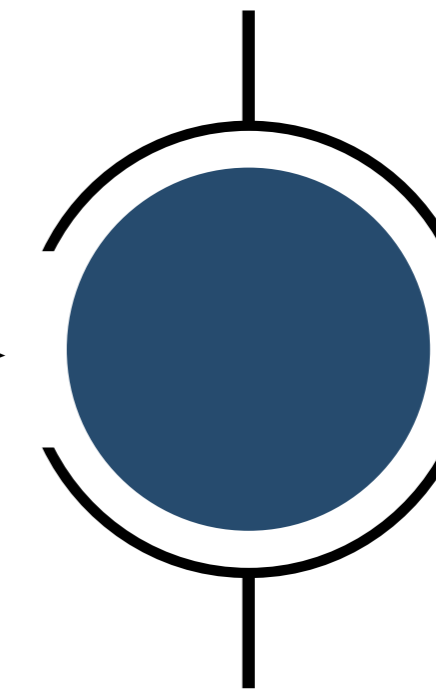
DKA SENIOR  
HOUSING



82,989 ft<sup>2</sup>

Oakland, CA

PENDLETON BUS  
BARN



2,639 ft<sup>2</sup>

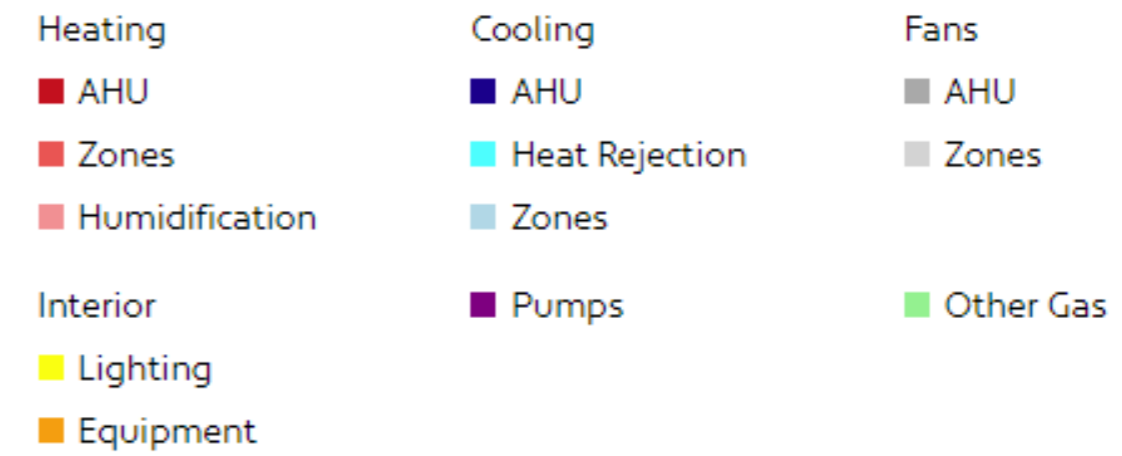
Pendleton, OR





# ENERGY MODELING - SEFAIRA

- i. Simplify model
- ii. Tag all elements – verify components
- iii. Upload to Sefaira

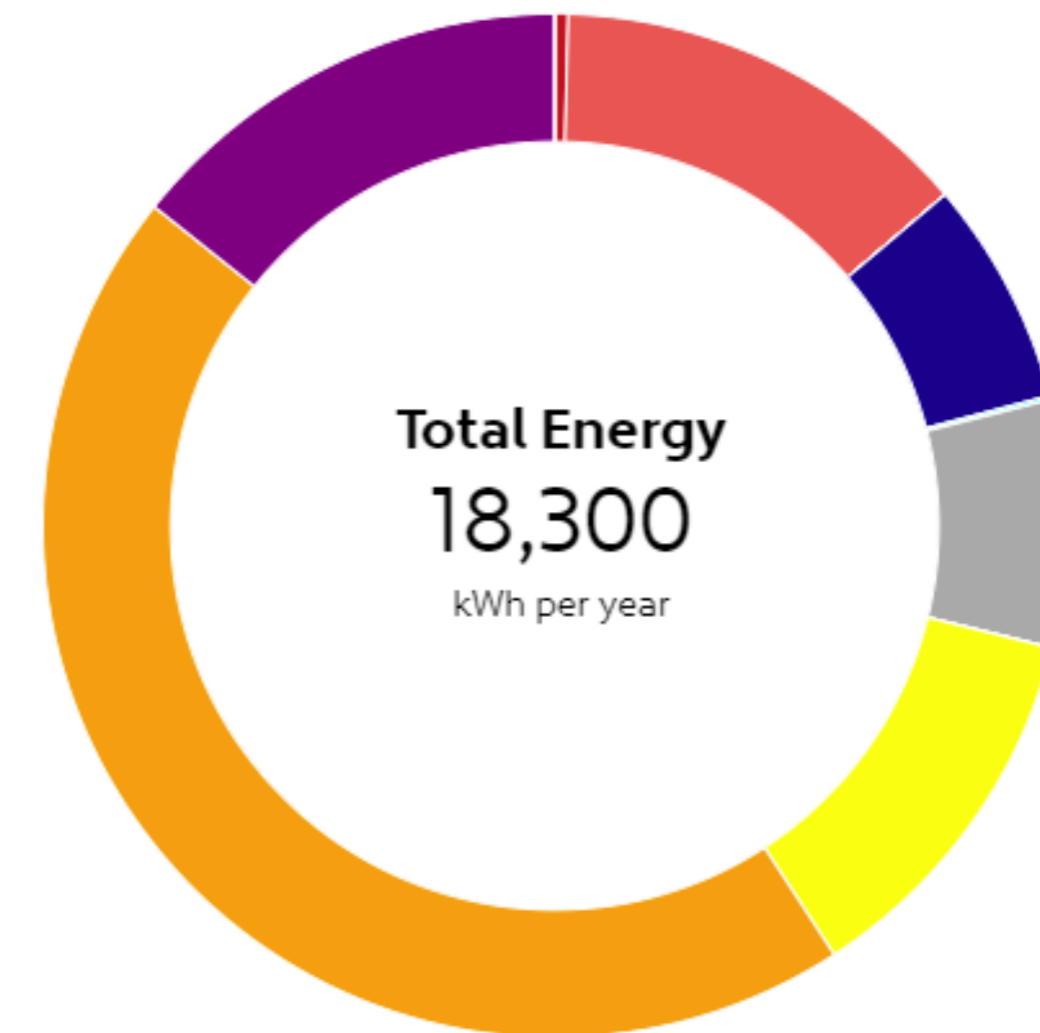


**Baseline Concept**  
2,639 ft<sup>2</sup>

HVAC System Type  
VAV - 100% OA Central Plant

Clone Del Export Idf

AHU Design Airflow	Cooling Equipment ...	EUI	Annual Energy Cost
2,395 (cfm)	6.0 ton	24 kBTU/ft <sup>2</sup> /yr	\$1,487



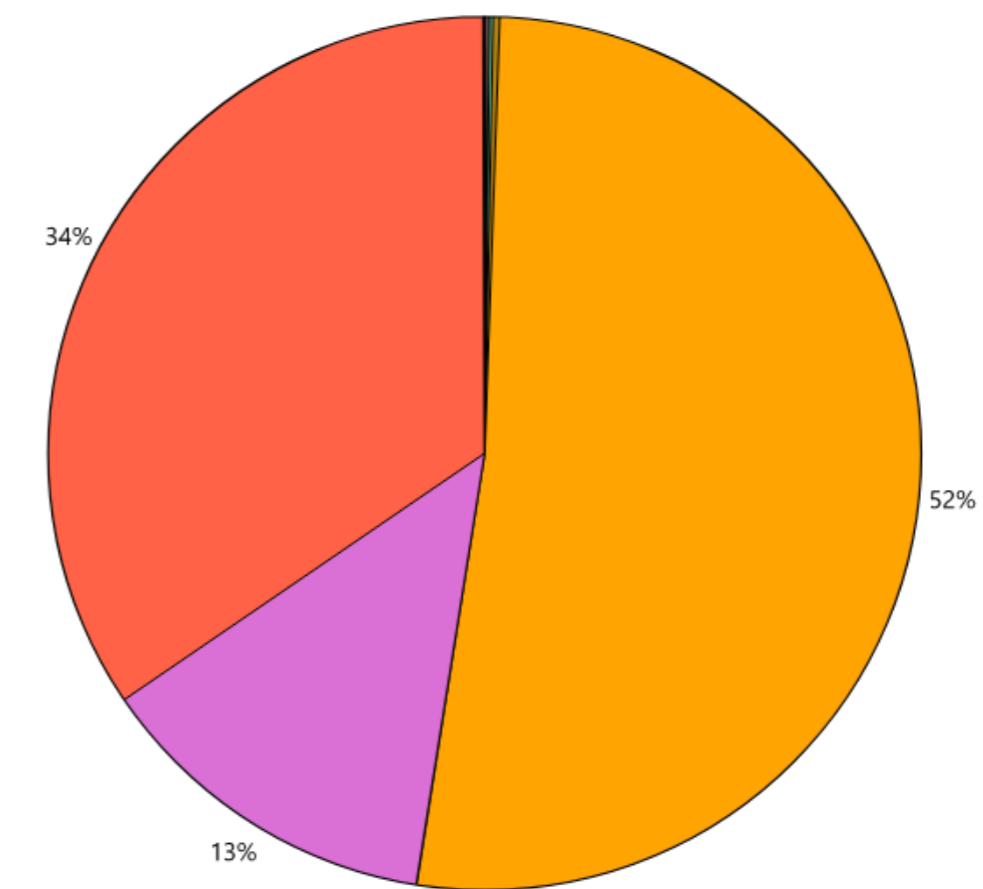
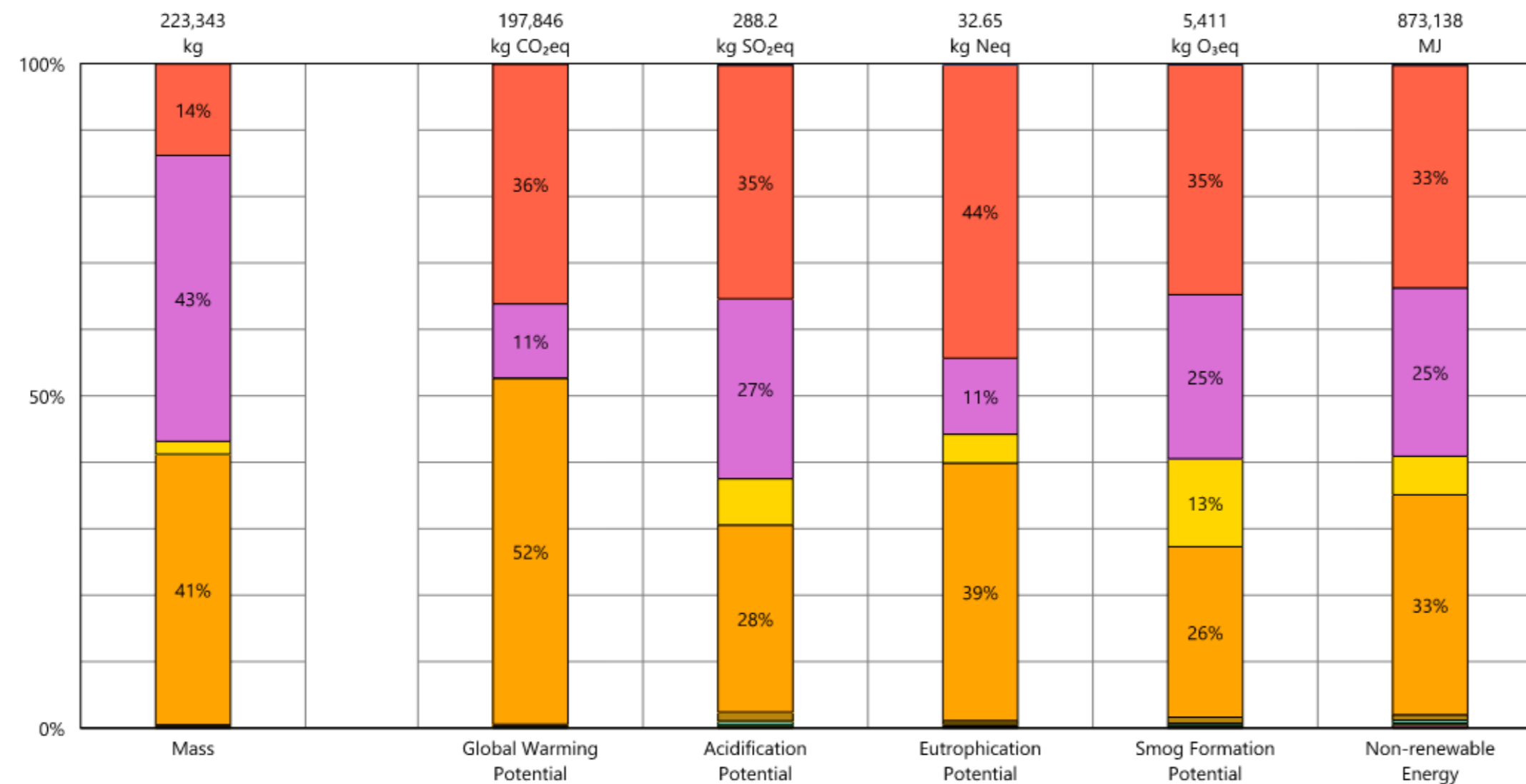
# CARBON TRACKING – TALLY LCA

- i. Simplify model
- ii. Verify components – input all material information
- iii. Run Tally Life Cycle Analysis report

## Revit Categories

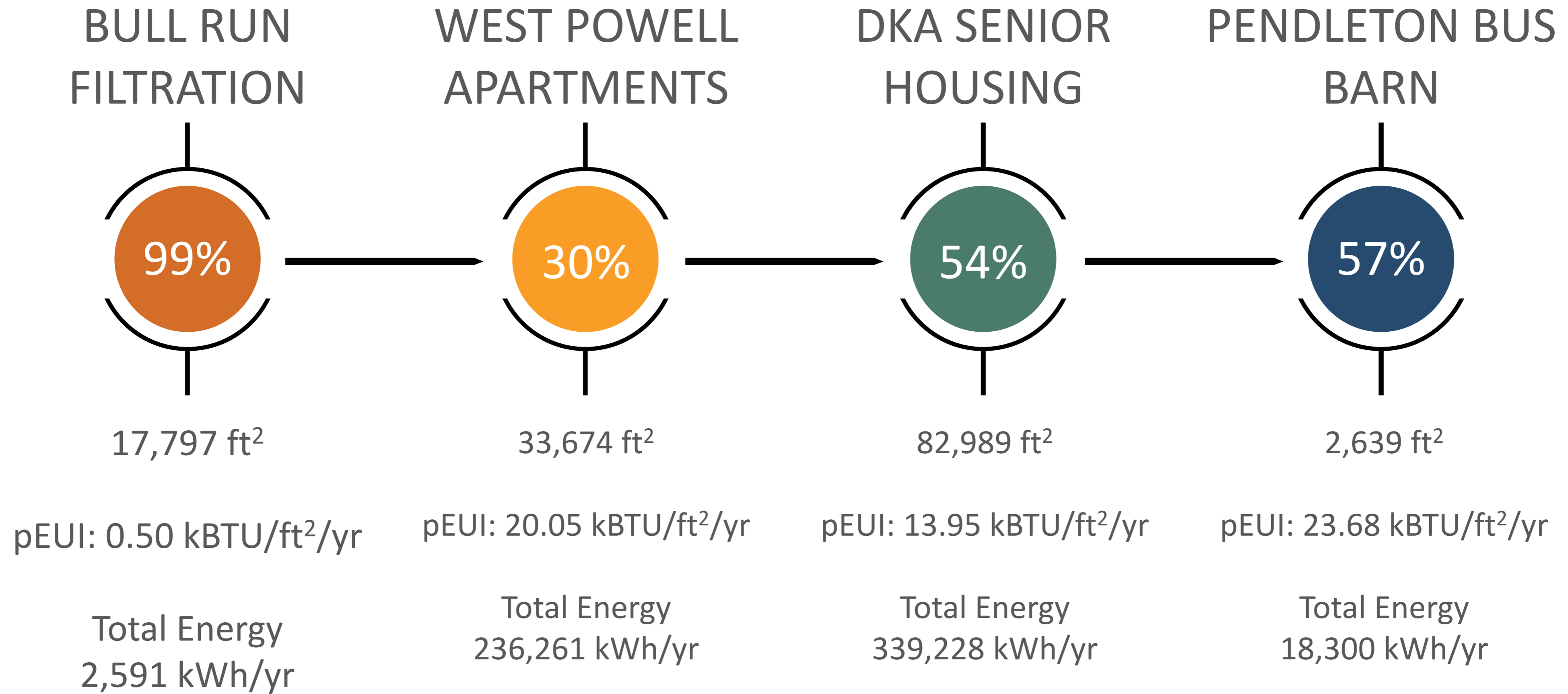
- Ceilings
- Curtainwall Mullions
- Curtainwall Panels
- Doors
- Floors
- Roofs
- Structure
- Walls
- Windows

## Results per Revit Category



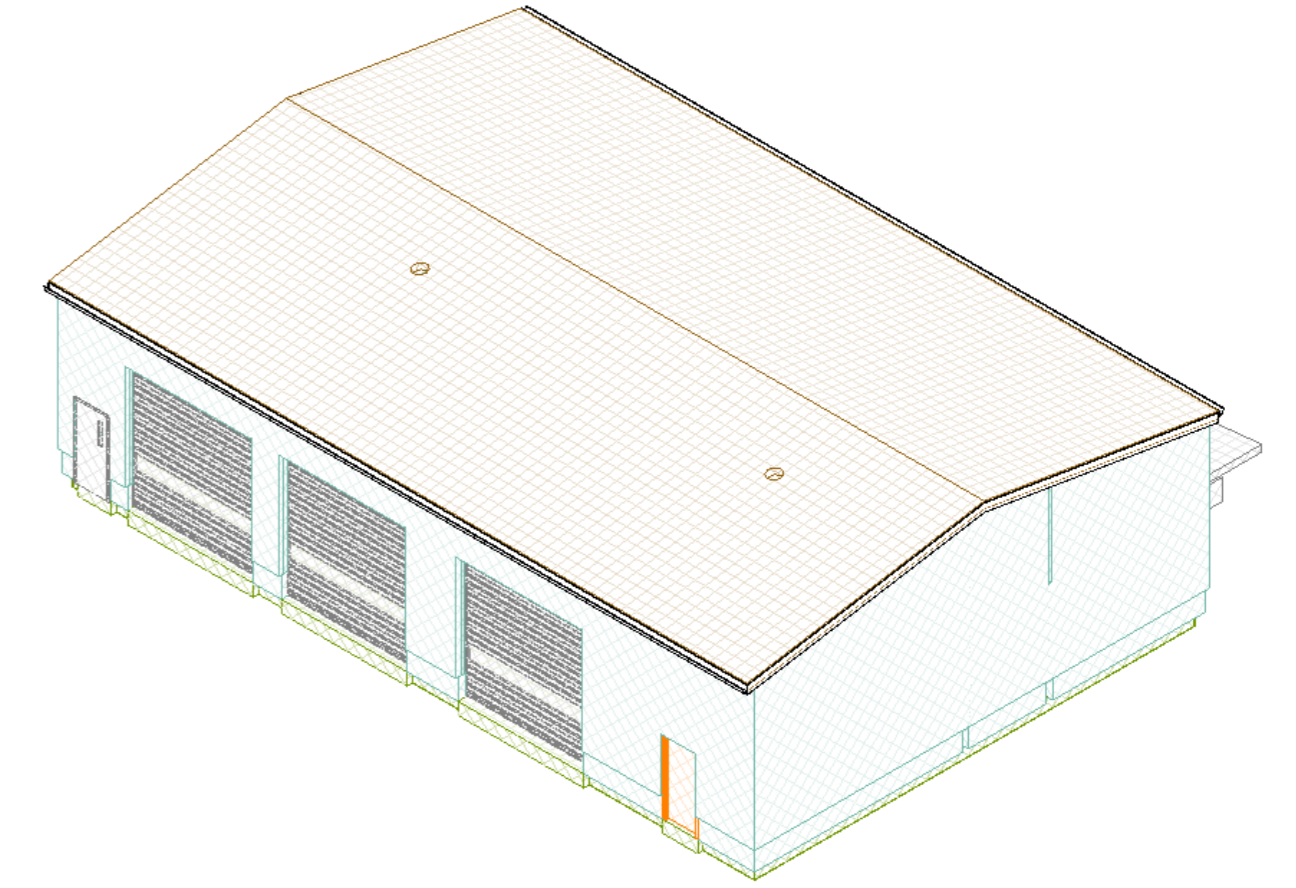
Global Warming Potential

# RESEARCH ANALYSIS



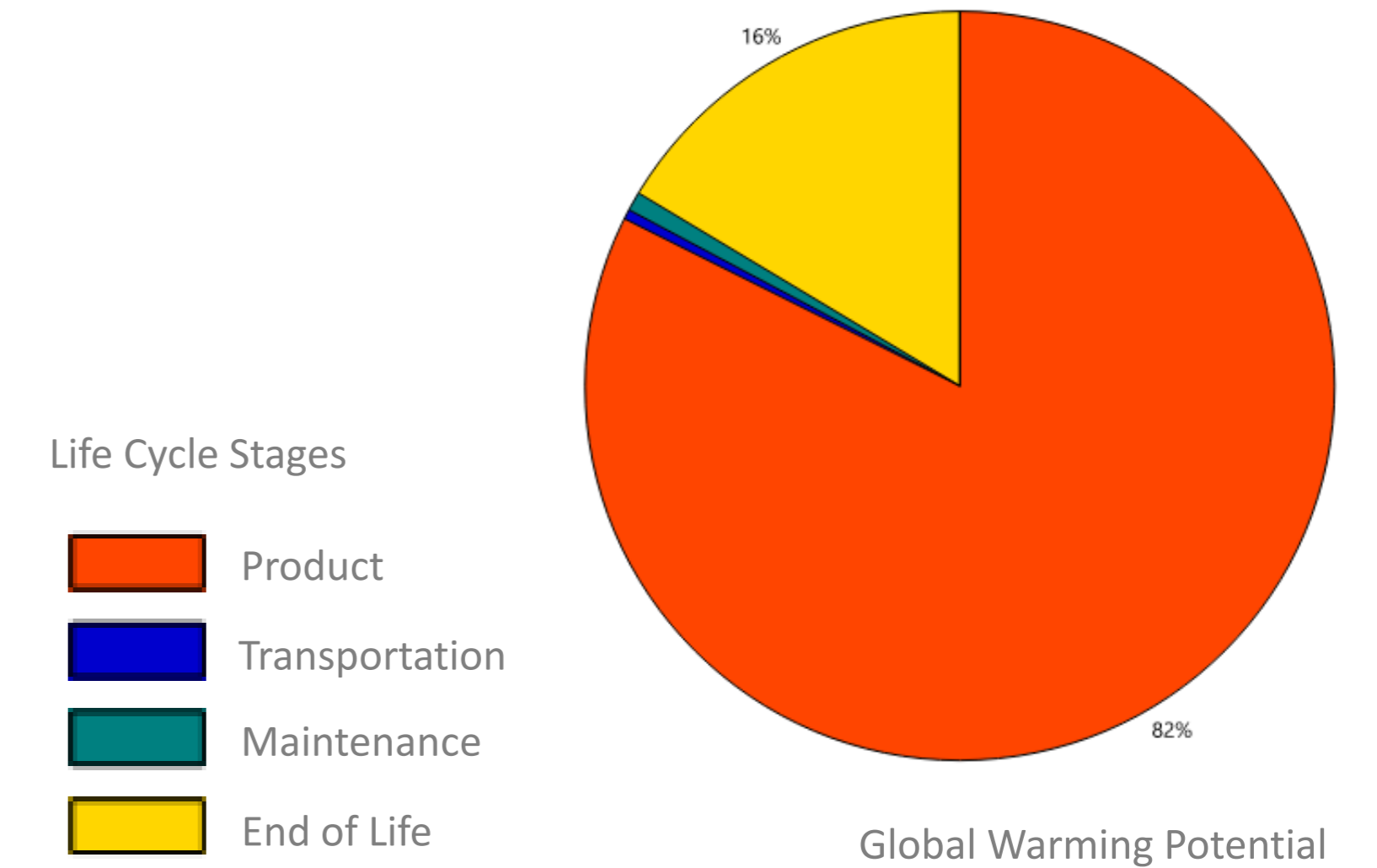
# RESEARCH ANALYSIS

- Average reduction: 49.7%
- Energy conservation
- Renewable energy
- Track project massing/material updates



Pendleton Bus Barn – Sefaira Analysis View

Environmental Impact Totals	Product Stage [A1-A3]	Construction Stage [A4]	Use Stage [B2-B5]	End of Life Stage [C2-C4]	Module D [D]
Global Warming (kg CO <sub>2</sub> eq)	172,097	883.5	1,709	34,255	-11,098
Acidification (kg SO <sub>2</sub> eq)	283.5	4.094	33.31	34.73	-67.4
Eutrophication (kg Neq)	27.44	0.3333	3.534	2.803	-1.46
Smog Formation (kg O <sub>3</sub> eq)	4,466	135.3	923.8	463.3	-578
Ozone Depletion (kg CFC-11eq)	0.08435	3.026E-011	6.562E-007	1.729E-005	3.239E-005
Primary Energy (MJ)	1,022,281	12,848	157,574	76,009	-213,764
Non-renewable Energy (MJ)	843,935	12,540	92,245	71,141	-146,723
Renewable Energy (MJ)	177,702	310.7	65,223	4,947	-66,925





# MOVING FORWARD

- Continue energy modeling at every stage
- Create a checklist for each stage of a project
  - When to work on energy modeling
  - When to work on carbon tracking
- Use the Tally design options comparison tool for material decisions in early stages
- Incorporate Tally Life Cycle Assessment into more projects
  - Efficient buildings from the early stages



West Powell Apartments



Pendleton Bus Barn





THANK YOU!