Housing Authority
of the City of El Paso

# Innovative Design in Affordable Housing

WORKSHOP**8**

# HACEP goals for the paisano senior housing development

create a **spectacular**, international-quality integrated housing development

implement the latest and highest quality **sustainable** design practices

design cutting-edge social housing using **bold** and **contemporary**, innovative and exciting designs

provide a solution which demonstrates the **practicalities** of developing in a sustainable and low carbon manner

deliver **innovative** thinking within technical and financial constraints

affordable housing with a construction **budget** $11,000,000 + for Phase I

# HACEP development requirements for 4.2 acres on E. Paisano Dr.

**73 units** of accessible, livable and sustainable elderly housing

**accessory uses** – office, security, community room(s), laundry room, maintenance, etc

**windmill** readily visible from a distance

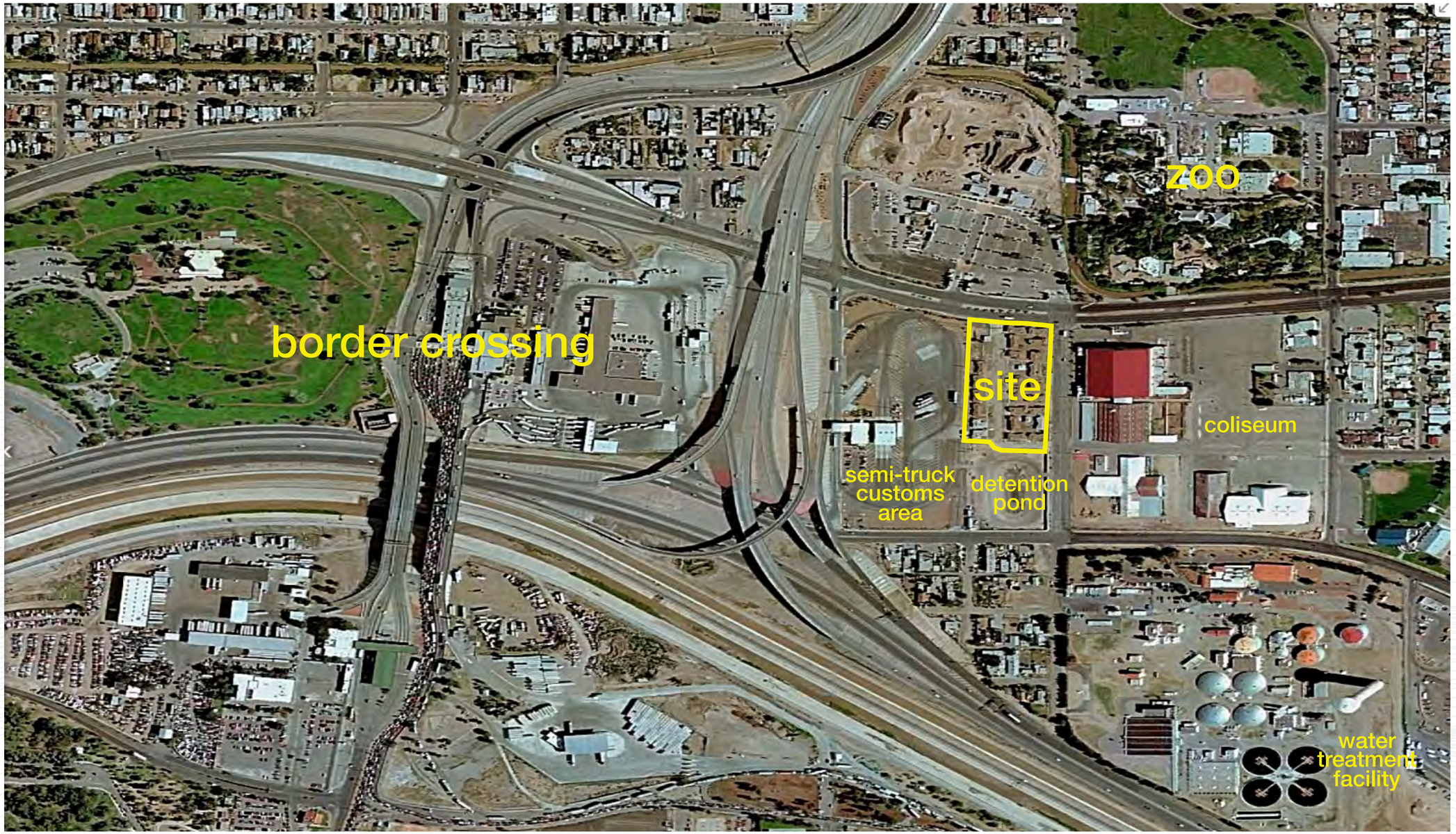
decorative **LED lighting** which is attractive on the outside of the building

**LEED Platinum** and

**Enterprise Green Communities** Certification

**Net-zero** energy consumption: generation = consumption

# site context



# site plan

# flats: building B

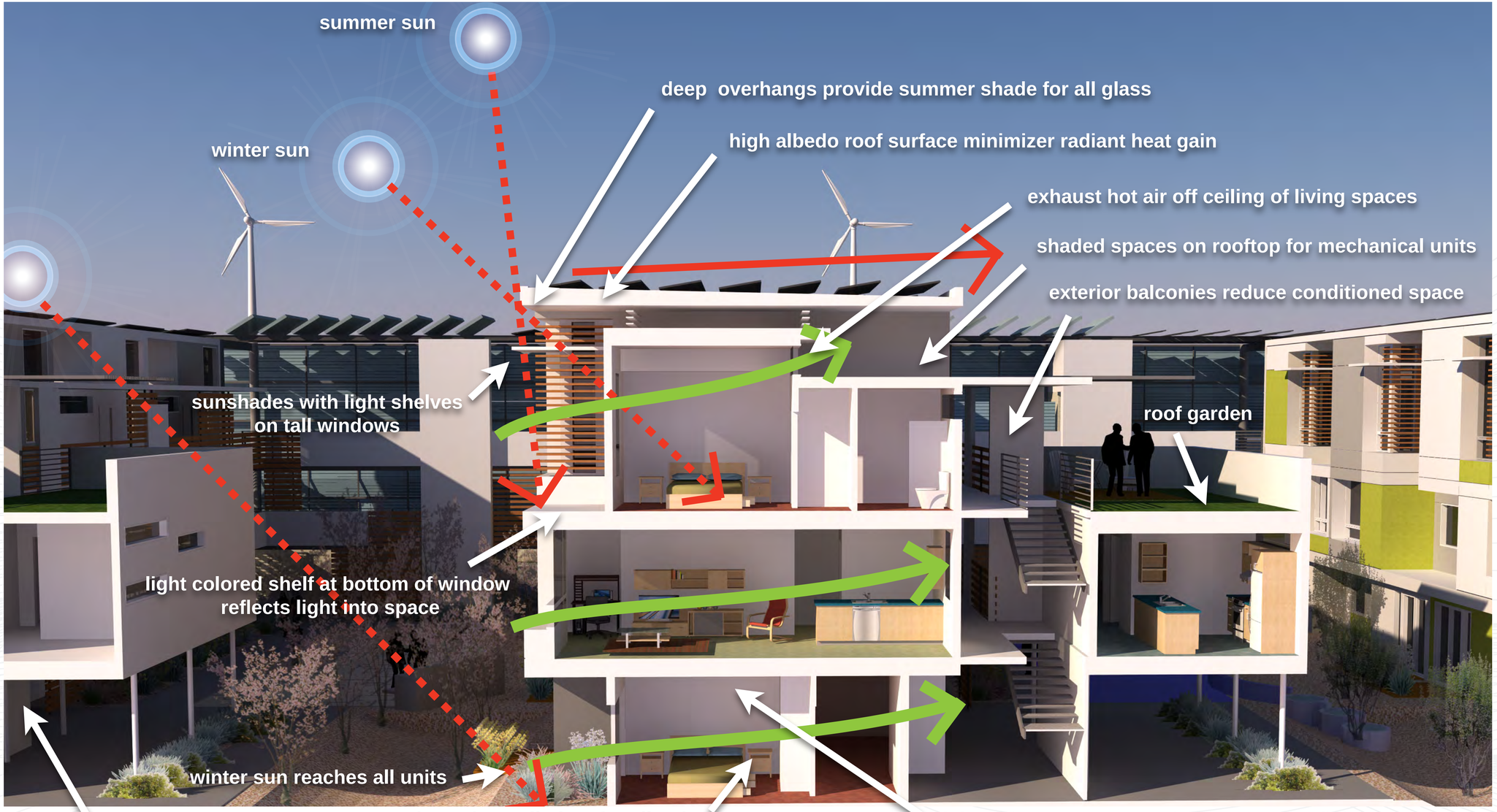
distinctive color on each flat

sunshade/light shelves used throughout

ground floor units

# flats: building B

# optimal passive solar strategies



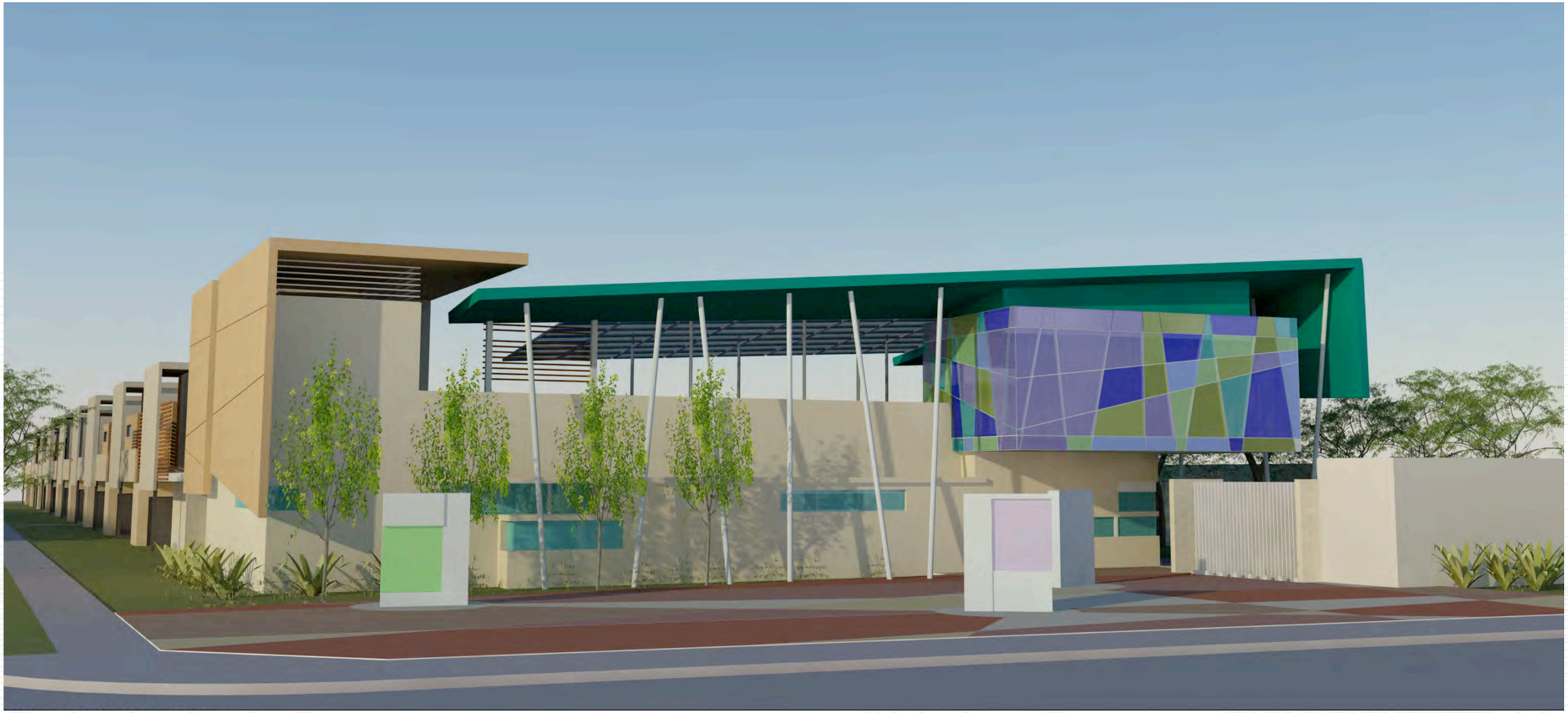
# canopy wall

# optimal passive solar strategies

# Boone Avenue residences

# Boone Avenue residences

# community building: view from Paisano



# community building: view from entry plaza

PV panels

“tapestry cladding”

education monuments

# site: aerial view from southwest

# green rating systems

## Enterprise Green Communities

- Aligned with LEED Homes
- Prescriptive system
- Targeting 91 points (need 35)

### *Strategies*

- LEED Homes Certification (6 pts)
- Utility efficiencies (6 pts)
- Site selection (13 pts)

## LEED for Homes

- Home size adjustment lowers Platinum threshold to 81 points
- Targeting 90 points (without solar)

### *Strategies*

- LEED-ND Certification (10 pts)
- Energy efficiency (23 pts)
- Water efficiency (15 pts)
- Healthy living spaces (10+ pts)

## LEED for Neighborhood Development

- Take advantage of site characteristics
- Targeting 49 points (need 40)

### *Strategies*

- LEED Homes Certification (6 pts)
- Utility efficiencies (6 pts)
- Site selection (13 pts)

# passive strategies

- windows oriented south and north with proper shading
- minimize summer heat gain
- maximize winter solar gain
- encourage natural ventilation
- well insulated building envelopes
- tight building construction - NACH < .1/hr
- heat recovery systems

south facing glazing tuned for passive solar gain in winter

**December 21st**

**June 21st**

south facing glazing protected from solar gain in summer

# renewable energy systems

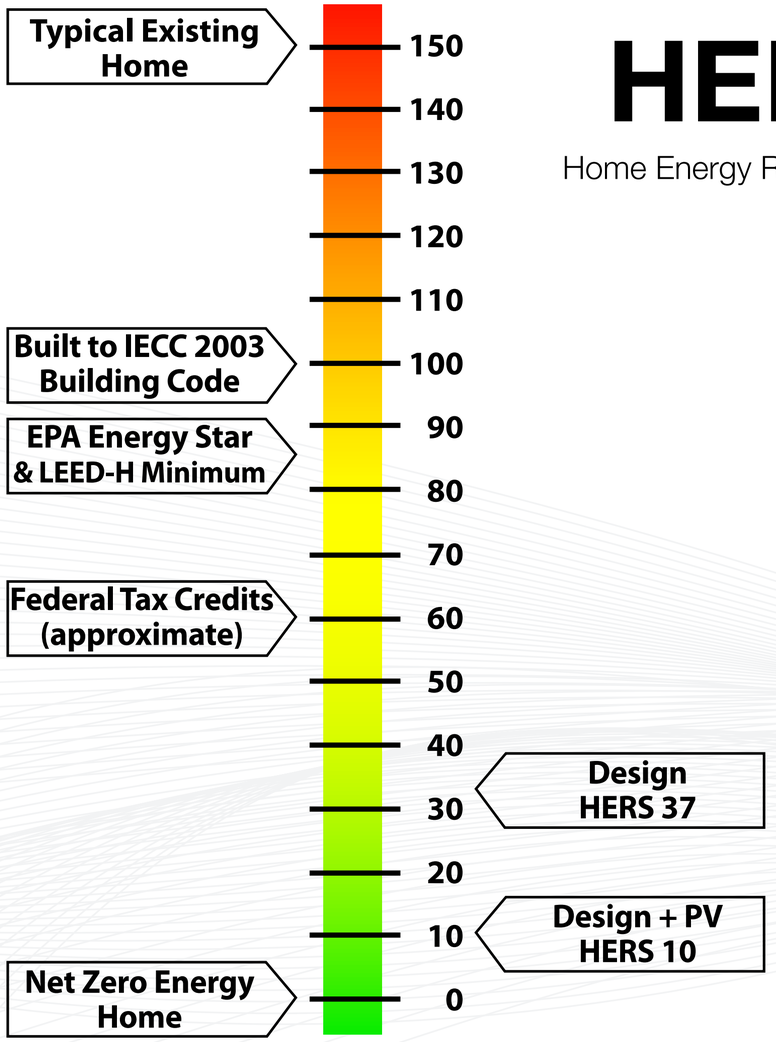
wind power generator

PV panels

PV panels

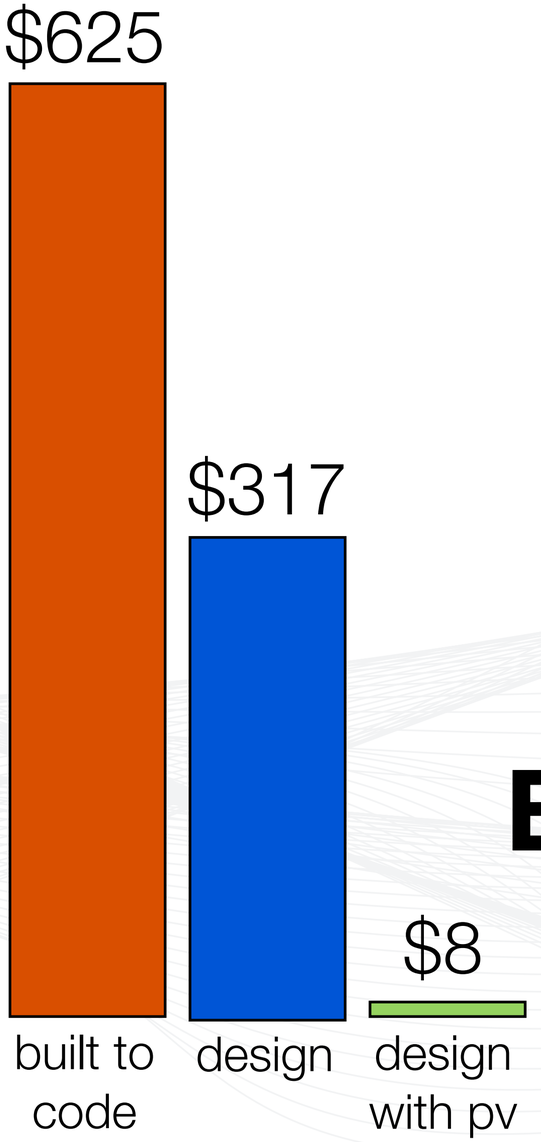
solar thermal panels

# HERS Score and Energy Consumption




## HERS

Home Energy Rating System




## Energy Cost

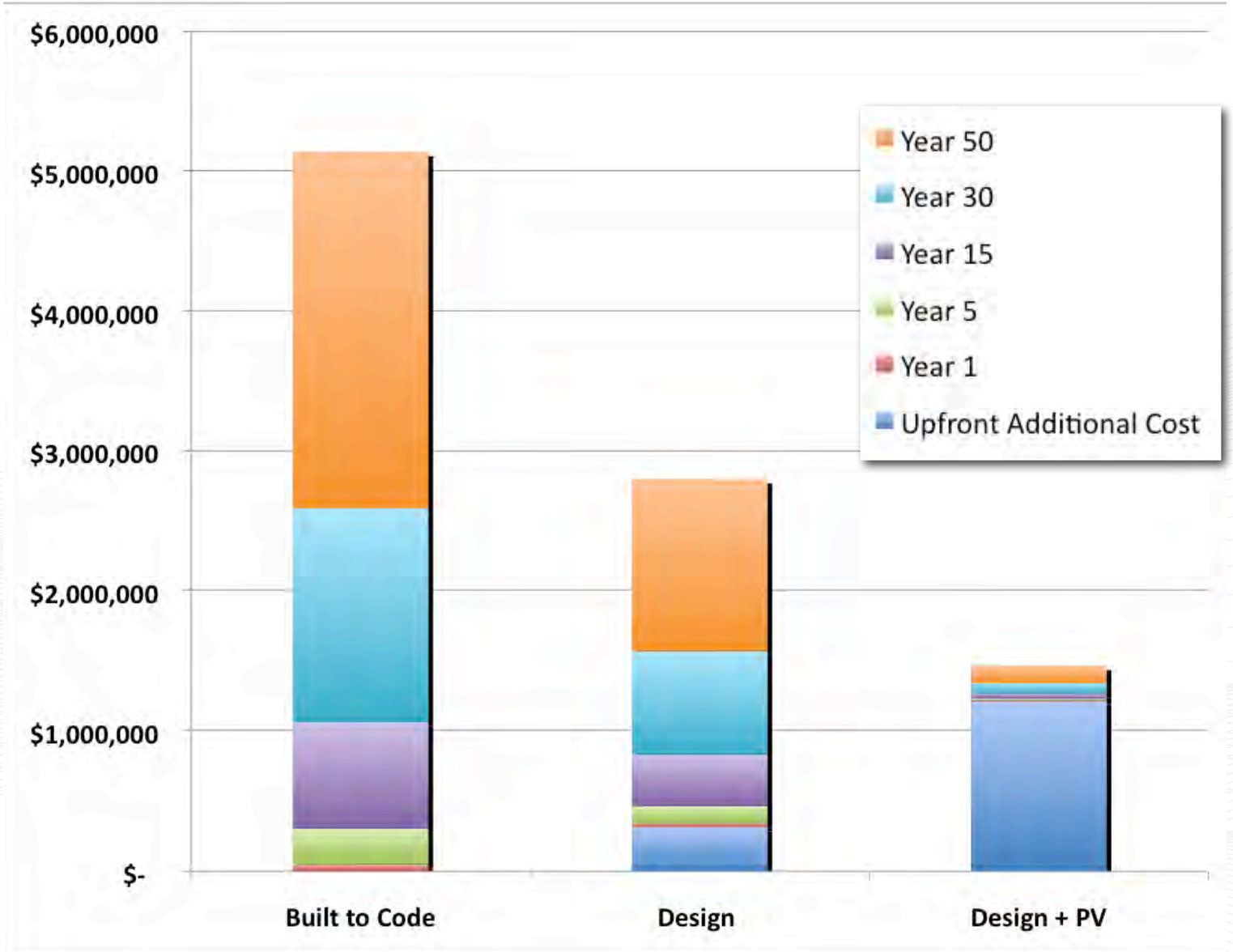
Annual Energy Cost for a One Bedroom Flat on the Ground Floor

# lifecycle energy costs plus additional capital costs

**Lifecycle Costs**

On average, the additional cost to reach our basic design guidelines is $5,800. This includes the solar thermal system for the multi-family flats, the advanced building shell, high-efficiency mechanical system, and Energy Star rated appliances and lighting. When including the PV system without tax credits, the additional cost is $22,600. The simple payback with the PV system is marginal without the tax credits and much better with them. However, when you look at the longterm cost of both the improvements and the utility bills (escalated annually at 5%), a much different picture appears. When integrating the renewable systems and the upgraded building shell and systems, the initial costs are much higher, but when adding the cumulative utility bills, the total costs are much lower.

In an affordable housing project, it is imperative that the tenants are protected from rising utility rates. When utility bills can often be a large percentage of a person's annual income, dramatically reducing these bills or completely eliminating them has a major impact in their lives.



**Design**
is the ultimate
renewable resource.

Together,
we **can** continue to **build**
**a better future.**

Cameron Sinclair - Architecture for Humanity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