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THE DANCO GROUP OF COMPANIES

Energy Efficiency, Low Income Housing & Your Bottom Line

The DANCO Group

Development, Construction, Property Management & More:

- Development: Affordable Housing, Market Rate Housing, Senior Assisted Living and Commercial.
- Construction: Commercial and Residential (Bonded and Non-Bonded).
- Property Management: Workforce and Senior rentals.
- Senior Assisted Living Services: Hospitality.
- Recovery: Drug and alcohol treatment facilities and sober living.

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DEVELOPMENT

Market Rate & Affordable

Housing Development: Danco Communities

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CONSTRUCTION

Commercial & Residential Contractors:

Danco Builders • Danco Builders Northwest • DT Builders

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PROPERTY MANAGEMENT

Workforce housing provider of choice.

Related entity properties, including affordable housing units.

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Pioneer of Net-Zero & Energy Efficient Affordable Housing

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COURTYARDS AT ARCATA PHASE II & III HIGHLIGHTS

Courtyards of Arcata Phase II Low Income Familes (2006):

- **1st apartment complex in North America and Europe to provide PV to individual apartments. 50% Zero Net Energy**

Courtyards of Arcata Phase III (2007):

- **50% ZNE offset for-sale subsidized townhomes**

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PLAZA POINT HIGHLIGHTS

- Low Income Seniors (2012)
- All-Electric
- 1st Apt Complex to go 100+% ZNE in North America, measured at 103% Net Positive.
- LEED Platinum
- NAHB Emerald
- Dept. of Energy certified "Zero Energy Ready Home" (formerly and only briefly called "Builders Challenge")

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ASTER PLACE HIGHLIGHTS

- Low Income Families (2012)
- All-electric
- Built to 70% ZNE offset
- Planned 100% PV offset with SOMAH funding

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CHURCH HILL HIGHLIGHTS

- Low Income Families (2013)
- All-Electric
- 80% ZNE
- LEED Platinum
- Dept. of Energy certified "Zero Energy Ready Home"

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COTTAGES AT CYPRESS HIGHLIGHTS

- Low Income Seniors (2014)
- All-Electric, measured 180% Net Positive
- LEED Platinum
- Dept. of Energy certified "Zero Energy Ready Home"

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YARROW VILLAGE HIGHLIGHTS

- Low Income Seniors (2016)
- All-Electric
- 70% ZNE
- Enterprise Green Communities
- Energy Star for Homes

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THE LODGE AT EUREKA HIGHLIGHTS

- Low Income Seniors (2017)
- All-electric
- Planned 100% ZNE PV array with SOMAH funding

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CREAMRY ROW HIGHLIGHTS

- Low Income Families (2018)
- All-electric
- Enterprise Green Communities
- Planned 100% ZNE PV array with SOMAH funding

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PROJECTS UNDER CONSTRUCTION

- Monterey Gateway Apartments (Gilroy, CA)
  - All-electric, 100% ZNE, Green Point Rated Platinum
- Eureka Veterans & Homeless Housing (Eureka, CA)
  - All-electric, 90% ZNE
- Samoa Coast Townhomes (Samoa, CA)
  - All-electric, 100% ZNE
- Cottages at Rigby (Rio Dell, CA)
  - All-electric, 100% ZNE
- The Plateau (Fort Bragg, CA)
  - In development
  - All-electric, 100% ZNE

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HOW DO WE MAKE IT WORK?

- Use renewable energy and green construction systems to lower utility allowances
- Exceed T24
  - Solar
  - Extra insulation
  - Energy efficient appliances
  - Passive solar design

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HOW DO WE MAKE IT WORK?

- By leveraging the CUAC calculator feature, we're able to cover these costs by:
  - Lowering utility costs with PV, all-electric and efficiency
  - Increasing rents within subsidized limits
  - Utilize 30% Solar Tax Credit
  - Increase permanent debt equal to or greater than final PV cost

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LOWER UTILITY ALLOWANCES

PHA Utility Allowances

VS.

California Utility Allowance Calculator

County of Humboldt 2019 Section 8 Utility Allowances of Humboldt County						
Utility or Service	0 BR	1 BR	2 BR	3 BR	4 BR	5 BR
HEATING*						
Electric	29.00	34.00	45.00	56.00	67.00	82.00
Air Conditioning	1.00	1.00	1.00	1.00	1.00	1.00
COOKING						
Electric	9.00	10.00	15.00	19.00	24.00	28.00
OTHER Electric (Lights						
Appliances includes CA Credit)	26.00	32.00	47.00	64.00	84.00	104.00
WATER HEATING						
Electric	21.00	25.00	32.00	39.00	46.00	53.00
OTHER - Natural Gas Climate Credit $-2.49	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
RANGE	11.00	11.00	11.00	11.00	11.00	11.00
REFRIGERATOR	12.00	12.00	12.00	12.00	12.00	12.00
	[illegible]	99.00	130.00	162.00	198.00	237.00

Project Name: Eureka Veterans
Site Address: 108 4th Street, Eureka
Site Contact: Chris Dart
Electric Utility: PG&E
Gas Utility: No Gas
Tariff Type: CARE
Electric Territory: V - Electric
Gas Territory: All
Affordable Housing ☑

Utility Allowance Calculator Results

Apartment Type	Units		Monthly Usage ($/month) Electric	Gas	Water	Trash	Total
	Aff. Hous.	Mkt. Rate					
One Bedroom	50	0	$5.00	$0.00	$0.00	$0.00	$5.00
Two Bedroom	0	1	$11.77	$0.00	$0.00	$0.00	$11.77

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PROFORMA

PHA UA's

Unit Type	AMI Rent	# of Units	Rent Each Unit	Gross Rent	UA Each	Net Rent	Annual Net Rent	Contract Rent less Utilities	Monthly Contract Rent Less Utilities	Annual Overhang
One Bedroom - VASH		26		$ 9,103		$6,628	79,536	$ 1,404	$ 17,550	$ 131,064
	30%	19	337	$6,403	99	$4,522	54,264	$ 702	$ 13,338	$ 105,792
	40%	6	450	$2,700	99	$2,106	25,272	$ 702	$ 4,212	$ 25,272
	Market	1								
One Bedroom - DHHS		25		$ 9,103		$6,628	79,536	$ 2,106	$ 17,550	$ 131,064
	30%	19	337	$6,403	99	$4,522	54,264	$ 702	$ 13,338	$ 105,792
	40%	6	450	$2,700	99	$2,106	25,272	$ 702	$ 4,212	$ 25,272
Community Room										
Totals		51					159,072		35,100	262,128

CUAC

Unit Type	AMI Rent	# of Units	Rent Each Unit	Gross Rent	UA Each	Net Rent	Annual Net Rent	Contract Rent less Utilities	Monthly Contract Rent Less Utilities	Annual Overhang
One Bedroom - VASH		26		$ 9,103		$8,978	107,736	$ 1,592	$ 19,900	$ 131,064
	30%	19	337	$6,403	5	$6,308	75,696	$ 796	$ 15,124	$ 105,792
	40%	6	450	$2,700	5	$2,670	32,040	$ 796	$ 4,776	$ 25,272
	Market	1								
One Bedroom - DHHS		25		$ 9,103		$8,978	107,736	$ 2,388	$ 19,900	$ 131,064
	30%	19	337	$6,403	5	$6,308	75,696	$ 796	$ 15,124	$ 105,792
	40%	6	450	$2,700	5	$2,670	32,040	$ 796	$ 4,776	$ 25,272
Community Room										
Totals		51					215,472		39,800	262,128

PRO FORMA Cont.

PHA UA's

NOI	Total	Unit
INCOME		
POTENTIAL GROSS RENT	$ 159,072	$ 3,119
Rental Assistance	$ 262,128	
Secondary Income: Laundry, Cable	$ 26,520	$ 520
Rental Vacancy & Collection Loss	$ (44,772)	10%
EFFECTIVE GROSS INCOME	$ 402,948	
EXPENSES		
Operating Expenses	$ 221,085	$4,335
Social Services - FTE	$ 55,000	$1,078
Replacement Reserves	$ 15,300	$300
TOTAL EXPENSES	$ 291,385	
Net Operating Income	$ 111,563	
DCR	1.150	
Loan Amount	$ 1,460,630	
Perm Loan Rate	5.75%	
Amoritization	35	
Annual Debt Service	$ 97,015	

CUAC

NOI	Total	Unit
INCOME		
POTENTIAL GROSS RENT	$ 215,472	$ 4,225
Rental Assistance	$ 262,128	
Secondary Income: Laundry, Cable	$ 26,520	$ 520
Rental Vacancy & Collection Loss	$ (50,412)	10%
EFFECTIVE GROSS INCOME	$ 453,708	
EXPENSES		
Operating Expenses	$ 221,085	$4,335
Social Services - FTE	$ 55,000	$1,078
Replacement Reserves	$ 15,300	$300
TOTAL EXPENSES	$ 291,385	
Net Operating Income	$ 162,323	
DCR	1.150	
Loan Amount	$ 2,125,158	
Perm Loan Rate	5.75%	
Amoritization	35	
Annual Debt Service	$ 141,153	

PRO FORMA COMPARISON

Eureka Veteran and Homeless Housing	
Leveraged Debt Utilizing CUAC Calculator	$ 2,125,158
Leveraged Debt Using Housing Authority UA's	$ 1,460,630
Amount Available for Solar	$ 664,527.70
Solar Costs to Make UA's equal to Meter Fee ($5.00)	$ (342,400.00)
30% Tax Credit Available	$ 102,720.00
Consulting Fees	$ (20,000.00)
Net Benefit to provide Solar	$ 404,847.70

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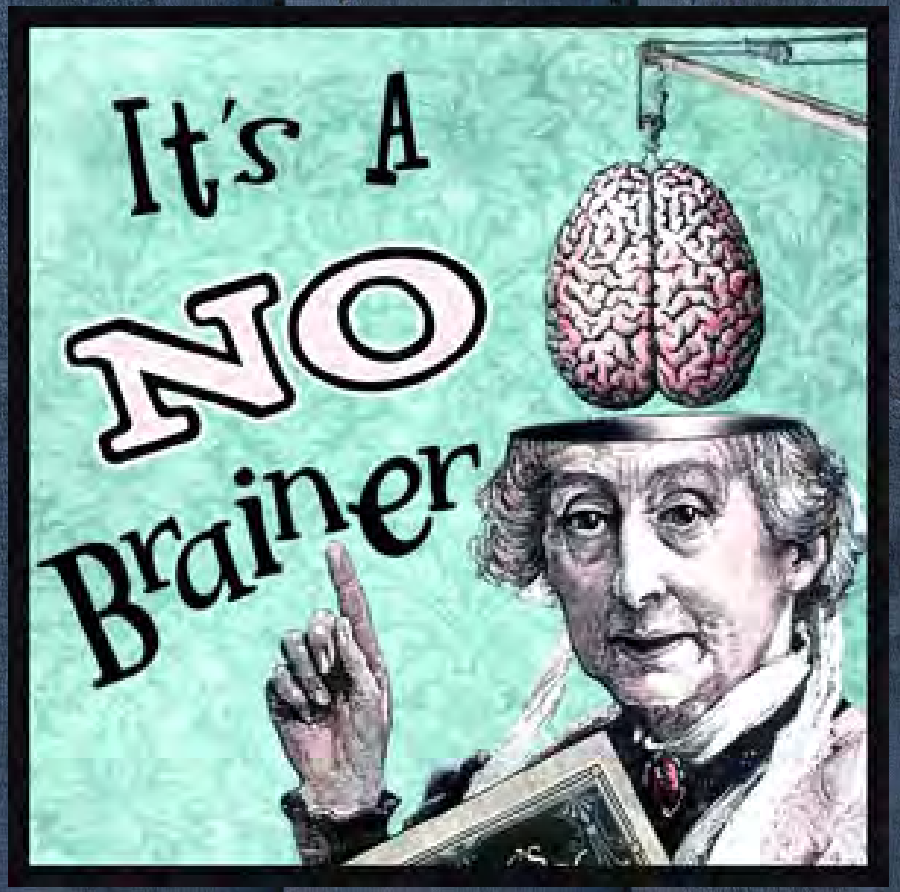
OTHER BENEFITS

- Green buildings are more desirable from many stand points
  - Tenant preference
  - Public approval process
  - Great asset after 15 years

SUMMARY

It's what we like to call a "no brainer."



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THANK YOU

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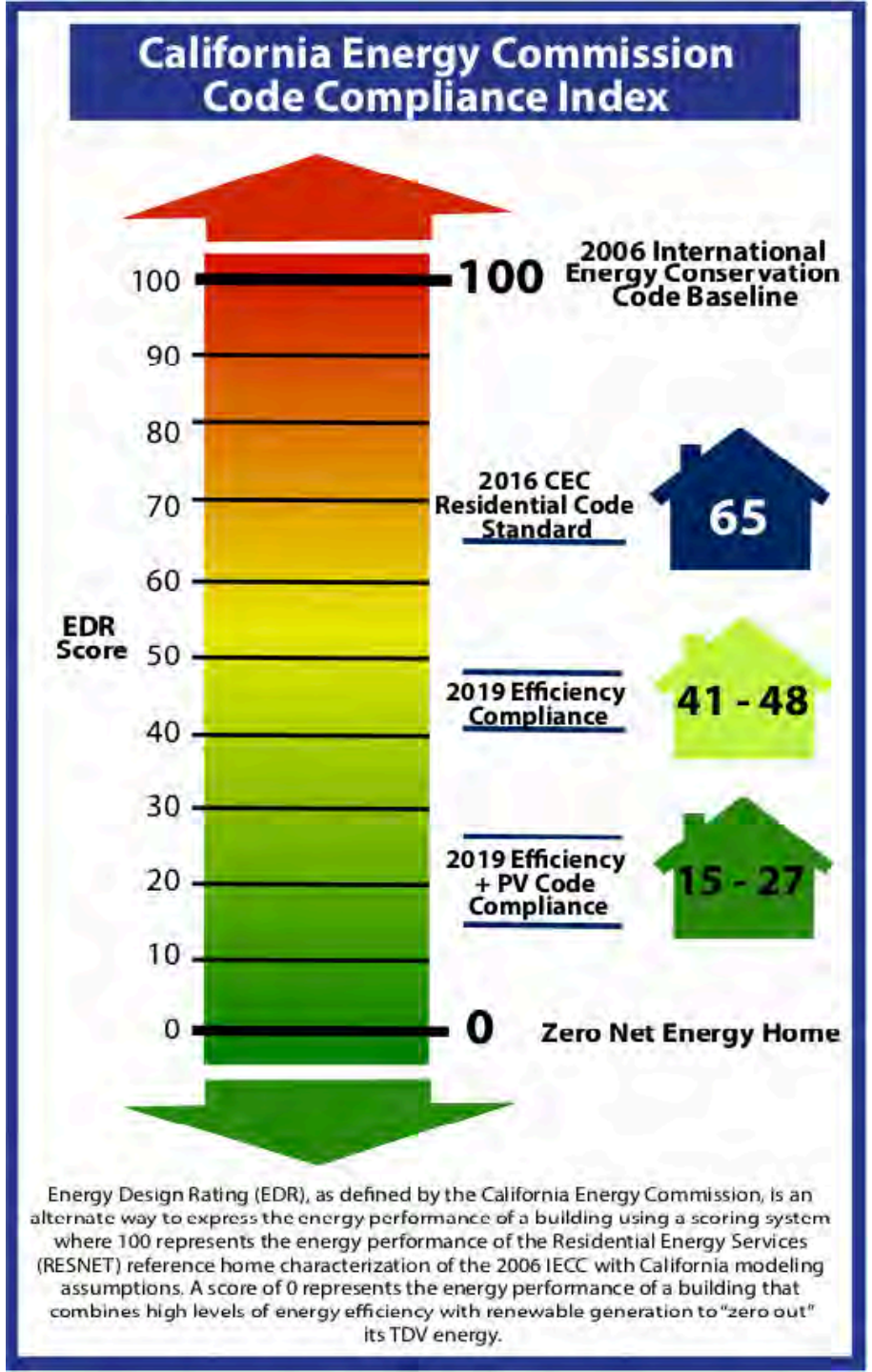
How to Build Affordable Housing on Budget in 2020



The 2020 Residential Code

- World's Most Efficient Building Code (as was 2016 Code)
- World's First State/Provincial Code to Mandate PV (2-4kW)
- Still Assumes ~40% Gas Powered Home

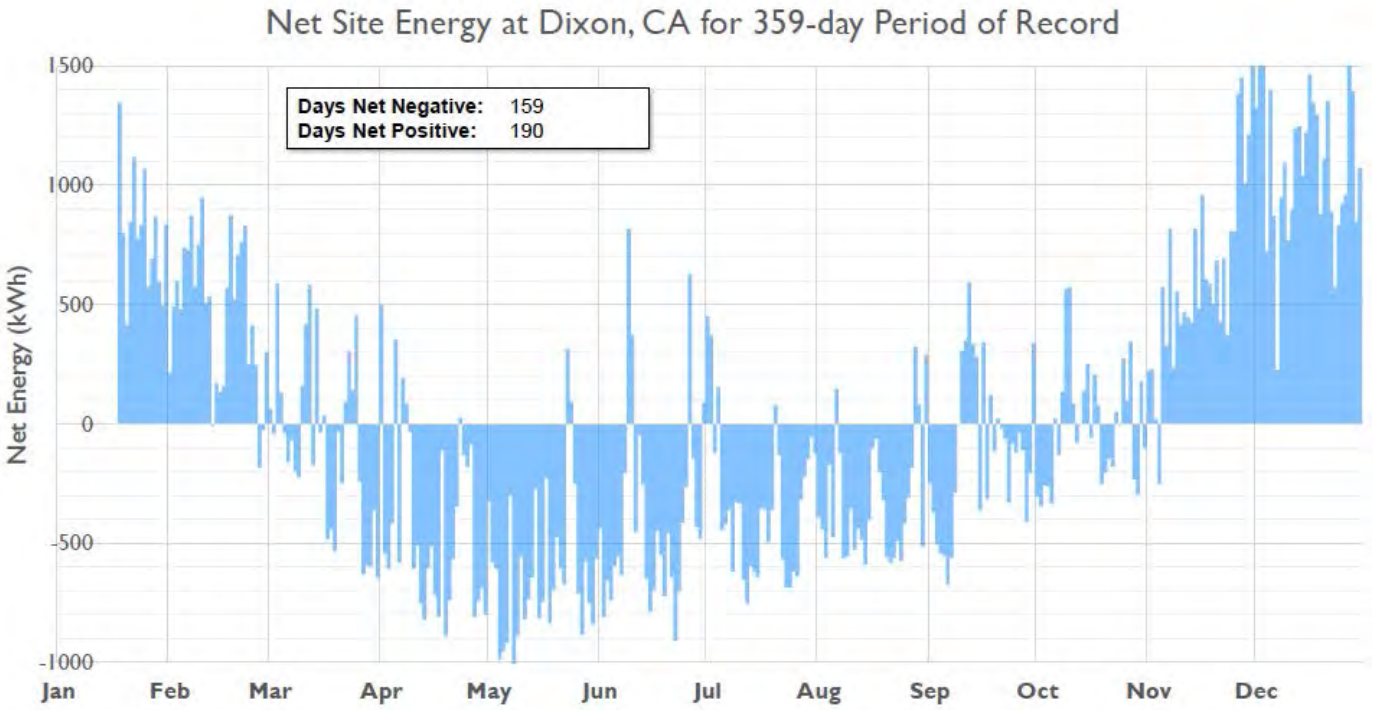
All-Electric Is The Cheapest Path to Compliance

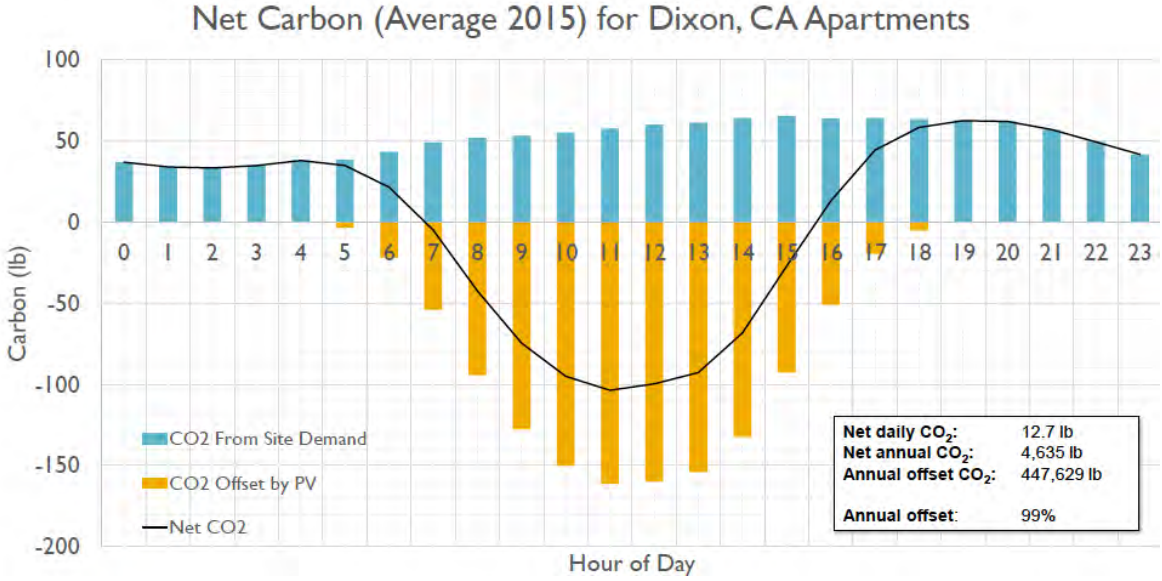
GENERAL INFORMATION					
01	Project Name	Mutual Housing at Spring Lake 2			
02	Calculation Description	Title 24 Analysis			
03	Project Location	2170 FARMER CENTRAL ROAD			
04	City	Woodland	05	Standards Version	Compliance 2017
06	Zip Code	95776	07	Compliance Manager Version	BEMCmpMgr 2016.3.0 (934 SP1)
08	Climate Zone	CZ12	09	Software Version	EnergyPro 7.2
10	Building Type	Multifamily	11	Front Orientation (deg/Cardinal)	180
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	15
14	Total Cond. Floor Area (ft^2)	14021	15	Number of Zones	15
16	Slab Area (ft^2)	6656	17	Number of Stories	2
18	Addition Cond. Floor Area(ft^2)	n/a	19	Natural Gas Available	No
20	Addition Slab Area (ft^2)	n/a	21	Glazing Percentage (%)	8.5%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

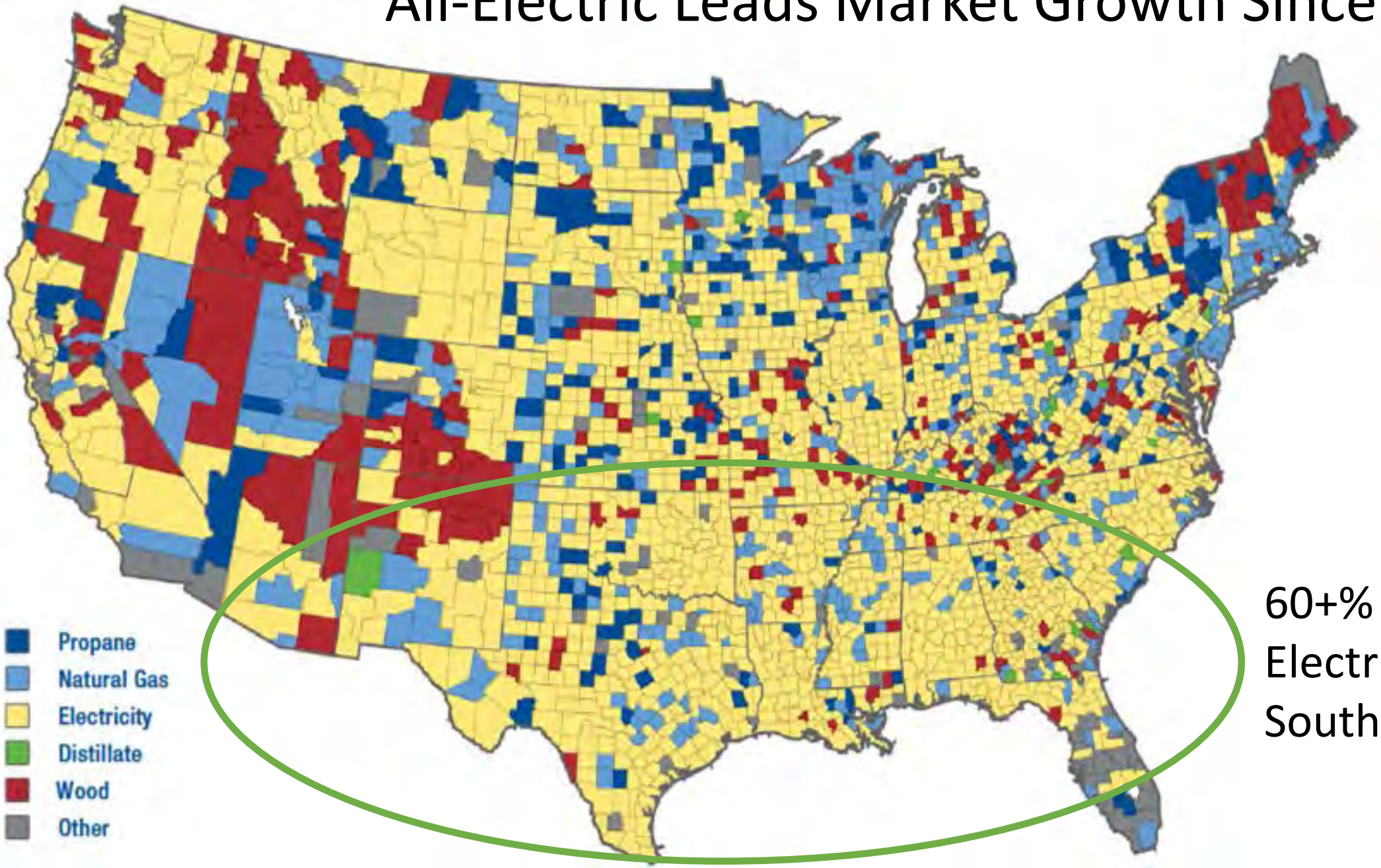
ENERGY USE SUMMARY				
04	05	06	07	08
Energy Use (kTDV/ft^2-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	7.14	7.53	-0.39	-5.5%
Space Cooling	19.83	17.24	2.59	13.1%
IAQ Ventilation	0.00	0.00	0.00	0.0%
Water Heating	32.17	16.30	15.87	49.3%
Photovoltaic Offset	----	-5.62	5.62	----
Compliance Energy Total	**59.14**	**35.45**	**23.69**	**40.1%**

All-Electric + PV Achieves Zero Net Carbon



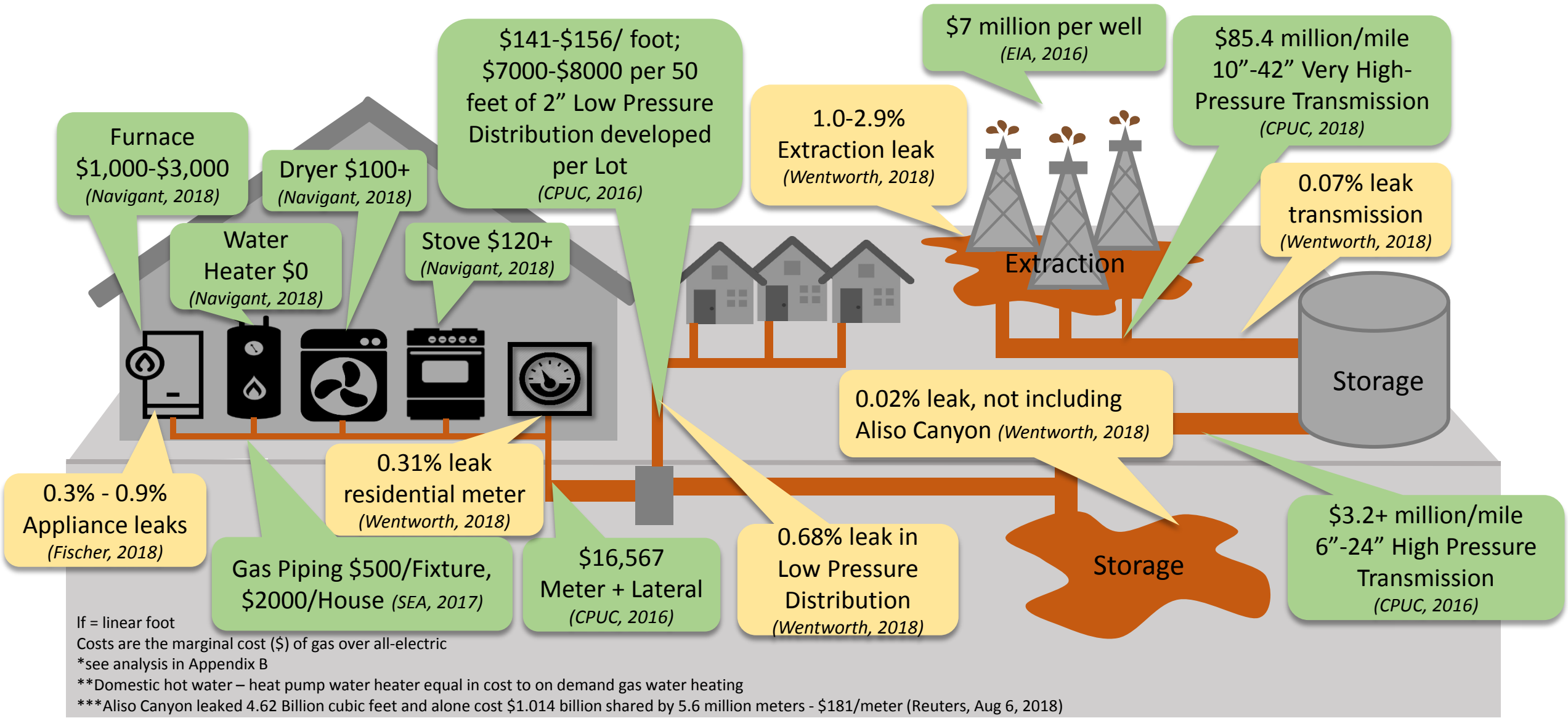


All-Electric Leads Market Growth Since 2010



60+% All-Electric in the South in 2018

Methane Delivery Costs More to Build at Every Step: $25,000-$30,000 per New California Home in PG&E Territory, Leaks at 2.5% to 5%



lf = linear foot
Costs are the marginal cost ($) of gas over all-electric
*see analysis in Appendix B
**Domestic hot water – heat pump water heater equal in cost to on demand gas water heating
***Aliso Canyon leaked 4.62 Billion cubic feet and alone cost $1.014 billion shared by 5.6 million meters - $181/meter (Reuters, Aug 6, 2018)

Arcata Bay Crossing, Arcata

Heritage Square, Pasadena

Belle Manor, Lakeport


AURELIE DA

Gold Nugget®
AWARDS
GRAND AWARD

world habitat awards


Hillandale
Gateway,
Washington DC

Homeless Veteran Tiny Housing, Santa Rosa

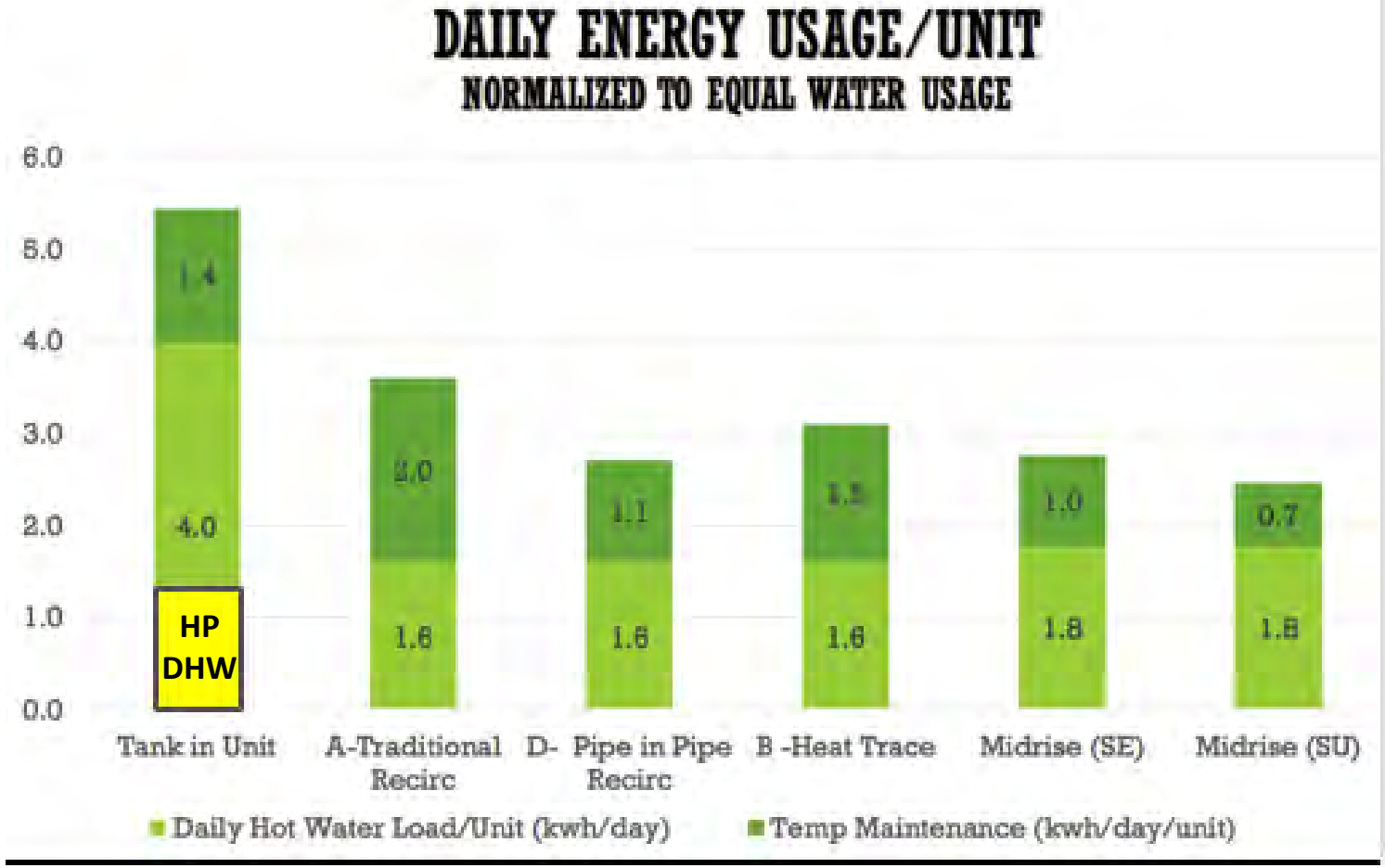
Affordable, Quiet and Efficient Heat Pumps

$3,000/Zone

$6,000/Zone

$14,000/Zone

Large Energy Savings
from Using Individual Tanks for Hot Water



U.S. Government

Federal law prohibits removal of this label before consumer purchase.

ENERGYGUIDE

Water Heater – ELECTRIC

Tank Size (Storage Capacity): 59 gallons

Uniform Energy Factor: 3.7

Rheem Sales Company, Inc.

Model XE65T10HD50U1

B00150

Estimated Yearly Energy Cost

$161

$225 — $732

Cost Range of Similar Models

The estimated yearly energy Cost of this model was not available at the time the range was published.

First Hour Rating

(How much hot water you get in the first hour of use)

very small	low	medium	high 75 Gallons

Estimated Yearly Electricity Use

- Your cost will depend on your utility rates and use.
- Cost range based only on models fueled by electricity with a high first hour rating (75 gallons and over)
- Estimated energy cost is based on a national average electricity cost of 12.00 cents per kWh.
- Estimated yearly energy use: 1341 kWh

ENERGY STAR

www.ftc.gov/energy.

Part No AX4258

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

ENERGYGUIDE

Water Heater – Natural Gas

Tank Size (Storage Capacity): 46 gallons

Rheem Sales Company, Inc.

Modei ECORHE50

B00007

Estimated Yearly Energy Cost

$231

$225 — $297

Cost Range of Similar Models

First Hour Rating

(How much hot water you get in the first hour of use)

very small	low	medium	high 87 Gallons

Estimated Yearly Energy Use

- Your cost will depend on your utility rates and use.
- Cost range based only on models fueled by natural gas with a high first hour rating (75 gallons and over)
- Estimated energy cost is based on a national average natural gas cost of $1.09 per therm.
- Estimated yearly energy use: 212 therms

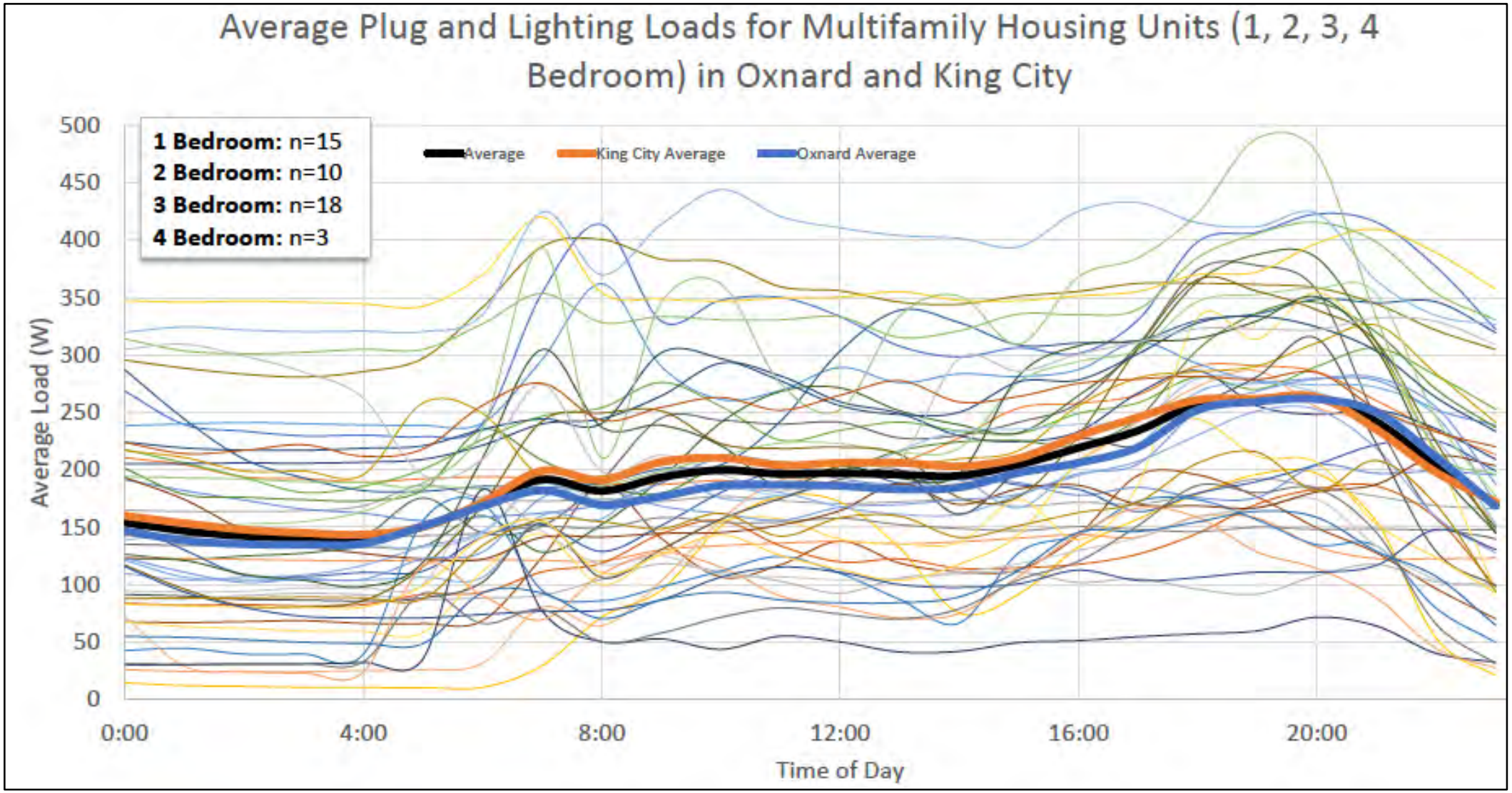
ENERGY STAR

www.ftc.gov/energy.

Part No. AX4258

Heat Pump Boilers + PV = Combined Heat and Power Retrofit

Plug Loads are Mostly Due to Always-On Products



Induction and Radiant Are Cost-Effective

Kenmore Elite	Frigidaire Gallery	General Electric	Kenmore Radiant	Electrolux
				
$1260	$ 1,100	$2,000	$500	$1,800

Heat Pumps for Hot Tubs and Swimming Pools

Sizing Tip: 4 BTU/Hr to 6 BTU/Hr per gallon of pool water

Hayward Heat Pro

Pentair

Aquacal Heatwave

Modern Electric Fireplaces

Dimplex Opti-Myst Pro 1000
($2099)

Napoleon See-thru
($2,008)

Dynasty DY-BT79
($1,299)

Amantii Zero Clearance
($1,308)

Amantii BI-40-SLIM (In/Out)
($1,618)

Modern Flames CLX Series
($7,449)

Dimplex Opti-Myst Pro 500
(outdoor) ($1300)

EnerG+ Patio Heater
(outdoor) ($186.99)

Touchstone Sideline
(outdoor) ($574)

Dimplex Opti-Myst Pro 400
($1749)

ClassicFlame Felicity
($349.77)

Altra Furniture
($160)

Inexpensive Solar Storage


Questions?
© Ron Niebrugge

TCAC Application Requirements and the 2020 California Energy Code

Gina Ferguson

Overview of Current TCAC Requirements

- ENERGY EFFICIENCY
  - New Construction must meet current energy code plus meet with an energy consultant to identify energy efficiency measures beyond code requirements.
  - Rehabilitation must improve energy efficiency by at least 10% plus meet with an energy consultant to identify energy efficiency measures.

Overview of Current TCAC Requirements

- COMPETITIVE POINT OPTIONS
  - Green building programs
  - Energy efficiency beyond 2016 energy code (NC)
  - Energy efficiency improvement over current use (Rehab)
  - Energy generation offsetting tenant energy loads
  - Individual metering
  - Water efficiency
  - Sustainable building management practices

https://www.treasurer.ca.gov/ctcac/2018/sustainable.asp

Code Changes and TCAC Requirements

- WHY CHANGE TCAC REQUIREMENTS AND SCORING OPTIONS?
  - Current scoring options will become obsolete
  - As the energy code moves to ZNE, a percent better than energy code makes less sense
  - Changes to green building programs
  - Code changes introduce possibilities for exploring new options
- BALANCING CALIFORNIA'S HOUSING NEED AND SUSTAINABLE BUILDING

Code Changes and TCAC Requirements

- OPTIONS for future requirements
  - LED lighting
  - Triple pane windows
  - ENERGY STAR appliance replacements for all units

Code Changes and TCAC Requirements

- OPTIONS for future competitive applications
  - Move closer to ZNE use
  - Increase energy generation requirements
  - Incentivize energy generation onsite storage
  - Owner collection of tenant energy use data
  - Electric vehicle charging stations
  - Reduction in carbon emissions

California's Affordable Housing Crisis

- Treasurer Ma is committed to deploying resources for affordable housing in step with the Governor's call for construction of 3.5 million new housing units.
  - Current proposals include additional state tax credits for low and moderate income housing, some with an emphasis on fast and early delivery.
- Treasurer Ma is also committed to reviewing the TCAC and CDLAC programs to enable increased production of affordable housing.
  - How this intersects with 2020 Energy Code changes and TCAC application requirements has yet to be determined.

Zero-Carbon Design & Urban Housing

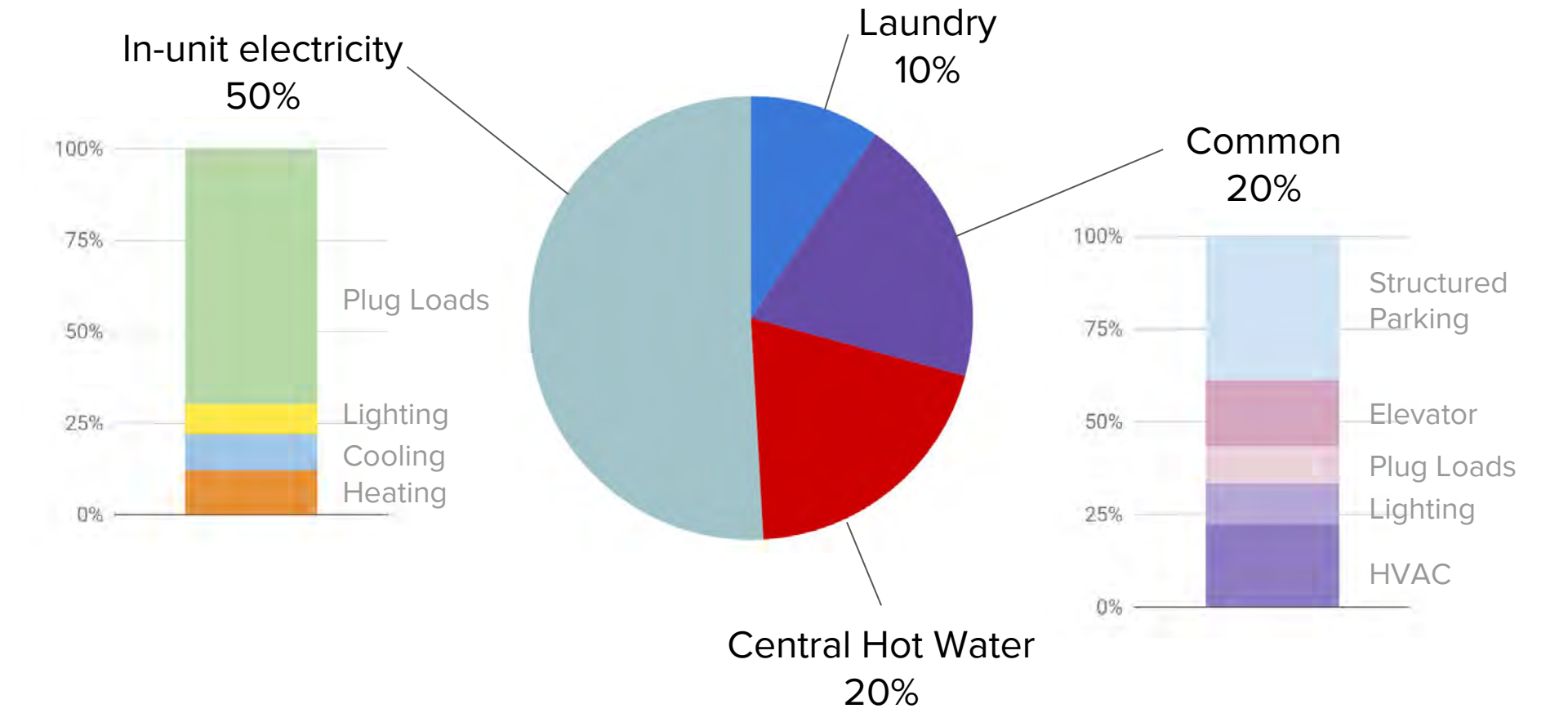
Katie Ackerly, David Baker Architects

Housing California
2019-04-16


35+ years
13000+ homes
7000+ affordable
400+ awards

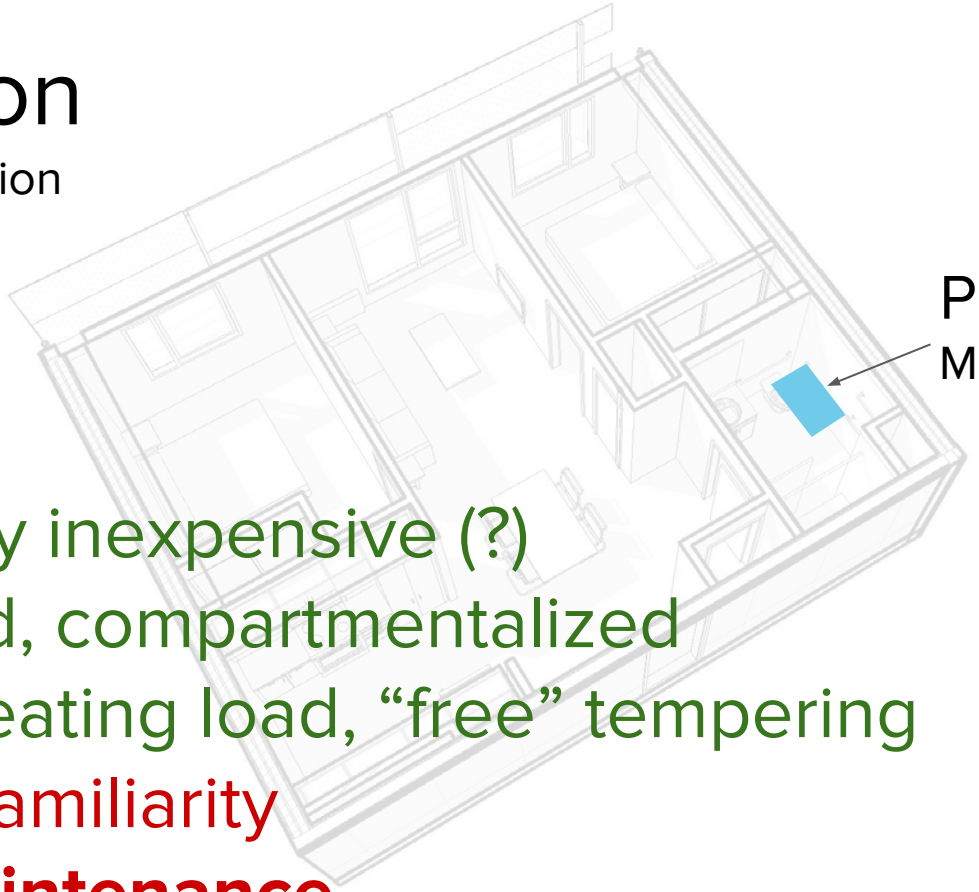
Mid-rise Urban Housing is Diverse

Energy Loads for one six-story podium building CZ3



Ventilation

An example solution

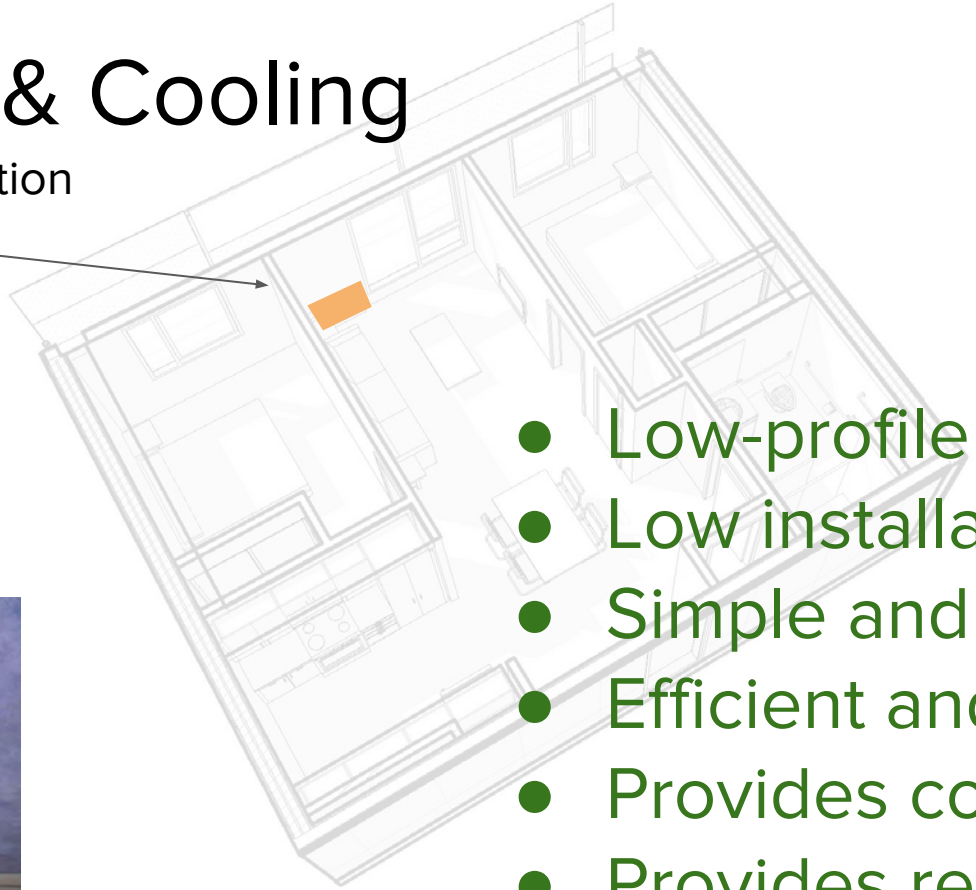


- Relatively inexpensive (?)
- Balanced, compartmentalized
- Lower heating load, “free” tempering
- Lack of familiarity
- **High-maintenance**

Heating & Cooling

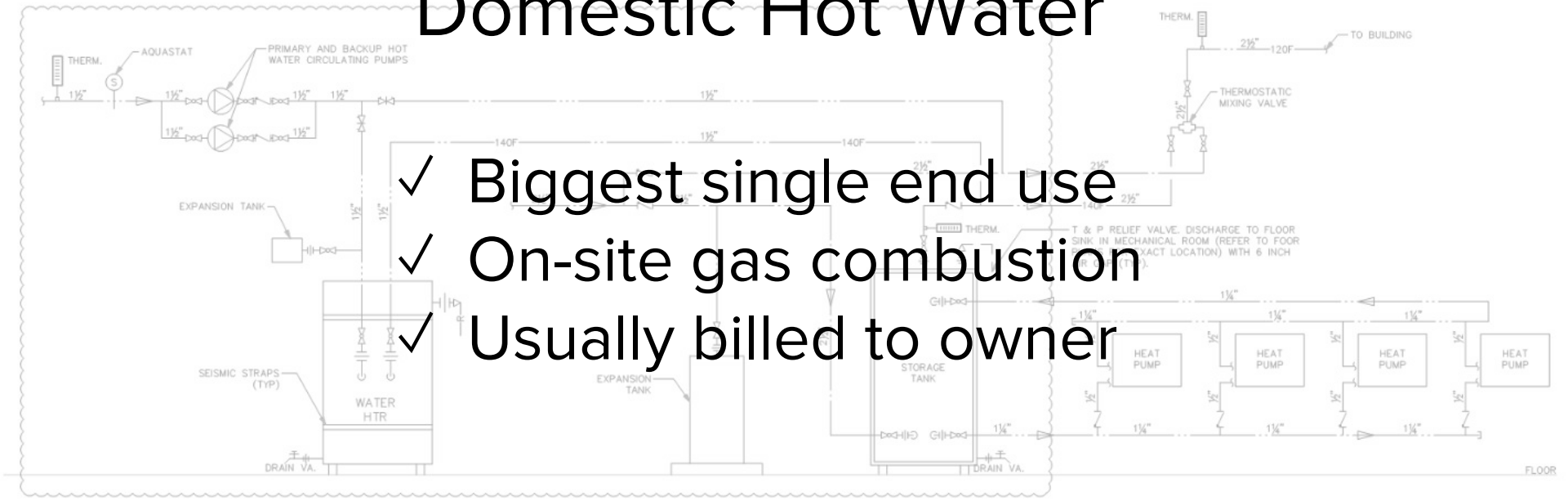
An example solution

Innova PTAC



- Low-profile
- Low installation cost
- Simple and legible
- Efficient and safe
- Provides cooling
- Provides recirculated air
- **No distribution**

Domestic Hot Water



- ✓ Biggest single end use
- ✓ On-site gas combustion
- ✓ Usually billed to owner

Edwina Benner Plaza, Sunnyvale, CA

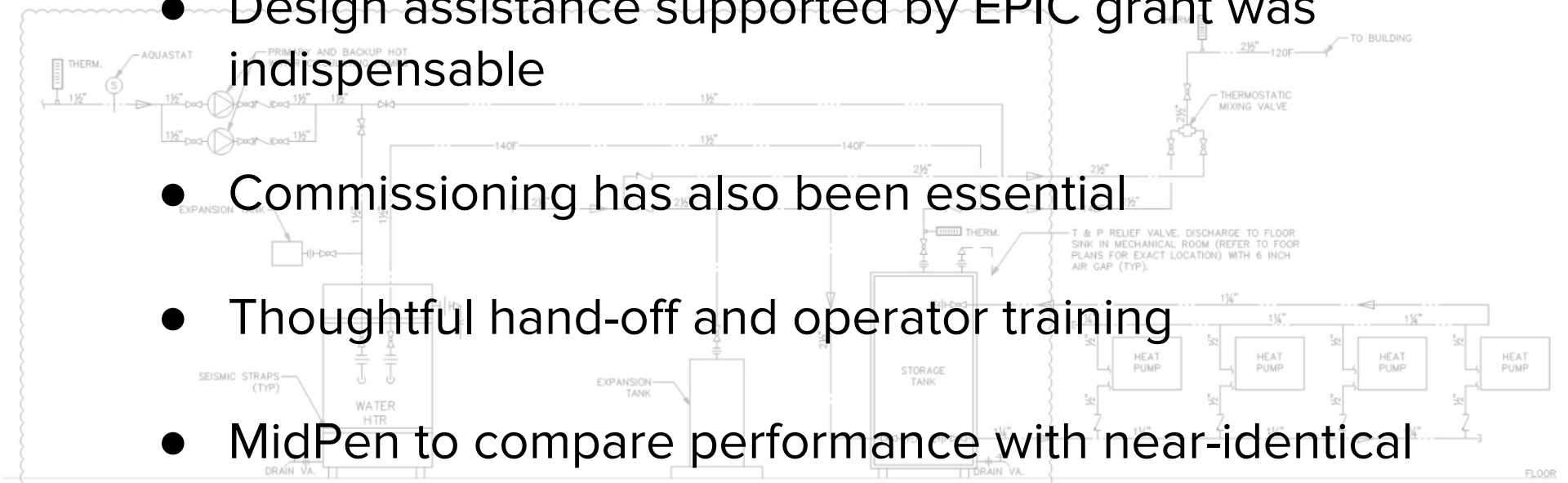
EPIC Heat Pump Hot Water Pilot

ASSOCIATION FOR ENERGY AFFORDABILITY INC.

Central Heat Pump Water Heater

Soft Landings

- Design assistance supported by EPIC grant was indispensable
- Commissioning has also been essential
- Thoughtful hand-off and operator training
- MidPen to compare performance with near-identical project up the street (gas + solar thermal + PV)



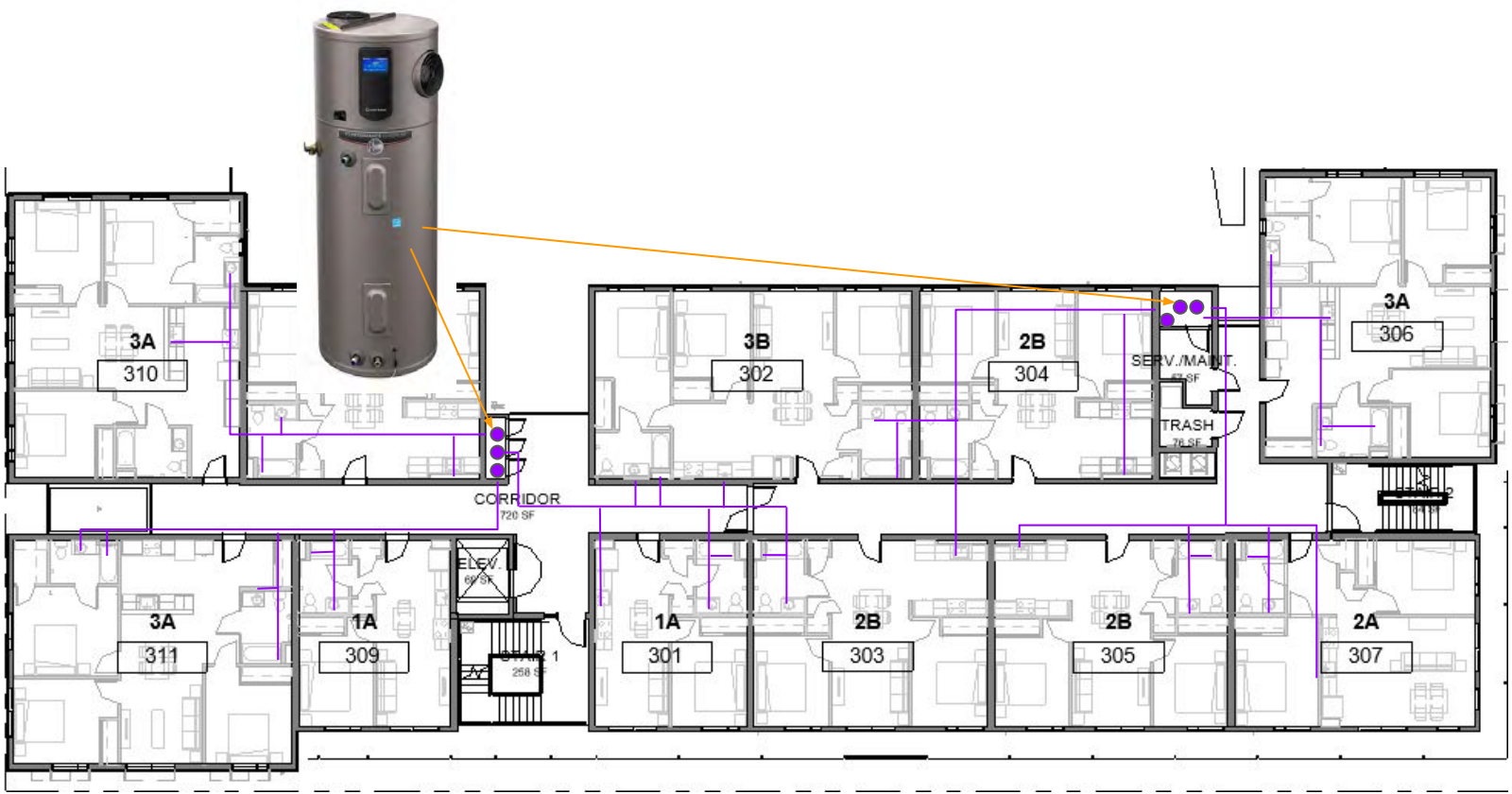
Coliseum Place, Oakland, CA

AHSC Zero Net Energy Project

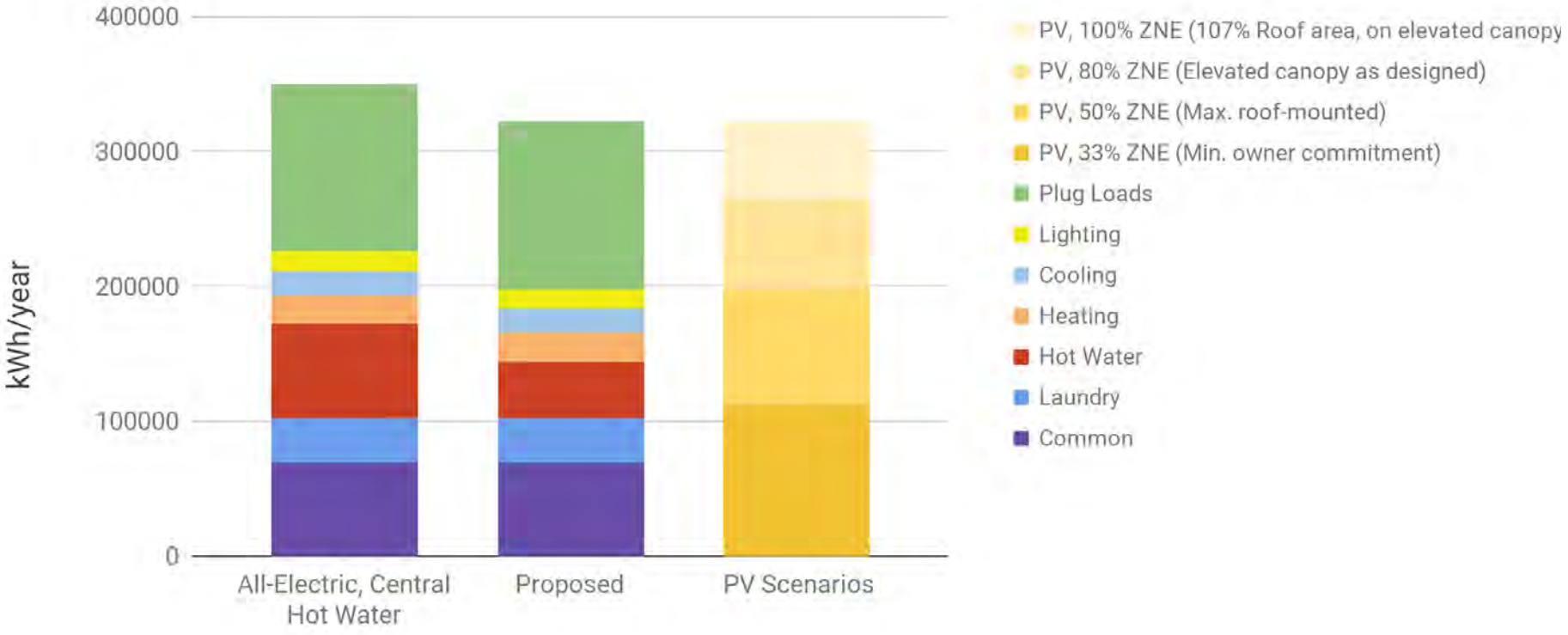
rcd
Creating & Preserving Affordable Housing

Redwood Energy
Foremost Zero Net Energy Specialists in Multifamily Housing

Eliminating Hot Water Recirculation



Energy Budget for Coliseum Place

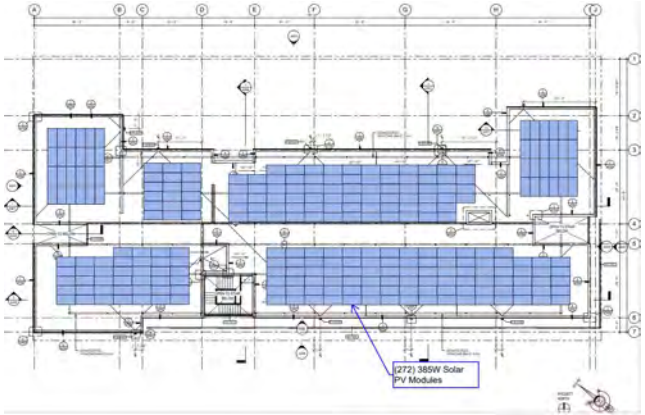


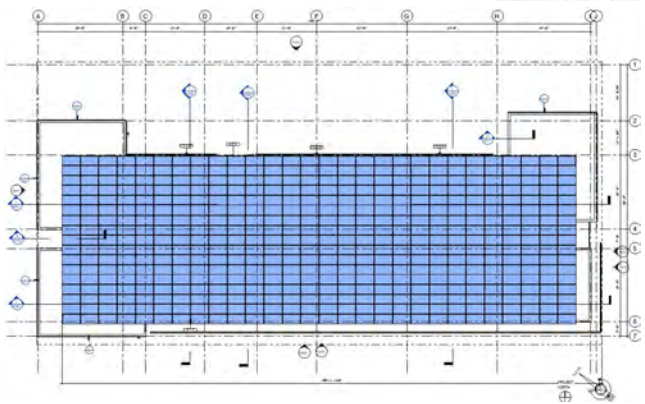
Considerations

- A lot of resistance to decentralized hot water
- Must design to minimize hot water wait times
- Electric resistance back-up requires a bit of vigilance and knowledge of operators and asset management

Net Zero Energy

What does it mean to make your roof your energy budget?

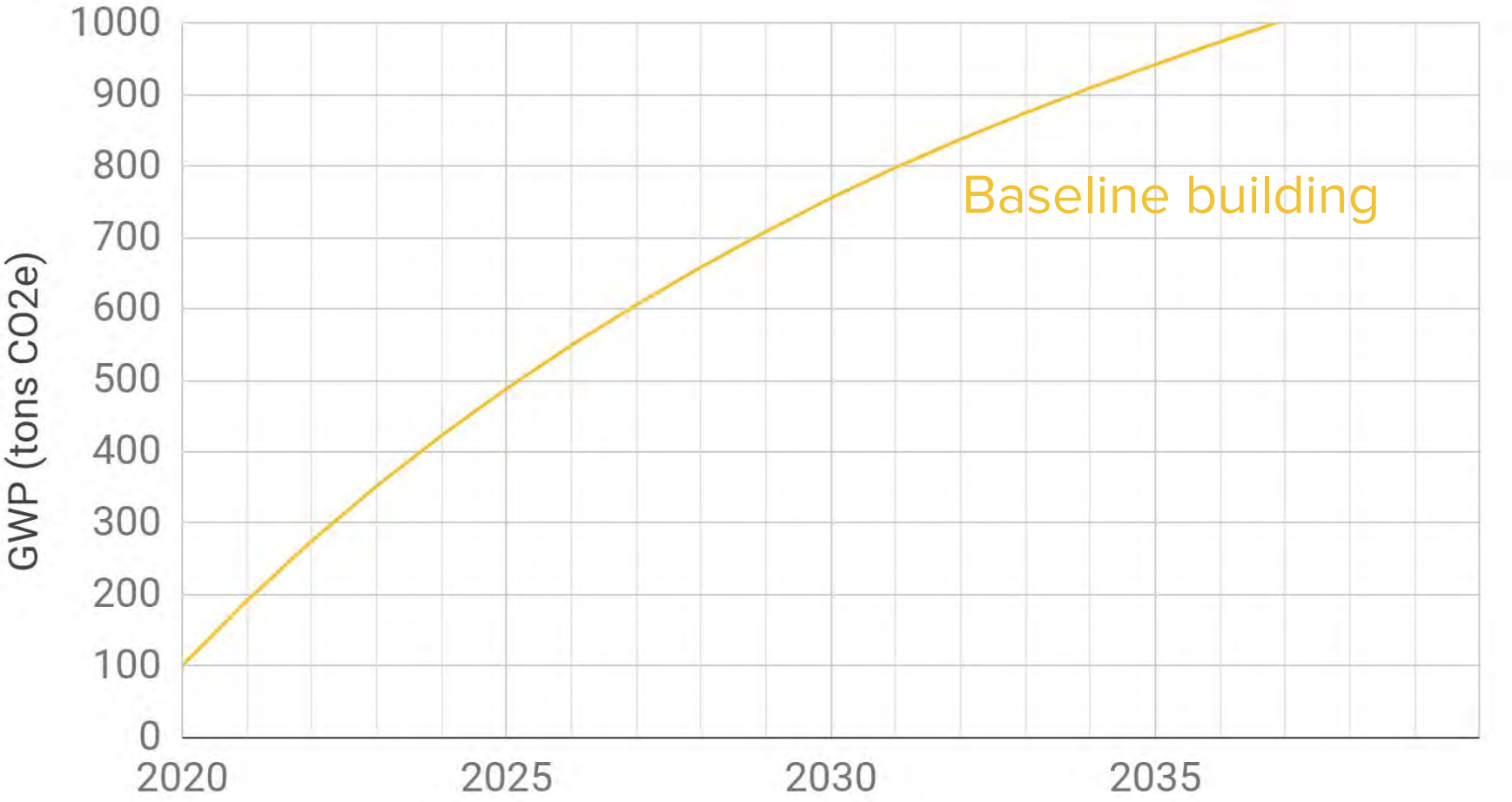


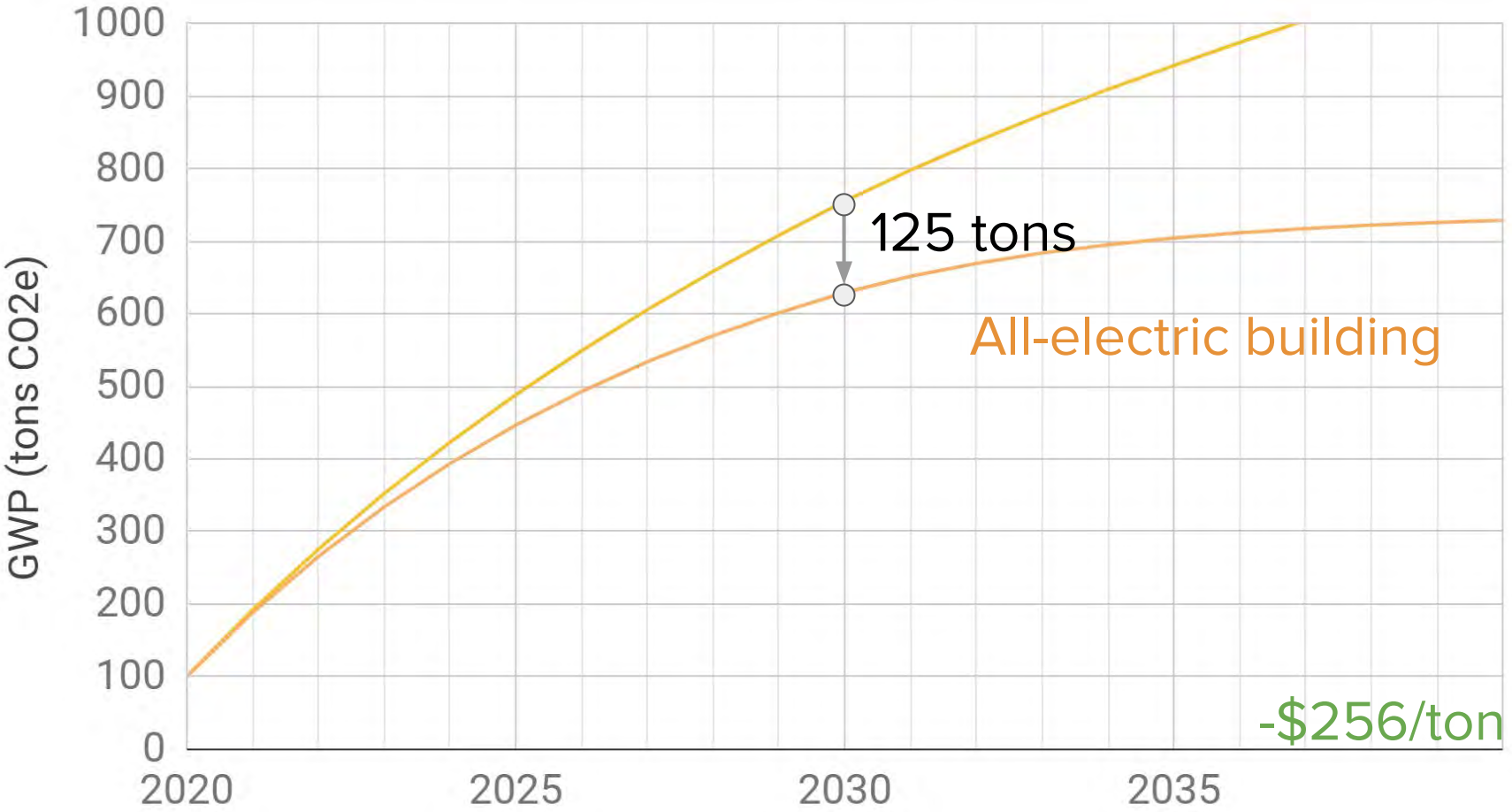


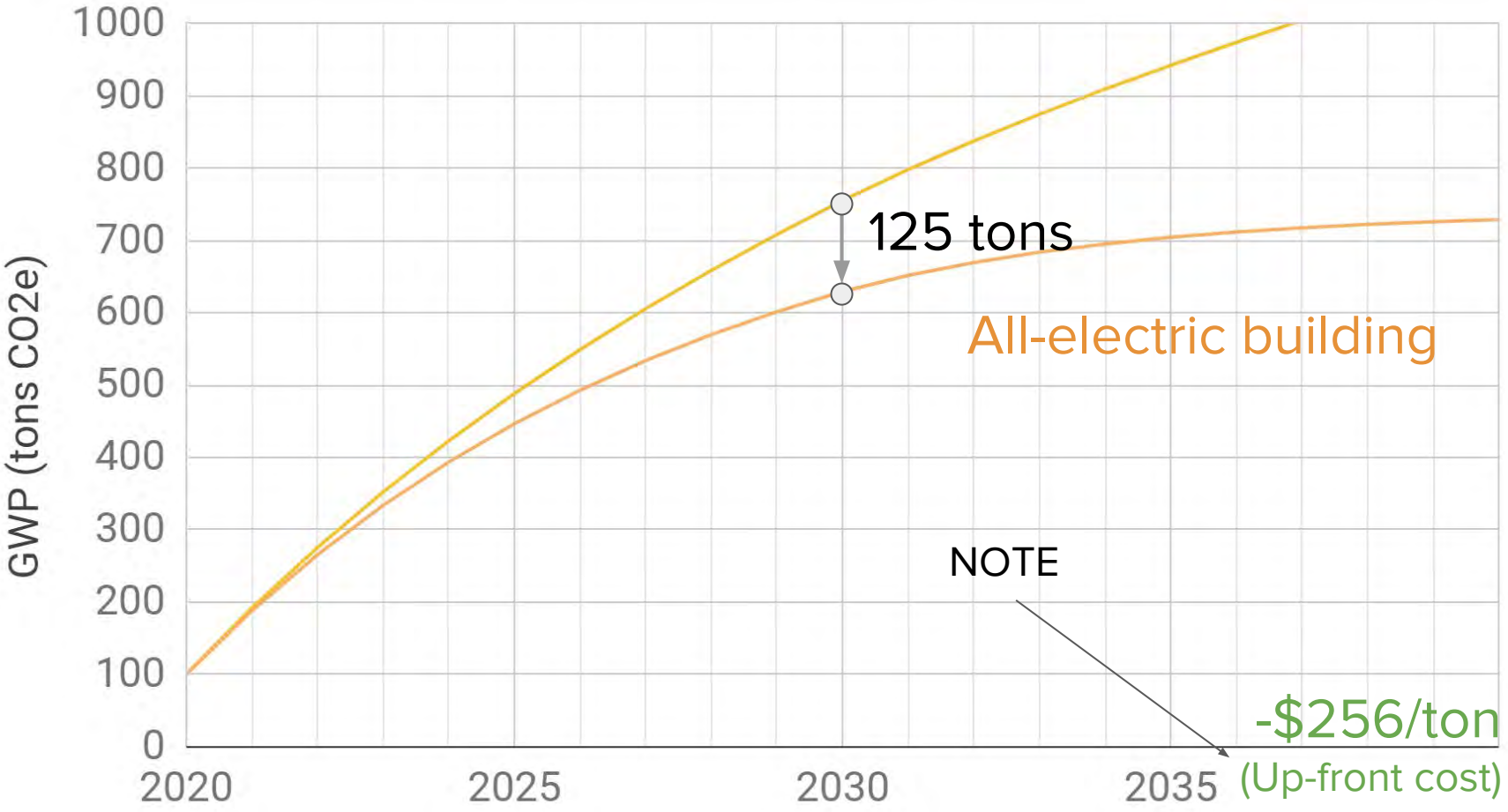
No canopy:
45% ZNE Offset
$340,000

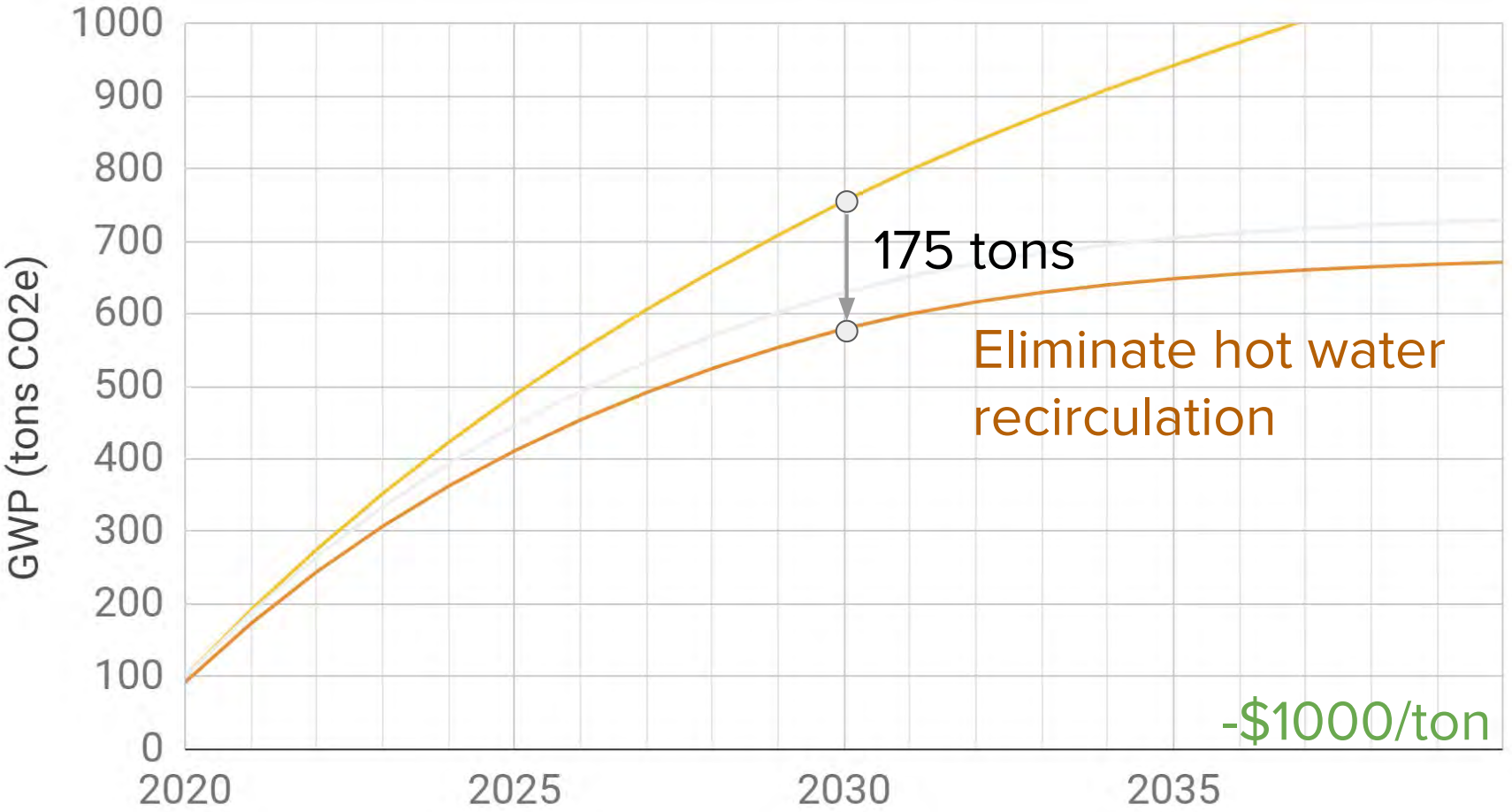
Canopy:
80% ZNE Offset
$1,100,000

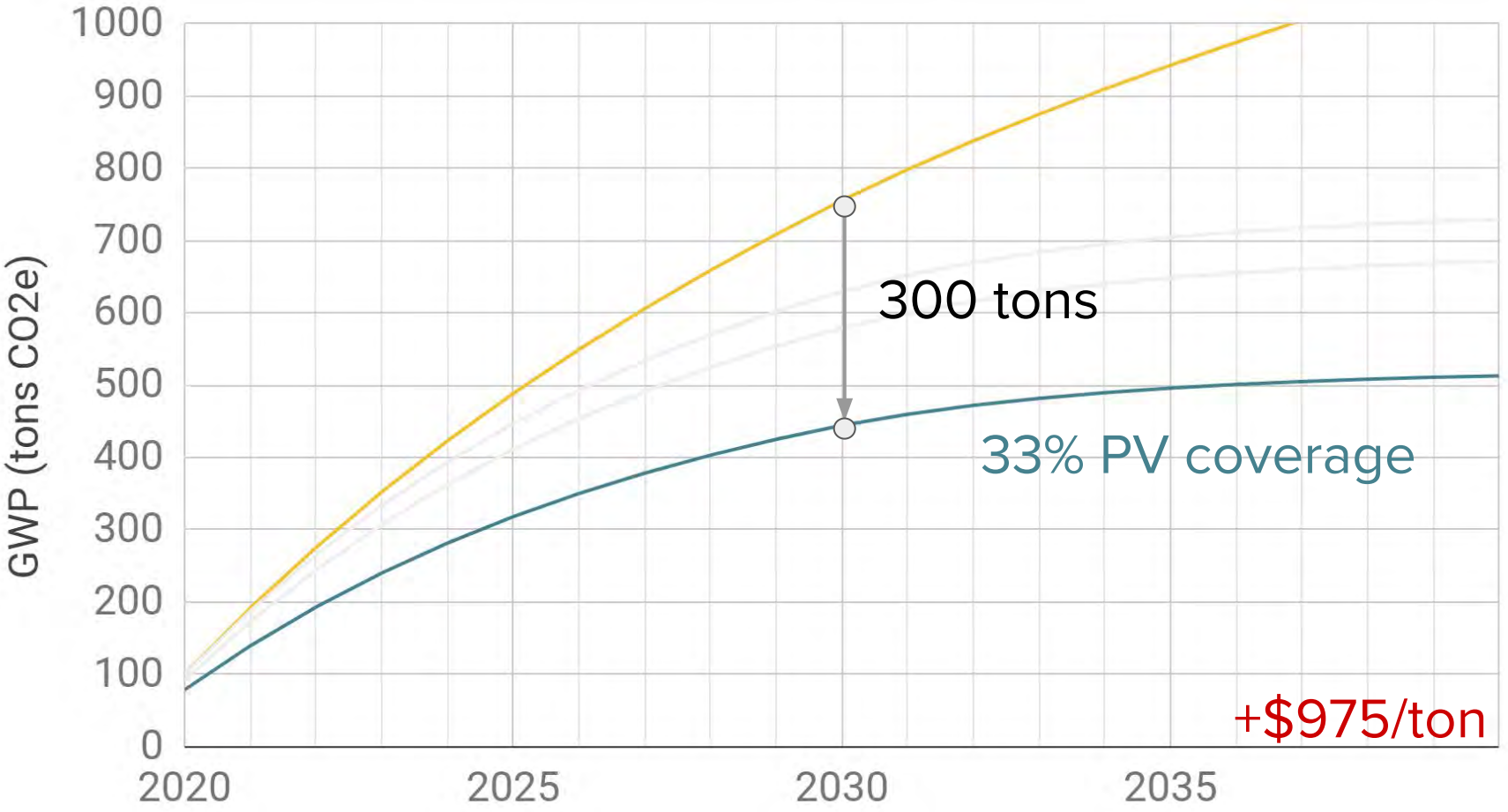
-$600,000 benefit from utility allowance adjustments if you allocate 75% to residents

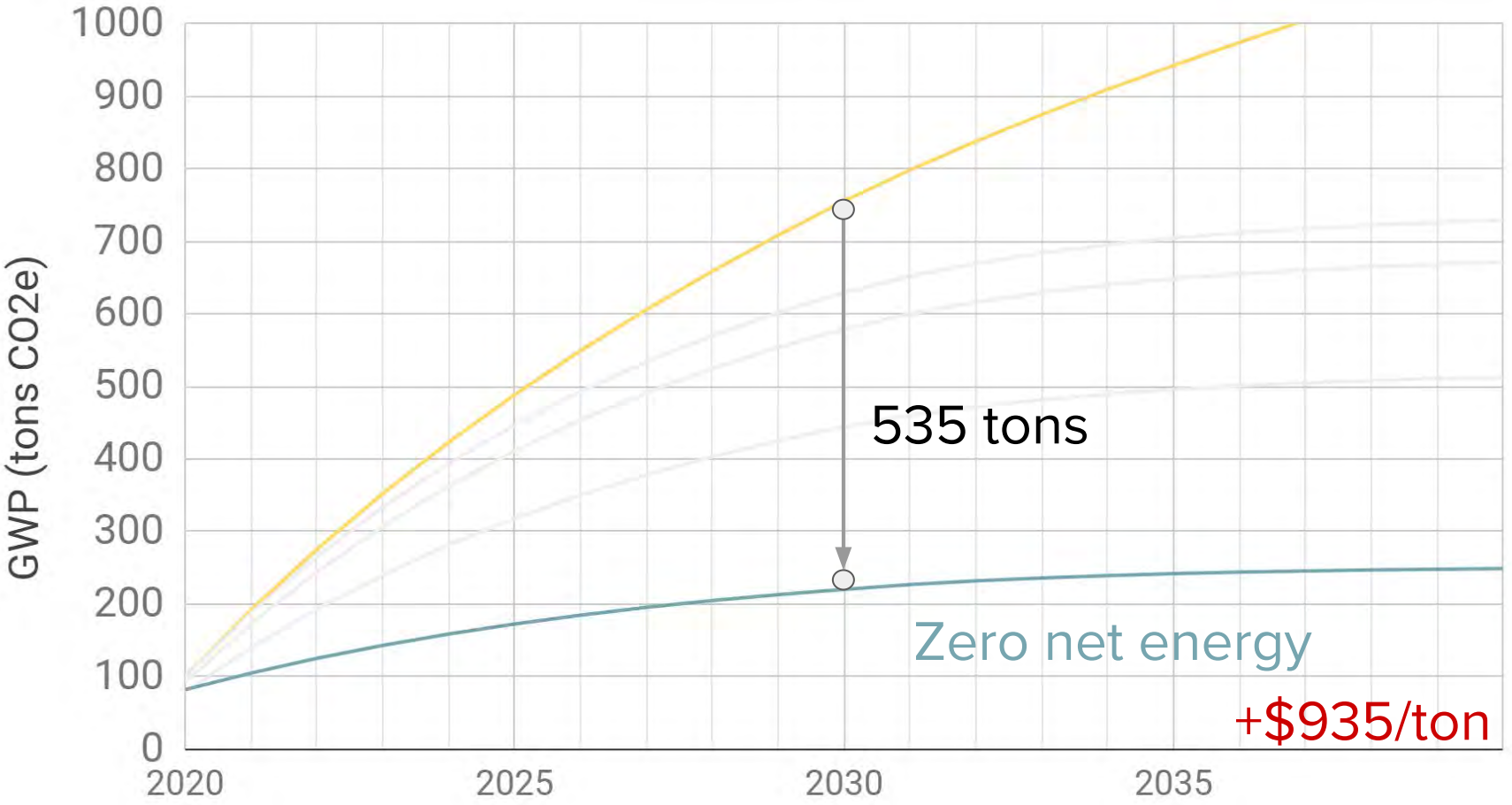

1000
900
800
700
600
500
400
300
200
100
0
GWP (tons CO2e)
2020
2025
2030
2035
Baseline building


GWP (tons CO2e)
1000
900
800
700
600
500
400
300
200
100
0
2020
2025
2030
2035
125 tons
All-electric building
-$256/ton


1000
900
800
700
600
500
400
300
200
100
0
GWP (tons CO2e)
2020
2025
2030
2035
125 tons
All-electric building
NOTE
-$256/ton
(Up-front cost)

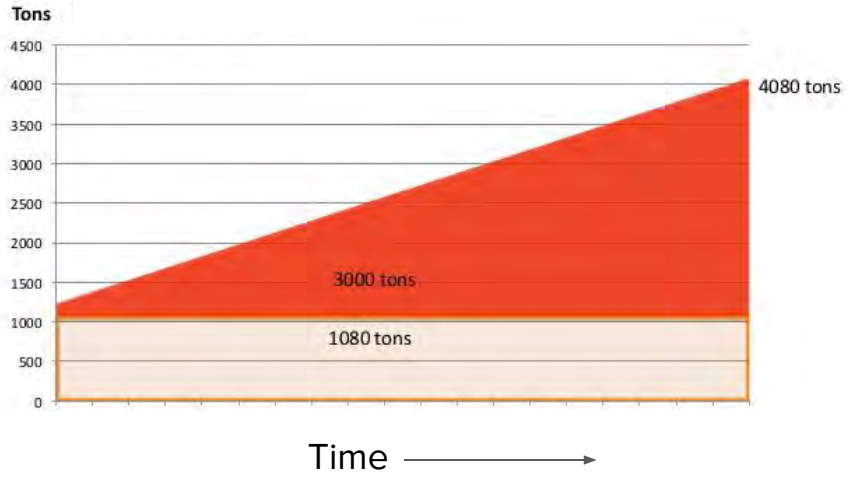

1000
900
800
700
600
500
400
300
200
100
0
GWP (tons CO2e)
2020
2025
2030
2035
175 tons
Eliminate hot water recirculation
-$1000/ton


GWP (tons CO2e)
1000
900
800
700
600
500
400
300
200
100
0
2020
2025
2030
2035
300 tons
33% PV coverage
+$975/ton

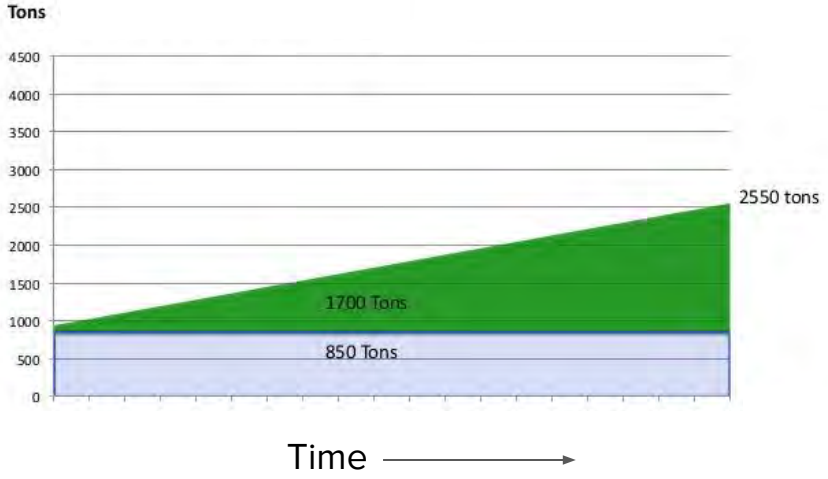

GWP (tons CO2e)
1000
900
800
700
600
500
400
300
200
100
0
2020
2025
2030
2035
535 tons
Zero net energy
+$935/ton

Embodied vs. Operating Emissions

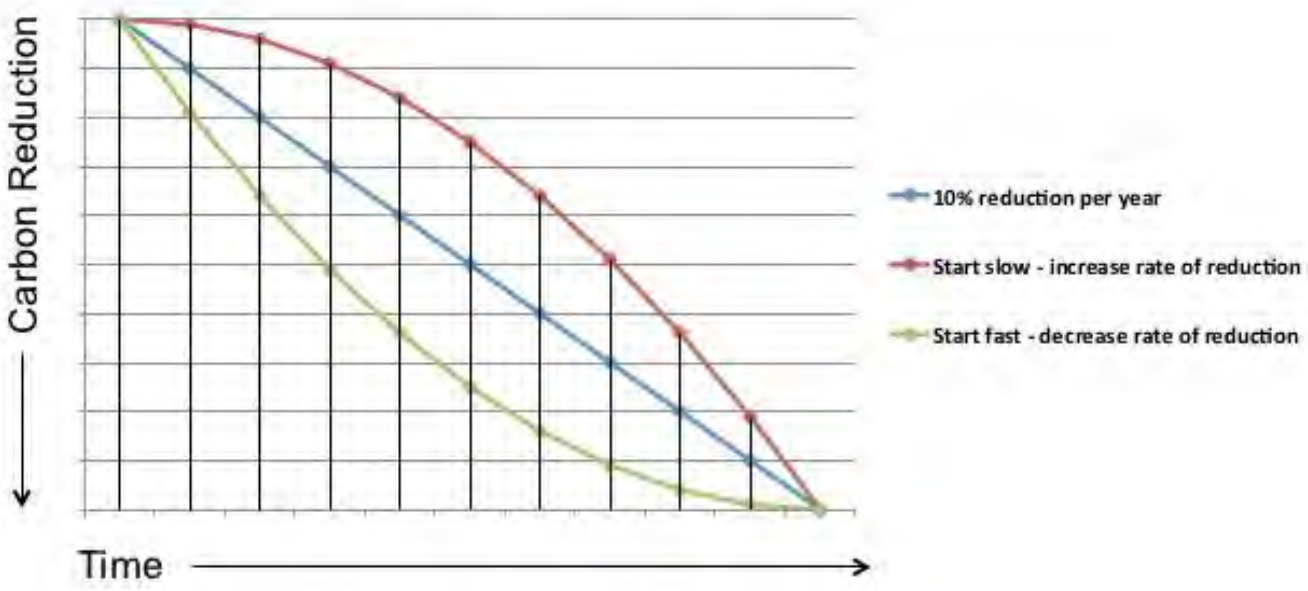
Standard Building



Efficient, Low-carbon Building

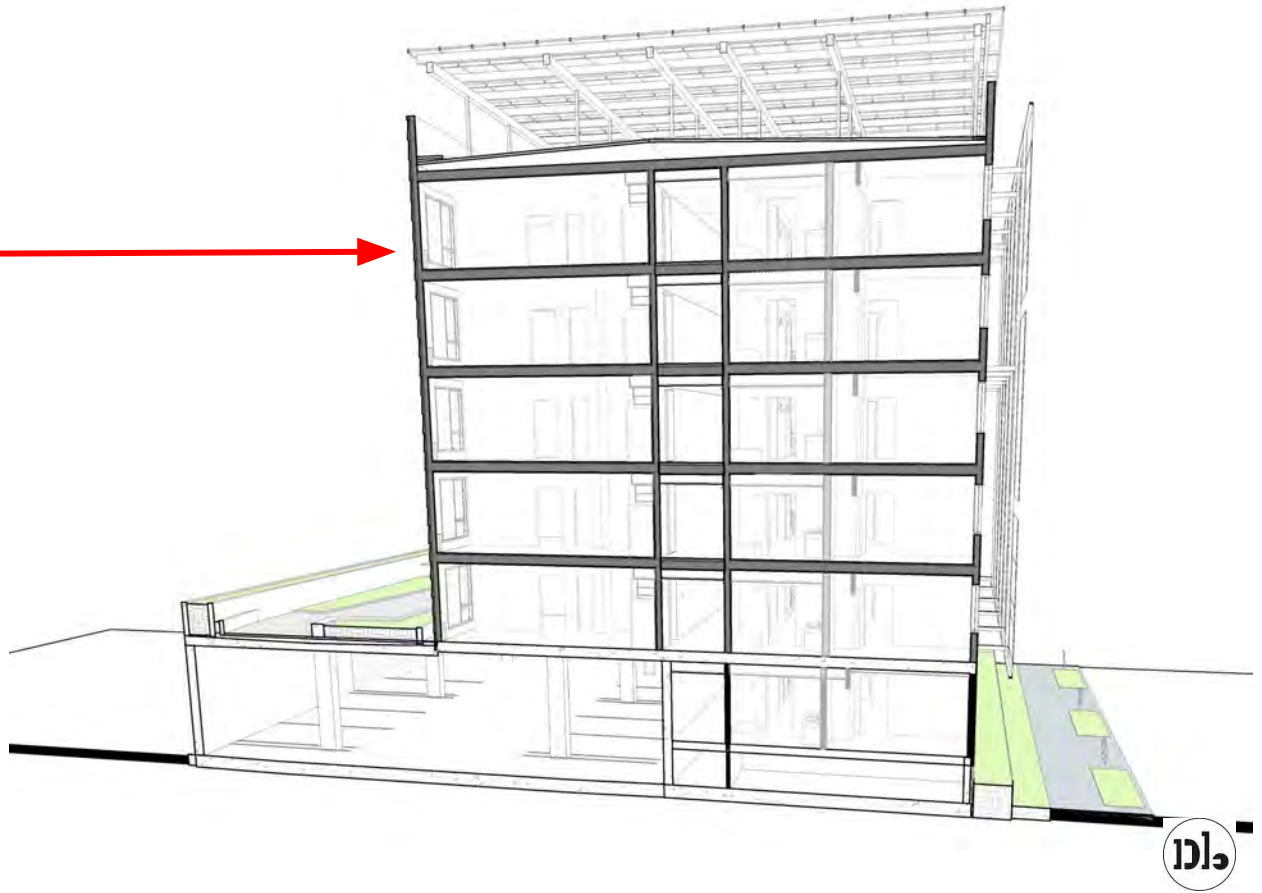


Carbon saved now is worth more than carbon saved later



What does this mean for podium buildings?

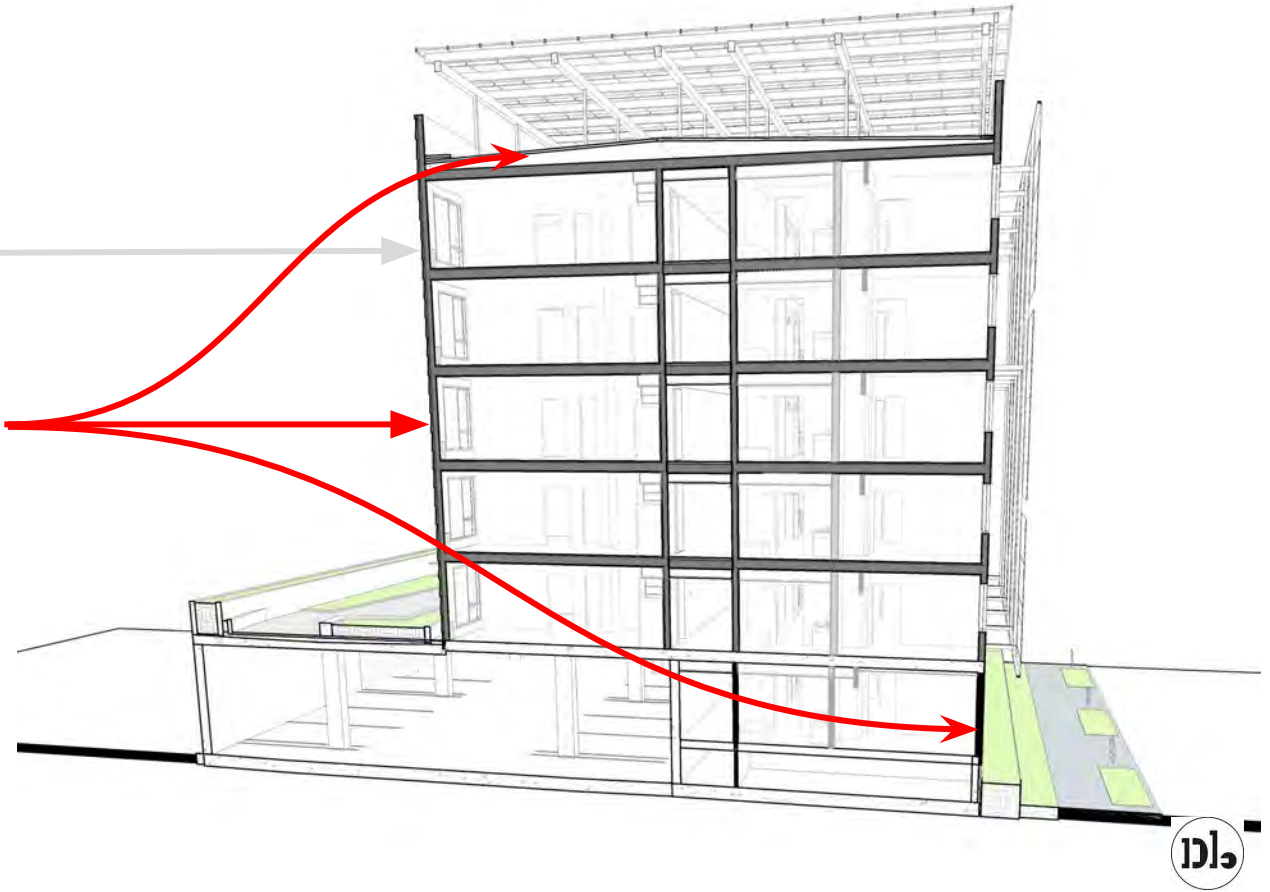
FSC wood superstructure



What does this mean for podium buildings?

FSC wood superstructure

No foam insulation

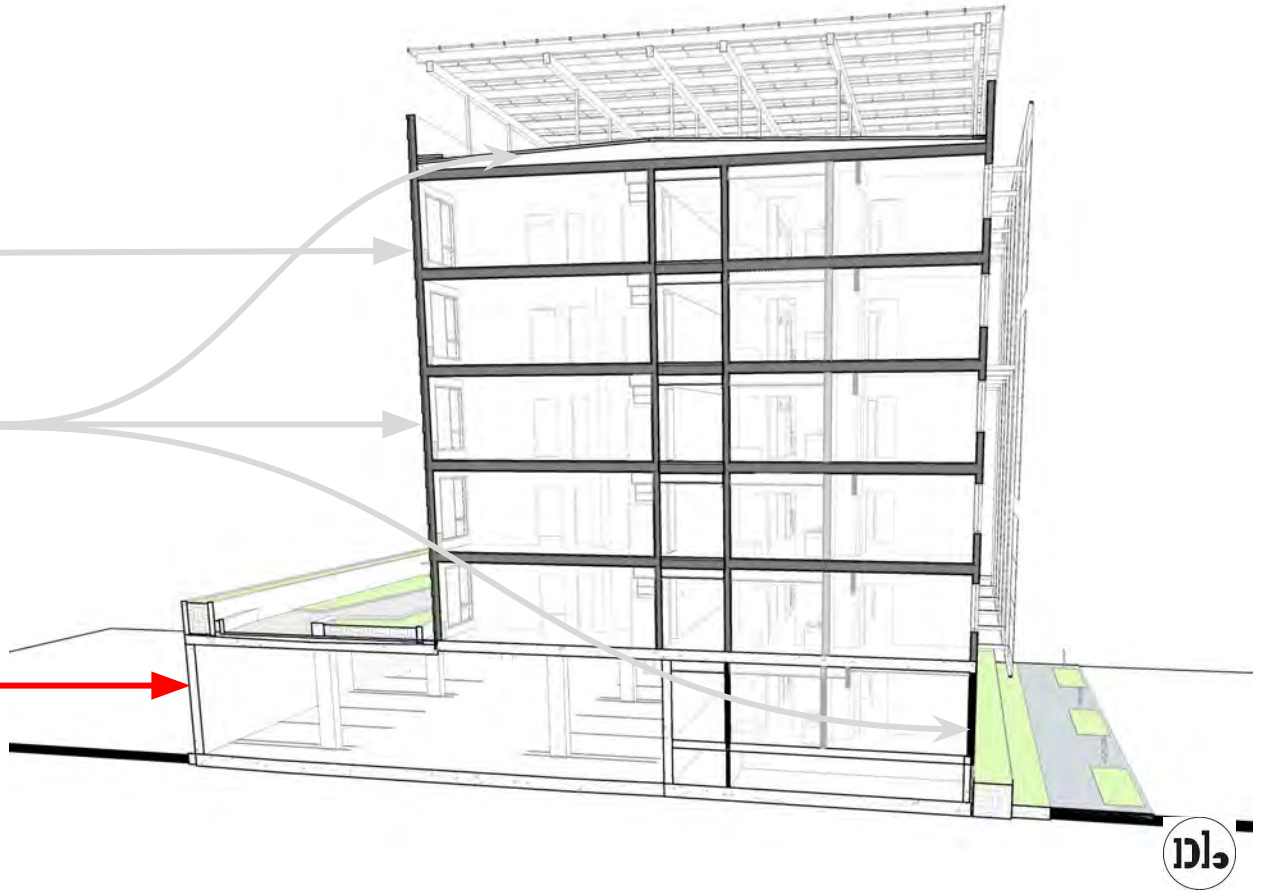


What does this mean for podium buildings?

FSC wood superstructure

No foam insulation

low-carbon concrete




FSC
www.fsc.org
FSC® C008225
FSC forests store 30% more carbon
than conventional managed forests

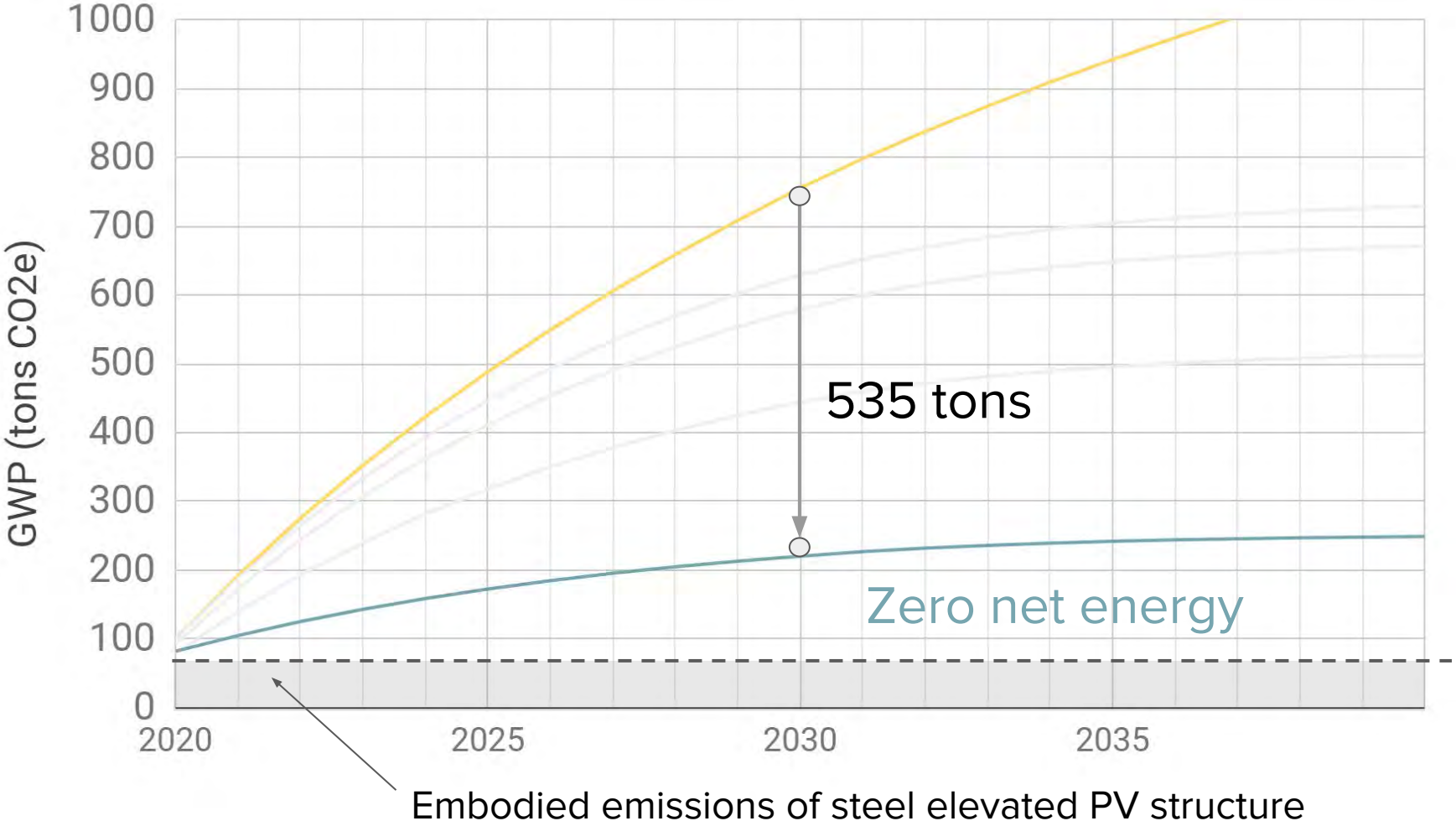
Wood framing

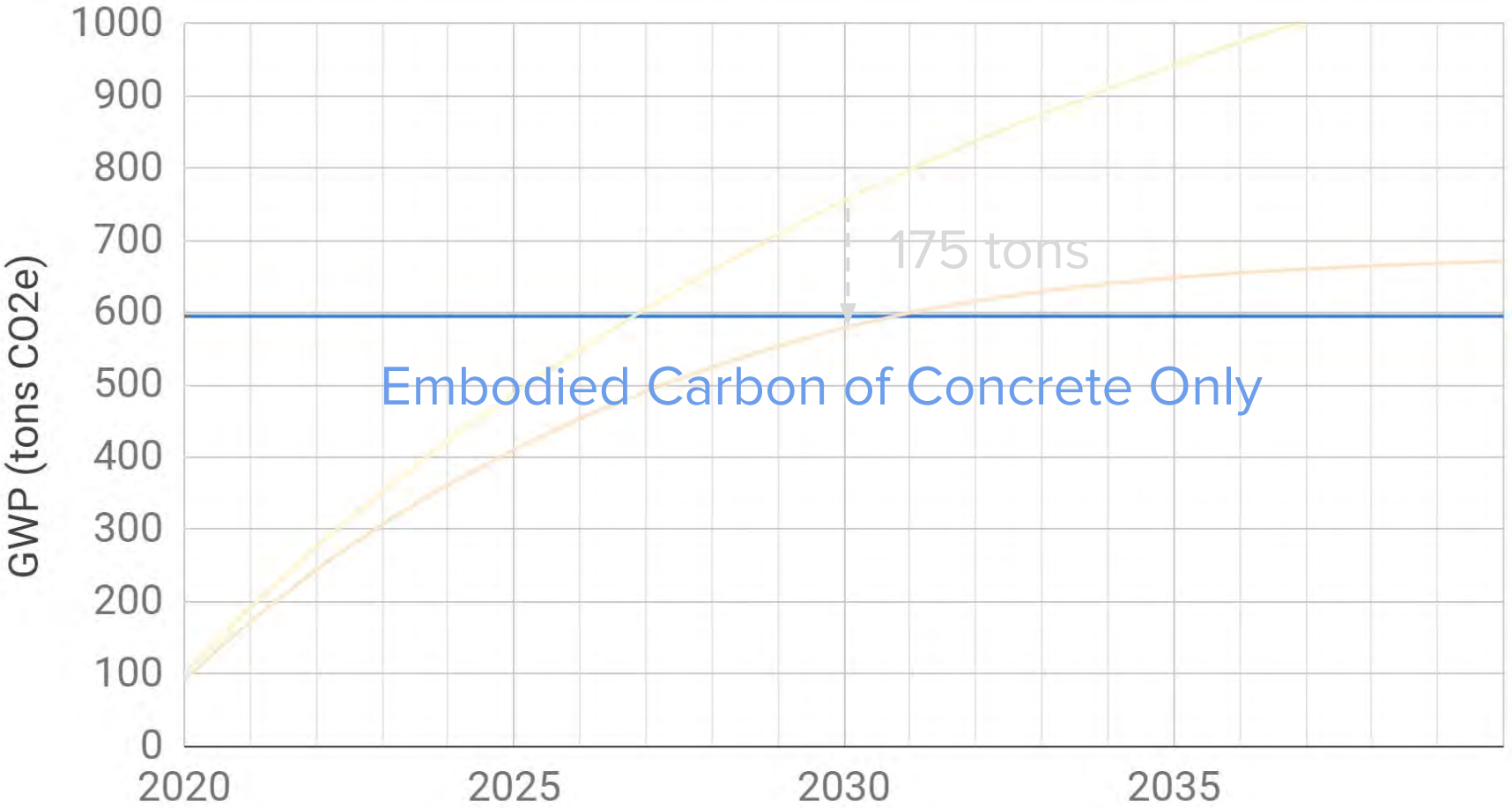
FSC: $127,000 Add/Alternate

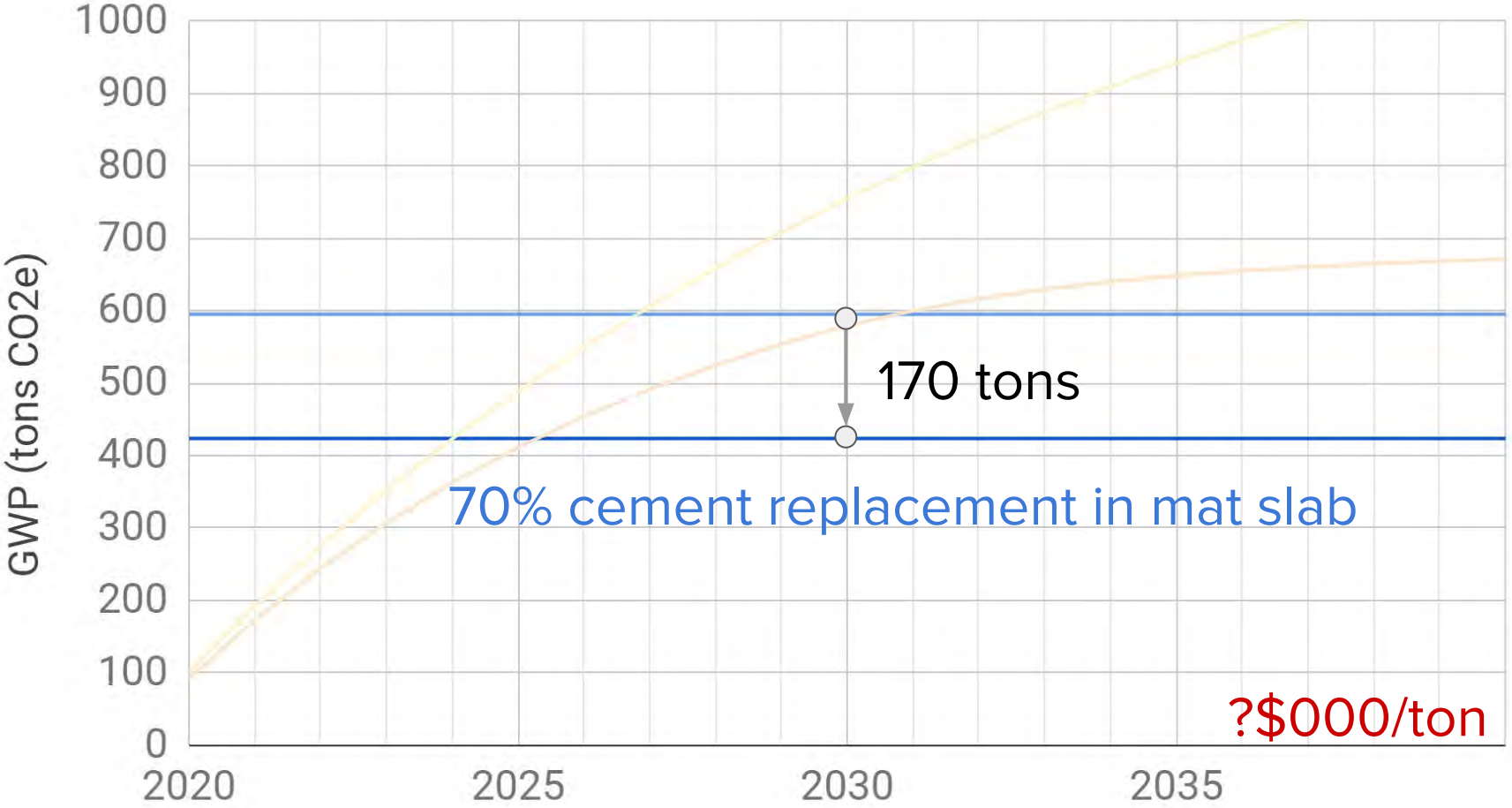
Total Framing Budget: $6 Million

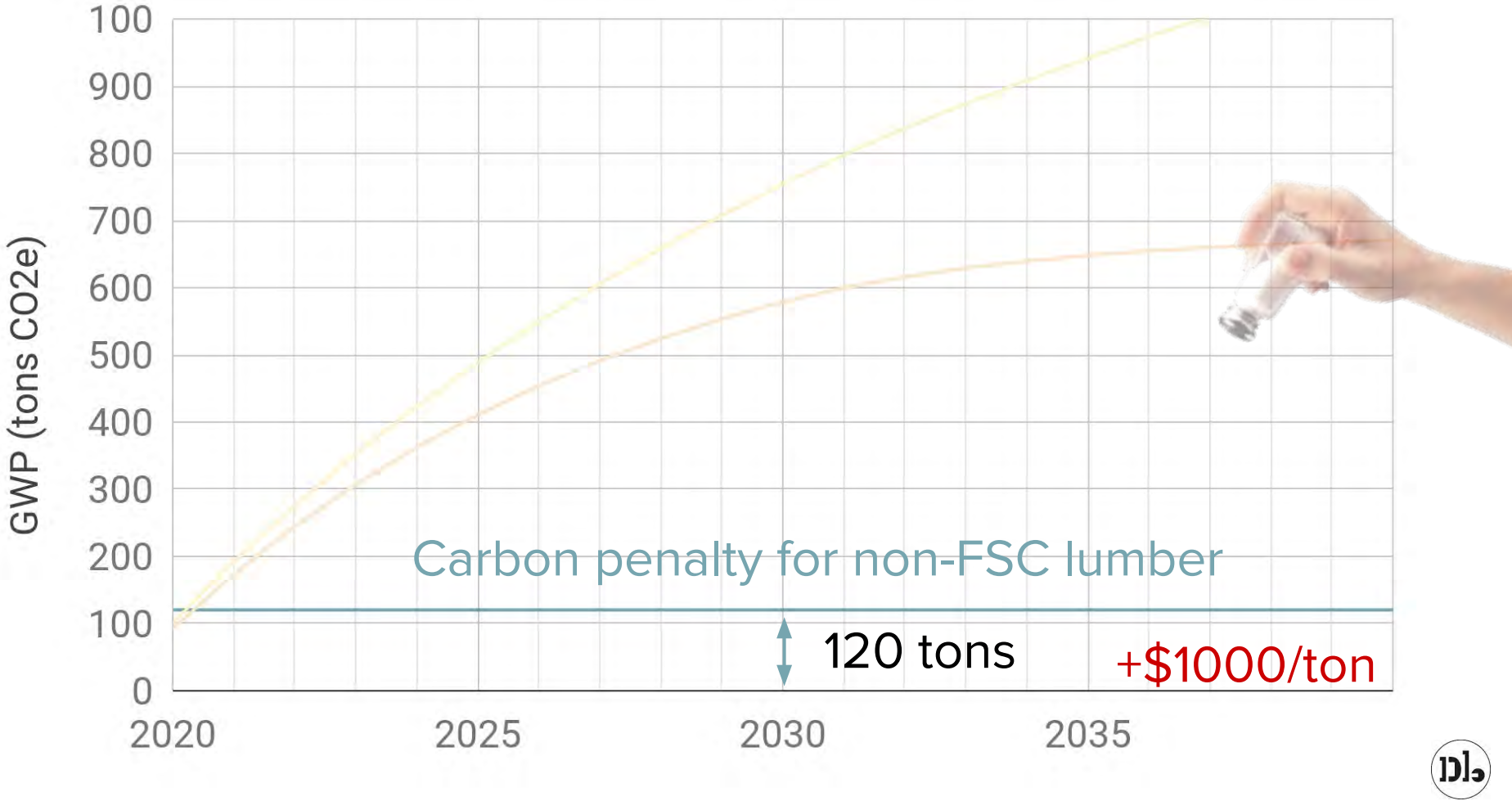
Concrete

70% cement replacement in mat slab


1000
900
800
700
600
500
400
300
200
100
0
GWP (tons CO2e)
2020
2025
2030
2035
535 tons
Zero net energy
Embodied emissions of steel elevated PV structure


1000
900
800
700
600
500
400
300
200
100
0
GWP (tons CO2e)
2020
2025
2030
2035
175 tons
Embodied Carbon of Concrete Only


GWP (tons CO2e)
1000
900
800
700
600
500
400
300
200
100
0
2020
2025
2030
2035
170 tons
70% cement replacement in mat slab
?$000/ton


GWP (tons CO2e)
100
900
800
700
600
500
400
300
200
100
0
2020
2025
2030
2035
Carbon penalty for non-FSC lumber
120 tons
+$1000/ton

Thank You!

katie.ackerly@dbarchitect.com