

# Energy Compliance Case study

Zero Net Carbon Retreat 2017  
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REDWOOD ENERGY

# Green Valley Homes subdivision

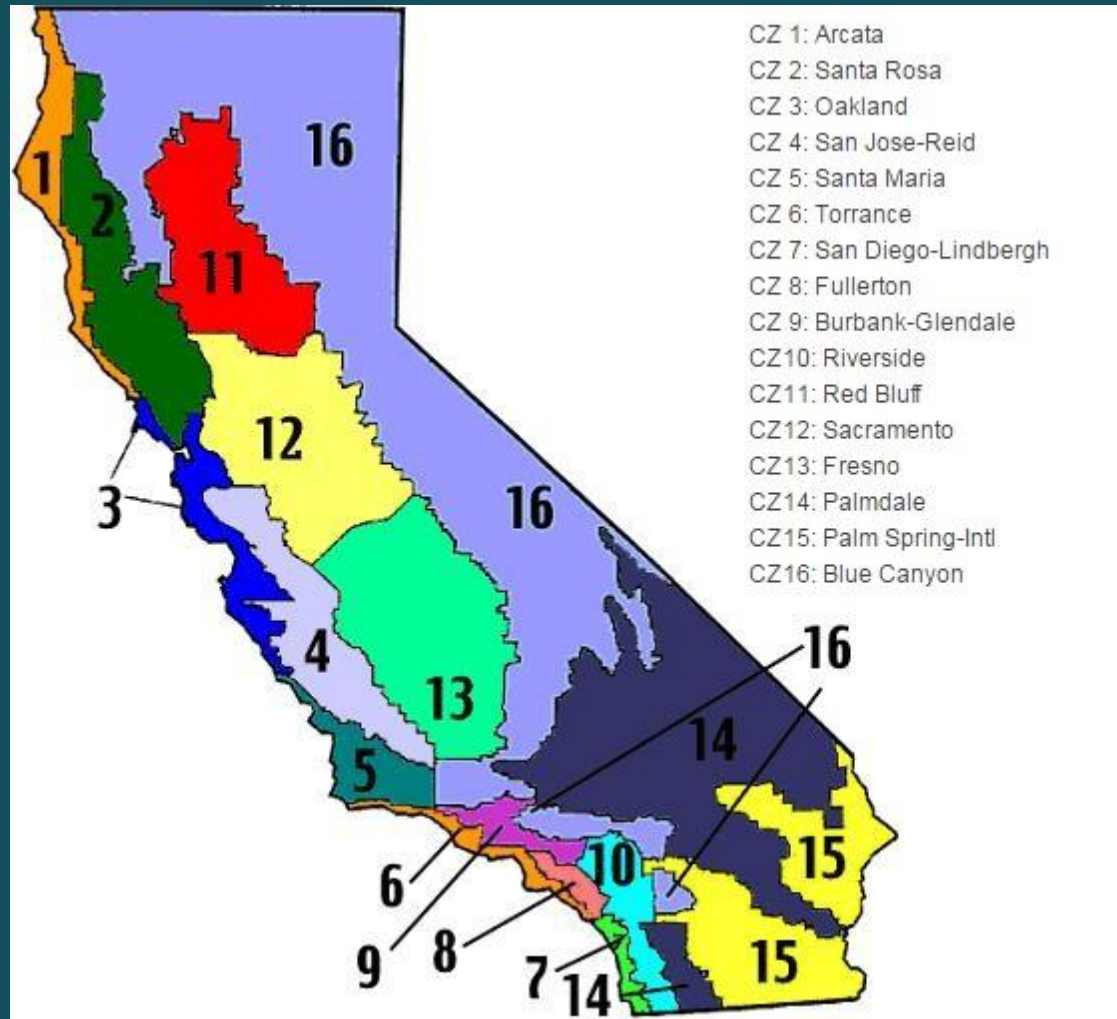
- ❖ Largest ZNE subdivision in California in Williams, CA
- ❖ Consist of 40 units
  - 5 are 2 bed/ 2 bath
  - 17 are 3 bed/ 2 bath
  - 18 are 4 bed/ 2 bath
- ❖ Focus on 3Bed Williams' home
  - DHW: GE GEOspring, EF=3.1
  - HVAC: Maytag Split DX: HSPF=10, SEER= 19, EER=13.9
- ❖ South facing orientation results



# Scenarios

Using the William's (3 bed) home:

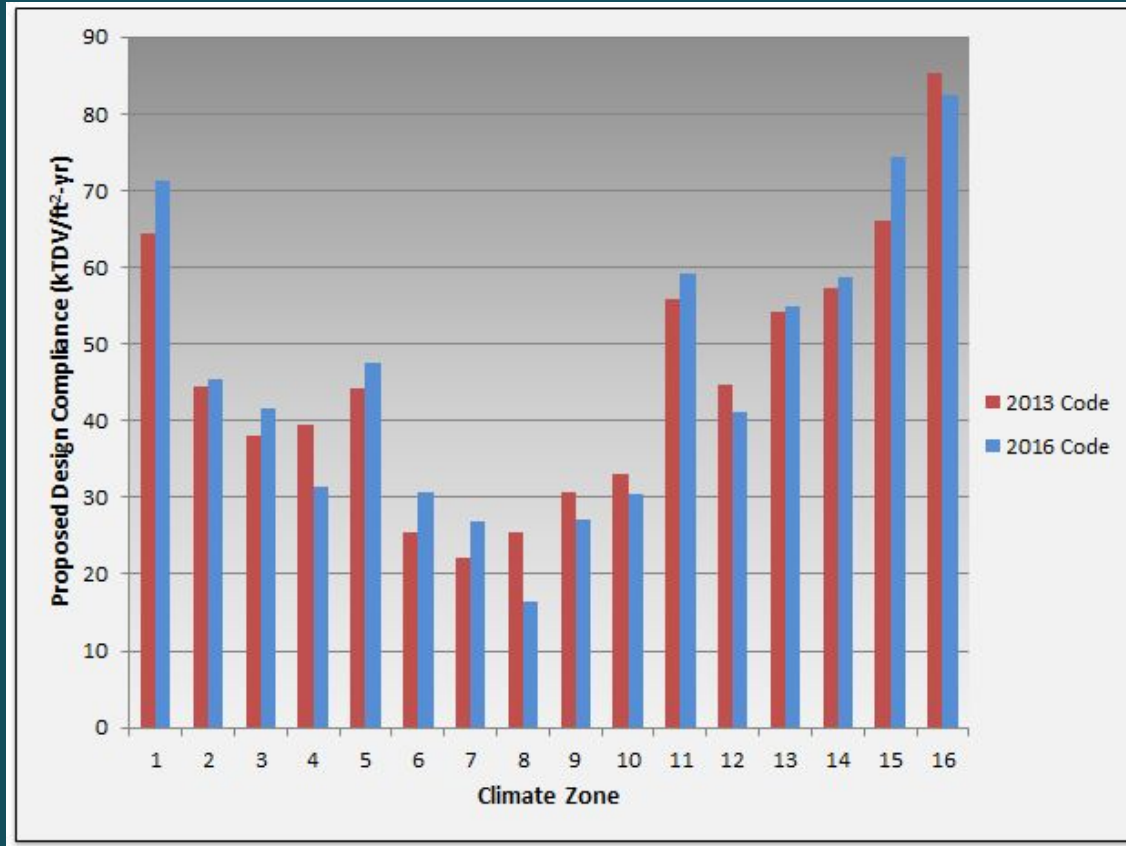
1. Compare 2013 to 2016 Code compliance software for an All electric home in all 16 CZs
2. Compare an all electric home with no NG available to an all electric home with NG available in 2016 code compliance software in all 16 CZs
3. Compare An all electric home with efficient mechanical system (HVAC & DHW) with a gas-electric hybrid home with efficient mechanical system



# All Electric Home No Gas Available (2013 vs 2016 code)

## Scenario #1

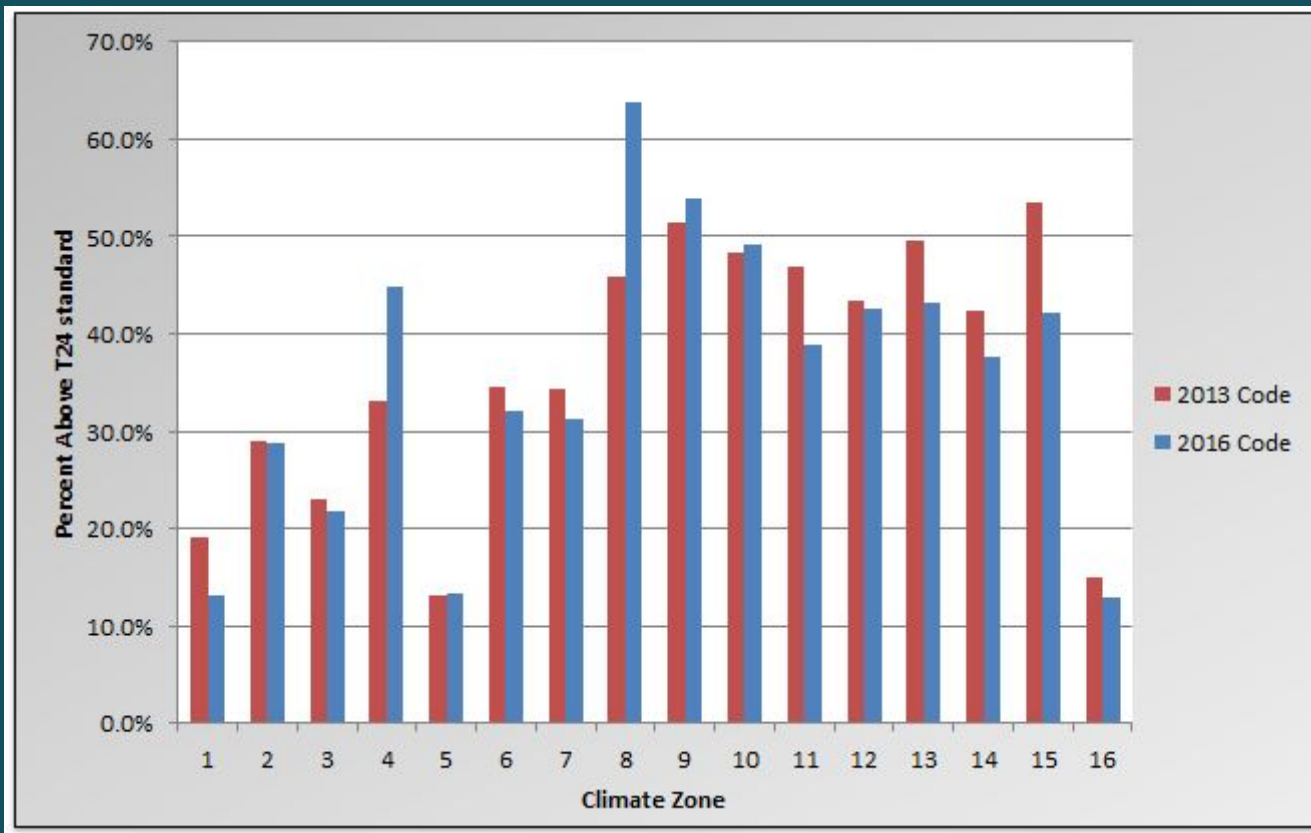
Percent difference between 2013 and 2016 proposed design compliance:



CZ	percent difference
1	11.0
2	2.4
3	9.3
4	-20.5
5	7.7
6	21.5
7	21.6
8	-35.4
9	-11.2
10	-8.4
11	5.9
12	-7.7
13	1.5
14	2.5
15	12.7
16	-3.4

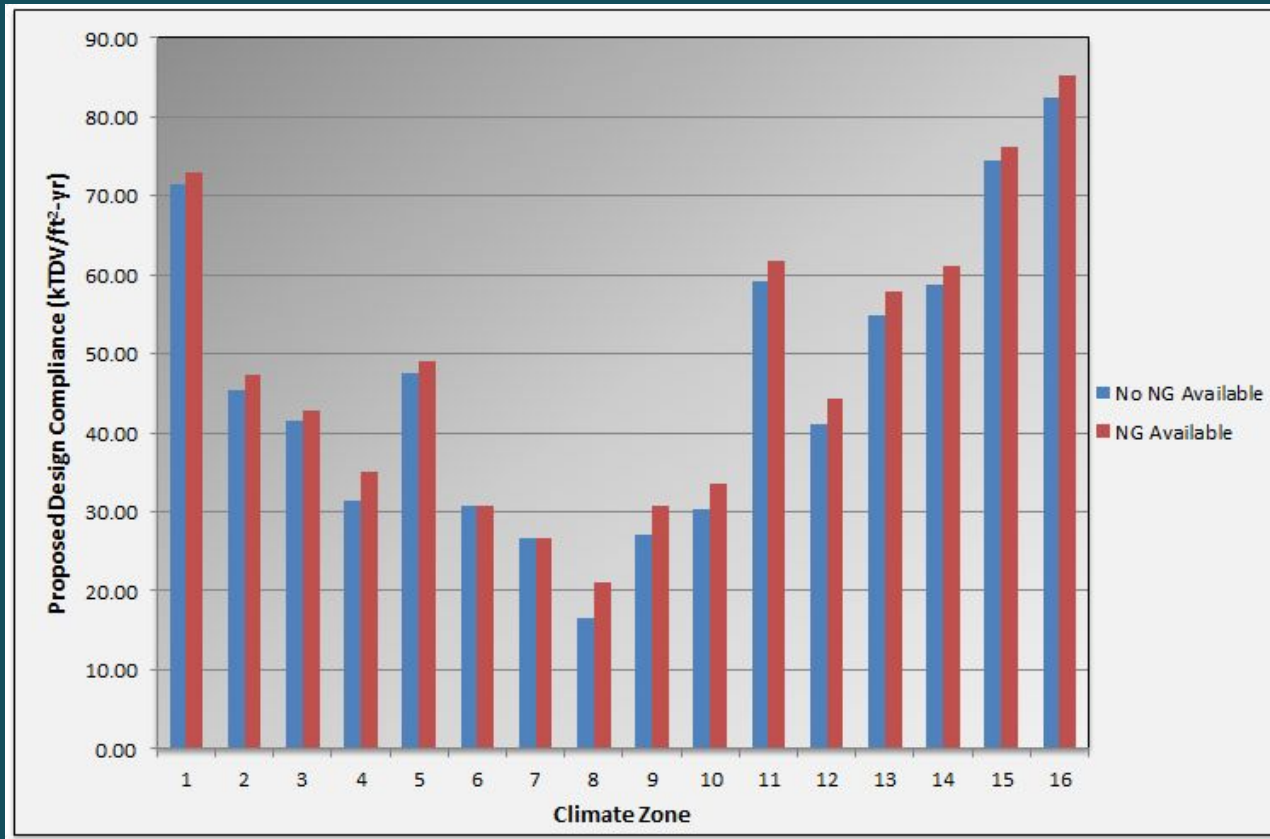
# All Electric Home No Gas Available (2013 vs 2016 code)

Percentage above T24 Standard design



# All Electric Home Gas Available vs No Gas Available Scenario #2

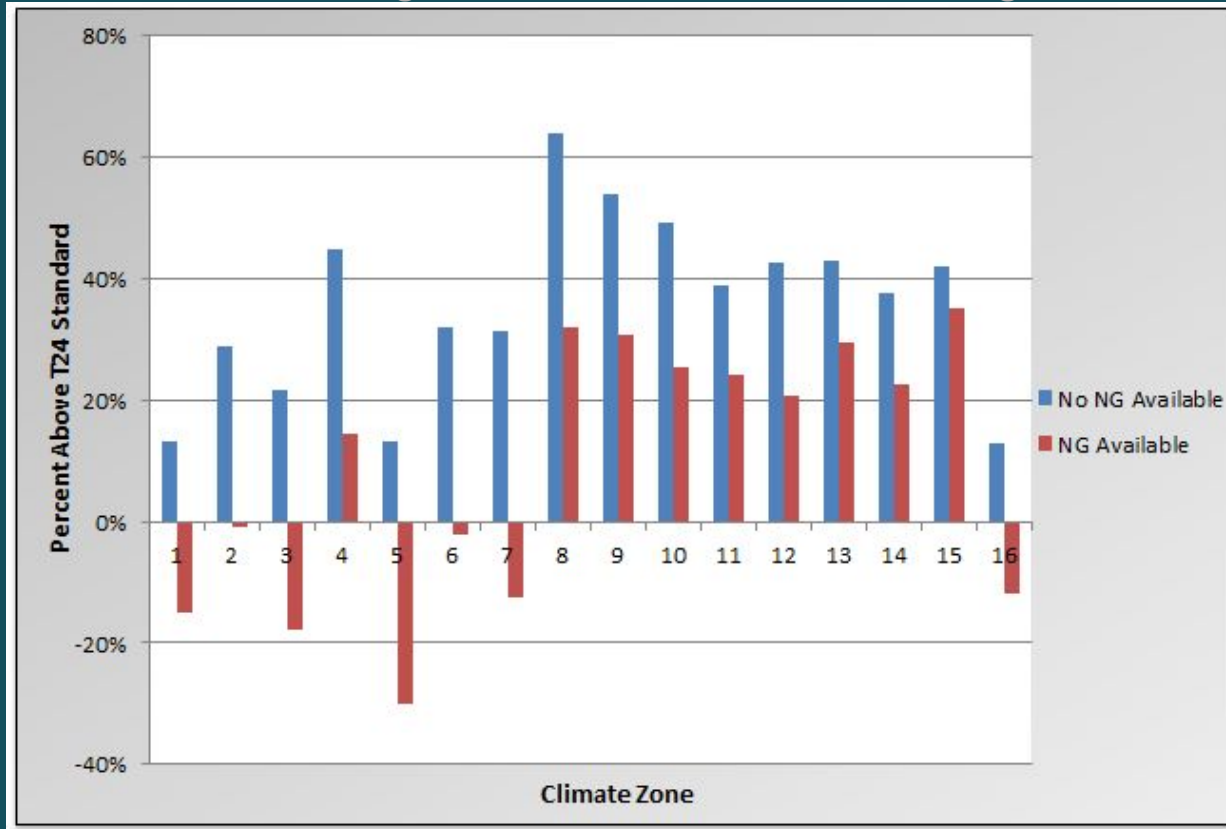
2016 code  
compliance  
Software  
results



# All Electric Home Gas Available vs No Gas Available

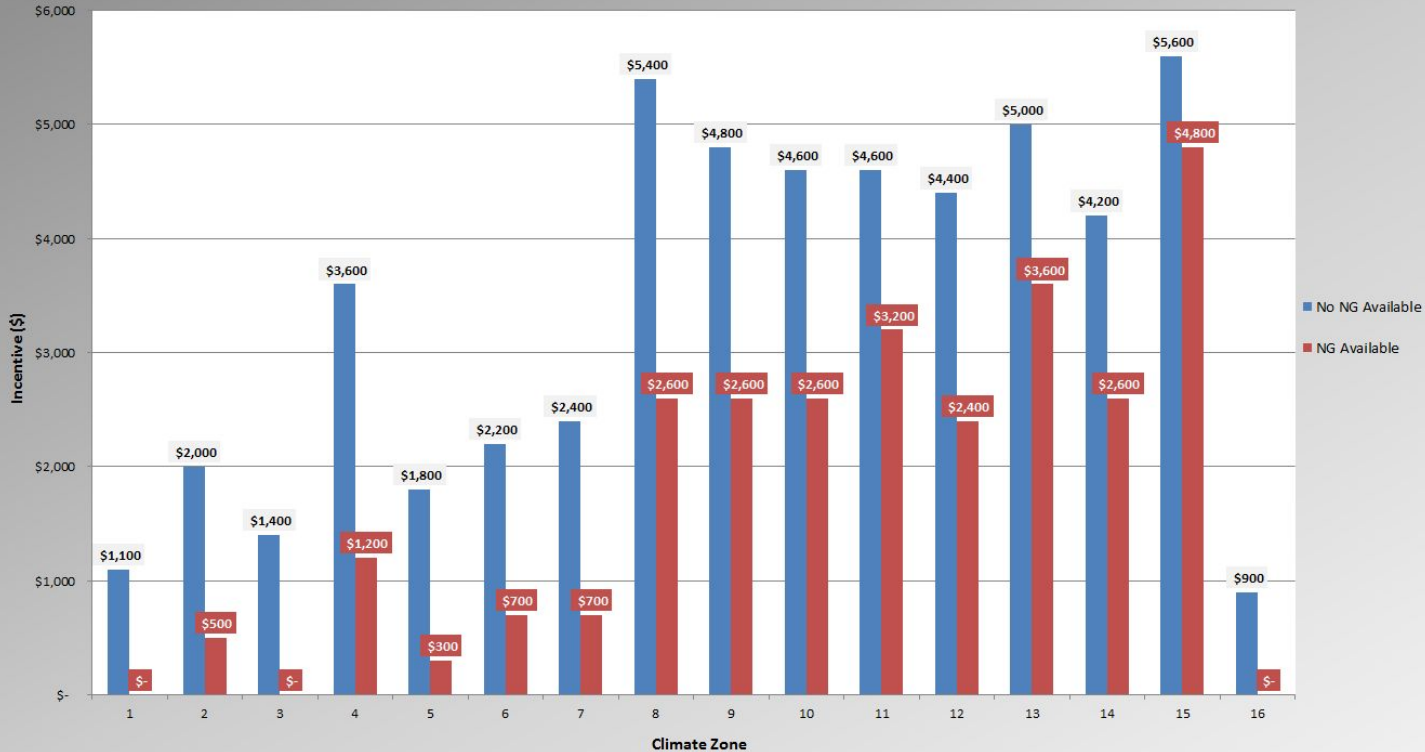
## Percentage above T24 Standard design

2016 code compliance  
Software  
results



# All Electric Home Gas Available vs No Gas Available

## 2016 code Incentives (\$)

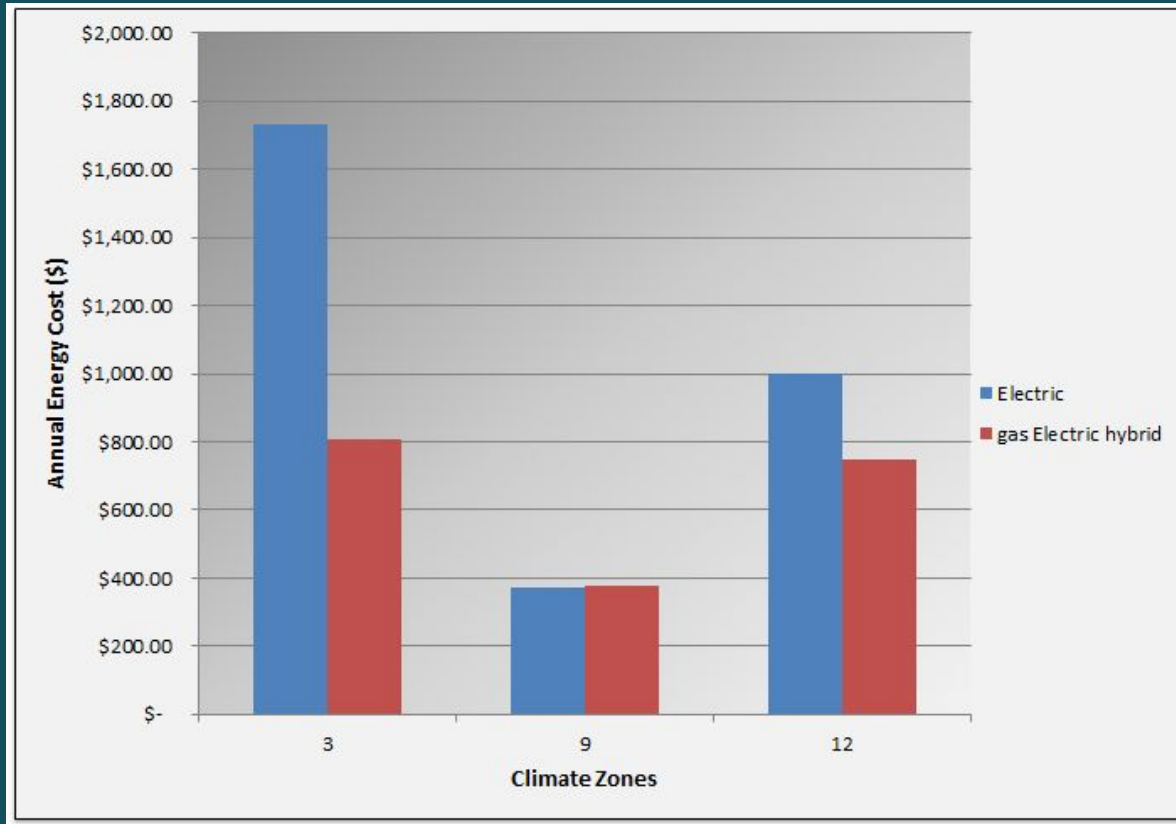


CZ	Total amount lost for Development
1	\$ 44,000
2	\$ 60,000
3	\$ 56,000
4	\$ 96,000
5	\$ 60,000
6	\$ 60,000
7	\$ 68,000
8	\$ 112,000
9	\$ 88,000
10	\$ 80,000
11	\$ 56,000
12	\$ 80,000
13	\$ 56,000
14	\$ 64,000
15	\$ 32,000
16	\$ 36,000



# All Electric Home vs Gas-Electric hybrid home in 2016 Code

## Annual Energy Cost



### Scenario #3

Mechanical Systems Specs:

- ❖ DHW: Stiebel Eltron Accelera 300
  - EF = 3.39
- ❖ HVAC: Infinity 20 with Green Speed intelligence
  - HSPF = 13
  - SEER = 20.5
  - EER = 16

Thank You!