California Residential and Commercial Building Energy Use Characteristics

Data Sources:

2012 CEC Demand Forecast

2009 RASS

2003 CEUS

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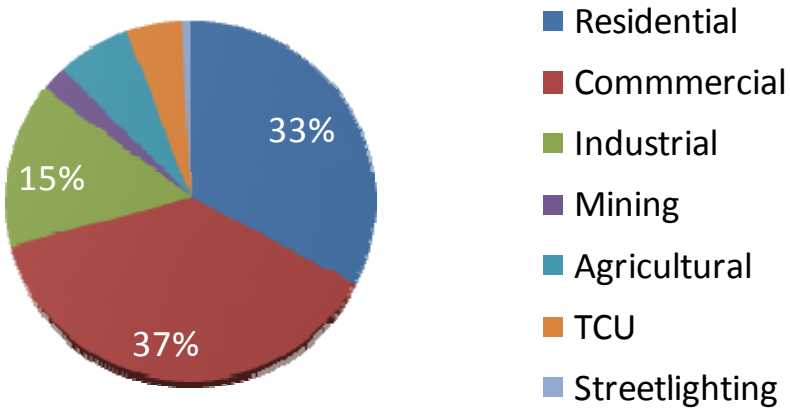
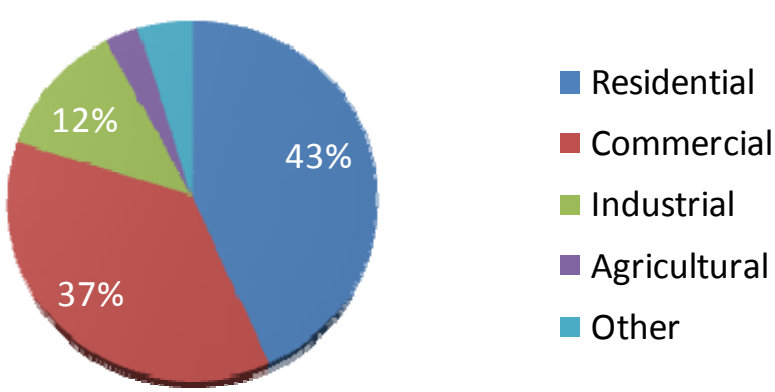
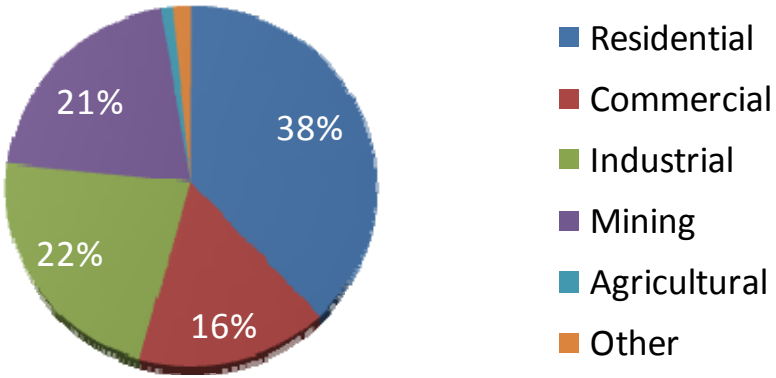
2012 Electricity Consumption



2012 Coincident Peak Demand

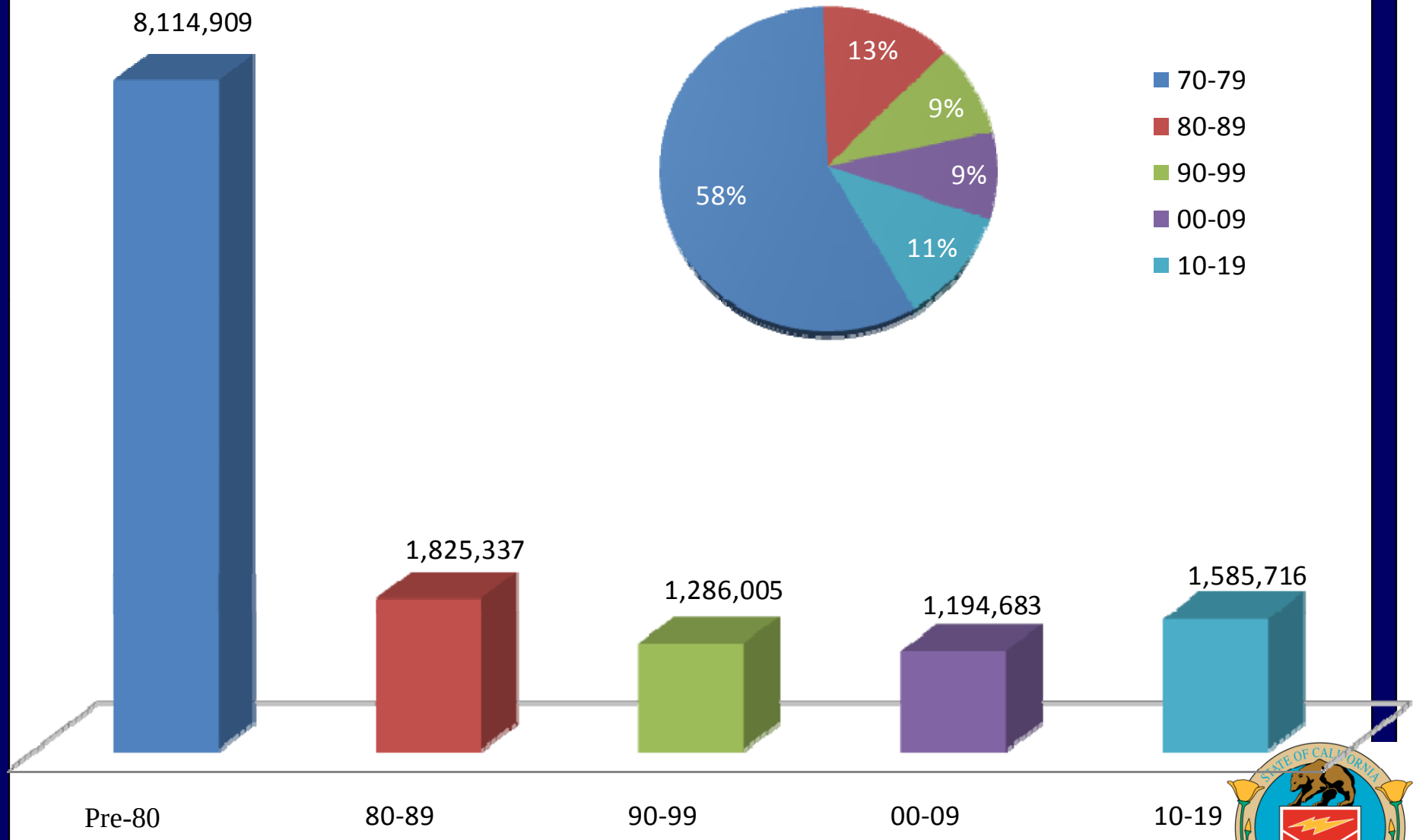


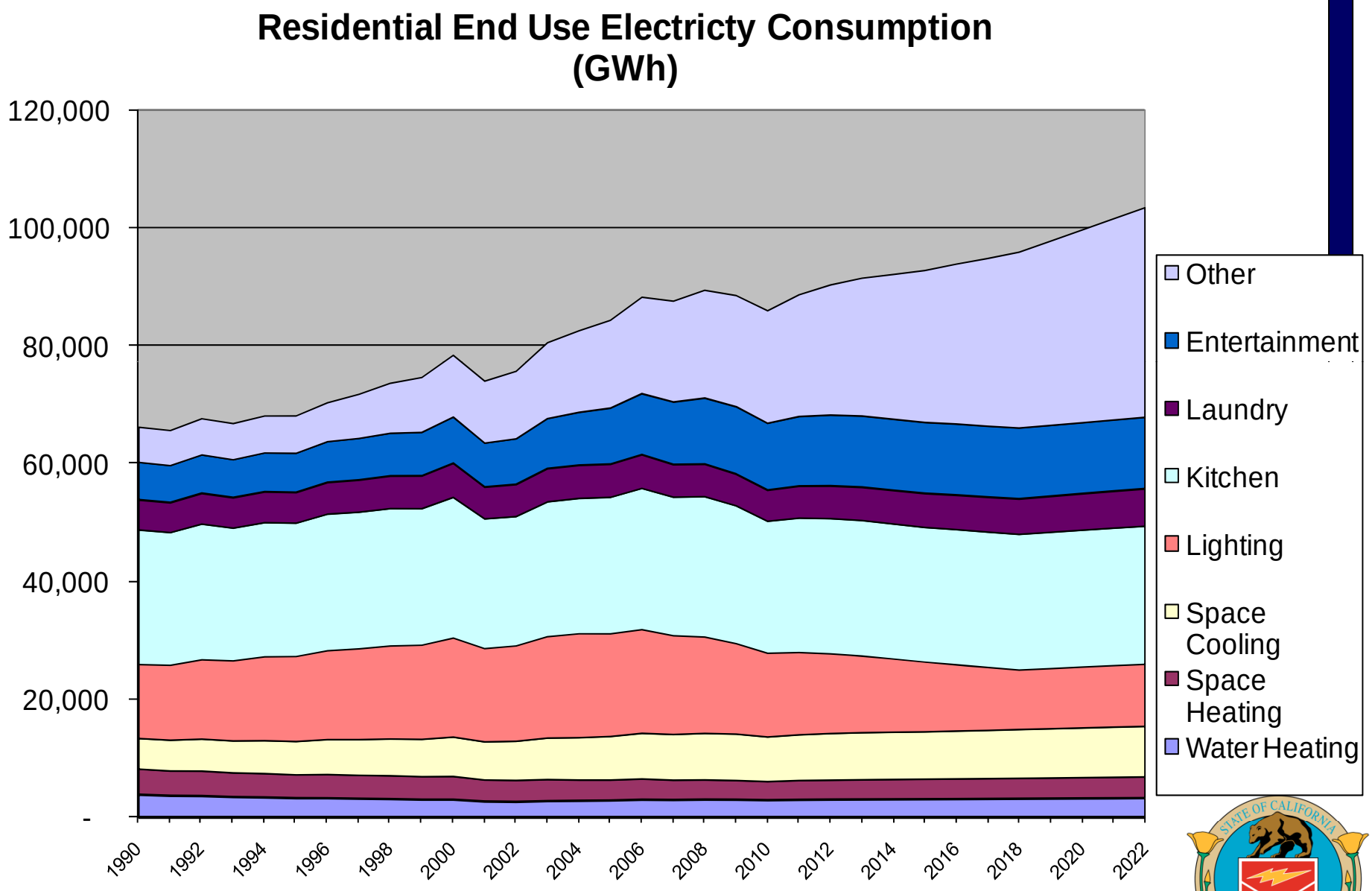
2012 Natural Gas Consumption

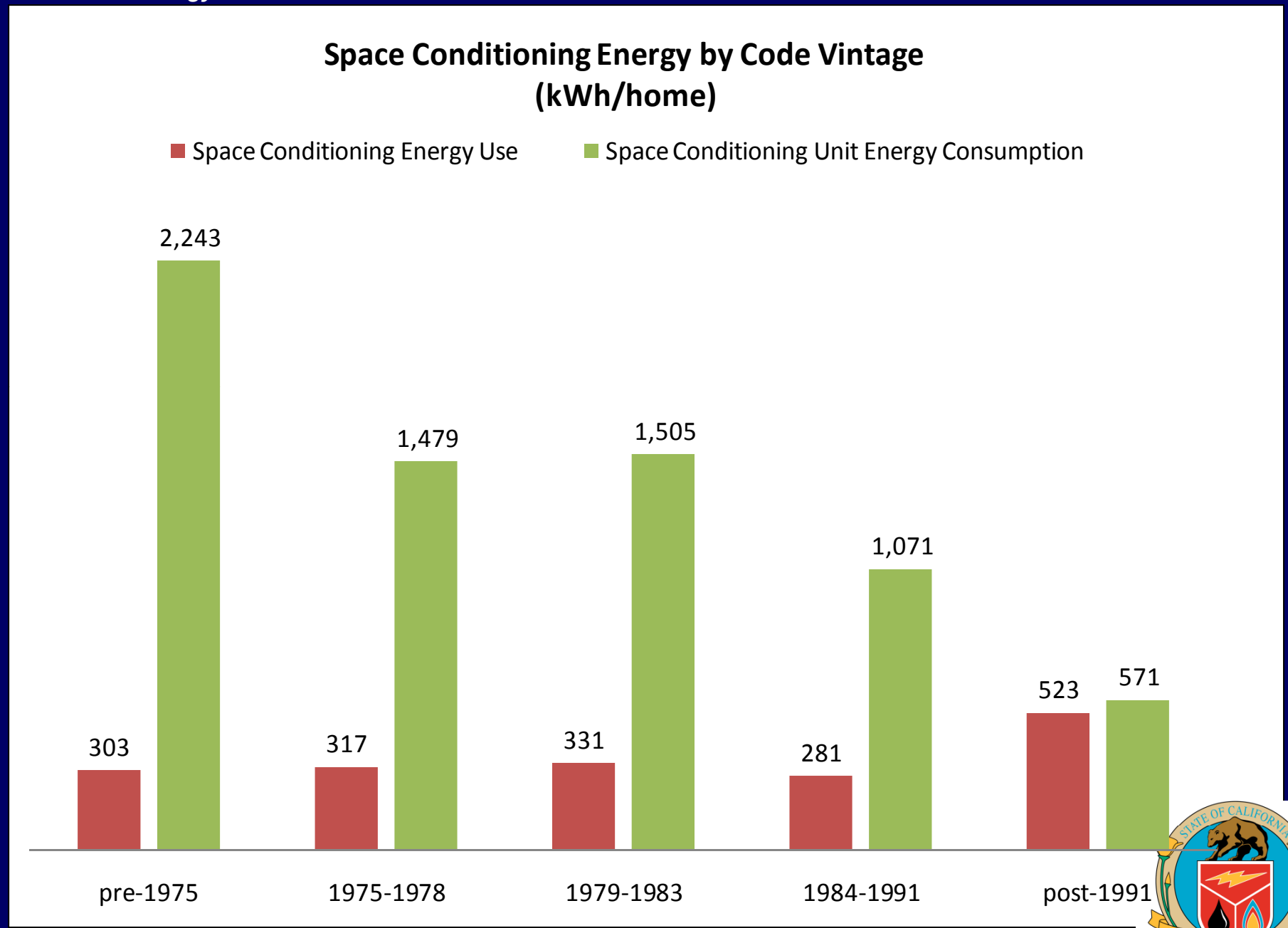


CALIFORNIA HOMES

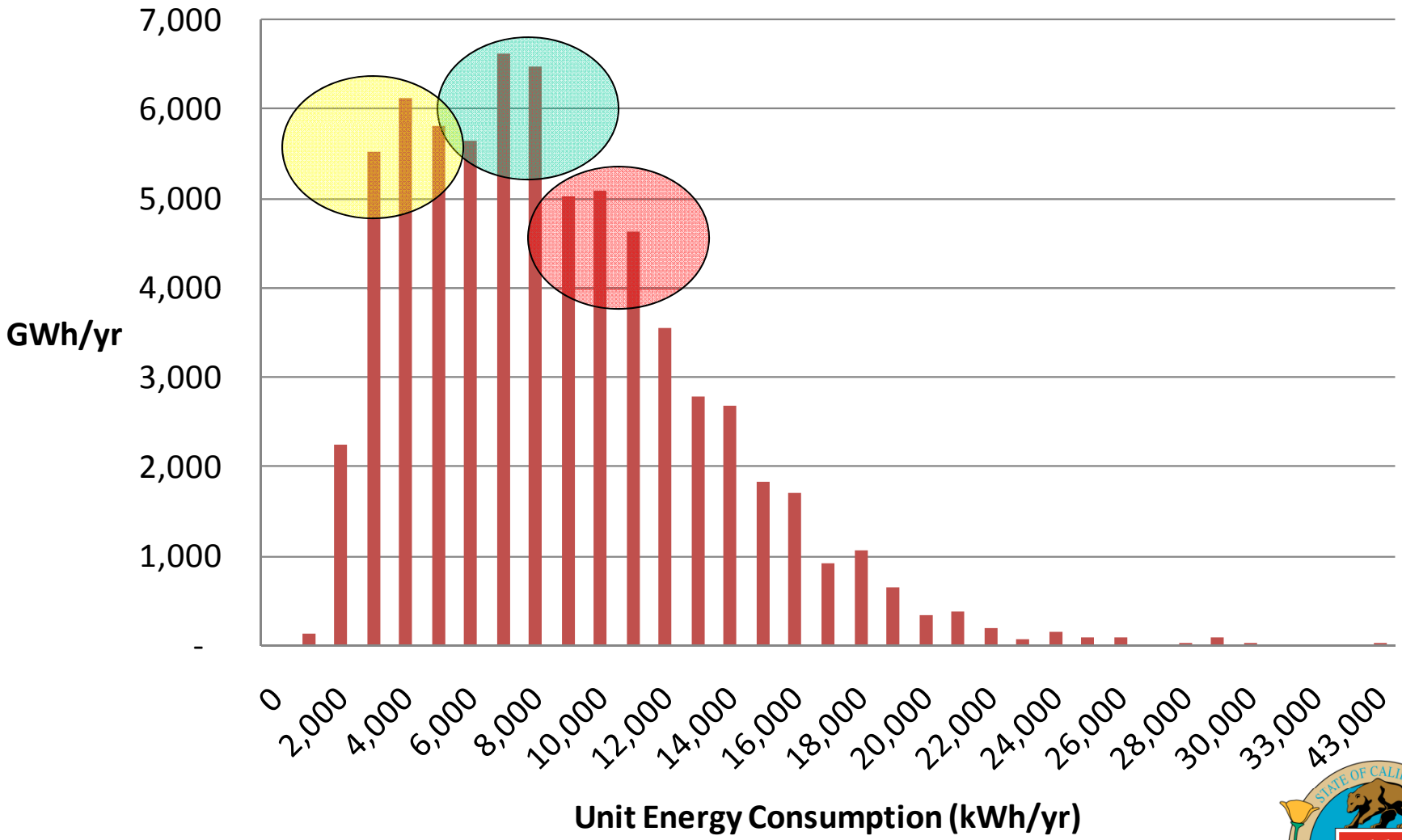
Existing Homes by Construction Decade

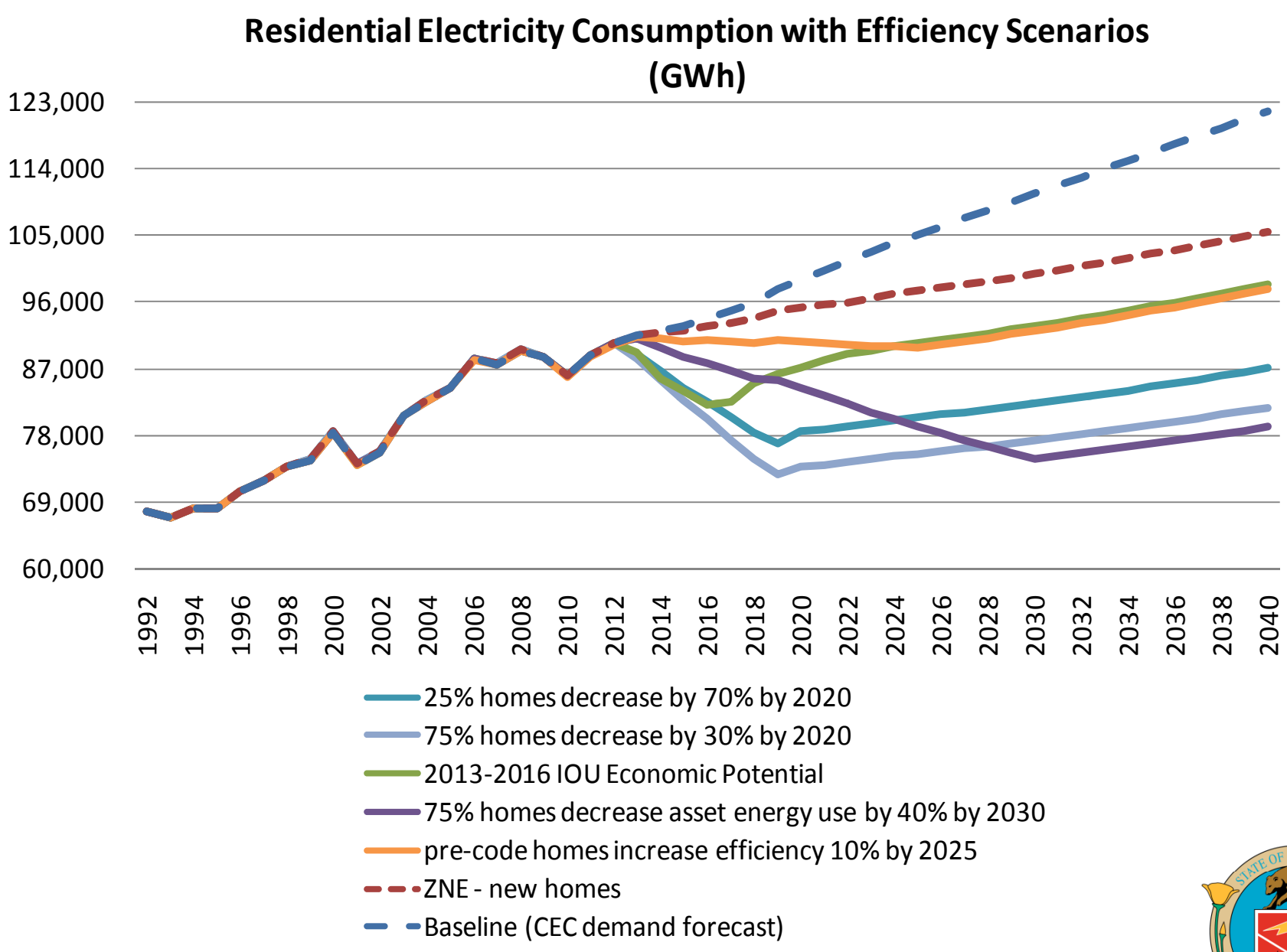



Residential End Use Electricty Consumption
(GWh)
120,000
100,000
80,000
60,000
40,000
20,000
-
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Other
Entertainment
Laundry
Kitchen
Lighting
Space Cooling
Space Heating
Water Heating


Space Conditioning Energy by Code Vintage
(kWh/home)
Space Conditioning Energy Use
Space Conditioning Unit Energy Consumption
2,243
1,479
1,505
1,071
303
317
331
281
523
571
pre-1975
1975-1978
1979-1983
1984-1991
post-1991

Distribution of Statewide Energy Use by Unit Energy Consumption

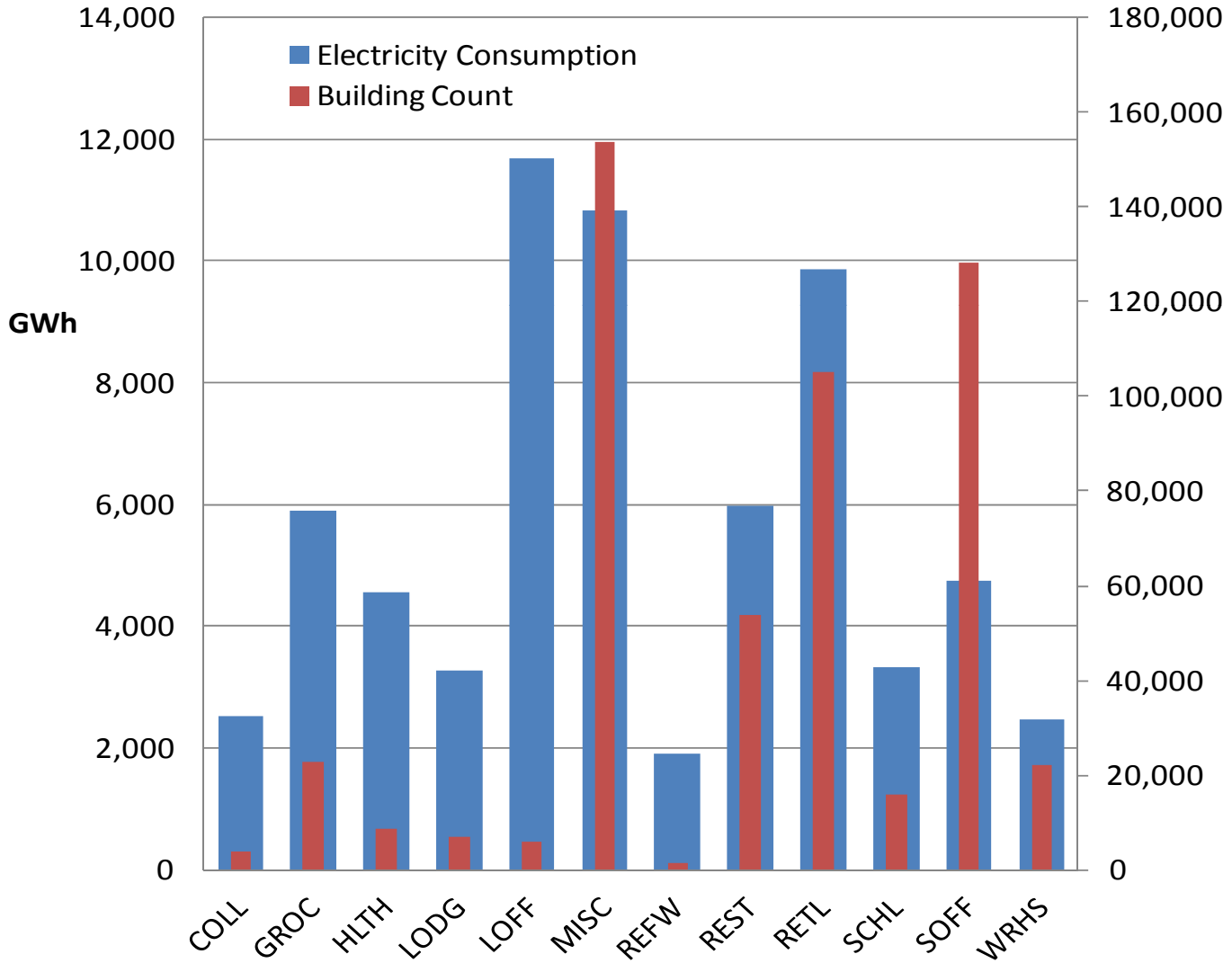


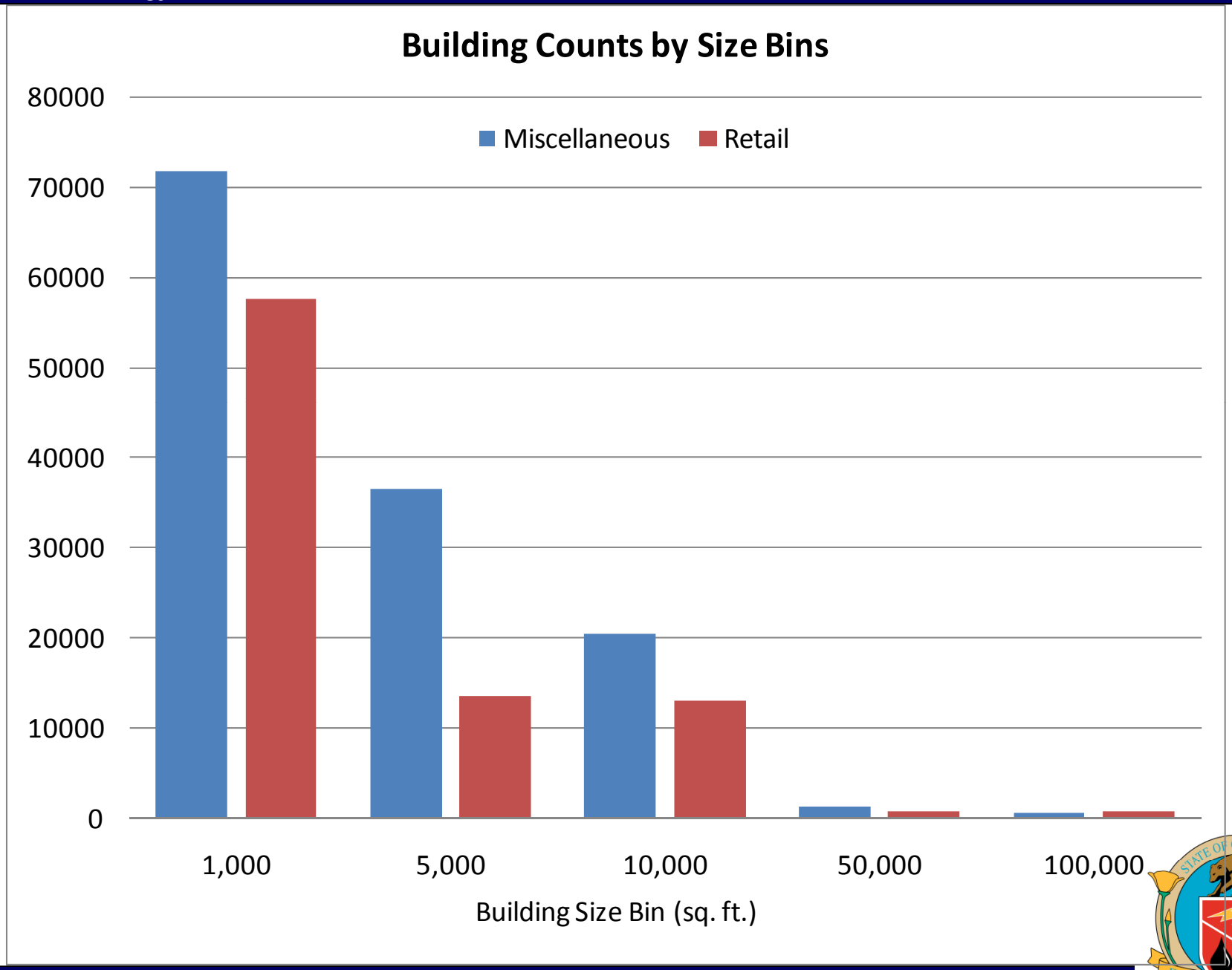

Residential Electricity Consumption with Efficiency Scenarios (GWh)
123,000
114,000
105,000
96,000
87,000
78,000
69,000
60,000
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
25% homes decrease by 70% by 2020
75% homes decrease by 30% by 2020
2013-2016 IOU Economic Potential
75% homes decrease asset energy use by 40% by 2030
pre-code homes increase efficiency 10% by 2025
ZNE - new homes
Baseline (CEC demand forecast)

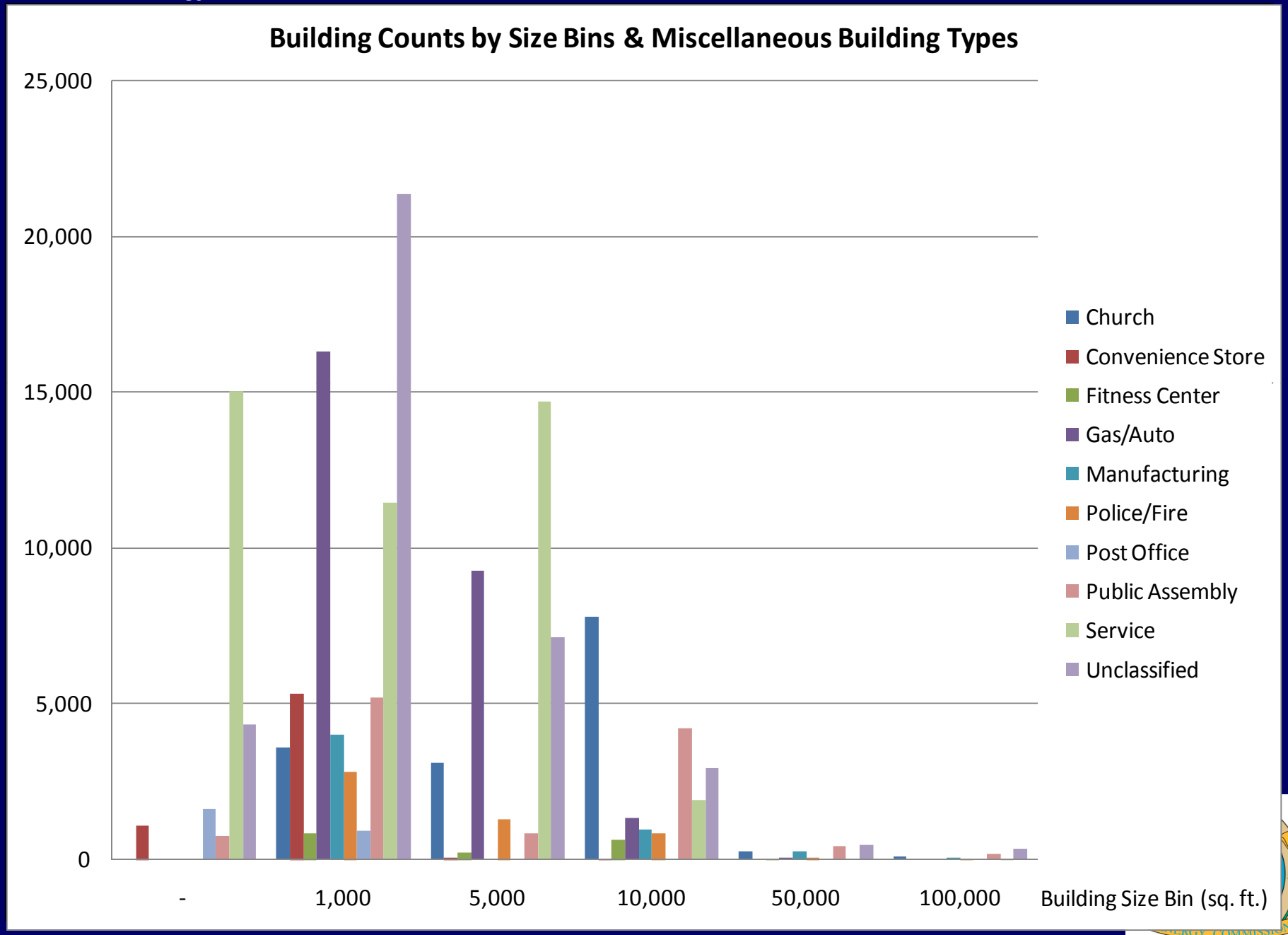
CALIFORNIA BUILDINGS

Slide Corrected 10-10-2012

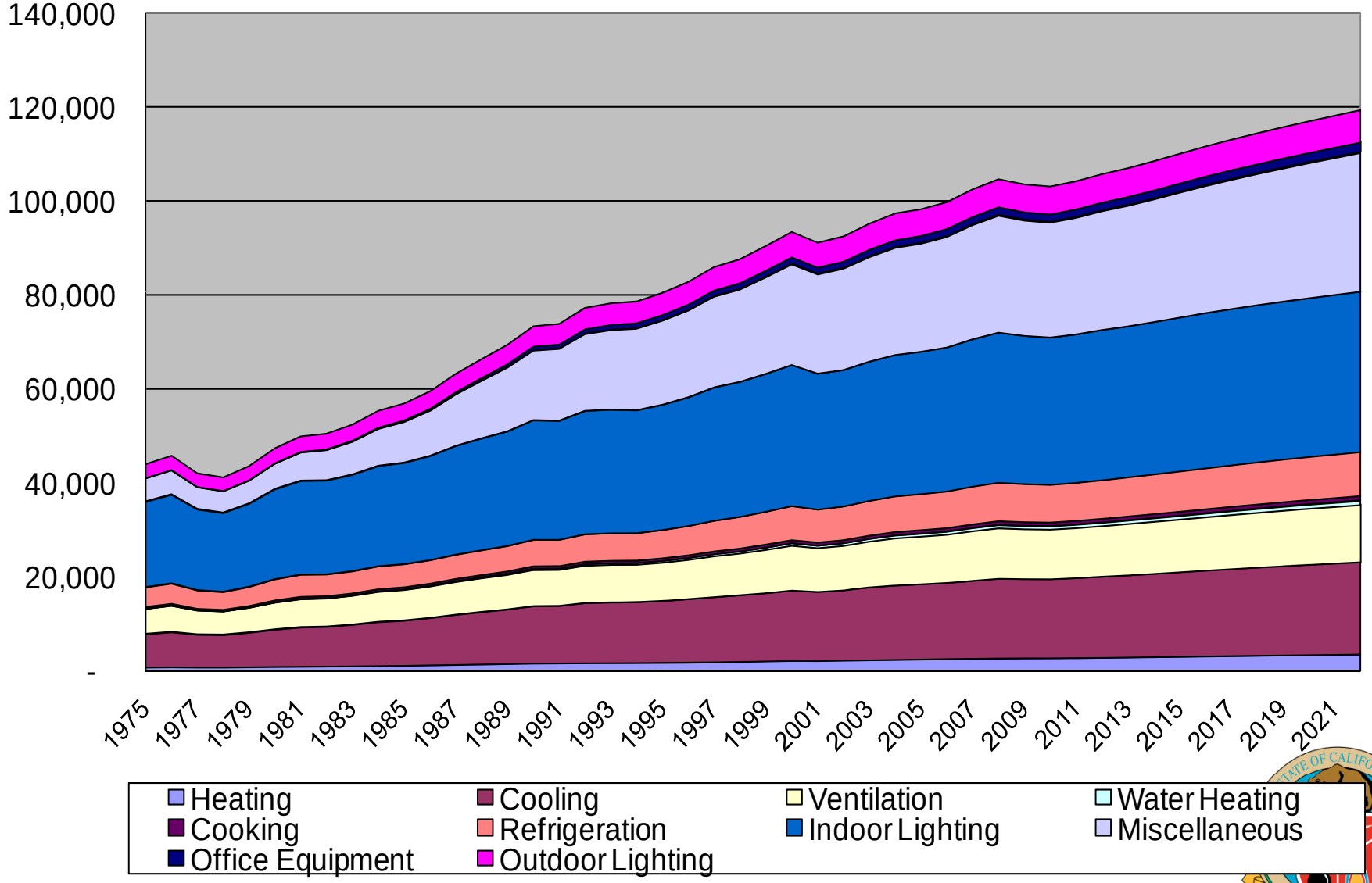
Electricity Consumption and Count by Building Type




Building Counts by Size Bins
80000
70000
60000
50000
40000
30000
20000
10000
0
Miscellaneous
Retail
1,000
5,000
10,000
50,000
100,000
Building Size Bin (sq. ft.)

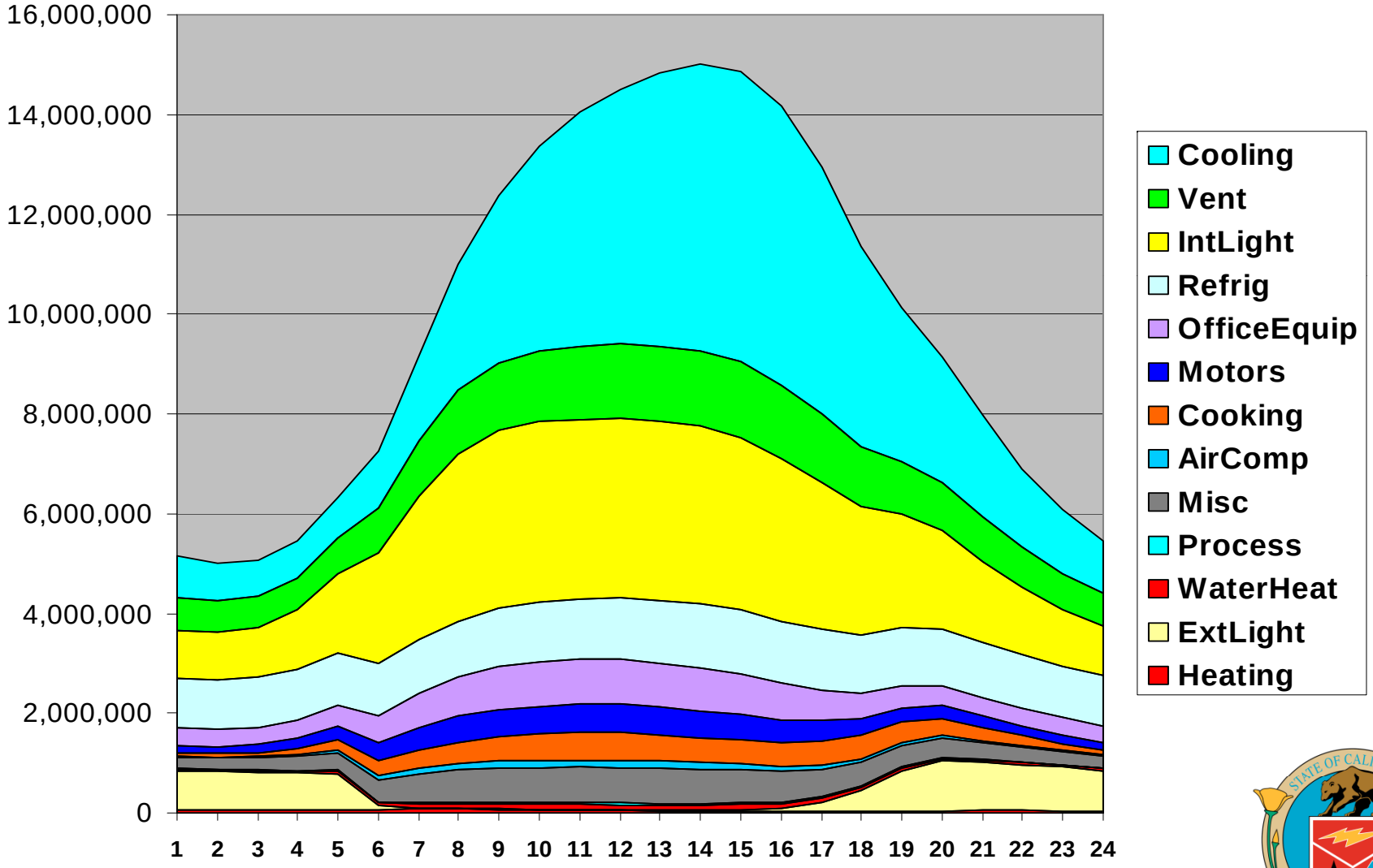

Building Counts by Size Bins & Miscellaneous Building Types
25,000
20,000
15,000
10,000
5,000
0
-
1,000
5,000
10,000
50,000
100,000
Building Size Bin (sq. ft.)
Church
Convenience Store
Fitness Center
Gas/Auto
Manufacturing
Police/Fire
Post Office
Public Assembly
Service
Unclassified

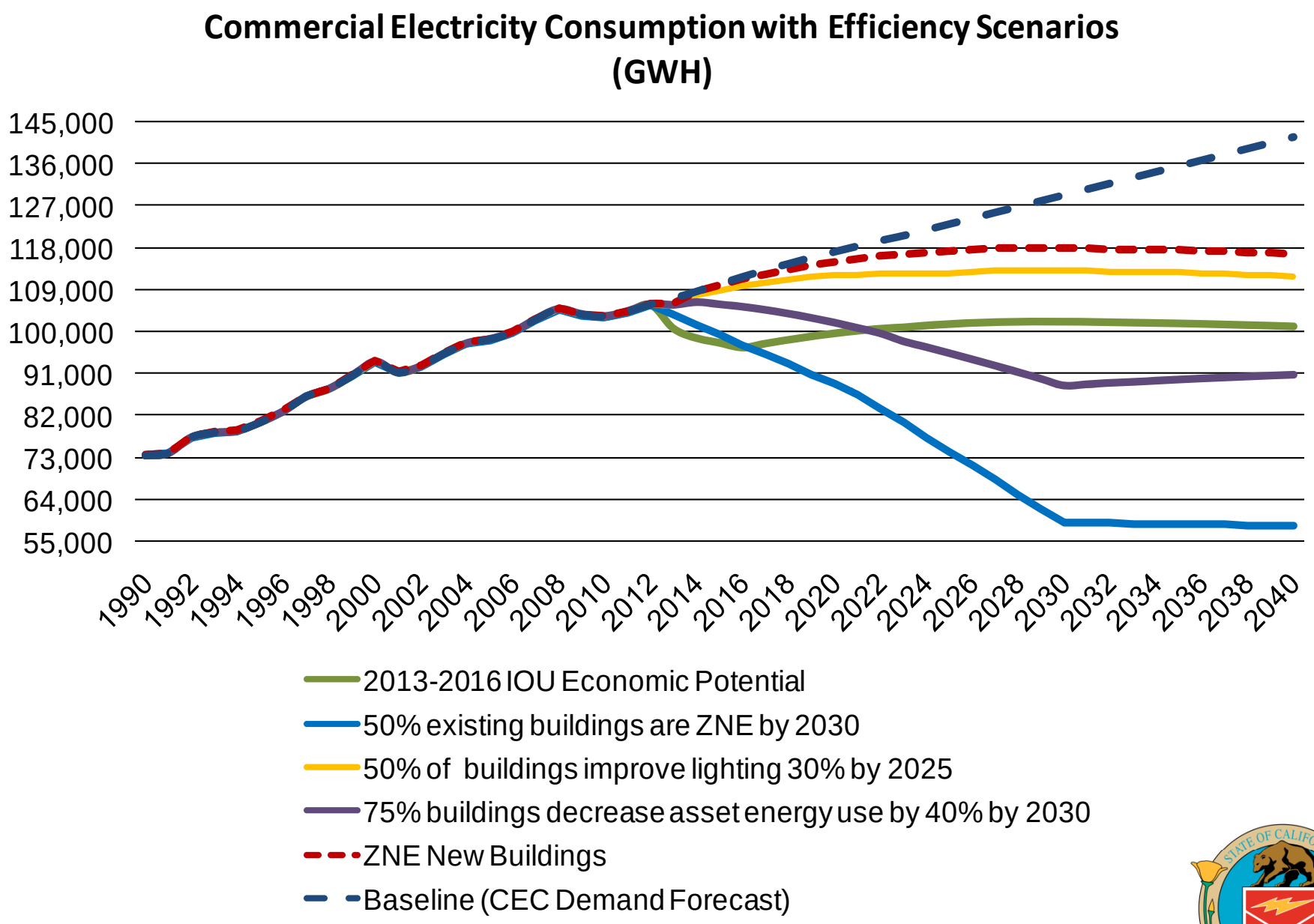
Commercial Electricity Consumption by End Use (GWh)



Commercial Sector Peak Demand

kW on Hot Summer Day




Commercial Electricity Consumption with Efficiency Scenarios (GWH)
145,000
136,000
127,000
118,000
109,000
100,000
91,000
82,000
73,000
64,000
55,000
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2013-2016 IOU Economic Potential
50% existing buildings are ZNE by 2030
50% of buildings improve lighting 30% by 2025
75% buildings decrease asset energy use by 40% by 2030
ZNE New Buildings
Baseline (CEC Demand Forecast)