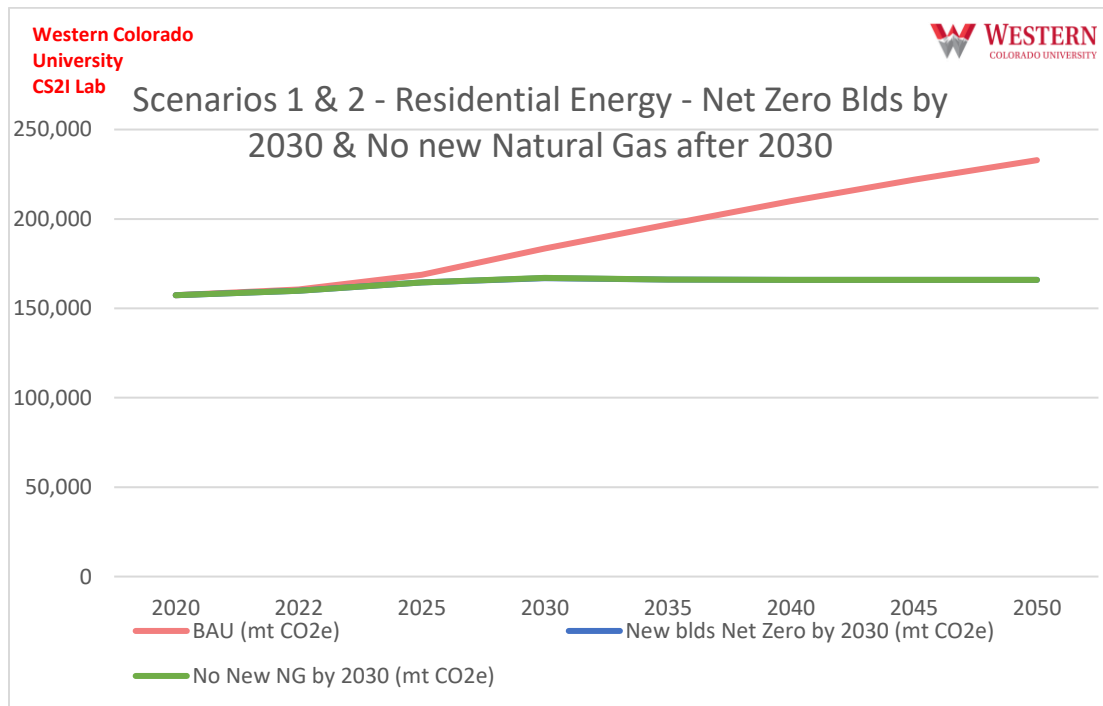


Residential Building Energy Modeling Scenario

(All units mt CO₂e unless otherwise noted)

Overarching Assumptions:

- HCE achieves 70% renewable electricity by 2022
- HCE achieves 100% renewable electricity by 2030
- Xcel Energy achieves 100% renewable electricity by 2050



Scenario 1: Require all construction be net-zero by 2030

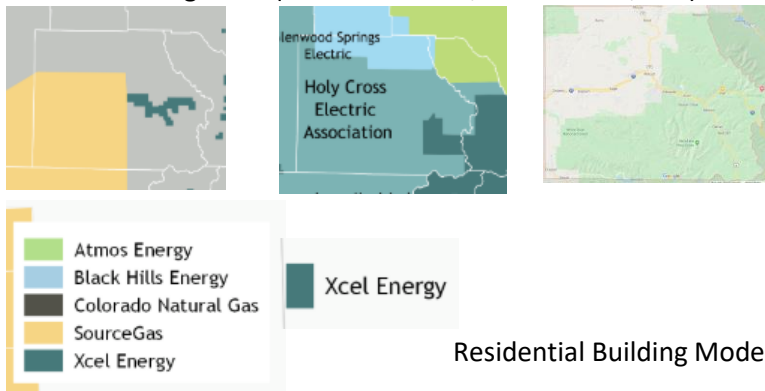
Assumptions:

- 10% more of new stock is Net Zero annually starting in 2021 (i.e. 10% in 2021, 20% in 2022, etc.)

Scenario 2: No new Natural Gas after 2030

Assumptions:

- Ban the use of natural gas in all new construction beginning in 2030
- All prior natural gas coverage area is accounted for by HCE
- Starting in 2021, 10% annual fuel switch from natural gas to electricity in new residential building stock (i.e. 10% in 2021, 20% in 2022, etc.)

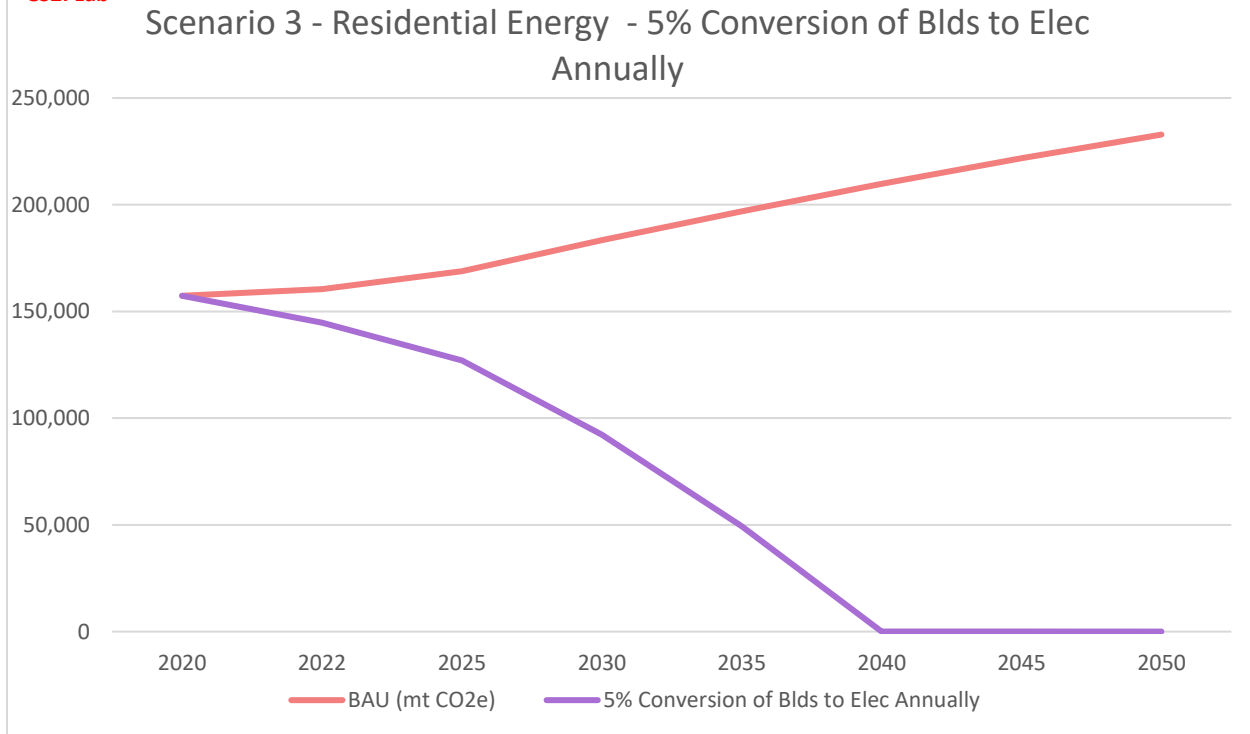


<https://energyoffice.colorado.gov/natural-gas>
<https://energyoffice.colorado.gov/electric-utilities>

Quantitative Results:

	Scenario 1				Scenario 2		
	BAU	New blds Net Zero by 2030	CO ₂ e Saved Annually	% Reduction from BAU	No New NG by 2030	CO ₂ e Saved Annually	% Reduction from BAU
2020	157,344	157,344	0	0.00%	157,344	0	0.00%
2022	160,543	159,814	730	0.45%	159,849	694	0.43%
2025	168,807	164,425	4,382	2.60%	164,550	4,257	2.52%
2030	183,376	166,856	16,520	9.01%	167,041	16,335	8.91%
2035	196,844	166,051	30,793	15.64%	166,105	30,739	15.62%
2040	209,859	165,895	43,964	20.95%	165,909	43,950	20.94%
2045	221,849	165,865	55,984	25.24%	165,868	55,981	25.23%
2050	232,867	165,859	67,008	28.78%	165,859	67,007	28.77%

Note: CO₂e emissions for scenarios 1 & 2 are almost identical given that new building energy originates entirely from electrical by 2030 in both scenarios and HCE has committed to zero emissions by 2030. The only difference is the slight emissions resulting from Xcel beyond 2030 in the NG conversion to Electrical scenarios.



Scenario 3: Convert 5% of existing residential properties from natural gas to electric every year beginning in 2021

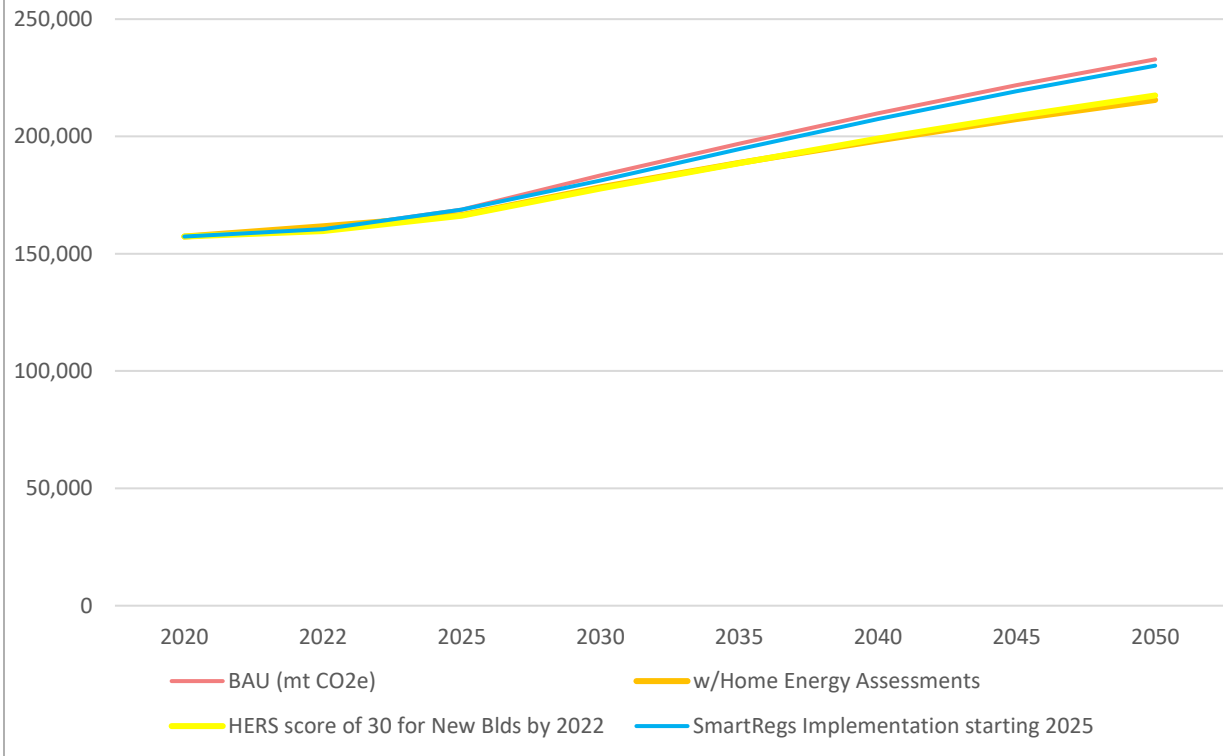
Assumptions:

- Conversion is 5% of existing building stock after growth rate applied annually
- 5% reduction starts in 2021
- All prior natural gas coverage area is accounted for by HCE

Quantitative Results:

	BAU	5% Conversion of Blds to Elec Annually	CO2e Saved Annually	% Reduction from BAU
2020	157,344	157,344	0	0.00%
2022	160,543	144,723	15,820	9.85%
2025	168,807	127,047	41,761	24.74%
2030	183,376	92,280	91,096	49.68%
2035	196,844	49,397	147,447	74.91%
2040	209,859	51	209,807	99.98%
2045	221,849	18	221,831	99.99%
2050	232,867	4	232,863	100.00%

Residential Energy - Scenarios 4, 5 & 6

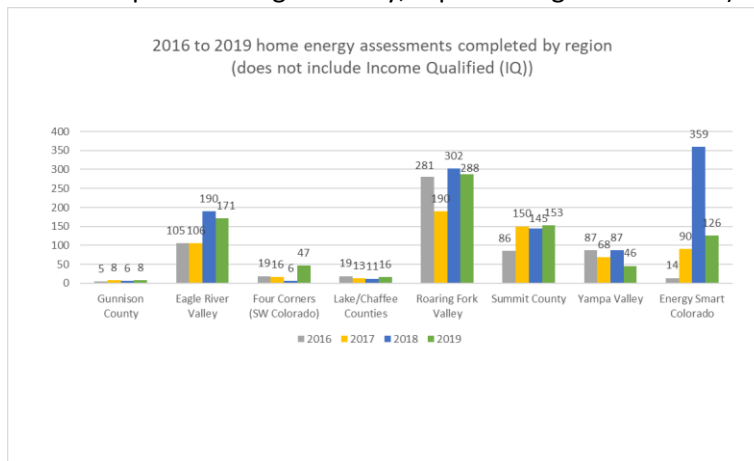


Scenarios 4, 5 & 6 shown together for comparison, however it is likely that there is overlap of emissions savings between the actions.

Scenario 4: 50% of homes have home energy assessment by 2030 and 100% of homes have home energy assessment by 2040

Assumptions:

- Negligible amount of homes in Eagle County have had energy assessments to date (At most ~650 assessments completed in Eagle County, representing 2% of homes)



Scenario 5: All new homes constructed meet a HERS score of 30 beginning in 2022

Assumptions:

- Current new buildings meeting HERS 50 as mandated by Eagle County Efficient Building Code [Link](#)
- HERS 30 = 20% more efficient than HERS 50
- (HERS 0 = Net Zero)]

Scenario 6: Implement a Smart Regs program beginning in year 2025

Assumptions:

- 5 years for compliance (Boulder gave 10 years, population is twice that of Eagle County)
- 30% is rental Property (inverse of owner occupied)

Quantitative Results:

	Scenario 4				Scenario 5		
	BAU	w/Home Energy Assessments	CO2e Saved Annually	% Reduction from BAU	HERS score of 30 for New Blds by 2022	CO2e Saved Annually	% Reduction from BAU
2020	157,344	157,344	0	0.00%	157,344	0	0.00%
2022	160,543	161,078	-535	-0.33%	159,612	931	0.58%
2025	168,807	165,500	3,308	1.96%	166,223	2,584	1.53%
2030	183,376	176,161	7,215	3.93%	177,878	5,498	3.00%
2035	196,844	185,165	11,679	5.93%	188,652	8,192	4.16%
2040	209,859	193,241	16,618	7.92%	199,064	10,794	5.14%
2045	221,849	201,077	20,772	9.36%	208,656	13,193	5.95%
2050	232,867	207,940	24,927	10.70%	217,471	15,396	6.61%

	Scenario 6			
	BAU (mt CO2e)	SmartRegs Implementation starting 2025	CO2e Saved Annually	% Reduction from BAU
2020	157,344	157,344	0	0.00%
2022	160,543	160,543	0	0.00%
2025	168,807	168,807	0	0.00%
2030	183,376	181,266	2,111	1.15%
2035	196,844	194,566	2,278	1.16%
2040	209,859	207,428	2,431	1.16%
2045	221,849	219,279	2,570	1.16%
2050	232,867	230,169	2,698	1.16%