ANALYSIS

The Cost of Efficiency

An Analysis of Minnesota's 2038 Energy Mandate

Land use has dominated the housing conversation, but building codes are beginning to attract the attention of policymakers. In 2024, Minnesota enacted a law change requiring the state to abandon its six-year code cycle for the residential energy code, shifting to a new code every three years and moving to a 70% reduction in site energy use by 2038.

Minnesota has been the national leader in energy-efficient new construction for more than a decade, and in 2025, it was on average 53% more efficient than new homes built in 2006. Housing Affordability Institute commissioned an engineering and cost analysis to see what the impact of the 2038 energy efficiency mandate will be in terms of affordability.

In today's dollars and present technology, the 2038 energy efficiency mandate would yield a sizeable cost increase for a housing market that is already the most expensive in the region:

SLAB-ON-GRADE HOME	TWO-STORY WITH BASEMENT
+$28,423 *Climate Zone 6*	**+$44,171** *Climate Zone 6*
+$25,773 *Climate Zone 7*	**+$44,171** *Climate Zone 7*

These estimates are likely on the lower end of the scale. While these do include the loss of energy-efficiency rebates, which only pay for exceeding the building code standards, the cost of redesigning and reengineering home plans is too complex to estimate and depends on a homebuilder's scale and number of communities in which they built requiring home design changes under zoning rules.

Housing affordability is determined by home prices relative to income; utility costs in for-ownership settings are a non-factor. Neither mortgage underwriting standards nor price-to-income benchmarks include utilities in their affordability calculations.

> ***Minnesota's 2038 energy efficiency mandate will serve as a critical barrier to both affordability and supply, one that will be exacerbated by the loss of utility rebate programs.***

The level of cost increase will price out tens of thousands of would-be buyers, creating a hurdle to addressing Minnesota's housing shortage and declining homeownership rate.

BY THE NUMBERS

SLAB-ON-GRADE HOME

+7.86%
Construction Valuation Increase *Climate Zone 6*

+$28,423
Construction Cost Increase *Climate Zone 6*

+$25,773
Construction Cost Increase *Climate Zone 7*

66,310
Homebuyers Priced Out *Climate Zone 6*

TWO-STORY HOME

+12.21%
Construction Valuation Increase *Climate Zones 6 & 7*

+$44,171
Construction Cost Increase

103,050
Homebuyers Priced Out Statewide

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Background

A Historical Perspective

In 2024, the Minnesota State Legislature enacted a law that created a significant change in how the state adopts residential energy codes going forward. Minnesota utilizes statewide adoption of all building codes and historically adopts new codes every six years.

The law change in question requires the state to move to a 70% increase in new home efficiency by 2038 (2038 energy efficiency mandate) and requires a new code be adopted after every new model code, every three years. Previously, the state had to review and consider each new residential energy code, a federal requirement, but was not bound to adopt a new code.

Given the Housing Affordability Institute's emphasis on barriers to homeownership in Minnesota, the Institute undertook an analysis of what this requirement will cost by 2038, as well as the impacts on both affordability and supply.

NOTE ON MEASURING EFFICIENCY

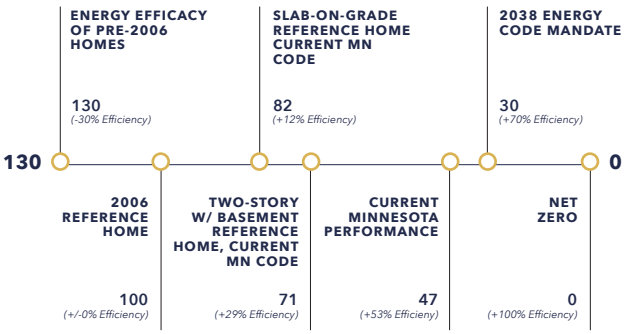
Energy efficiency in new home construction is measured relative to a reference home built for each climate zone.The baseline for the 2006 reference home is 100, meaning a 70% increase in efficiency would have an efficiency rating of 30.

MINNESOTA AND ENERGY EFFICIENCY

Along with the Dakotas, Minnesota's climate is one of the most wide-ranging in terms of seasonality, with St. Cloud and Minneapolis-St. Paul-Bloomington being two of the metropolitan areas with the widest seasonal changes in the nation. This range has made energy efficiency and durability an essential part of the housing conversation, as both heating and cooling are essential to homes in Minnesota (only the former is mandated in the building code).

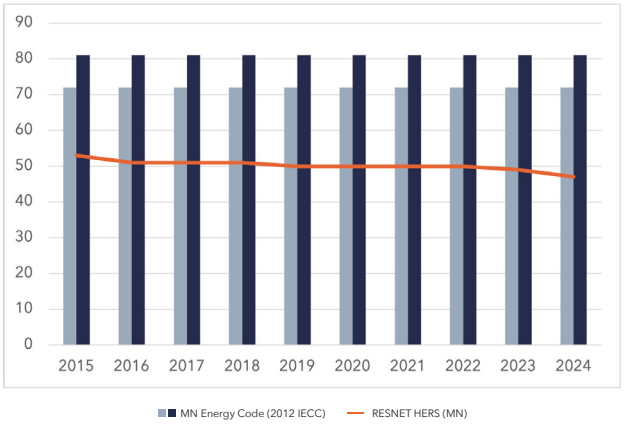
Minnesota is in Climate Zones 6 and 7, with the former being home to the majority of the state's housing production. Despite being on the 2012-edition of the International Energy Conservation Code (IECC), Minnesota's energy efficiency numbers eclipse those of any other state in which a high volume of homes is tested and rated.

FIGURE 1: ENERGY EFFICIENCY STATS AND TARGETS



According to RESNET and its Home Energy Rating Score (HERS), new homes in Minnesota, on average, are 53% more efficient (HERS of 47) than a new home built in 2006. While Minnesota's residential energy code has remained unchanged in that time (the 2012 IECC with Minnesota Amendments implemented in 2015), energy efficiency has increased 6% relative the 2006 reference home.

FIGURE 2: MINNESOTA HOME EFFICIENCY PERFORMANCE VS. CODE, 2015-2024



Source: ARCXIS (IECC Analysis), RESNET (HERS)

ANALYSIS

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An Analysis of Minnesota's 2038 Energy Mandate

ENERGY EFFICIENCY AND COST

Building more energy-efficient homes adds cost during the home construction process, both in materials and labor. An analysis of the cost increases to the model 2024 IECC for Minnesota's climate zones (with basement) by Home Innovation Research Labs estimates:

While reduced utility bills are often pointed to as increasing affordability, the utility rebates and the federal 45L tax credit, which is being discontinued in at the end of June 2026, see net construction costs decreased through rebates and incentives, as these incentives cover the costs of the materials and labor of these additional components. A typical new home in Minnesota can qualify for several thousand dollars in energy efficiency rebates, which make energy efficiency upgrades cost neutral. These programs only pay rebates when a home is built "better than code," meaning more efficient.

FIGURE 3: 2018 IECC TO 2024 IECC COST INCREASES

	2018 IECC TO 2024 IECC - GAS	2018 IECC TO 2024 IECC - ELECTRIC
CLIMATE ZONE 6	$6,214 per home	$10,239 per home
CLIMATE ZONE 7	$6,400 per home	$10,425 per home

Source: Home Innovation Research Labs (Estimates comparing the 2012 IECC with Minnesota Amendments to the 2024 IECC were not available.)

UPFRONT COST VS. UTILITY COSTS

In the rhetoric of the energy code debate, the long-term cost savings are often used to justify the up-front costs.

For a home to be deemed affordable to a buyer, the buyer must either have the cash to pay for it upfront or be able to qualify the monthly mortgage, which should not exceed 30% of their monthly income. Included in the mortgage payment is the principal, interest, private mortgage insurance (PMI) for homebuyers placing less than 20% down, and property insurance and property taxes.

FIGURE 4: HOUSING AFFORDABILITY FORMULA VIA MORTGAGE FINANCING

$P\frac{r(1+r)^n}{(1+r)^n-1} + T + I$	$\leq$	**30% Monthly Household Income**

$(P = \text{Principal})(r = \text{Monthly Interest Rate})(n = \text{Total Number of Payments})$
$(T = \text{Property Taxes})(I = \text{Insurance, Including PMI if applicable})$

So, what about the reduced utility costs? From a mortgage lending perspective, utility costs are not a consideration, falling into the other 70% of household spending. While a necessity in the same vein as groceries, utility payments are not part of housing affordability for mortgage-financed homes.

Another way to look at housing affordability is the home price-to-income ratio, in which a home should not exceed more than three. While less precise than using the mortgage calculation, this allows housing prices to be evaluated in a rate-agnostic environment. Again, utility bills are not part of this formula.

Housing affordability is driven by home prices (plus insurance and taxes) relative to income, not by utility costs in owner-occupied housing. Standard mortgage underwriting and price-to-income benchmarks exclude utilities from affordability calculations. While lower utility bills may reduce household expenses, they do not affect whether a home is affordable or attainable under established affordability measures.

FIGURE 5: NEW HOME AFFORDABILITY MINNESOTA, NOVEMBER 2025

	MEDIAN HOME PRICE (NOV. 2025)	INCOME REQUIRED MORTGAGE*	INCOME REQUIRED RATIO
STATEWIDE	$570,450	$154,734 *(177.62% State Median HH Income)*	$190,150 *(218.27% State Median HH Income)*
MSP	$579,930	$159,937 *(160.26% State Median HH Income)*	$193,310 *(197.4% State Median HH Income)*

Source: Housing Affordability Institute Calculation Using Zonda Price Data, Census Bureau 2025 ACS 1-Year Income, and Standard Mortgage Data (10.8% Downpayment, 6.16% Interest, PMI, Property Taxes and Insurance*

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2038 Mandate

What will the 2038 energy mandate's impact on housing affordability, and therefore buyer demand for new homes, be by 2038?

This analysis was undertaken using today's technology and costs and examines only the hard costs of complying with the mandate by 2038 through added materials. Not included in this analysis are the engineering costs* associated with complying with this requirement, increased building valuation, which will increase building permit fees, and administrative and real estate transaction costs tied to a home's final price.

**The engineering figure is dependent on several factors that are dependent on each builder, including the number of plans and variations, homes built, and communities requiring modifications via zoning controls.*

To better understand this target and its impact on supply, Housing Affordability Institute commissioned an expert analysis from ARCXIS, an inspection and engineering firm based in Houston, Texas. ARCXIS works on one in three homes across the United States and has a role in providing energy code compliance services to homes built in Minnesota, in addition to other markets across the United States.

The report used composites of common plans in the state:

- **HOME 1:** 2,000 square-foot single-story slab-on-grade home.
- **HOME 2:** 3,000 square-foot two-story home with a basement.

In 2024, the median construction valuation in Minnesota, as reported by the United States Census Bureau's Building Permit Survey, was $361,707. Valuation typically includes the full cost of labor and materials for all work authorized under the permit. That generally means structural work, framing, foundation, roofing, exterior finishes, interior finishes, insulation, drywall, flooring, cabinetry, and built-in fixtures. It also includes the cost of mechanical, electrical, and plumbing systems. Lot, land and administrative charges are not included.

AUTHOR NOTE: *Prior to the adoption of the 2038 energy efficiency mandate, the state of Minnesota had no requirement that a new residential energy code be adopted. It elected not adopt the 2018 IECC when the six-year code cycle was implemented in 2020. Without this law change, it is likely the state would adopt some future energy codes, but there would be no mandate to do so every three or six years. The State of Minnesota would also be bound to consider affordability in those adoptions. While some future cost increases on the energy code front are likely, it is difficult to assess compared to the rigid standards of this mandate.*

IN THESE ADOPTIONS	
ACH	LTVO
Heating	Cooling
Duct Location	Water Heating
Ventilation	Fenestration
Ceiling	Watts
Frame Floor	Foundation
Slab	DWHR
Appliances	

GETTING TO +70% EFFICENCY – ANALYSIS OF CHANGES

To achieve the target by 2038, incremental increases in efficiency will be made in the following code adoptions:

- 2024 IECC Adopted in 2026
- 2027 IECC Adopted in 2029
- 2030 IECC Adopted in 2032
- 2033 IECC Adopted in 2035
- 2036 IECC Adopted in 2038

FIGURE 6: 2038 MANDATE COST INCREASE SLAB-ON-GRADE HOME, CLIMATE ZONES 6 AND 7

YEAR	2038	
IECC	IECC 2036	
HERS TARGET	30	
	FEATURE	MATERIALS COST INCREASE
ACH	1	$1,500 / $1,500
LTO	4%	$0
HEATING	98 AFUE	$1,000
COOLING	17 SEER2	$800 / $0
DUCT LOCATION	INSIDE	$4,500
WATER HEATING	.97 UEF INSTANT GAS	$900
VENTILATION	85% HRV	$700
FENESTRATION	.20/.40	$8,433
CEILING	R80	$1,740
WALLS	R21 + R10	$2,700
FRAME FLOOR	NA	$0
FOUNDATION	NA	$0
SLAB	R20 SE, R20 UNDER	$5,100 / $4,000
DWHR	YES	$750 / $0
APPLIANCES	ENERGY STAR	$300
	ESTIMATED COST INCREASE	$28,423 / $25,773

FIGURE 7: 2038 MANDATE COST INCREASE TWO-STORY HOME

YEAR	2038	
IECC	IECC 2036	
HERS TARGET	30	
	FEATURE	COST INCREASE
ACH	0.75	$1,000
LTO	4%	$0
HEATING	3.8 COP GEO	$23,200
COOLING	19.2 EER GEO	$0
DUCT LOCATION	INSIDE	$0
WATER HEATING	.97 UEF INSTANT GAS	$900
VENTILATION	85% HRV	$700
FENESTRATION	.17/.40	$10,616
CEILING	R80	$1,200
WALLS	R21 + R10 AF	$3,375
FRAME FLOOR	R50 +R5	$680
FOUNDATION	R20	$1,450
SLAB	R10 PERIMETER	$0
DWHR	YES	$750
APPLIANCES	ENERGY STAR	$300
	ESTIMATED COST INCREASE	$44,171

SINGLE-FAMILY DETACHED, SLAB-ON-GRADE

For the composite slab-on-grade home, the analysis from ARCXIS shows an estimated cost increase of $28,423 in Climate Zone 6 and $25,773 in Climate Zone 7. For Climate Zone 6, where the largest portion of new homes are built in Minnesota, this level of cost increase would price out 66,310 prospective new-home buyers in one of the fastest-growing regions of the state. The National Association of Home Builders' 2025 Priced Out analysis estimates 2,333 homebuyers in Minnesota are priced out for each $1,000 cost increase.

SINGLE-FAMILY DETACHED, BASEMENT

For the composite two-story home with a basement, the analysis from ARCXIS shows an estimated cost increase of $44,171 in Climate Zones 6 and 7. According to data from the National Association of Home Builders, this cost increase would price out 103,050 prospective new homebuyers from the market.

Conclusion

New-home prices in Minnesota already exceed the national average. Housing Affordability Institute has also published multiple papers highlighting how new-home prices in the Minneapolis-St. Paul-Bloomington CBSA and greater Minnesota exceed those of neighboring markets.

Even if policy interventions on other fronts decrease new home prices, the 2038 mandate will still add to the state's affordability pressures by limiting or negating any decreases in costs. For a region with persistent undersupply and a systemic affordability problem, any policy adding to the cost of new homes will add to the state's affordability woes.

In terms of present technology, costs, and Minnesota's current efficiency standards, new-home prices in Minnesota will see a cost increase that, over the implementation of this energy code standard, will price out tens of thousands of would-be new homebuyers from the market. This will place added demand on an already undersupplied existing new-home market.

- A slab-on-grade home in Minnesota will see a see a cost increase of $25,773 to $ $28,423, absent engineering, administrative, and permitting cost increases.
- A two-story home with a basement will see a cost increase of $44,171, absent engineering, administrative, and permitting cost increases.

The notion that increased energy efficiency improves housing affordability does not hold water. Housing affordability is determined by home prices relative to a buyer's income; utility costs in for-ownership settings are a non-factor. Neither mortgage underwriting standards nor price-to-income benchmarks include utilities in their affordability calculations. While lower utility bills may ease household budgets, they do not change whether a home is considered affordable or attainable under prevailing affordability measures.

> ***Minnesota's 2038 energy efficiency mandate will serve as a critical barrier to both affordability and supply, one that will be exacerbated by the loss of utility rebate programs.***

Absent significant increases in household income, the high up-front costs in the coming years due to the state's energy code mandate will likely lead to a decrease in housing production caused by reduced purchasing power. Even with policy or market interventions in other areas, new home prices will remain elevated.

Notes

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Appendix

2,000 SQ. FT. - 1 STORY/3 BED - SLAB-ON-GRADE (CLIMATE ZONE 6)											
YEAR	CURRENT BASELINE	2026		2029		2032		2035		2036	
IECC	CZ 6	IECC 2024		IECC 2027		IECC 2030		IECC 2033		IECC 2036	
HERS TARGET	63	47		43		38		34		30	
	FEATURE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE
ACH	3	2.5	$0	2.5	$0	1.5	$100	1.5	$1,000	1	$1,500
LTO	4%	4	$0	4%	$0	4%	$0	4%	$0	4%	$0
HEATING	92 AFUE	95 AFUE	$200	95 AFUE	$200	95 AFUE	$200	98 AFUE	$1,000	98 AFUE	$1,000
COOLING	13.4 SEER2	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	17 SEER2	$800
DUCT LOCATION	ATTIC	INSIDE	$4,500	INSIDE	$4,500	INSIDE	$4,500	INSIDE	$4,500	INSIDE	$4,500
WATER HEATING	.70 UEF 50 GAL GAS	.95 UEF INSTANT GAS	$600	.95 UEF INSTANT GAS	$600	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900
VENTILATION	65% HRV	75% HRV	$400	75% HRV	$400	85% HRV	$700	85% HRV	$700	85% HRV	$700
FENESTRATION	.30/.30	.27/.30	$766	.27/.30	$766	.25/.35	$5,366	.23/.40	$6,900	.20/.40	$8,433
CEILING	R49	R60	$580	R60	$580	R60	$580	R70	$1,160	R80	$1,740
WALLS	R20	R21	$200	R21	$200	R23	$800	R21 + R5 AF	$2,200	R21 + R10	$2,700
FRAME FLOOR	NA	NA	$0	NA	$0	NA	$0	NA	$0	NA	$0
FOUNDATION	NA	NA	$0	NA	$0	NA	$0	NA	$0	NA	$0
SLAB	R10 SE	R10 SE	$0	R10 SE, R10 UNDER	$3,000	R10 SE, R10 UNDER	$3,000	R10 SE, R15 UNDER	$4,000	R20 SE, R20 UNDER	$5,100
DWHR	NO	NO	$0	NO	$0	NO	$0	NO	$0	YES	$750
APPLIANCES	HERS REFERENCE	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300
		ESTIMATED COST INCREASE	$7,546	ESTIMATED COST INCREASE	$10,546	ESTIMATED COST INCREASE	$16,446	ESTIMATED COST INCREASE	$22,660	ESTIMATED COST INCREASE	$28,423

Appendix

3,000 SQ. FT. - 2 STORY/4 BED - W/ FULL BASEMENT (CLIMATE ZONE 6)											
YEAR	CURRENT BASELINE	2026		2029		2032		2035		2038	
IECC	CZ 6	IECC 2024		IECC 2027		IECC 2030		IECC 2033		IECC 2036	
HERS TARGET	57	47		43		38		34		30	
	FEATURE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE
ACH	3	2.5	$0	1.5	$0	1.5	$0	1	$500	0.75	$1,000
LTO	4%	4%	$0	4%	$0	4%	$0	4%	$0	4%	$0
HEATING	92 AFUE	95 AFUE	$200	98 AFUE	$1,000	98 AFUE	$1,000	98 AFUE	$1,000	3.8 COP GEO	$23,200
COOLING	13.4 SEER2	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	19.2 EER GEO	$0
DUCT LOCATION	INSIDE	INSIDE	$0	INSIDE	$0	INSIDE	$0	INSIDE	$0	INSIDE	$0
WATER HEATING	.70 UEF 50 GAL GAS	.95 UEF INSTANT GAS	$600	.95 UEF INSTANT GAS	$600	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900
VENTILATION	65% HRV	75% HRV	$400	75% HRV	$400	85% HRV	$700	85% HRV	$700	85% HRV	$700
FENESTRATION	.30/.30	.27/.30	$816	.27/.30	$816	.25/.35	$5,716	.20/.40	$8,983	.17/.40	$10,616
CEILING	R49	R60	$400	R60	$400	R60	$400	R70	$800	R80	$1,200
WALLS	R20	R21	$250	R21	$250	R21 + R5 AF	$2,750	R21 + R10 AF	$3,375	R21 + R10 AF	$3,375
FRAME FLOOR	R30	R30	$0	R38	$200	R38	$200	R38	$200	R50 +R5	$680
FOUNDATION	R10	R10	$0	R15	$558	R20	$1,450	R20	$1,450	R20	$1,450
SLAB	R10 PERIMETER	R10 PERIMETER	$0	R10 PERIM-ETER	$0	R10 PERIM-ETER	$0	R10 PERIM-ETER	$0	R10 PERIM-ETER	$0
DWHR	NO	NO	$0	NO	$0	NO	$0	YES	$750	YES	$750
APPLIANCES	HERS REFERENCE	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300
		ESTIMATED COST INCREASE	$2,966	ESTIMATED COST INCREASE	$4,524	ESTIMATED COST INCREASE	$13,416	ESTIMATED COST INCREASE	$18,958	ESTIMATED COST INCREASE	$44,171

Appendix

2,000 SQ. FT. - 1 STORY/3 BED - SLAB-ON-GRADE (CLIMATE ZONE 7)											
YEAR	CURRENT BASELINE	2026		2029		2032		2035		2038	
IECC	CZ 7	IECC 2024		IECC 2027		IECC 2030		IECC 2033		IECC 2036	
HERS TARGET	66	47		43		38		34		30	
	FEATURE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE
ACH	3	3	$0	2.5	$0	2.5	$0	1.5	$1,000	1	$1,500
LTO	4%	4%	$0	4%	$0	4%	$0	4%	$0	4%	$0
HEATING	92 AFUE	95 AFUE	$200	95 AFUE	$200	95 AFUE	$200	98 AFUE	$1,000	98 AFUE	$1,000
COOLING	13.4 SEER2	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0
DUCT LOCATION	ATTIC	INSIDE	$4,500	INSIDE	$4,500	INSIDE	$4,500	INSIDE	$4,500	INSIDE	$4,500
WATER HEATING	.70 UEF 50 GAL GAS	.70 UEF 50 GAL GAS	$0	.95 UEF INSTANT GAS	$600	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900
VENTILATION	65% HRV	65% HRV	$0	75% HRV	$400	85% HRV	$700	85% HRV	$700	85% HRV	$700
FENESTRATION	.30/.30	.30/.30	$0	.30/.30	$0	.25/.35	$5,366	.25/.35	$5,366	.20/.40	$8,433
CEILING	R49	R60	$580	R60	$580	R60	$580	R60	$580	R80	$1,740
WALLS	R20	R20	$200	R20	$200	R23	$800	R21 + R5 AF	$2,200	R21 + R10 AF	$2,700
FRAME FLOOR	NA	NA	$0	NA	$0	NA	$0	NA	$0	NA	$0
FOUNDATION	NA	NA	$0	NA	$0	NA	$0	NA	$0	NA	$0
SLAB	R10 SE	R10 SE, R10 UNDER	$3,000	R10 SE, R10 UNDER	$3,000	R10 SE, R10 UNDER	$3,000	R10 SE, R15 UNDER	$4,000	R10 SE, R15 UNDER	$4,000
DWHR	NO	NO	$0	NO	$0	NO	$0	NO	$0	NO	$0
APPLIANCES	HERS REFERENCE	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300
		ESTIMATED COST INCREASE	$8,780	ESTIMATED COST INCREASE	$9,780	ESTIMATED COST INCREASE	$16,346	ESTIMATED COST INCREASE	$20,546	ESTIMATED COST INCREASE	$25,773

Appendix

3,000 SQ. FT. - 2 STORY/4 BED - W/ FULL BASEMENT (CLIMATE ZONE 7)											
YEAR	CURRENT BASELINE	2026		2029		2032		2035		2038	
IECC	CZ 7	IECC 2024		IECC 2027		IECC 2030		IECC 2033		IECC 2036	
HERS TARGET	58	47		43		38		34		30	
	FEATURE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE	FEATURE	COST INCREASE
ACH	3	2.5	$0	1.5	$0	1.5	$0	1	$500	1	$1,000
LTO	4%	4%	$0	4%	$0	4%	$0	4%	$0	4%	$0
HEATING	92 AFUE	95 AFUE	$200	98 AFUE	$1,000	98 AFUE	$1,000	98 AFUE	$1,000	3.8 COP GEO	$23,200
COOLING	13.4 SEER2	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	13.4 SEER2	$0	19.2 EER GEO	$0
DUCT LOCATION	INSIDE	INSIDE	$0	INSIDE	$0	INSIDE	$0	INSIDE	$0	INSIDE	$0
WATER HEATING	.70 UEF 50 GAL GAS	.95 UEF INSTANT GAS	$600	.95 UEF INSTANT GAS	$600	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900	.97 UEF INSTANT GAS	$900
VENTILATION	65% HRV	75% HRV	$400	75% HRV	$400	85% HRV	$700	85% HRV	$700	85% HRV	$700
FENESTRATION	.30/.30	.30/.30	$0	.30/.30	$0	.25/.35	$5,716	.20/.40	$8,983	.17/.40	$10,616
CEILING	R49	R60	$400	R60	$400	R60	$400	R60	$400	R80	$1,200
WALLS	R20	R21	$250	R21	$250	R21 + R5 AF	$2,750	R21 + R10 AF	$3,375	R21 + R10 AF	$3,375
FRAME FLOOR	R30	R30	$0	R38	$200	R38	$200	R38	$200	R50 +R5	$680
FOUNDATION	R10	R15	$558	R15	$558	R20	$1,450	R20	$1,450	R20	$1,450
SLAB	R10 PERIMETER	R10 PERIMETER	$0	R10 PERIMETER	$0	R10 PERIMETER	$0	R10 PERIMETER	$0	R10 PERIMETER	$0
DWHR	NO	NO	$0	NO	$0	NO	$0	NO	$0	YES	$750
APPLIANCES	HERS REFERENCE	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300	ENERGY STAR	$300
		ESTIMATED COST INCREASE	$2,708	ESTIMATED COST INCREASE	$3,708	ESTIMATED COST INCREASE	$13,416	ESTIMATED COST INCREASE	$17,808	ESTIMATED COST INCREASE	$44,171