

Base Codes and Green Building Standards

How Green Building Standards are embedded in recent International Building Code (IBC), International Residential Code (IRC), and International Energy Conservation Code (IECC) Cycles

CAP Action BE1.4: Adopt Green Building Codes

Base Codes and Reach Codes

What the Climate Action Plan Proposes

- Adopt a green building performance standard (reach code) for new residential and commercial construction
- A reach code is a locally adopted rule that goes beyond what the base building codes already require
- Intent: reduce fossil fuel use and improve energy performance in new buildings
- Examples cited in the CAP: Santa Fe County HERS Rating, Seattle Building Energy Performance Standard

Impacts of Reach Codes

- Increase hard construction costs, which flow directly into home prices and rents
- Disproportionately burdens smaller projects that lack the economies of scale to absorb added costs
- Only applies to new construction while existing buildings (the largest source of building energy consumption) are unaffected
- Performance gains above the 2021 International Energy Conservation Code (IECC) are minimal, and shrinking with every subsequent code cycle

CAP Action BE1.4: Adopt Green Building Codes

An Alternative Path to the Same Goal

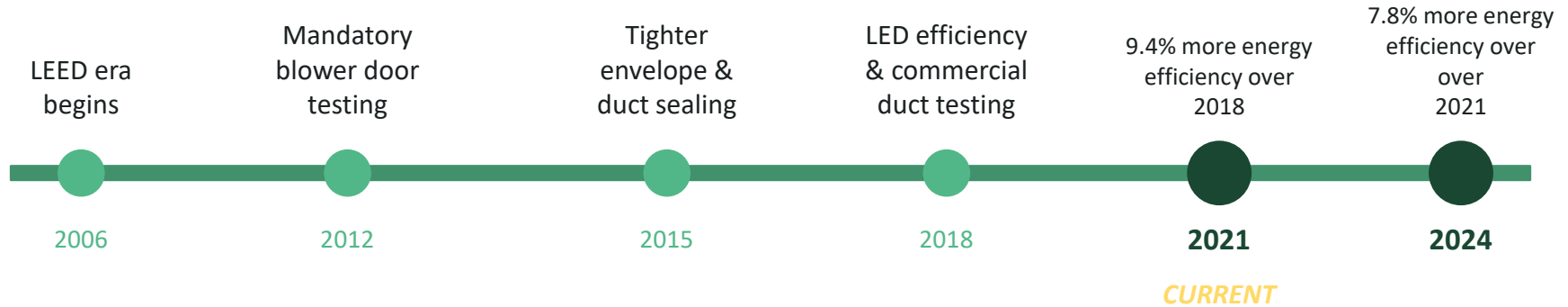
The base IBC, IRC, and IECC have been fundamentally transformed since 2018, steadily incorporating the requirements that reach codes were designed to achieve.

Los Alamos is already enforcing the 2021 IECC—one of the most stringent base code editions ever published—and the 2024 IECC code cycle continues this trend

This alternative approach is not inaction. It is precision: let the base code do the heavy lifting, and invest in education and implementation.

Twenty Years of Continuous Improvement

The International Code Council (ICC) publishes new code editions every three years. Each cycle has delivered measurable efficiency gains.



According to ICC and DOE, the IECC has improved residential and commercial building energy efficiency by approximately 40% since 2006. The residential provisions of the 2021 and 2024 editions together represent a combined ~17% improvement over 2018 alone.

2021 IECC: What Los Alamos Already Requires

9.4%

more efficient
than 2018 IECC

8.7%

GHG reduction
over 2018 IECC

\$2,320

avg. homeowner
mortgage savings

Key Provisions Now Required Under the 2021 IECC

- Mandatory blower door testing requires a maximum of 3.0 ACH50, verifying actual air tightness rather than design intent alone
- Mandatory duct leakage testing ensures mechanical systems perform as designed, not just as specified on paper
- R-values for walls, slabs, and ceilings have been tightened for Climate Zones 4–5 (Los Alamos is CZ-5)
- At least 90% of permanently installed lighting must be high-efficacy, effectively mandating LED fixtures that were considered an above-code green building requirement just a few years ago
- Windows in Los Alamos projects can have a max U-factor of 0.32, a more stringent standard than the 2018 IECC (relevant to Los Alamos's heating-dominated climate)

ATTACHMENT C

What was "Green Code" is now Base Code

Requirements once found only in reach codes and local green building amendments are now embedded in the base IBC/IRC/IECC.

Provision	Previously a Reach Code / Green Building Feature	Now in the Base Code	Adopted
Blower Door Testing	LEED prerequisite; local amendment in progressive jurisdictions	Mandatory — all new construction	2021 IECC
Air Tightness Standard (3 ACH50)	Passive House / high-performance standard	Mandatory — Climate Zones 3–8	2021 IECC
Duct Leakage Testing	ENERGY STAR requirement; above-code program	Mandatory — field-verified	2018/2021 IECC
EV-Ready Conduit	Stretch code / green program requirement	Mandatory — NMAC 14.7.6.12(D) and 14.7.9.12(D)(4)	New Mexico Administrative Code (NMAC)
Solar-Ready Design	Stretch code / green program requirement	Adoptable IECC Appendix — not yet adopted by State of NM → Recommended for next cycle adoption	To Be Adopted in the Future
High-Performance Insulation	LEED credit; above-code incentive program	Minimum code requirement	2015–2021 IECC
LED Lighting Efficiency	Green building incentive; rebate program	Effectively standard via LED requirements	2018 IECC

Are Reach Codes Still the Best Approach?

Reach codes were designed to get ahead of a base code that was lagging. That gap has closed significantly.

Added Cost to Redevelopment

Reach codes layer requirements on top of an already-demanding 2021 IECC baseline. For infill and redevelopment in a community with housing constraints, additional cost burdens work against the County's housing goals.

Contractor Confusion and Compliance Gap

Local amendments to base codes create a parallel compliance track. Contractors working across jurisdictions may not know which requirements apply, leading to errors, plan revision cycles, and lost time at the permit counter.

Marginal Performance Gains/Diminishing Returns

A well-implemented 2021 IECC—with verified blower door and duct testing—outperforms a reach code that is poorly understood or inconsistently enforced. The performance gap above current base code is narrow and shrinking with each edition.

The 2024 IECC Continues the Trend

The 2024 IECC Cycle represents an additional 7.8% efficiency improvement over 2021. That progression accomplishes more than most reach codes would, without the administrative burden of adopting local code amendments.

2024 IECC: What Is Included in the Next Cycle

Pending New Mexico statewide adoption, Los Alamos will move to the 2024 IBC/IRC/IECC—building on an already-strong 2021 foundation.

Electrification Readiness

New provisions prepare buildings for the transition away from fossil fuels

Battery Storage Ready

Provisions for future on-site energy storage integration

Mechanical Efficiency Credit

First time since 2006 that high-efficiency HVAC earns compliance credit in the performance path

50+ Compliance Options

Expanded enhanced efficiency menu — more flexibility for builders to hit performance targets

Air-Tight Doors and Windows

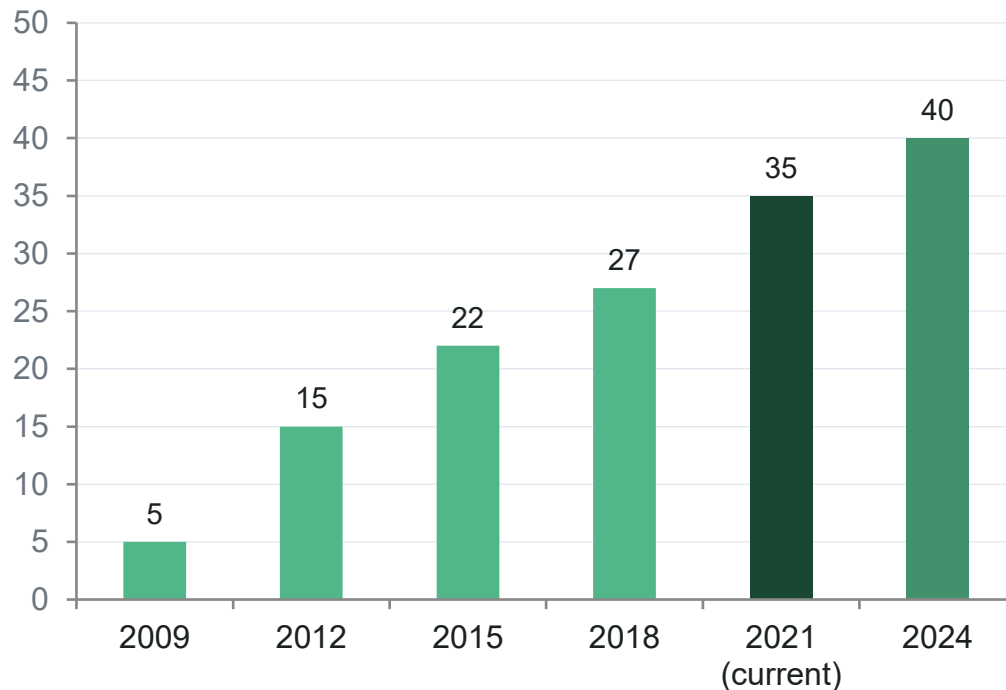
More stringent window U-factor and SHGC requirements in cold climates

Renovation Lighting Change

Requires all renovation lighting upgrades must meet efficiency standards

Source: DOE Federal Register Dec. 2024; NAHB; Ekotrope 2024 IECC Overview

The Trajectory: Cumulative Efficiency Gains Over 2006



~40%

Cumulative efficiency gain
since 2006

~17%

Combined 2021 + 2024
improvement over 2018

2024

Next adoption target — pending
NM state action

Chart is illustrative; earlier cycle values are approximate. 2021 and 2024 improvement figures are based on DOE/PNNL determinations. Values reflect residential energy code efficiency relative to the 2006 IECC.

Recommendation

CDD recommends the following approach to advance CAP Goal BE1.4 — without reach codes:

01 Educate the Community

Most community members do not know how significantly the 2021 IECC has raised the baseline. A targeted education campaign delivers real performance gains—by encouraging residents to upgrade to code compliant and energy efficient building materials and systems.

02 Educate Contractors and Applicants

Develop a plain-language guide for contractors and permit applicants explaining what the 2021 IECC currently requires, so compliance is driven by understanding rather than just plan check.

03 Incentivize, Don't Mandate

Consistent with community engagement findings from the CAP process, supplement base code compliance with education, incentives, and recognition—not additional requirements that add cost and complexity.

04 Track Building Performance

Begin capturing blower door and duct leakage test results at the inspection stage to build a baseline of new construction energy performance consistent with CAP Action BE1.2