

City of Flagstaff – Building Safety & Code Compliance

2024 IBC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 IBC changes focus on life safety, structural performance, and new building technologies. Cost impacts are generally moderate to high and depend on building type, height, and occupancy.

Key Change	Impact / Cost
Energy Storage Systems (ESS)	New requirements for battery systems; can significantly increase cost depending on size (\$1,000s–\$10,000s).
Mass Timber / Tall Wood Buildings	Expanded allowances; may reduce structural cost but increase fire protection requirements.
Egress & Stairway Updates	Refined requirements; may impact layout and construction cost.
Fire Protection Systems	Expanded sprinkler/alarm requirements; moderate to high cost depending on building size.
Structural Load Updates	Updated wind, snow, and seismic provisions; may increase structural design cost.
Facade & Exterior Wall Requirements	Improved weather protection and fire resistance; moderate cost increase depending on system.
Elevator & Accessibility Updates	Enhanced accessibility provisions; can increase cost for multi-story buildings.
EV Charging & Electrical Coordination	Coordination with NEC/IECC; may require infrastructure planning and added cost.
Occupancy Classification Changes	Refined classifications; may trigger different construction requirements and costs.

WHEN COSTS ARE TRIGGERED (IBC)

- Building Type → Commercial vs residential significantly affects requirements
- Building Height & Size → Taller/larger buildings trigger more fire and structural requirements
- Occupancy Type → Higher hazard uses increase life safety requirements
- Structural System → Material choice (steel, concrete, wood) impacts cost
- Fire Protection Level → Sprinklers, alarms, and ratings drive cost
- Technology Integration → ESS, EV, and new systems increase cost

Final Takeaways: IBC cost impacts are moderate to high and heavily project-specific. Costs are driven by building size, occupancy, structural system, and fire protection requirements.

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2024 IRC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 IRC changes are optional or situational. Overall cost impacts are generally neutral to slightly cost-reducing depending on project conditions.

Key Change	Impact / Cost
Floor Framing at Guards (R502.11)	Additional framing required; ~\$0–\$459 cost.
Vapor Retarder Under Slabs (R506.3.3)	Reduced to 6-mil; ~\$472–\$957 savings.
Stucco WRB Changes (R703.7.3)	Modified requirements; up to ~\$1,200 savings.
Building Official Authority (R104)	Expanded authority; ~\$74–\$597 cost when triggered.
Framing Splice Engineering (R502/R802)	Engineering required; ~\$804–\$891 when triggered.
Soil Classification (R401.4.1)	Allows USDA data; ~\$946 savings.
Deck Ledger Flashing (R507)	Improved moisture control; ~\$28–\$36 cost.
Exterior Stair Landing Exception	Reduced landing size; ~\$798 savings.
Masonry Veneer Support	Simplified flashing; up to ~\$328 savings.
HVAC Exhaust & Return Air Changes	Flexibility; savings up to ~\$262 or costs up to ~\$1,843.
BIPV Solar Marking	Safety labeling; ~\$190–\$246 cost.

WHEN COSTS ARE TRIGGERED (IRC)

- Structural Conditions → Non-prescriptive framing or splices require engineering
- Site Conditions → Soil conditions or slopes may trigger design requirements
- Project Scope → Decks, exterior work, and additions introduce additional requirements
- Mechanical System Design → HVAC layout or return air strategies may increase cost
- Material Choices → Exterior finishes (stucco, veneer) can shift cost up or down
- Technology Integration → Solar or specialty systems add incremental cost

Final Takeaways: Most changes are optional or condition-based. Overall impact is neutral to slightly cost-reducing. Costs are driven by structural engineering and HVAC changes; savings come from simplified materials and reduced requirements.

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2024 IEBC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 IEBC changes provide flexibility for existing buildings while improving safety and accessibility. Cost impacts vary widely depending on scope of work, occupancy changes, and level of alteration.

Key Change	Impact / Cost
Expanded Compliance Methods	Clarifies prescriptive, work area, and performance options; generally neutral cost with added flexibility.
Change of Occupancy Requirements	More defined triggers for upgrades; can increase costs significantly depending on hazard category change.
Accessibility Upgrades	Expanded requirements during alterations; may add \$1,000s depending on scope and building condition.
Structural Evaluation Triggers	Updated thresholds for structural review; engineering costs ~\$800–\$3,000 when triggered.
Energy Code Coordination	More alignment with IECC; may require insulation, lighting, or system upgrades during remodels.
Fire & Life Safety Improvements	Enhanced requirements for alarms, separations, and egress; cost varies widely by building condition.
Historic Building Flexibility	Maintains alternative compliance paths; can significantly reduce upgrade costs for historic structures.
Work Area Method Clarifications	Improves predictability of required upgrades; may reduce unexpected costs during permitting.
Mechanical, Plumbing, Electrical Coordination	Better alignment with IMC/IPC/NEC; may trigger system upgrades when alterations occur.
Partial vs Full Building Upgrades	Clarifies when entire building must comply; major cost driver if triggered by large project scope.

WHEN COSTS ARE TRIGGERED (IEBC)

- Change of Occupancy → Higher hazard categories may trigger full upgrades
- Scope of Work → Larger alterations (Level 2/3) require more compliance
- Area of Work → Upgrades typically limited to the work area unless thresholds are exceeded
- Accessibility Thresholds → Improvements may be required up to 20% of project cost
- Structural Modifications → May require engineering analysis and upgrades
- Building Systems → MEP work can trigger system compliance updates

Final Takeaways: IEBC changes are highly project-dependent. Costs are primarily driven by occupancy changes, accessibility upgrades, and structural evaluations. The code also provides flexibility that can help manage or reduce costs in many renovation scenarios.

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2024 IECC Significant Changes & Cost Impacts (Condensed Summary)

Includes Flagstaff-specific considerations (Climate Zone 5). Costs vary based on system type, design, and compliance path.

Key Change	Impact / Cost (Including CZ5 Focus)
Overall Cost Increase vs 2018 IECC	Gas: ~\$4,100–\$4,200; Electric: ~\$7,200+ in CZ5.
R408 Credit System	Flexible compliance options; can offset costs with lower-cost credits.
Continuous Wall Insulation (CZ 4-5)	Major cost driver; ~\$5,000+.
Air Sealing (Tighter Homes)	Stricter ACH; ~\$900–\$1,200.
High-Efficiency HVAC / Heat Pumps	Cold-climate systems ~\$6,000+.
Mechanical Ventilation (HRV/ERV)	Required in CZ5; ~\$2,200.
Fenestration (Windows)	Lower U-factor increases cost.
Ducts in Conditioned Space	Energy savings but may increase cost.
Renewable Energy / Solar Ready	Optional high-cost option (~\$10,000+).

WHEN COSTS ARE TRIGGERED (IECC)

- Climate Zone → CZ5 drives higher insulation, HVAC, and ventilation costs
- System Type → All-electric designs typically cost more than gas systems
- R408 Credit Selection → Costs vary widely depending on chosen compliance path
- HVAC Equipment → High-efficiency or cold-climate heat pumps increase cost
- Envelope Design → Continuous insulation and tighter envelopes increase cost
- Optional Measures → Solar, advanced systems significantly increase cost if selected

Flagstaff (CZ5) Takeaways: Costs are driven primarily by insulation, HVAC, and ventilation. The R408 system provides flexibility, but colder climate requirements still result in higher costs.

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2024 IFGC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 IFGC changes focus on system safety, material standards, and emerging fuel technologies. Cost impacts are generally low to moderate and tied to system type, materials, and installation methods.

Key Change	Impact / Cost
CSST Bonding & Grounding Updates	Additional bonding requirements; ~\$100–\$500 depending on system.
Hydrogen Blending Considerations	Future-focused provisions; minimal immediate cost but may impact material selection.
Appliance Installation & Clearance Updates	Refined spacing and placement; may affect layout and installation cost.
Venting System Clarifications	Updated vent sizing and routing; minor to moderate cost depending on system complexity.
Gas Piping Materials & Standards	Expanded material options; may increase or decrease cost depending on selection.
Outdoor Appliance Installations	Improved safety requirements; minor cost increase for exterior systems.
Pressure Regulation & Testing	Enhanced testing requirements; minor labor and inspection cost.

WHEN COSTS ARE TRIGGERED (IFGC)
• System Type → Larger or more complex gas systems increase cost • Material Selection → CSST, steel, or specialty materials vary in cost • Appliance Type → High-efficiency or specialty appliances increase cost • Venting Design → Complex vent routing increases labor and material cost • Fuel Type Changes → Emerging fuels (hydrogen blends) may impact system design

Final Takeaways: IFGC cost impacts are generally low to moderate and project-specific. Costs are driven by system design, material choices, and appliance selection.

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2024 IMC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 IMC changes focus on improved ventilation, system efficiency, and equipment safety. Cost impacts are generally moderate and are typically tied to system design and equipment selection.

Key Change	Impact / Cost
Ventilation Requirement Updates	Increased outdoor air requirements; may increase duct sizing and equipment capacity (~\$500–\$2,000).
Commercial Kitchen Exhaust Clarifications	More defined hood/exhaust requirements; can increase cost for restaurant TI projects (\$1,000s).
Refrigerant Safety Updates	Alignment with newer refrigerants; may impact equipment selection and cost.
Duct Construction & Fire/Smoke Dampers	Improved safety requirements; added dampers and protection may increase cost (~\$500–\$2,500).
Equipment Access & Service Clearance	Expanded access requirements; may impact layout and roof/mechanical room design.
Outdoor Air & Exhaust Placement	Clearer separation requirements; may increase duct routing complexity and cost.
System Efficiency Alignment (IECC Coordination)	Higher efficiency equipment often required; cost increases ~\$1,000–\$5,000 depending on system.
Mechanical System Controls	More advanced controls required in some cases; minor to moderate cost impact.

WHEN COSTS ARE TRIGGERED (IMC)
• System Type → Larger or more complex HVAC systems increase costs significantly • Building Use → Commercial kitchens and high-occupancy spaces drive higher ventilation costs • Equipment Selection → High-efficiency or specialty systems increase upfront costs • Duct Routing & Layout → Complex layouts increase labor and material costs • Code Coordination → IECC and other codes may require upgraded systems

Final Takeaways: IMC cost impacts are generally moderate and project-specific. Costs are primarily driven by ventilation requirements, equipment efficiency, and system complexity.

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2024 IPC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 IPC changes focus on water efficiency, system protection, and updated materials. Cost impacts are generally low to moderate and tied to fixture selection, system design, and backflow protection.

Key Change	Impact / Cost
Water Efficiency / Fixture Updates	Updated fixture performance standards; minimal to moderate cost depending on product selection.
Backflow Prevention Requirements	Expanded protection requirements; may add devices/testing (~\$200–\$1,000+).
Water Heater & Expansion Control	Thermal expansion and installation updates; may require additional components (~\$150–\$500).
Drainage & Venting Flexibility	More flexible venting methods; may reduce labor/material costs in some designs.
Pipe Materials & Standards	Updated approved materials; cost varies depending on material selection and availability.
Storm Drainage Requirements	Improved sizing and design; may increase cost for larger buildings or roof systems.
Hot Water System Efficiency	Improved distribution efficiency; may add recirculation or insulation costs (~\$200–\$1,000).
Trap & Cleanout Accessibility	Improved access requirements; may affect layout and installation complexity.

WHEN COSTS ARE TRIGGERED (IPC)
• Fixture Selection → Higher efficiency fixtures may increase upfront cost • Building Type → Commercial projects require more backflow and system protection • System Design → Complex layouts increase labor and material costs • Water Heater Type → High-efficiency or recirculation systems increase cost • Code Coordination → IECC and other codes may require additional upgrades

Final Takeaways: IPC cost impacts are generally low to moderate and project-specific. Costs are driven by backflow protection, water heater systems, and overall plumbing system design.

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2023 NEC Significant Changes & Cost Impacts (2017 → 2023)

The 2023 NEC introduces expanded electrical safety requirements and new technology provisions. Cost impacts are generally moderate and tied to protection devices, EV infrastructure, and system upgrades.

Key Change	Impact / Cost
Expanded GFCI Protection	Applies to more circuits (125–250V); ~\$100–\$500 increase per panel.
Expanded AFCI Protection	Additional arc-fault breakers required; ~\$300–\$1,000 increase.
Surge Protection (SPDs)	Now required for dwelling units; ~\$200–\$600 cost.
EV Charging Infrastructure	Dedicated circuits and capacity; ~\$500–\$2,500 depending on installation.
Energy Storage Systems (ESS)	New safety requirements; significant cost when installed (\$1,000s).
Outdoor Emergency Disconnects	New requirement for dwellings; ~\$100–\$300 cost.
Load Calculation Updates	May increase service size; moderate cost depending on project.
Solar / Renewable Integration	Expanded PV provisions; cost varies widely depending on system.
Working Space & Clearance	May affect layout; minor cost impacts.

WHEN COSTS ARE TRIGGERED (NEC)
• Panel Upgrades → Additional breakers and capacity increase cost • Technology Integration → EV, solar, and battery systems drive cost • Circuit Expansion → More GFCI/AFCI protection increases cost • Building Type → Larger/commercial systems significantly increase cost • Electrical Design → Load calculations and service size impact cost

Final Takeaways: NEC cost impacts are generally moderate and driven by safety upgrades and emerging technologies. Costs are primarily tied to panel capacity, protection devices, and optional system installations.

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2024 ISPSC Significant Changes & Cost Impacts (Condensed Summary)

Most 2024 ISPSC changes focus on safety, energy efficiency, and water quality. Cost impacts are generally low to moderate and primarily affect new pool and spa installations.

Key Change	Impact / Cost
Barrier & Safety Requirements	Updated fencing, alarms, and safety features; ~\$500–\$2,000 depending on configuration.
Energy Efficiency (Pumps & Heaters)	Higher efficiency equipment required; ~\$500–\$3,000 depending on system.
Water Quality & Circulation	Improved filtration and turnover requirements; moderate equipment cost increases.
Entrapment Protection	Enhanced drain and suction safety; minimal to moderate cost depending on system.
Electrical Bonding Coordination	Alignment with NEC; may increase coordination and installation cost.
Deck & Surface Requirements	Slip resistance and drainage updates; may increase material and installation cost.
Spa & Hot Tub Safety	Additional safety and control requirements; minor to moderate cost increase.

<i>WHEN COSTS ARE TRIGGERED (ISPSC)</i>
• New Construction → Full compliance required for new pools/spas • Safety Features → Barriers, alarms, and covers increase cost • Equipment Selection → High-efficiency pumps/heaters increase cost • Pool Type → Commercial pools have significantly higher requirements • Site Design → Decking, drainage, and layout affect cost

Final Takeaways: ISPSC cost impacts are generally low to moderate and concentrated in new construction. Costs are primarily driven by safety features, equipment efficiency, and overall pool design.

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