RHODE ISLAND DEPARTMENT OF BUSINESS REGULATION

Regulatory Analysis for Adoption of The Rhode Island State Building Codes

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1. Reason for Regulatory Action

Pursuant to R.I. Gen. Laws Chapter 23-27.3, the Building Code Standards Committee of the Rhode Island Department of Business Regulation is charged with promulgating the Rhode Island State Building Code Regulations. Much of Building Code Regulations incorporate international or national building codes by reference, the majority of which are set forth by the International Code Council, with the electrical code adopted in RI coming from the National Fire Protection Association. This document reviews the substantive changes resulting in quantifiable costs and/or benefits to the following building code regulations:

Code	**Title**	**RICR Reference**	**Model Code to be adopted**
RISBC-1	Rhode Island Building Code	510-RICR-00-00-1	ICC – International Building Code, 2021
RISBC-2	Rhode Island One and Two Family Code	510-RICR-00-00-2	ICC – International Residential Code, 2021
RISBC-3	Rhode Island Plumbing Code	510-RICR-00-00-3	ICC – International Plumbing Code, 2021
RISBC-4	Rhode Island Mechanical Code	510-RICR-00-00-4	ICC – International Mechanical Code, 2021
RISBC-5	Rhode Island Electrical Code	510-RICR-00-00-5	NFPA - National Electrical Code, 2023
RISBC-6	Rhode Island Property Maintenance Code	510-RICR-00-00-6	ICC – International Property Maintenance Code, 2021
RISBC-8	Rhode Island Energy Conservation Code	510-RICR-00-00-8	ICC – International Energy Conservation Code, 2024[1]
RISBC – 14	Swimming Pool and Spa Code	510-RICR-00-00-14	ICC – International Swimming Pool and Spa Code, 2021
RISBC-19	Fuel and Gas Code	510-RICR-00-00-19	ICC – International Fuel and Gas Code, 2021

The nine codes outlined above substantially reflect the changes that may reflect in meaningful costs or benefits to Rhode Island.[2] There are several additional building codes related to enforcement, procedures, and related ministerial matters that are reflected and explained elsewhere in the submitted materials. In general, these additional code sections reflect formatting

[1] Pursuant to R.I. Gen. Laws § 23-27.3-100.1.5.4, the BCSC is required to adopt the 2024 Energy Conservation Code within 3 months of its release. It has not yet been published by the ICC.

[2] These include: RISBC-7 and RISBC-20, relating to the repeal of certain provisions of the Rehabilitation Code and replacement with the ICC Model Existing Building Code; and RISBC-11, relating to the certification of building officials.

and regulatory construction changes meant to improve the useability of the codes. SBC-20 (the Rehabilitation Code) is updated to reflect the transfer of building-code related elements of SBC-20 to the new SBC-7 (the Existing Buildings Code); the goal of this change is to improve the usability of both the Rehabilitation and Existing Buildings code and ensure that all relevant components of both are fully aligned with the building standards found in SBC-1 and SBC-2. Finally, SBC-11(relating to the certification of building officials) and SBC-18 (relating to the use of native lumber) are updated to reflect current operating procedures within the State Building Office and do not represent a change to regulatory status quo.

2. Model Codes: Adoption Process and Timeline

a. International Code Council Model Code Adoption

The International Code Council promulgates model codes, known as the International Codes or I-Codes, including the International Building Code or IBC, on a three-year cycle. The model codes are in use or adopted in all 50 states as well as jurisdictions across the world. Rhode Island has been operating under the 2018 code family since the last adoption of Rhode Island's building codes in early 2022. The proposed promulgation underlying this cost benefit analysis would bring Rhode Island into alignment with the 2021 code cycle and prepare the state to adopt the 2024 codes in the coming year to 18 months.

ICC model code development is a rigorous, lengthy, transparent, and stakeholder-informed process that incorporates input from a wide variety of end users from both government and private industry. This process includes a public comment period, detailed cost assessment, and a vote of more than 60,000 ICC members.[3] The move from 2018 to 2021 model codes encompassed 1,341 code changes – all of which are reflected in the model codes considered by the Rhode Island Building Code Standards Committee.[4] Moreover, the ICC published detailed cost assessments for each model code and the proposed changes thereto in accompaniment with the public comment period – these are available to the general public and were intended to inform comment on the proposed model codes during ICC's promulgation and adoption process.[5]

The 2021 model codes were put forth by the ICC in December 2020. Over the course of 2021-2023, the Rhode Island Building Code Standards Committee (BCSC) sought input from a variety of stakeholders, subject matter experts, industry participants, and other interested parties to determine what, if any, Rhode Island-specific amendments, changes, or alterations to the model codes ought to be adopted. These are reflected in Table 1 below. By late 2023, the BCSC completed its consideration of the model codes; the Department has since turned to formal rule promulgation.

[3] See: https://www.iccsafe.org/wp-content/uploads/ICC-CDP-How-It-Works.pdf
[4] See: https://www.iccsafe.org/wp-content/uploads/ICC-CDP-By-the-Numbers-2019.pdf
[5] See, e.g.: https://www.iccsafe.org/wp-content/uploads/IBC-General-2021-Group-A-2021-Group-A-Aug-13.pdf. The entire library of public comment agenda documents, including cost impact analyses, are available here: https://www.iccsafe.org/products-and-services/i-codes/code-development-process/2021-2022-group-a/

b. National Electrical Code – National Fire Protection Association

R.I. Gen. Laws § 23-27.3-100.1.5 states that electrical work shall be in accordance with the latest edition of the National Electrical Code (NEC), as adopted with any state specific amendments. The NEC is prepared by the National Fire Protection Association ("NFPA") which also prepares and updates the model codes that Rhode Island adopts for fire safety. The NEC is on a different code cycle. Rhode Island is currently operating under NEC 2020 and through this year's amendment would adopt NEC 2023.

c. Statutory Mandate to adopt 2024 IECC

Pursuant to the statutory mandate present in R.I. Gen. Laws § 23-27.3-100.1.5.4(1), the BCSC has approved – and the DBR is proposing to adopt without amendment, the 2024 International Energy Conservation Code as published by the International Code Council. There is an additional provision within this section that gives the BCSC discretion to adopt so-called "electric-readiness provisions" that meet or exceed those set forth in the IECC. At this time, the BCSC has chosen to delay consideration of such standards in lieu of those set forth in the IECC, which have been deemed sufficient to advance State policy goals related to energy efficient buildings. As a result, and in accordance with this statutory provision, no amendments to the IECC were made by the BCSC.[6]

3. The Inherent Value of Building Codes

In general, state and local governments rely heavily on building codes to ensure a baseline level of life safety, resilience to natural disasters, and to mitigate the potential damaging effects of a variety of hazards on commercial and residential structures. Building codes have improved steadily over several decades in response to observed building performance during natural hazards, changes in construction methods, and advances in research and testing of materials and methods.[7]

Widespread adoption of building codes has clear economic benefits, on balance. A landmark 2020 study from the Federal Emergency Management Agency (FEMA), entitled "Building Codes Save," found that nationally, cumulative losses avoided through the adoption of modern building codes (2015 and newer) are projected to grow to more than $132 billion by 2040.[8] Likewise, a 2019 study from the National Institute of Building Sciences (NIBS) found that every

[6] See: https://webserver.rilegislature.gov/Statutes/TITLE23/23-27.3/23-1/23-27.3-100.1.5.4.htm. Relevant provision reads, in part: "The state building code standards committee shall revise the state energy conservation code to comply with this requirement within one year of any update to the International Energy Conservation Code; provided, however, that the 2021 IECC published by the International Code Council shall not be adopted and the 2024 IECC published by the International Code Council shall be adopted within (3) three months of its release."
[7] See: https://www.fema.gov/sites/default/files/2020-11/fema_building-codes-save_study.pdf
[8] See: https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes-save-study

$1 in investment in adoption of modern building codes results in $11 in savings through avoided disaster-related property damage.[9]

More practically, the Rhode Island General Laws require the Building Code Standards Committee to "…adopt, promulgate, and administer a state building code for the purposes of regulating the design, construction and use of buildings or structures previously erected…"[10] and provides further that the state building code "…shall be reasonably consistent with recognized and accepted standards adopted by national model code organizations and recognized authorities."[11]

Finally, the timely and expedient adoption of model building codes is a clear benefit to our state's economy in general, and the construction sector in particular, as we engage in an all-of-government effort to spur both residential and commercial development across our state. Keeping our code structure in line with national best practices will ensure that our state is competitive within the region and nationally while further strengthening the resilience of our communities against natural disasters and protecting life safety. Please note that a further discussion relating to the value of statistical life, and the important role this concept plays in further quantifying the benefits of life-safety related changes to the building codes, can be found in the Results section below.

4. Regulatory Impact Analysis: Approach and Estimation Methodology

Consistent with normative values, clear economic benefits, and statutory requirements that Rhode Island shall have a building code that incorporates and reflects the most up-to-date model codes, this cost-benefit analysis aims to quantify **both** the Rhode Island-specific amendments to the model codes adopted by the Building Code Standards Committee and the updates from the 2018 to 2021 ICC model codes that have a significant impact on construction costs.[12] There are sixteen (16) state-specific amendments that fall within the scope of the analysis; four (4) of these amendments have been deemed to have a material cost or benefit. These are itemized in Tables 2 and 3 below. Note that the appendices to this analysis and accompanying analytical documents itemize additional non-substantive amendments adopted by the RI BCSC, which generally relate to technical and clarifying changes; deletion of legacy amendments rendered obsolete by updates to ICC model codes; and structural and/or formatting changes to streamline and improve the usability of the Rhode Island codes.

In addition to the Rhode Island amendments, we have identified – and quantify the impact of – several dozen significant changes to the model codes being incorporated by reference that are

[9] See: https://www.nibs.org/files/pdfs/ms_v3_federalgrants.pdf
[10] See: https://webserver.rilegislature.gov//Statutes/TITLE23/23-27.3/23-1/23-27.3-100.1.3.htm
[11] See: https://webserver.rilegislature.gov//Statutes/TITLE23/23-27.3/23-1/23-27.3-100.1.5.htm
[12] As previously mentioned, the 2021 model ICC codes and the 2023 National Electrical Code reflect more than 1,300 changes relative to the 2018 ICC codes and 2020 National Electrical Code; though Rhode Island will be incorporating these by reference, they are not a result of specific regulatory decisions made by the BCSC or the Department and are therefore deemed outside the scope of this analysis.

not Rhode Island-specific amendments. These are itemized, along with a description, rationale, and cost impact determination, in Appendix A.

For these amendments with a material economic impact, we employ the following methodology to estimate the annual cost or savings to the construction industry of each. An example estimate for a hypothetical residential provision known as "Amendment X" is laid out below.[13]

Cost estimates were generated for provision changes, when deemed possible and appropriate. The cost estimation process includes three primary calculations: the percentage increase in construction costs, the frequency/prevalence of the code change, and the impact on overall Rhode Island construction output. An example of the calculation of a code revision is provided below.

Percentage Increase in Construction Costs

Most of the code provisions analyzed in this report make incremental changes to specific provisions in the code. For any given provision or requirement that has been altered in some form, this analysis estimates costs by looking at the marginal difference between the current cost of the provision and the estimated cost were the change to be adopted. The cost estimates should not be taken to represent the cost of the provision in totality, because, for the purpose of this analysis, the costs associated with the current code language are fixed.

To generate these incremental percentage changes, the BCC based their estimates on material provided by external consultants and other subject matter experts to understand the change in construction costs associated with the proposed revisions to the code. Prototype projects were used to provide structure to the estimation of code impacts around a typical example of a project where the code revision would lead to construction cost differences.

For example, suppose a (hypothetical) revision to the code now requires GFCI outlets to be installed in two common home locations that typically do not have GFCI outlets. Cost estimators would use an example prototype project of a 2,000 square foot home to determine the cost impact per home of these two new GFCI outlets. Since the wiring, outlets, and labor would be installed regardless of the code change, the incremental cost difference would be the difference between two GFCI outlets vs. two regular outlets. Using an example cost difference of $4, the cost of two additional GFCI outlets is $8 per 2,000 square foot home, or $0.004 per square foot.
To determine the percentage increase in the cost of development per square foot, the cost estimates per square foot were divided by the average cost of development per square foot. These estimates were based on values from valuation tables published by the ICC. This analysis used four different total cost of development per square foot assumptions:

- Residential- Basic
- Residential- Specialty
- Commercial- Basic

[13] An Excel workbook laying out the specific calculations for each of the proposed amendments will be attached to this analysis.

- Commercial- Specialty

Frequency/Prevalence Factor

Each provisional change was assigned a ranking that estimated how likely it is that the change would impact a construction project. Identifying prevalence or commonality is critical to understanding the magnitude of effect each provision could have in the state. This factor ensures that the impact of code changes that only apply to rare project types or circumstances are not attributed to all construction, and therefore over-estimate the impact. Conversely, it also ensures the estimates reflect a larger impact for the code changes that affect everyday construction projects.

Since more accurate data from permitting data or other RI data sources could not be provided to estimate the commonality of a code change, the following scale was used to rank the prevalence of a code change applying to a category of construction:

- High
- Medium
- Low
- Rare

These ranks corresponded to percentages that were used to generate the overall cost estimate. A frequency could be applied to up to four of the categories of construction noted in the list above, depending on the relevance of the code change to that type of construction.

Impact on Overall Construction Output

The percentage increases in construction costs and frequency factors were applied to an estimate of overall Rhode Island construction output. This figure represents the assumed statewide cost estimate. Since more accurate data from permitting data or other RI data sources was not available, the construction output estimates were based on national-level data, which were then proportionally applied to the state level in RI. Total RI Construction Industry Output estimates and forecasts were based on national level BEA/Census/BLS data on gross output by industry and other economic indicators and were then distributed to the state level. The overall state-level estimate was then distributed to the four types of construction outlined above using Census Bureau estimates of the Value of Construction Put in Place by type of construction.

Example: Cost of a Residential Provision (Amendment X)			
Category	**Item**	**Estimate**	**Source**
Percentage Increase in Construction Costs	Cost of Amendment X in Prototype Project	$ 100	*Department Estimate*
	Square-footage of Prototype Project	2,000	*Department Assumption*
	Cost of Provision Per Square Foot	$ 0.05	*Calculation*
	Total Cost of Construction Per Square Foot: Basic Residential (2025)	$ 200	*Parameter: Based on ICC Valuation Tables: R-3 Residential average (excludes Type I & II)*
	Amendment X Increase of Cost of Development	0.03%	*Calculation*
Prevalence	Frequency: Likelihood of provision applying to a residential project	25%	*Department Assumption*
RI Construction Output: Residential	Total RI Construction Industry Output (2025)	$ 3,321,806,600	*Parameter: BEA Data*
	Percentage of Construction Output: Basic Residential	32.8%	*Parameter: BEA Data*
	RI Construction Industry Output: Basic Residential	$ 1,090,755,054	*Calculation*
Statewide Impact of Amendment X		**$ 68,304**	*=% Increase to Cost of Development*Likelihood of Application*Industry Output Total*

A Note on Regulatory Alternatives

Alternative approaches are largely limited by statutory mandates and national standards. The model codes that we adopt that comprise the Rhode Island Building Codes are determined by statute. The models themselves are vetted by thousands of people nationwide each time a new edition is prepared and issued. The Building Code Standards Committee then reviews the next version of the model code for each above-listed regulation and considers potential alternatives to the model code provisions as part of the adoption of each new set of codes and those alternatives, when appropriate and approved by the Building Code Standards Committee are reflected in the limited Rhode Island amendments to substantive provisions of the model codes.

Analysis of Impacted Stakeholders

The Rhode Island state building codes are some of the largest and most significant regulations in the state, and have a far-reaching impact that affects the quality, safety, and cost of construction in Rhode Island. These impacts include:

- Safety, health, livability, and environmental impacts related to increased protective requirements;
- Building quality and resiliency impacts related to higher-quality construction and energy savings requirements;
- Construction cost impacts related to the cost of construction and compliance with the state building code requirements;
- Procedural and administrative impacts related to the management and application of the code requirements
- Effect on the cost and availability of insurance to the citizens of Rhode Island
- Effect on catastrophic damage to buildings and dwellings

Stakeholders impacted by these codes include:

- *State & Local Government.* The proposed changes to the building codes will alter the standards that state and local government building code and inspection offices enforce through building inspections and permitting activities. This will require these offices to become familiar with the changes to the model codes as well as the changes to the Rhode Island amendments. Some of the proposed changes also alter the way in which the building codes are administered by state and local entities that have jurisdiction.

- *Builders and Construction Industry.* The proposed changes will have an impact on developers—in some cases adding costs, and in some cases creating savings. Depending on the market, developers may pass any additional costs on to their customers, the property owners.

- *Homeowners, Property Owners, and Business Owners.* Additional costs or savings created by the revised building code provisions may change the prices charged to property owners. The benefits associated with the proposed code revisions—such as safety, building resiliency, and efficiency savings—are benefits to the end-users of the buildings. There are also benefits to the cost and availably of insurance and the survivability of buildings subject to catastrophic events.

5. Significant Changes to the 2021 Model Codes: Costs and Benefits

As previously discussed, the ICC updates from the 2018 to 2021 model codes encompass a quantity of changes that far exceeds the scope of this analysis. Still, this analysis seeks to describe a number of significant changes to the model codes in each section, with an itemized cost or benefit attributed to each where applicable. Broadly speaking, these changes reflect enhancements to life safety; improvements to health/livability; added flexibility; incorporation of new materials and technology; increased permissiveness; and procedural/administrative clarifications. The following table lays out the categories of code changes with an associated number of code changes. (Note that some changes may be in more than one category.)

Table 1. Nature and Frequency of Model Code Changes

Category	**Number of Code Changes**
Safety	17
Health/Livability	2
Building Resiliency	1
Energy/Environment	0
New Materials/Technology	6
Cost Savings	3
Flexibility	6
Increased Permissiveness	1
Procedural/Administrative	6
Technical	1

The table below lays out significant changes to the model codes from 2018 to 2021. Altogether, in accordance with the methodology described above, the Department estimates an initial statewide net cost increase of $5.7M per year associated with the incorporation of these significant changes to the model codes, with a 5-year net present value cost of approximately $23.0M over the period 2025-2029. The significant changes to the model codes are itemized in **Appendix A**.

6. Rhode Island Amendments: Itemized Costs and Benefits

In addition, this cost-benefit analysis seeks to quantify the costs and benefits of the Rhode Island-specific amendments to the model codes approved in 2023 by the Rhode Island Building Code Standards Committee. These are outlined in the following table. Notably, the only proposed Rhode Island-specific deviations from the international model codes with material costs and/or benefits impact SBC-1 (Building), SBC-2 (1/2 Family Residential), and SBC-3 (Plumbing). The BCSC approved sixteen Rhode Island amendments to the model codes. Of these, **four** are identified as having a cost-saving impact – estimated further in Table 2 below. An additional **twelve** were identified as having no cost impact; these are itemized in the following table (Table 3). In total, consistent with the methodology described above, the Department estimates an initial statewide net cost decrease of $904,885 associated with these Rhode Island amendments; these savings are estimated to have a five year net-present value of $4.4M over the period 2025-2029.

Table 2. Description of 2021 Rhode Island Amendments With An Annual Economic Impact

Code	Citation	Description	Background and Reasoning	Cost Increase or Decrease	2025 Est. Annual Statewide Cost (Savings)
SBC-1	3103	Temporary Structures – eliminate board variances	Eliminating variances from board for temporary structures.	Decrease	$(105)
SBC-2	2101.11	Used Materials – delete section	Provide procedural and administrative flexibility	Decrease	$(901,611)
SBC-3	608.18.1	Well Locations – conform to ICC	Align RI standards with ICC model code	Decrease	$(1,366)
SBC-3	903.2	Frost Closure	Align with statutory requirements	Decrease	$(1,803)
				Total Est. Annual Statewide Cost (Savings)	**$(904,885)**

Table 3. Description of 2021 Rhode Island Amendments With No Annual Economic Impact

Code	Citation	Description	Background/Reasoning
SBC-1	1011.5.2	Riser height and tread depth	Harmonize existing conflict with RI Fire Code
SBC-1	1601.1.1	General	Clarifies mapped features within model code
SBC-1	3112	Fabric Structures	Align RI definitions with ICC standards
SBC-1	3113.3	Manufacturer's data plate	Provide procedural/administrative flexibility
SBC-1	3113.4	Inspection Agencies	Align with statutory requirements
SBC-1	3114	Public Use Restroom Buildings in Flood Hazard Areas	Align with statutory requirements
SBC-2	105.2	Work exempt from permits	Provide procedural/administrative flexibility
SBC-2	322.3.2	Elevation Requirements	Provide procedural/administrative flexibility
SBC-2	326.3	Story Above Grade Plane	Provide procedural/administrative flexibility
SBC-2	2001.5	Add Section 2001.5	Provide procedural/administrative flexibility
SBC-2	2201.1	Materials	Provide procedural/administrative flexibility
SBC-3	802.1.7	Food utensils, dishes, pots and pans sinks	Provide procedural/administrative flexibility

In addition to these Rhode Island-specific amendments to the 2021 model codes, the codes delete a number of Rhode-Island specific amendments to the prior (2018) codes. These are itemized below. These deletions generally reflect the 2021 model code updates' consistency with the existing amendments, rendering the need for said amendments obsolete.

The net effect of these deletions is to improve the simplicity and usability of the codes while **maintaining regulatory status quo.** Unless otherwise noted, these deletions **do not drive material costs or benefits** that would otherwise be reflected in this analysis. Finally, unless noted in the below table or accompanying documents, all other existing state-specific amendments are maintained and will continue to represent regulatory status quo. A complete, itemized list of prior Rhode Island amendments that are being deleted in this code cycle can be found in **Appendix B.**

Finally, there are two scrivener's errors being corrected in the proposed code revisions that date back to the update from 2015 to 2018 model codes with amendments. In neither case were the erroneous 2018 revisions being enforced as a matter of practice; therefore, these changes do not represent a change from status quo. These are as follows:

- *SBC-1 Sec. 1809.5:* Confirms that buildings/structures exempt from frost depth requirements shall not exceed 200SF. Previous erroneous amendment had a 600 SF exemption threshold.
- *SBC-2 Sec. R105.2*: Confirms that buildings/structures exempt from permit requirements shall not exceed 64 square feet. Previous erroneous amendment had a 200 SF exemption threshold.

7. Results: Net Present Value of 2021 Code Changes

Finally, we aim to quantify the long-run impact of the proposed changes over the time period 2025-2029. This analysis assumes an annual growth rate in the construction industry of 2.2% in 2025, 2.6% in 2026, and 2.4% over the period 2027-2029 that is consistent with the American Institute of Architects (AIA) January 2025 Consensus Construction Forecast.[14] In addition, it assumes a discount rate (cost of capital) of 4.5% consistent with the rate approved by the Federal Reserve Board in December 2024.[15]

Subject to these assumptions, we estimate the combined net present value of the specified significant changes to ICC model codes and the specified Rhode Island specific changes to the 2021 building codes as follows:

[14] See: https://www.aia.org/resource-center/january-2025-aia-consensus-construction-forecast
[15] See: https://www.federalreserve.gov/newsevents/pressreleases/files/monetary20250114a1.pdf

Table 4: Net Present Value of Model Code Changes and Rhode Island Amendments

	2025	**2026**	**2027**	**2028**	**2029**
Model Code	$5,718,107	$ 5,843,906	$5,972,472	$6,103,866	$6,238,151
RI Amendments	(904,885)	(928,412)	(950,694)	(973,511)	(996,875)
Net Cost Increase (Decrease)	4,813,222	4,915,493	5,021,777	5,130,355	5,241,276
2025-2029 NPV Cost Increase (Decrease)	**$23,006,479**				

8. Summary and Discussion

In addition to the costs and benefits quantified above, there are further benefits to these code changes that are harder to quantify. Specifically, given the life-safety orientation of a significant number of the code changes itemized herein, it is worthwhile to consider the mortality-reducing effect of these changes as a benefit that should be further balanced against the potential costs. Here, we can consider the value of a statistical life – currently pegged at $9.1M in Rhode Island.[16] As a general matter, the concept of value of statistical life aims to quantify the benefit of policies that improve safety based on society's and individuals' willingness to pay for improvements in safety and corresponding reductions in injury and/or mortality.

Based on the foregoing analysis, we conclude that the estimated additional costs statewide incurred by the adoption of the 2021 model code significant changes and Rhode Island amendments has a net present value cost of $23.0M, roughly equaling the value of 2.5 statistical lives over this same period. The life safety improvements attributable to these code changes, and the associated reduction in mortality of more than three lives over the next five years, therefore justify these additional costs.

Overall, the Building Code Standards Committee, with the support of the State Building Office, aimed to reduce and/or eliminate a number of deviations from the model code that were adopted in the 2018 code cycle, with an overall eye towards decreasing costs and responding to the experience and requests of the construction industry in Rhode Island.

Therefore, we determine that the benefits of adopting the 2021 code family outweigh the estimated costs of the same and that this supports moving towards final adoption of the proposed 2021 building codes.

[16] See: https://omb.ri.gov/sites/g/files/xkgbur751/files/2023-12/ORR-Review-Analyzing-Regulatory-Benefits-and-Costs.pdf for a detailed discussion of the concept of Value of Statistical Life (VSL) and the important role it plays in regulatory impact analysis.

9. Appendix A: Selected Significant Changes to the 2021 Model Codes

IBC (SBC-1)	Section	Description of Provision	Rationale	Cost Increase/ Decrease
	404.5	Smoke control in atriums. In the evaluation of whether a smoke control system is required for an atrium condition, vertical opening protection consisting of a combination of both the atrium and a shaft enclosure is now recognized.	Added flexibility	Decrease
	406.2.4	Floor surfaces in parking garages. The mandate for a sloping floor to facilitate drainage in the vehicle areas of parking garages has been reinstated in the IBC for those garages classified as Group S-2 occupancies.	Safety	None
	407.6.1	Activation of automatic-closing doors. In Group I-2 occupancies, the closing of automatic-closing doors on hold-open devices must now also occur upon activation of the fire alarm system or automatic sprinkler system.	Safety	Increase
	411.5	Puzzle room exiting. Puzzle rooms are now regulated in a manner consistent with traditional special amusement areas. Special means of egress requirements have been established for puzzle rooms.	Safety	Increase
	414.2.3	Fire wall use for control areas. The scoping limitations of a fire wall's use to create separate buildings have been expanded through a new allowance for the number of control areas permitted.	Flexibility	Decrease
	424	Play structures. The interior finish materials of play structures are now regulated for flame spread purposes.	Safety	Increase
	506.3.2	Allowable area frontage increase. The methodology for establishing the	Procedural/ administrative	None

		permissible allowable area increase for frontage has been simplified by using a table.		
IRC (SBC-2)	**Section**	**Provision**		
	301.2(2)	Ultimate Design Wind Speed alignment. Table has been aligned with IBC and ASCE 7 maps.	Procedural/ administrative	None
	302.5.1	Opening Protection clarification. has been clarified to state that doors separating the garage and dwelling must be self-latching, as well as self-closing.	Safety	Increase
	310.1.1	Window opening control devices. Operational constraints and opening control devices clarifies that window opening control devices and fall prevention devices, complying with ASTM 2090, shall be allowed on emergency escape and rescue windows. The height of the mechanism is restricted to not more than 70” above the finished floor.	New materials/ technology	None
	311.7	Detached stairways. clarifies that stairways not within or attached to a building, porch, or deck are not regulated by this section. (Example: A stairway in the yard leading to a firepit area would not have to meet the riser height, tread depth, handrail, etc., requirements that a stairway inside of the house must meet.)	Flexibility	Decrease
	314.3	Smoke alarms/high ceilings. Location is modified with a new location requirement for smoke alarms to address areas with high ceilings adjacent to hallways serving bedrooms. (In the hallway and in the room open to the hallway, where the ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24” or more.)	Safety	Increase
	315.2.2	CO monitors. Alterations, repairs and additions is modified to require that carbon monoxide alarms be installed when there are repairs to, or replacement of, fuel fired mechanical systems.	Safety	Increase

	323.1.1	Sealed Documents. This is a newly added section requiring storm shelter construction documents be prepared and sealed by a registered design professional. There is an exception to this for systems that are listed and labeled to indicate compliance with ICC-500.	Procedural/ administrative	None
	326	Habitable Attics. Habitable Attics is modified to limit the area of a habitable attic to not greater than one-third of the floor area of the story below. The allowable area is allowed to be increased to not greater than one-half of the floor area of the story below when located within a dwelling unit equipped with a fire suppression system.	Procedural/ administrative	Increase
IPC (SBC-3)	**Section**	**Provision**		
	202	Public or Public Utilization. The definitions of "public" and "private" are simplified to make a clearer distinction as to which plumbing fixtures are intended to be configured for public use.	Procedural/ administrative	None
	403.1.1	Fixture calculations. The minimum fixture quantities for multiple-user toilet facilities designed to serve all genders must be calculated as 100 percent based on total occupant load.	Flexibility	Decrease
	403.2	Separate facilities. Designs for multiple-user facilities serving both sexes are possible.	Flexibility	None
	407.2	Bathtub waste outlets and overflows. Bathtubs are no longer required to have an overflow outlet.	New materials/ technology	Decrease
	606.1	Location of full-open valves. Multiple tenant buildings must have a main water shutoff valve for each tenant space.	Health/livability	Increase
	708.1.6	Cleanout equivalent. Removable traps and removable fixtures with integral traps are acceptable as equivalent to cleanouts.	New materials/ technology	Decrease
IMC (SBC-4)	**Section**	**Provision**		
	401.4	Intake opening location. A new type of factory-built combination exhaust and	New materials/ technology	Decrease

		intake air fitting is introduced that does not require separation between the two openings.		
	502.2	Manicure and pedicure stations. The code now requires the continuous operation of nail salon exhaust systems during business hours.	Health/livability	None
	504.4.1	Termination location. New text was added to address the possibility of dryer exhaust air being reintroduced into a building interior.	Safety	None
	506.3.7	Prevention of grease accumulation in grease ducts. A new exception exempts factory-built grease ducts from the duct slope prescriptions of the code, relying instead on the slope requirements stated in the product listing and manufacturer's installation instructions.	New materials/ technology	Decrease
	602.2.1.8	Pipe and duct insulation within plenums. This revision addresses the practice of using pipe insulation materials to protect piping that does not meet the required fire performance requirements.	Safety	Increase
	1105.9	Means of egress. Revised egress requirements for machinery rooms from the IBC were added to the IMC to prevent such requirements from being overlooked.	Procedural/ administrative	None
IFGC (SBC-19)	**Section**	**Provision**		
	307.2	Fuel-burning appliances. The termination of concealed condensate piping shall be marked to indicate whether the piping is connected to the primary drain or the secondary drain.	Safety	None
	403.8.3	Threaded joint sealing. the text was revised to require the use of thread joint sealants (aka, joint compounds, pipe dope, pipe tape). In the past, the code addressed pipe thread sealants but never required them to be used.	Safety	Increase
	405.4	Fittings in concealed locations. Plugs and caps have been added to the list of fittings approved for installation in concealed spaces.	New materials/ technology	None
	618.6	Furnace plenums and air ducts. New text clarifies the intent to prohibit	Technical	None

		pulling return air from the mechanical room.		
2023 NEC (SBC-5)	**Section**	**Provision**		
110.26		Grade, Floor, or Working Platform. The grade, floor, or working platform in the required working space shall be kept clear and the space shall be as level and flat as practical for the entire depth and width.	Safety	None
210.8		GFCI Protection for Dwelling Units. All kitchen receptacles in dwelling units must now be GFCI protected	Safety	Increase
210.8		GFCI Protection for Other Than Dwellings. Receptacles and cord and plug connected fixed or stationary appliances installed within 6ft of a sink shall be GFCI protected.	Safety	Increase
210.8		Specific Appliances. List of specific appliances in dwelling and non-dwelling installations that must have GFCI protection has been expanded to include: electric ranges, wall mounted ovens, counter mounted cooking units, & microwaves	Safety	Increase
210.8		Outdoor Outlets. Outdoor outlets on dwelling units requiring GFCI protection has been expanded to include: 1) Garages with a floor located at or below grade level 2) Accessory buildings 3) Boathouses. (If equipment supplied by an outlet covered under this section is replaced, the outlet shall be supplied with GFCI protection). Exception No 2 for HVAC equipment still applies until September 1, 2026	Safety	Increase
210.17		Guest Rooms & Guest Suites. Guest rooms and guest suites along with a newly added, assisted living facilities, that provide permanent provisions for cooking shall have branch circuits installed to meet the rules for dwelling units.	Safety	Increase
210.52		Islands, Peninsular Countertops & Work Surfaces. Receptacle outlets, if installed to serve an island or peninsular countertop or work surface,	Safety	Increase

		shall be installed in accordance with 210.52 (C) (3). If a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, provisions shall be provided at the island or peninsular for future addition of a receptacle outlet to service the island or peninsular countertop or work surface.		
215.18		Surge Protective Device. Where a feeder supplies any of the following, a surge protective device (SPD) shall be installed: 1) Dwelling units 2) Dormitory units 3) Guest rooms and guest suites of hotels and motels 4) Areas of nursing homes and limited-care facilities used exclusively as patient sleeping rooms	Safety	Increase
230.85		Emergency Disconnects for Services. For one and two-family dwelling units, and emergency disconnecting means shall be installed.	Safety	Increase

10. Appendix B. Prior Rhode Island Amendments Deleted in 2021 Codes

Code Title	Chapter	Explanation of deleted 2018 amendments
SBC-1	**Ch. 2**	State specific amendments to the definitions have been deleted because they no longer necessary as those terms are defined in statute (commissioner and committee) or are now included in the IBC 2021 definitions (nightclub). No change to status quo.
	Ch. 3	RI amendments to Chapter 3 have been deleted because these group are now sufficiently defined in IBC 2021. No change to status quo.
	Ch. 4	State specific amendments to section 401 (which added 2 new paragraphs to the model code) have been deleted because they are unnecessary, additional references to the Fire Safety Code. No change to status quo.
	Ch. 9	Prior RI amendments have been deleted because that content is now included in SBC 2021. No change to status quo.
	Ch. 10	Prior RI amendment is no longer necessary because the language in IBC 2021 is now consistent with the provisions of the RI Fire Safety Code. No change to status quo.
	Ch. 11	Prior RI amendments are no longer necessary because these provisions are now included in IBC 2021. No change to status quo.
	Ch. 13	Prior RI amendments were not substantive and no longer required due to the statutory requirement to adopt the unamended IECC. No change to status quo.
	Ch. 14	The prior RI amendments are no longer necessary because these provisions are included in IBC 2021. No change to status quo.
	Ch. 15	The prior RI amendments are no longer necessary because these provisions are included in IBC 2021. No change to status quo.
	Ch. 16	The only RI amendments being retained are the RI specific snow and wind load and frost depth tables, which have been updated and relocated to the end of the Regulation in § 1.4. The rest of the RI amendments are being deleted which means the provisions of IBC 2021 will apply.
	Ch. 23	Chapter 23 is adopted with a reduction of the RI specific amendments related to the use of Native Lumber. The deleted provisions have been relocated to 510-RICR-00-00-18, Use of Native Lumber. Amendments to that regulation are being promulgated

		simultaneously with this regulation. No change to status quo, just a reorganization of the provisions and updated cross reference to Part 18.
	Ch. 27	Chapter 27 of IBC 2021 is deleted. All prior RI amendments are also deleted as they are covered by the Electrical Code, 510-RICR-00-00-5. No change to status quo.
	Ch. 28	Chapter 28 of IBC 2021 is deleted. All prior RI amendments are also deleted as they are covered by the Mechanical Code, 510-RICR-00-00-4 and other provisions referenced in this updated amendment. No change to status quo.
	Ch. 29	Chapter 29 of IBC 2021 is deleted. All prior RI amendments are also deleted as they are covered by the Plumbing Code, 510-RICR-00-00-3. No change to status quo.
	Ch. 30	Chapter 30 of IBC 2021 is adopted with minimal changes necessary to refer to the regulation of Elevators by the Department of Labor and Training. The RI amendment for 3001.1.1 was deleted because the provision is now included in IBC 2021. No change to status quo
	Ch. 31	Chapter 31 is adopted with no changes. The prior RI amendments have been deleted. The general provision, definition of membrane-covered cable structure and provisions for fabric structures are now included in IBC 2021 and are no longer needed as state specific amendments.
	Ch. 33	The prior RI amendments are no longer necessary as those terms are now defined in SBC 2021. No change to status quo.
	Ch. 34	The content of Chapter 34 was relocated to a new model code in 2012. It now only contains a 1 sentence cross reference, therefore, the RI amendments to Chapter 34 are no longer necessary and have been deleted.
SBC-2	**Ch. 2**	The state specific amendments to the definitions have been deleted because they are no longer necessary as those terms are defined in statute (commissioner and committee) or are now included in the IRC 2021 definitions.
	Ch. 4	The state specific amendments have been deleted because they are no longer necessary as the 2021 IRC includes substantively similar provisions.
	Ch. 5 and 6	The state specific amendments have been deleted because they would be duplicative of the IRC 2021. No changes to the status quo.
	Ch. 8	The state specific amendments have been deleted because they would be duplicative of the IRC 2021. No changes to the status quo.

	Ch. 9	The state specific amendments have been deleted because they would be duplicative of the IRC 2021. No changes to the status quo.
	Ch. 10	The state specific amendments have been deleted because they would be duplicative of the IRC 2021. No changes to the status quo.
	Ch. 11	Chapter 11 is deleted due to statutory requirement for adoption of the Rhode Island Energy Conservation Code.
	Ch. 12-15	Chapters 12 through 15 are adopted with no changes. RI Amendment would be duplicative of the IRC 2021.
	Ch. 17-21	Chapters 17 through 21 are adopted with no changes. RI Amendment would be duplicative of the 2021 IRC.
	Ch. 23-24	Chapters 23 and 24 are adopted with no changes. RI Amendment would be duplicative of the 2021 IRC.
	Ch. 34-43	Chapters 34 through 43 are deleted. Language is now found in the RI Electrical Code, SBC 5.
	Ch. 44	Chapter 44 is adopted with no changes. RI Amendments would be duplicative of the 2021 IRC.
	Appendices	Appendices AE, AH, AK, AM, AO, AQ, AR, AS, and AW are adopted and all other appendices are deleted.
SBC-3	**Ch. 7**	RI amendments to sections 703.1 and 703.6 have been deleted. This deletion reflects the Model Code's alignment with previous Rhode Island amendments, which are therefore no longer necessary. No change to status quo.
	Ch. 8	RI amendments to sections 802.1.8 and the exception to 802.2 have been deleted. This deletion reflects the Model Code's alignment with previous Rhode Island amendments, which are therefore no longer necessary. No change to status quo.
	Ch. 10	The amendments to sections 1002.4, 1002.4.1 through 1002.4.4, and 1002.6 have been deleted. his deletion reflects the Model Code's alignment with previous Rhode Island amendments, which are therefore no longer necessary. No change to status quo.
SBC-4	**Ch. 6**	All prior state specific amendments have been deleted. This deletion reflects the alignment of the Model Code with a previous Rhode Island amendment, which is therefore no longer necessary.
	Ch. 10	The amendment to section 1003.1 has been deleted. This deletion reflects the alignment of the Model Code with a previous Rhode Island amendment, which is therefore no longer necessary.

	Ch. 11	The amendment to section 1105.3 has been deleted. This deletion reflects the alignment of the Model Code with a previous Rhode Island amendment, which is therefore no longer necessary.
	Ch. 12	The 2 state specific amendments to IMC 2018 have been deleted. This deletion reflects the alignment of the Model Code with a previous Rhode Island amendment, which is therefore no longer necessary.
SBC-5	**General**	Several of the sections in this regulation contained "Substantiation" explanations of why certain state specific amendments were made. This is not regulatory content and so we have deleted it.
	Ch. 1	One prior state specific amendment to the Informational Note to Section 110.2 is unnecessary because it is informational, and the content is covered in R.I. Gen. Laws Chapter 23-27.3.
SBC-6	**Ch. 1**	Section 108 "Board of Appeals" was deleted because those provisions are covered by state statutes. The prior RI specific amendments to Sections 111 and 112.4 were removed because the content of those sections in IMPC 2021 is different and they are no longer necessary. No change to status quo.
	Ch. 2	The prior RI amendment to section 201.3 was deleted because it is repetitive of the same RI amendment in Chapter 1, § 102.8. The additional definitions were deleted because they were redundant of existing definitions in Chapter 1. No change to status quo.
	Ch. 6	The amendments to IPMC 2018 which added sections 605.5 & 605.6 and amended IPMC 2018 sections 606.1 and 606.2 regarding elevators have been deleted because elevators are regulated by DLT and therefore additional RI specific provisions are not required in this code. No change to status quo.
	Ch. 7	All of the prior RI specific amendments to IPMC 2018 are deleted. The old amendments to 702.1, 702.2, 704 are not necessary as they contain the same requirements as the model code.
	Ch. 8	This is the "Referenced Standards" chapter. The prior RI specific amendments are deleted as they were redundant with the "referenced standards" amendments to chapter 1. No change to status quo.
	Appendix B	Appendix B regarding "Board of Appeals" is deleted because that content is covered by state statutes. No change to status quo.
SBC-7	**Appendix D**	Appendix D is deleted as it contains information about appeals procedures which are unnecessary as those procedures are governed by statutory provisions in R.I. Gen. Laws Chapter 23-27.3
SBC-18	**Ch. 2**	Deleted the "supporting statement" section. The first sentence was deleted because it was redundant. The second sentence was relocated.
	Ch. 4	Deleted the application and certification forms from the regulation. The content of the forms is summarized in the regulation. The forms

		will be updated and made available at the SBO and on the Building Code Commission's website.
SBC-19	**Ch. 3**	The 2018 deletion and substitution of a state specific provision pertaining to Repair Garages (Sec. 305.10) is being eliminated, because as stated in IFGC 2021 Sec. 305.10, Repair Garage appliance installation is governed by Fire Safety Code/NFPA 30A.
	Ch. 4	All of the prior state specific amendments have been deleted in order to harmonize building code requirements with applicable requirements of the International Fire Code and NFPA 58.
	Appendix D + E	Appendices D and E are deleted as they pertain to procedures covered by other state laws.
SBC-20	**Ch. 1-12**	Deleted to reflect the incorporation by reference of the Rhode Island Life Safety Code, Chapter 43 titled Building Rehabilitation for fire code elements and the International Existing Building Code for building code elements.