

RHODE ISLAND NON-RESIDENTIAL NEW CONSTRUCTION INDUSTRY STANDARD PRACTICE STUDY

DNV carried out the NRNC ISP Study for Rhode Island Energy from March 2023 to March 2024. The study objectives were to assess and inform industry standard practices (ISPs) where possible based on the data collection, and to assess energy Code compliance for select Code measures. Rhode Island adopted IECC 2024 for program planning purposes on January 1, 2025, after the analysis had been completed for IECC 2015. RIE then asked DNV to leverage the results of the data collection to recommend prospective ISPs for IECC 2024.

APPROACH

Phase 1	Phase 2	Update Phase
Literature review of prior studies, review of RIE programs, determination of study focus	Recruitment, data collection, site-level analysis of sample of NRNC buildings under IECC 2015	Apply results of study to prospectively recommend ISP baselines for IECC 2024

To apply the results of the NRNC Study prospectively to IECC 2024, DNV:

- 1. Compared observations from sites permitted under IECC 2015 to the IECC 2024 code requirements.** DNV tracked code changes from IECC 2015 through IECC 2024 for all affected measures in the NRNC study to understand how code efficiencies have evolved since the study period, then re-analyzed the results from the study against the 2024 IECC.
- 2. Identified any code evolution, technology advancement, or construction trends that would influence market practices.** DNV reviewed the re-analysis observations with an internal review panel comparing IECC 2015 and IECC 2024 to consider industry trends and developments that should be incorporated into the final ISP recommendations.
- 3. Finalized the ISP applied to IECC 2024.** For measures such as lighting, the panel identified additional research for the NRNC team to better understand technology evolution.

KEY FINDINGS: RECOMMENDED ISP CODE ADJUSTMENT FACTORS

Equipment type	Recommended IECC 2024 factor	Notes
Above-grade wall insulation (R-value and U-factor)	1.10 (R-Value) 0.90 (u-factor)	Code adjusted from 14% to 10% better than code.
Interior lighting (LPD)	0.56	Code adjusted from 58% to 44% better than code.
Exterior lighting (LPD)	0.43	Code adjusted from 73% to 57% better than code.
Hot water boilers (efficiency)	1.14	Code adjusted from 20% to 14% better than code.
Heat pumps - heating (efficiency)	1.02	Code adjusted from 3% to 2% better than code.
Air conditioning (efficiency)	1.045	Code adjusted from 5% to 4.5% better than code.

RECOMMENDATIONS

- Envelope:** DNV recommends adjusting the wall insulation ISP from 14% compared to IECC 2015 to 10% better than code when applied to IECC 2024. This is the result of applying the RI NRNC observations to the IECC 2024 wall insulation requirements and calculating the average of IECC 2015 and IECC 2024.
- Lighting:** DNV recommends adjusting the interior lighting LPD ISP from 58% to 44% better than code when applied to IECC 2024. DNV recommends adjusting the exterior lighting LPD ISP from 73% to 57% better than code when applied to IECC 2024. This is the result of applying RI NRNC observations to the IECC 2024 LPD requirements and a 10% adjustment factor being incorporated based on the industry advancements in lighting since 2019.
- HVAC:** DNV recommends adjusting the ISP efficiency for hot water boilers to 14% better than code, air-cooled heat pumps (heating only) to 2% better than code, and air-cooled air conditioning to 4.5% better than code. The ISP recommendations for heat pump heating and air conditioning systems represent the average of comparing the observations against IECC 2015 and IECC 2024 code values.

Updated measures

- Wall insulation measures
- Interior and exterior lighting measures
- Hot water boiler measures
- Air source heat pump heating measures
- VRF heat pump heating measures
- and more