MINNESOTA SB 2030 ENERGY STANDARD

SB 2030 in 2020: Program Update

Center for Sustainable Building Research
College of Design · University of Minnesota

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Contents

Introduction

SB 2030 is a progressive energy and carbon reduction program intended to impact Minnesota's commercial, institutional, and industrial buildings. It is required for projects designated New Construction and Major Renovations, projects participating in the B3 Guidelines program, and for voluntary projects committed to pursuing these energy standards. SB 2030 was initially modeled on the Architecture 2030 program, and was customized to better fit Minnesota's buildings, climate, and policies, and expanded to allow the inclusion of more building types. Minnesota's SB 2030 program integrates increasing reductions in onsite energy-use intensity (EUI), a measure of how much energy a building uses, determined annually on the basis of a measurement of thousand British thermal units (kBtu) per square foot per year (kBtu/ft2/year). According to the SB 2030 program, projects starting design between 2010 and 2015 must reduce EUI by 60 percent compared to an average building in 2003; projects starting design between 2015 and 2020 must reduce EUI by 70 percent; projects starting design between 2020 and 2025 must reduce by 80 percent; and projects starting design between 2025 and 2030 must reduce EUI by 90 percent. Reductions in EUI can be achieved by any combination of energy efficiency and onsite renewable energy developed and generated as part of the project.[1]

Legislative Language Notes

The current legislation for the SB 2030 program includes the following information (emphasis added):[2]

(a) The purpose of this subdivision is to establish cost-effective energy-efficiency performance standards for new and substantially reconstructed commercial, industrial, and institutional buildings that can **significantly reduce carbon dioxide emissions** by lowering energy use in new and substantially reconstructed buildings. For the purposes of this subdivision, the establishment of these standards may be referred to as Sustainable Building 2030.

…

(c) Sustainable Building 2030 energy-efficiency performance standards must be firm, **quantitative measures of total building energy use and associated carbon dioxide emissions** per square foot for different building types and uses, that allow for accurate determinations of a building's conformance with a performance standard. Performance standards must address energy use by electric vehicle charging infrastructure in or adjacent to buildings as that infrastructure begins to be made widely available. The energy-efficiency performance standards must be updated every three or five years to incorporate all cost-effective measures. **The performance standards must reflect the reductions in carbon dioxide emissions per square foot resulting from actions taken by utilities to comply with the renewable energy standards in section 216B.1691.** The performance standards should be designed to achieve reductions equivalent to the following reduction schedule, measured against energy consumption by an average building in each applicable building sector in 2003: (1) 60 percent in 2010; (2) 70 percent in 2015; (3) 80 percent in 2020; and (4) 90 percent in 2025. A performance standard must not be established or increased absent a conclusive engineering analysis that it is cost-effective based upon established practices used in evaluating utility conservation improvement programs.

…

(Full text of this language is available in Appendix A.)

[1] Renewable Energy Credits (RECs) for onsite renewable energy generation must be retired for the projects in order for that onsite renewable energy generation to be permitted to be counted for the SB 2030 project.

[2] https://www.revisor.mn.gov/statutes/cite/216B.241

Status of Program through 2019

Through 2019, projects participating in the SB 2030 program follow the following steps, which are tracked at several phases with the B3 Guidelines Tracking Tool.

During the predesign phase, an initial energy standard, or energy budget, is set for the project. The standard helps communicate the required energy savings for the project and assists in setting parameters for budgeting and initial design efforts. The standard is set with the Energy Standard Tool, which calculates the standard by creating a 2003 baseline building and then applying a reduction based on the year in which schematic design began. The inputs to the tool are program-driven elements—such as space use, schedule, air flow rates, occupancy, and others—that impact the project's energy consumption. The tool includes preset defaults for typical building types because these more detailed values may not be known in the early design phase.

Through the Schematic and Design Development phases, the design team performs initial energy modeling by evaluating the design of the project against the energy standard—ensuring that the energy efficiency and renewable energy generation designed into the project meet program requirements. Full design documentation is not required at this initial submission; instead, the SB 2030 Review Team verifies anticipated compliance based on the submission of the Building Strategy Checklist outlining the performance of enclosure and mechanical systems.

At the construction documents phase, design teams submit a final energy model for the project and upload construction documents and related documentation. These are reviewed by the SB 2030 Review Team to ensure that the design energy model and the Energy Standard Tool both match the construction documents, and that the project is expected to meet the SB 2030 Energy Standard.

(If a design team begins its participation in the SB 2030 program after the predesign phase, the design team may need to revisit earlier design decisions to ensure that the final constructed project will meet SB 2030 requirements.)

During the operation phase, design teams must submit annual energy consumption reports, and update or confirm inputs to the Energy Standard Tool to ensure the building continues to operate according to the SB 2030 Energy Standard. If a project exceeds the standard, the design team (now in operations) must confirm the accuracy of the inputs and establish a plan for corrective action.

Setting the Energy Standard

The Energy Standard Tool (EST) is an online energy model that simulates the energy use of a 2003 average building of the same function and operation as the SB 2030 project. The reduction (60 percent, 70 percent, 80 percent, or 90 percent, depending on the year), up through 2019, is determined by that baseline and constitutes the project's SB 2030 Energy Standard. This modeled baseline approach permits flexibility in accommodating various building types and operational parameters.

Evaluated Onsite Energy Consumption

Through 2019, SB 2030 has evaluated compliance based only on energy use[3]—a project is considered compliant with the SB 2030 program if its team has documented an approved energy model showing that the project will achieve a lower EUI than that set by SB 2030 Standard. Although the amount of modeled carbon consumption is also reported based on the same reduction schedule, it is not used for compliance.

[3] Energy use in this document refers to site energy, the amount of energy used by the building, but does not account for energy wasted in transmission and conversion.

Because electricity is more carbon-intensive than other fuel sources, a minority of projects compliant with the SB 2030 Energy Standard do not meet the SB 2030 Carbon Standard. However, this discrepancy may be the result of evaluations based on the same emissions factors for design and the SB 2030 Standard. Some of these projects may meet the SB 2030 Carbon Standard if the improving emissions factors of the grid were considered.

Major Renovation Projects

Through 2019, projects designated Major Renovations and renovated portions of buildings were held to a more relaxed standard: They had to meet half of the reduction percentage of new construction projects. This decision accommodated renovations that did not impact all energy efficiency-related portions of the building (though, in practice, the relaxed standard may have overlooked opportunities for reduction in major renovations).

Alternative Paths

Through 2019, some projects followed alternative paths to comply with the SB 2030 program, and these are listed below with a brief description of their method and intent.

Small Buildings Method: Projects under 20,000sf have been permitted to use the Small Buildings Method, which relies on a prescriptive approach in lieu of a comprehensive building energy simulation. This limits the simulation and documentation burden and is sized to align with the threshold of energy modeling services provided in some utility territories. The method identifies several prescriptive standards that can be used to achieve compliance with SB 2030.

Partial Mechanical Upgrades: Major Renovation projects that are not replacing full mechanical systems have fewer opportunities to achieve improved performance and have limited system design opportunities. This method applies a prescriptive approach similar to the Small Buildings Method to those portions of the mechanical systems or building enclosure to be modified as part of the project. This method can be used to achieve compliance with SB 2030.

Wastewater Treatment Facilities: Because different opportunities to reduce energy consumption exits for different facility types, loadings, and permit levels, wastewater treatment facilities must meet other criteria than an energy standard-based approach. To meet SB 2030, wastewater treatment facilities must perform and document the following: Input data entry into B3 benchmarking and complete an energy audit of existing facility; document energy conservation measures (ECMs) considered for inclusion; provide anticipated performance metrics under several load conditions; evaluate opportunities for renewable energy generation onsite; and evaluate water savings potential.

Cost-Effective Adjusted Standard: Because SB 2030 must be achieved cost-effectively, some projects may request to document the limit of this cost-effectiveness in order to adjust the SB 2030 Standard EUI. Cost-effectiveness for this program must be evaluated using Conservation Improvement Programs (CIP) practices. Teams using this path must document that all energy strategies with up to a 15-year simple payback have been implemented for the project. The EUI for the project with all cost-effective strategies implemented becomes the project's adjusted standard. Documenting a design energy simulation with less energy consumption than this adjusted standard achieves compliance with SB 2030.

Cost-Effectiveness

Through 2019, a 15-year simple payback period was used as a measure of cost-effectiveness after an in-depth evaluation of societal, participant, and utility costs and using methodology consistent with Conservation Improvement Program (CIP) calculations. The measure was developed as a metric to be used by design teams and by the SB 2030 Review Team when evaluating cost-effectiveness because implementing CIP-style calculations for individual strategies is not a viable approach.

Program Updates: 80 Percent Better Buildings

The SB 2030 program has increased its energy use-reduction requirements every five years. Because many buildings' existing efficiency-only technology can meet but not reach beyond the 70 percent threshold, the SB 2030 Project Team anticipates that design teams required to meet the 80 percent threshold must look to a broader set of strategies to lower buildings' energy consumption. The updates outlined in this section increase flexibility while continuing to adhere to the intent of the legislation in developing and managing an achievable and impactful energy and carbon reduction program. Input from project and owner groups has influenced these proposed updates, especially with regard to the inclusion of campus-scale and in-portfolio approaches.

Approaches from Related Energy Program

Architecture 2030 Challenge: The Architecture 2030 Challenge prescribes: "All new buildings, developments, and major renovations shall be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 70 percent below the regional (or country) average/median for that building type."[4]

Defining Net-Zero: Researchers at the National Renewable Energy Lab (NREL) classify net-zero approaches under Technical Report NREL/TP-550-44586 (Net-Zero Energy Buildings: A Classification System Based on Renewable Energy Supply Options) based on the source of renewable energy generation. These SB 2030 Program Updates use the definitions outlined in the NREL paper and related work with minor modifications.

Program Updates

Meet both SB 2030 Energy and Carbon Standards

The legislation highlighted above notes that the SB 2030 program should include both energy and carbon reductions. Consequently, the 2020 update determines compliance according to the SB 2030 Energy Standard and the SB 2030 Carbon Standard. The combined energy and carbon reduction requirements are referred to below as the SB 2030 Standard.

Projects in the schematic design phase in 2020 will be evaluated on whether they achieve an 80 percent reduction from a 2003 baseline of both energy intensity and carbon intensity. Based on analysis of prior projects and due to the decarbonization of the electric grid, the energy standard will be the operative standard for projects using a mix of both natural gas and electricity. For an all- or almost all-electric building, the carbon standard will act as a backstop to ensure that fuel switching leads to a net decrease in carbon emissions. As electric utilities decarbonize, the operative standard for all-electric buildings will return to the energy standard.

Based on the most recently available data from the Energy Information Agency (2017) Minnesota's electricity is derived from several types of resources: 39 percent from coal, 24 percent from nuclear, 19 percent from wind, 11 percent from natural gas, and 7 percent from other sources, including 1 percent from solar.[5] As this mix varies between utilities, this dual standard enables project teams to make better decisions on low-energy and low-carbon design. For instance, heat pumps in a coal- and natural gas-dominated grid will frequently be a net CO_2/carbon increase, whereas heat pumps in a wind- and nuclear-dominated grid will be a CO_2 reduction compared to a natural gas-heated baseline.

[4] https://architecture2030.org/2030_challenges/2030-challenge/

[5] U.S. Energy Information Agency State Energy Profiles 1990 through 2017, data table 7

The inclusion of carbon accounting in awarding compliance encourages cost-effective measures that result in achieved and immediate carbon savings and enable stakeholders to make informed decisions about their project's resource use. Additionally, it meets the intent of 16B.325: to achieve energy conservation and lowest lifetime cost for new buildings and major renovations. Carbon emissions will be calculated and tracked through the Energy Standard Tool, permitting a streamlined evaluation of this dual-standard approach.

Permit Utility-Specific Emission Factors

This update permits utility-specific CO_2 emission factors to be used by utility territory (for electric utilities), allowing design teams to calculate the utility territory-specific carbon intensity and baseline. This will be particularly useful to design teams evaluating the net impact of fuel-switching strategies: Heat pumps in a coal- and natural gas-dominated grid, for example, frequently operate with a net CO_2 increase, whereas heat pumps in a wind- and nuclear-dominated grid operate with a CO_2 reduction compared to a natural gas-heating baseline. The update supports utilities' efforts to decarbonize the grid and enacts the legislative requirement for the SB 2030 program to "reflect the reductions in carbon dioxide emissions per square foot resulting from actions taken by utilities to comply with the renewable energy standards in section 216B.1691."

In order to accommodate different utilities and carbon intensities, the program uses the aggregated MRO-West emissions rate from eGrid. Utility-specific carbon intensity, in terms of its 2003 baseline and its current form, can then be reported for any utility or district energy system. This utility-specific carbon intensities reporting permits disaggregation from the remainder of the grid and permits prorating the remaining MROW rate for both baseline (2003) and current carbon intensities. The approach also allows reporting of carbon reduction efforts per utility without requiring every utility to report carbon intensity. In implementation, it is important to ensure that changing carbon intensity calculations do not negatively impact project compliance for changes implemented mid-project. When provided, the Energy Standard Tool and related software use these utility-specific carbon intensities, limiting design-team calculations, and streamlining determination and achievement of compliance. Additionally, it is necessary to ensure that the format of carbon intensity requested balance fidelity with the burden of calculation for smaller utilities.

Require Consideration of a Hierarchy of Energy Efficiency and Renewable Energy Generation and Modify the Cost-Effective Path

Projects not cost-effectively able to achieve the SB 2030 Energy and Carbon Standards with only energy efficiency measures are required to provide sufficient carbon-neutral renewable energy (RE) to meet the standards.

This proposal uses the NREL characterizations of energy efficiency and renewable energy sources (developed as part of Technical Report NREL/TP-550-44586: Net-Zero Energy Buildings: A Classification System Based on Renewable Energy Supply Options) to develop a categorization and hierarchy of preferred options.

SB 2030 combines and expands some of these characterizations by considering campus and in-portfolio approaches to meet the SB 2030 Energy and Carbon Standards. This largely aligns the SB 2030 program with the NREL classification system, though with some considerations based on the type of buildings and ownership organizations that participate in the SB 2030 program. The NREL classification system is shown below with the proposed SB 2030 requirements noted:

SB 2030 Program Energy Efficiency and Renewable Energy Supply Options Hierarchy

Option Number	NZEB Supply-Side Options	Examples
0	Reduce site energy use through energy efficiency and demand-side renewable building technologies.	Daylighting; insulation; passive solar heating; high-efficiency heating, ventilation, and air-conditioning equipment; natural ventilation, evaporative cooling; ground-source heat pumps; ocean water cooling
	On-Site Supply Options	
1	Use RE sources available within the building footprint and connected to its electricity or hot/chilled water distribution system.	PV, solar hot water, and wind located on the building
2	Use RE sources available at the building site and connected to its electricity or hot/chilled water distribution system.	PV, solar hot water, low-impact hydro, and wind located on parking lots or adjacent open space, but not physically mounted on the building
	Off-Site Supply Options	
3	Use RE sources available off site to generate energy on site and connected to the building's electricity or hot/chilled water distribution system.	Biomass, wood pellets, ethanol, or biodiesel that can be imported from off site, or collected from waste streams from on-site processes that can be used on site to generate electricity and heat
4	Purchase recently added off-site RE sources, as certified from Green-E (2009) or other equivalent REC programs. Continue to purchase the generation from this new resource to maintain NZEB status.	Utility-based wind, PV, emissions credits, or other "green" purchasing options. All off-site purchases must be certified as recently added RE. A building could also negotiate with its power provider to install dedicated wind turbines or PV panels at a site with good solar or wind resources off site. In this approach, the building might own the hardware and receive credits for the power. The power company or a contractor would maintain the hardware.

NZEB Supply Options 0, 1, and 2 must be considered first and implemented if cost-effective. On-campus development of Supply Option 2 is included in this evaluation and considered equivelant to on site Supply Option 2.

If the SB 2030 Standard cannot be met cost-effectively using supply options above, additional RE should be developed from within the project owner's portfolio (note that this in-portfolio RE development is not listed as a supply option number here). NZEB Supply Option 3 is also permitted, subject to evaluation by the SB 2030 Project Team.

The remainder of RE needed to meet the SB 2030 Standard shall be procured through Renewable Energy Credits (RECs).

Table adapted from Net-Zero Energy Buildings: A Classification System Based on Renewable Energy Supply Options, page 10

Under this program, projects are required to meet the SB 2030 Standard by implementing the following measures in the order listed:

1. On site/campus measures: Evaluate the cost-effective feasibility of meeting the SB 2030 Energy and Carbon Standards using energy efficiency measures and any combination of NZEB Supply Options 0, 1, and 2 (noting that under this program, Supply Option 2 includes RE developed on a campus[6]), and implement if cost effective. An RE system that is considered cost effective but does not fully meet the SB 2030 requirement must still be developed, with the remainder of energy sourced from RE listed under part 2: In portfolio, and part 3: RECs below. Projects that qualify to use resources under part 2: In portfolio, and part 3: RECs to satisfy their SB 2030 requirements must first document the project's achievement of an EUI equal to that achieved by all efficiency and RE measures under part 1 determined to fall within the payback period.
2. In portfolio measures: If a design team can demonstrate that the project cannot effectively meet the SB 2030 Standard cost-effectively using a combination of Supply Options 0, 1, and 2, the team must evaluate the cost-effectiveness of implementing RE at other locations within their portfolio of buildings (defined as the set of properties within the agency or owner's control, independent of location). This in-portfolio RE must be developed in addition to the cost-effective measures implemented under the first requirement, listed

[6] Campus is defined as contiguous property owned by a single entity and which includes areas that are separated by a public right-of-way.

immediately above. NZEB Supply Option 3 could also be considered, though offsite biomass or other offsite RE source must be validated for long-term carbon neutrality to be used for compliance.

3. RECs: If in-portfolio RE development is not cost-effective, the balance of energy needed to meet the SB 2030 Energy and Carbon Standards must be supplied by Supply Option 4 (RECs).

RE contributing to meeting NZEB Supply Options 1 or 2 are subject to the following rules:[7]

1. RECs associated with the RE must be retired by the project.
2. Third-party ownership of an RE system is permitted when both the RECs associated with the RE are retired by the project and a power purchase agreement is entered into with a period of at least 10 years for the full portion of the system capacity contributing to meeting the SB 2030 Standard.
3. The renewable energy generating source consists of photovoltaic systems, solar thermal power systems, and/or wind turbines.

Biomass used to meet NZEB Supply Option 3 is subject to the following rule:

1. A default biomass carbon intensity is used (this assumes that the resource is not derived using carbon-neutral methods). Biomass users are permitted to demonstrate carbon-neutral fuel sourcing, though with stringent requirements related to biomass carbon neutrality, few providers will likely pursue or qualify. (This may have implications for entities with centralized plants.)

RE contributing to meeting NZEB Supply Option 4 (RECs) are subject to the following rules:[8]

1. The building owner signs a contract to procure qualifying offsite renewable energy, with a term of not less than 10 years.
2. RECs and other environmental attributes associated with the procured offsite renewable energy is assigned to the building project for the duration of the contract. (Note that this may prohibit renewable energy purchases from most types of community solar gardens, as those in many cases separate RECs from the energy produced.).
3. The renewable energy generating source consists photovoltaic systems, solar thermal power plants, geothermal power plants, and/or wind turbines.
4. The offsite renewable energy producer maintains transparent accounting that clearly assigns production to the building. Records on power sent to or purchased by the building are retained by the building owner.
5. Projects that can demonstrate constraints prohibiting the procurement of RECs may be waived from the requirement to provide RECs sufficient to meet the SB 2030 Standard (after exhausting NZEB Supply Options 0 through 3 and locations within the owner's portfolio to the limit of cost-effectiveness). Some projects accessing General Obligation Bond Funds may be subject to this waiver due to the limitations on allowable expenses for those funds.

Updated Cost-Effectiveness Evaluation

Prior to 2020, cost-effectiveness analysis was performed and was based on a combination of a 2009 Department of Energy Resources (DER) memo providing direction to natural gas utilities for their 2009 filings and inputs used in 2008 CIP filings submitted by Xcel Energy and CenterPoint Energy. This parametric analysis of 115 buildings showed that virtually all public buildings with an energy savings payback of 15 years or less will be cost-effective from societal test, participant test, and utility test perspectives, and that a payback threshold of longer than 15 years would likely lead to

[7] Third party-owned systems that have obtained utility or other incentives to sell RECs to publicly available programs may be permitted if the project procures the equivalent amount of RECs from the same program; consult the SB 2030 Project Team to verify requirements.

[8] These requirements are generally aligned with the Architecture 2030 Zero Code for Offsite Procurement of Renewable Energy.

individual building projects failing to be cost-effective from a societal test and/or participant test perspective. The participant discount rate for public buildings was set at the societal discount rate, which is much lower than the discount rate typically used for commercial building participants. Data on the 115 buildings in the upper Midwest came from Willdan's database of Energy Design Assistance program participants.

During the last half of 2019, the cost-effectiveness evaluation was updated, permitting a verification of the metric (payback period, excluding incentives) and the value to ensure that the program continues to adhere to the cost-effectiveness outlined in the authorizing legislation. This updated evaluation is now used to create the cost-effective boundary used in evaluation of the hierarchy of efficiency and renewable energy options.

The updated analysis concludes that a payback period of 12 years is the cost-effective boundary for measures under the SB 2030 program, using the analysis method outlined above for current utility factors. The SB 2030 Project Team anticipates moving to a regular update of the cost-effectiveness evaluation, coordinated with triannual CIP filing schedule.

Eliminate the Relaxed Standard for Renovation Projects

Currently, projects considered Major Renovations are held to a more relaxed standard than projects considered New Construction and are required to reduce energy consumption by half of the required reduction for new construction. Because the Minnesota Energy Code has been updated since the inception of the SB 2030 program and because these code advancements have achieved close to parity with SB 2030 renovation requirements, renovation projects represent a less significant improvement over a code-base building than new construction projects in the program. In addition, an analysis of renovation projects by Willdan indicated that additional savings potential was possible and that additional savings were achievable but were not realized with the relaxed standard. The increased availability of cost-effective carbon neutral renewable energy generation further supports a move away from different standards for new construction and major renovation projects.

Approximately one-third of the 23 renovation projects on the B3 Case Studies Database would have met the SB 2030 Standard for New Construction without changes to their design. New renovations may be unable to meet the initial standard cost-effectively; therefore, the cost-effectiveness test will be implemented more frequently, and methods of evaluation of this limit will be more fully embedded in the program software and will permit projects to achieve an adjusted standard and compliance with SB 2030. Improvements in the Energy Standard Tool help ensure a minimized time commitment for the increased number of projects pursuing this pathway. In addition, some renovated buildings will be required to install more efficient systems and will achieve higher energy savings than would be possible under the current standard, resulting in higher savings while maintaining cost-effectiveness.

National programs such as the AIA 2030 Commitment currently use the same standard for major renovations as for new construction. Further, Willdan's experience on EDA programs suggests that major renovations achieve similar energy savings as new construction. Therefore, aligning the new construction and renovation standards will result in a more equitable application of SB 2030, will permit clearer messaging, and will facilitate a more meaningful comparison between projects.

Elimination of the relaxed standard for renovation projects is in effect for projects beginning predesign on or after January 1, 2020. Projects already in predesign can use the more relaxed standard relative to the reduction requirement of the SB 2030 program.[9]

As part of NZEB Option 1 (energy efficiency measures), projects are permitted to exclude from evaluation strategies that significantly negatively impact the durability or lifespan of existing assemblies, or modifications to assemblies that conflict with historic preservation constraints.

Continue to Exclude EV Charging and Process Loads from SB 2030 Project Scope

Electricity consumption associated with electrical vehicle (EV) charging is not considered part of the building load for SB 2030 compliance determination. It is necessary to separately meter or submeter these loads to ensure that additional uptake in vehicle charging does not impact a project's ability to achieve its SB 2030 compliance. Design teams on buildings with large process loads may request to have these considered outside the SB 2030 project scope, provided that they define a process outside of typical building operation and are submetered appropriately.

Future Areas of Program Development

Consideration of Time-of-Day CO_2 Emissions Factors

The time-of-day CO_2 emissions factors will allow the SB 2030 program to encourage strategies that decrease energy use when the grid is most fossil-fuel dependent, and could be used by design teams to accurately adjust the carbon intensity relative to the strategies selected. Emissions factors are needed to begin determining the best method of using time-of-day carbon emissions rates.

Implementation and Conclusions

Timeline

The rollout of this program update is as follows:

- 80 Percent Better than Baseline is in place for projects starting schematic design on or after January 1, 2020.
- The approach outlined in this paper takes effect for those 80 percent better buildings, including:
  - Evaluation of compliance based on both carbon and onsite energy consumption
  - Modification of the requirements around onsite RE evaluation
  - A campus-based approach to RE development
  - Elimination of the relaxed standard for renovations
- The cost-effectiveness test scheme has been updated and will be used for projects beginning with those start.
- The updated tracking tool, the Energy Standard Tool, and SB 2030 As-Designed Tool will be updated in early 2020
- This proposal does not impact the requirements of [MN Statute §16B.32, Subd 1a, which requires the consideration of meeting two percent of the energy needs of the building from renewable resources located specifically on the building site.]

[9] Note that as the SB 2030 program uses the schematic design (or equivalent) start date for determination of the reduction percentage required from the 2003 baseline, some projects that have started predesign prior to 1.1.2020 and schematic design after 1.1.2020 will need to meet a 40 percent reduction from the baseline (half of the 80 percent reduction of new construction projects).

Conclusion

The proposed changes outlined here facilitate the transition to 80 percent better buildings required by the SB 2030 program in 2020. With this transition and the ongoing decrease in cost of renewables, a considered approach will ensure that projects comply to all SB 2030 standards in a cost-effective manner, while ensuring that robust program goals are maintained. The evaluation of renewable energy based on a hierarchy of potential resources ensures that the development of sufficient renewable energy generation is supported and that project-specific constraints and opportunities are recognized. It balances cost-effective evaluation, on-campus and in-portfolio opportunities, and supports of the development of other renewable energy.

Appendix A: Legislative Language

Minnesota Statute 216B.241, Subd. 9:

… Subd. 9. Building performance standards; Sustainable Building 2030.

(a) The purpose of this subdivision is to establish cost-effective energy-efficiency performance standards for new and substantially reconstructed commercial, industrial, and institutional buildings that can significantly reduce carbon dioxide emissions by lowering energy use in new and substantially reconstructed buildings. For the purposes of this subdivision, the establishment of these standards may be referred to as Sustainable Building 2030.

(b) The commissioner shall contract with the Center for Sustainable Building Research at the University of Minnesota to coordinate development and implementation of energy-efficiency performance standards, strategic planning, research, data analysis, technology transfer, training, and other activities related to the purpose of Sustainable Building 2030. The commissioner and the Center for Sustainable Building Research shall, in consultation with utilities, builders, developers, building operators, and experts in building design and technology, develop a Sustainable Building 2030 implementation plan that must address, at a minimum, the following issues:

(1) training architects to incorporate the performance standards in building design;

(2) incorporating the performance standards in utility conservation improvement programs; and

(3) developing procedures for ongoing monitoring of energy use in buildings that have adopted the performance standards.

The plan must be submitted to the chairs and ranking minority members of the senate and house of representatives committees with primary jurisdiction over energy policy by July 1, 2009.

(c) Sustainable Building 2030 energy-efficiency performance standards must be firm, quantitative measures of total building energy use and associated carbon dioxide emissions per square foot for different building types and uses, that allow for accurate determinations of a building's conformance with a performance standard. Performance standards must address energy use by electric vehicle charging infrastructure in or adjacent to buildings as that infrastructure begins to be made widely available. The energy-efficiency performance standards must be updated every three or five years to incorporate all cost-effective measures. The performance standards must reflect the reductions in carbon dioxide emissions per square foot resulting from actions taken by utilities to comply with the renewable energy standards in section 216B.1691. The performance standards should be designed to achieve reductions equivalent to the following reduction schedule, measured against energy consumption by an average building in each applicable building sector in 2003: (1) 60 percent in 2010; (2) 70 percent in 2015; (3) 80 percent in 2020; and (4) 90 percent in 2025. A performance standard must not be established or increased absent a conclusive engineering analysis that it is cost-effective based upon established practices used in evaluating utility conservation improvement programs.

(d) The annual amount of the contract with the Center for Sustainable Building Research is up to $500,000. The Center for Sustainable Building Research shall expend no more than $150,000 of this amount each year on administration, coordination, and oversight activities related to Sustainable Building 2030. The balance of contract funds must be spent on substantive programmatic activities allowed under this subdivision that may be conducted by the Center for Sustainable Building Research and others, and for subcontracts with not-for-profit energy organizations, architecture and engineering firms, and other qualified entities to undertake technical projects and activities in support of Sustainable Building 2030. The primary work to be accomplished each year by qualified technical experts under subcontracts is the development and thorough justification of recommendations for specific energy-efficiency performance standards. Additional work may include:

(1) research, development, and demonstration of new energy-efficiency technologies and techniques suitable for commercial, industrial, and institutional buildings;

(2) analysis and evaluation of practices in building design, construction, commissioning and operations, and analysis and evaluation of energy use in the commercial, industrial, and institutional sectors;

(3) analysis and evaluation of the effectiveness and cost-effectiveness of Sustainable Building 2030 performance standards, conservation improvement programs, and building energy codes;

(4) development and delivery of training programs for architects, engineers, commissioning agents, technicians, contractors, equipment suppliers, developers, and others in the building industries; and

(5) analysis and evaluation of the effect of building operations on energy use.

(e) The commissioner shall require utilities to develop and implement conservation improvement programs that are expressly designed to achieve energy efficiency goals consistent with the Sustainable Building 2030 performance standards. These programs must include offerings of design assistance and modeling, financial incentives, and the verification of the proper installation of energy-efficient design components in new and substantially reconstructed buildings. A utility's design assistance program must consider the strategic planting of trees and shrubs around buildings as an energy conservation strategy for the designed project. A utility making an expenditure under its conservation improvement program that results in a building meeting the Sustainable Building 2030 performance standards may claim the energy savings toward its energy-savings goal established in subdivision 1c.

(f) The commissioner shall report to the legislature every three years, beginning January 15, 2010, on the cost-effectiveness and progress of implementing the Sustainable Building 2030 performance standards and shall make recommendations on the need to continue the program as described in this section.