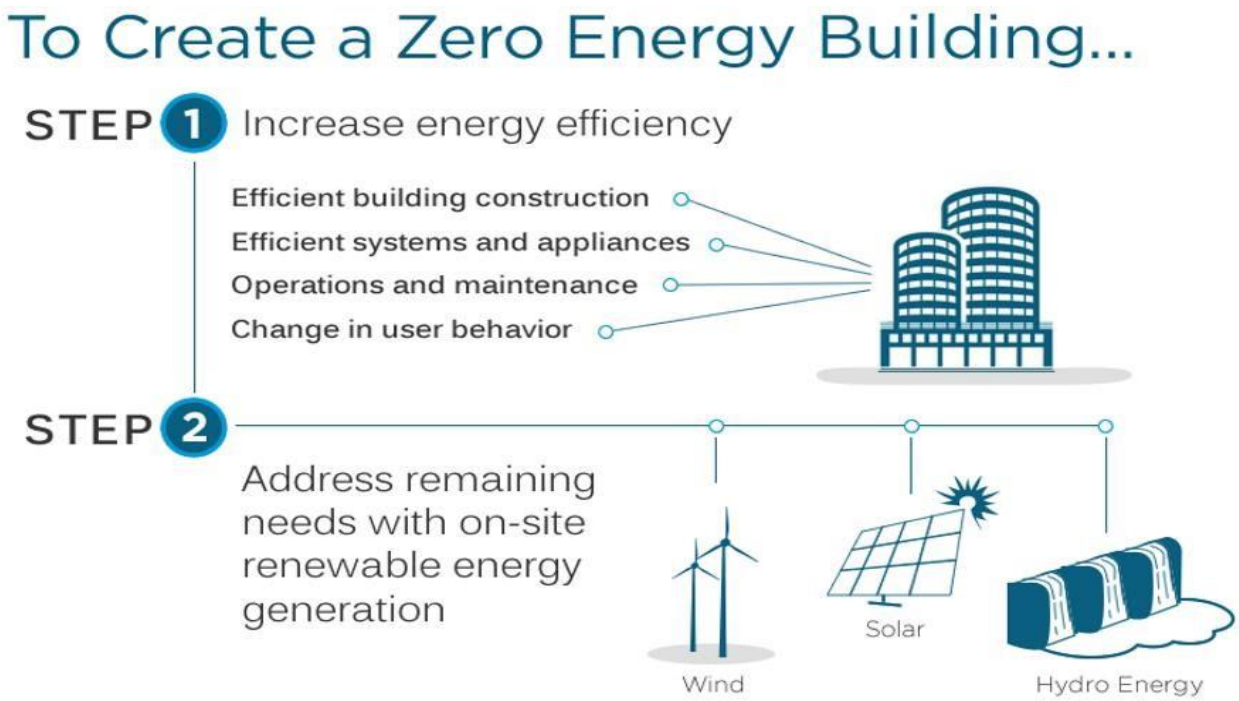
NAIOP MARYLAND CHAPTERS
THE ASSOCIATION FOR COMMERCIAL REAL ESTATE

Re: SB 414 – Climate Solutions Now Act
Recommendation: Unfavorable
Supplemental Information: Net Zero Blds. | Rooftop Solar| Empire State Bld. Lessons | Carbon vs Elec Priority | Carbon Tax | Policy Alternatives | State Lead

+ **Net Zero Energy Buildings – Compliance Challenges Both Technical and Regulatory**



A Zero Energy Balance buildings is designed to use half or one third of the energy a conventional building would require. The balance of the building's energy need is met through on-site renewable energy generation and off-site power purchase agreements in locations that can be delivered to the site by local utilities. The LEED Zero Energy Balance certification specified in the bill requires not only that energy consumed on-site be offset but also energy lost during transmission from the generating source. This increases the amount of energy **the building must offset 2-3 times the amount of energy consumed on site.**

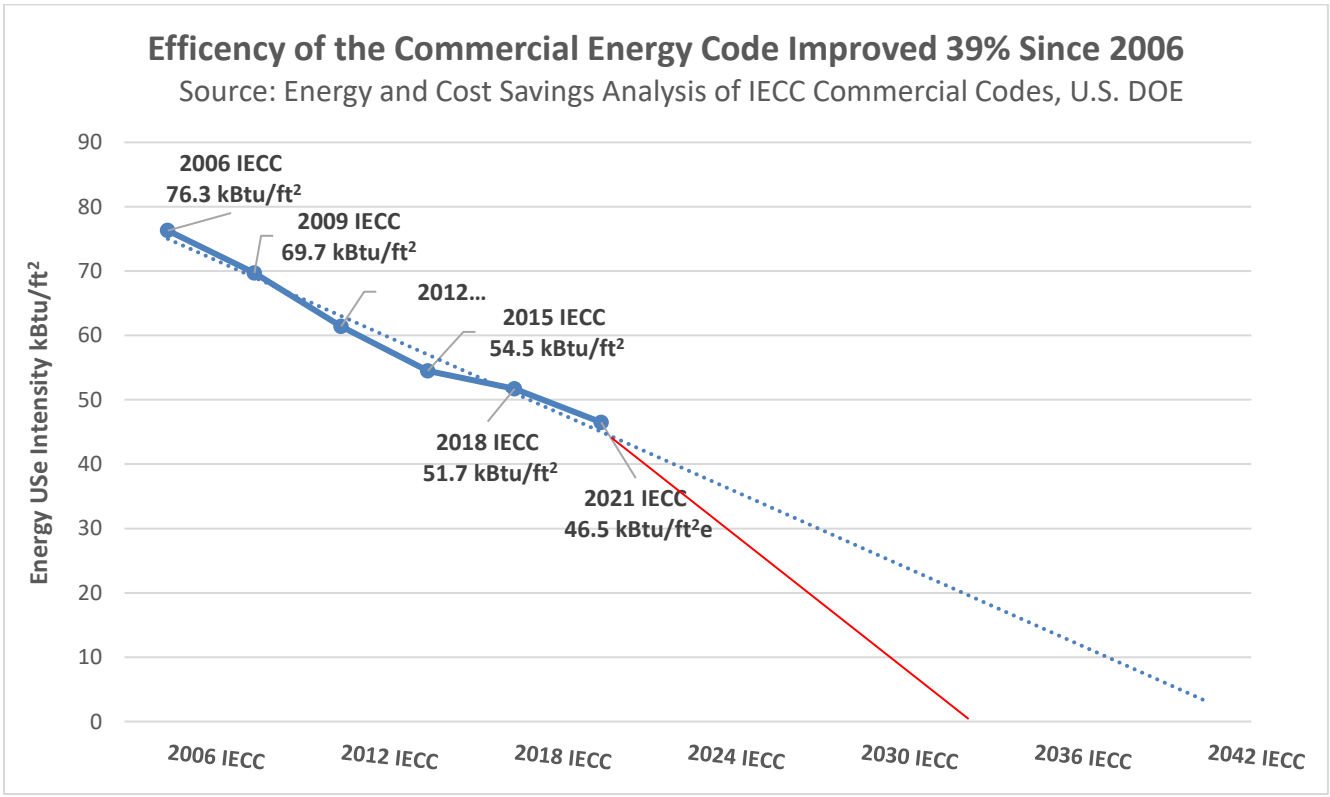
Integrating renewables at that scale will require significant advancements in the functionality of the utility grid and the removal of barriers to on-site power generation. **Physical deficiencies in the grid and in regulatory policy create barriers to accomplishing *Step 2* in the illustration above.** For commercial real estate current rules on net metering, virtual net metering and meter aggregation limit the size of systems, the amount and price of power returned to the grid and prevent generated power from being shared among a portfolio of related buildings.

Multistory buildings, and high energy uses like hospitals, data centers and restaurants will find it extremely difficult to reach Zero Energy balance. A National Renewable Energy Lab technical paper concluded 3% of four-story buildings had the potential to reach net zero because of the small roof area compared to the interior space. Even ultra-efficient buildings will require easy access to locally sourced,

off-site wind and solar energy in amounts that are not currently available. Alternatively, the state would need to allow building owners to enter into power purchase agreements without being geographically limited to local utilities, Maryland, or the PJM service territory.

Construction costs should also be a consideration. A study of net zero office and multifamily construction in Washington D.C. found that, even after a $5m solar incentive payment, initial costs were 5%-19% higher than the same building built to meet LEED Platinum. D.C. is working on incentives and special loan programs to break down first cost barriers and unlock savings. Maryland's climate commission recommended incentivizing Net Zero construction as part of its policy making structure for the buildings sector discussed below.

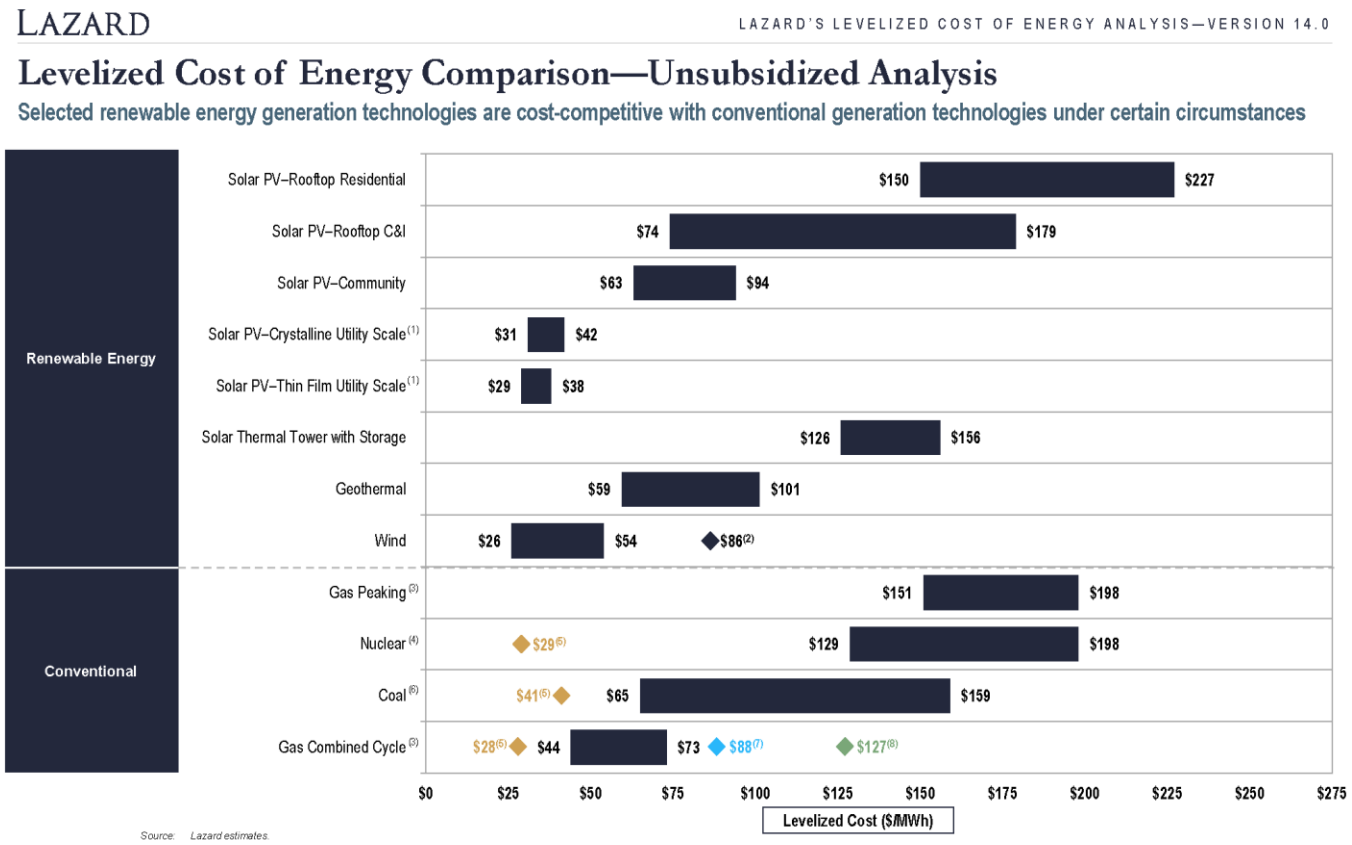
The efficiency of the International Energy Conservation Code improved 39% between the 2006 and 2021 codes, an average improvement of 2.6% per year. A similar rate of improvement will put the code at or near zero energy by 2042. The bill requires that new buildings perform at 30% below the energy code over the next five years and reach 60% below code within ten years. [red line] This will **require an average improvement of 6.6% per year, 2.5 times the historic rate of improvement.** The 40% reduction in energy use between 2030 and the net-zero target date of 2033 will **require utility constraints to be resolved and off-site renewables to be locally available.** As buildings have become more efficient, deeper energy use reductions have become less cost effective and more difficult to achieve. The stepped process would **decouple Maryland from the International Building and Energy Code** requiring state and local regulators to develop compliance pathways. We do not believe this is advisable or realistic.



While the technologies exist to build net zero energy buildings under the right circumstances, the trade-offs make them impractical for widespread application across the entire market. To achieve necessary reductions in energy consumption, designers of net zero energy buildings often must put limits in the number of occupants, move computer servers or laboratory equipment off-site, reduce the building footprint or put limitations on the type of tenants and their activities. Broadly applied, the trade-offs necessary to achieve Net Zero Energy Balance would result in under-utilization of building sites and under-build of job centers which could affect land use and transportation patterns in ways counter-productive to both climate mitigation and Chesapeake Bay cleanup.

+ **Mandating Rooftop Solar Blocks Use of Less Expensive Renewable Power Options** – One of the concerns raised in NAIOP's hearing testimony was that by prescribing means and methods the bill eliminated less costly ways to reach state climate goals. The investment bank Lazard produces an annual report comparing the Levelized Cost of Energy for various renewable and conventional power generation technologies. The chart below shows the cost of rooftop solar [first two rows] to be among the most expensive options costing between $74 and $227 per MWh. Utility scale solar [fourth and fifth rows] is among the lowest cost power generation options at between $29 and $42 per MWh.

The cost differential is made worse because commercial property owners are not permitted to share power among a portfolio of buildings, net metering limits on generation and battery storage limitations negatively affect revenue generation. Future utility pricing decisions will also affect the financial performance of on-site solar as a tool to avoid peak demand charges. Among the most important



prerequisites to reaching the potential for solar is the affordable scale up of batteries and other long term storage options.

The relationship between the roof area and floor area / energy use on the 20-story building called for in the bill is much larger than what our members consider to be a good candidate for rooftop solar. Solar on a building of this size would not provide meaningful amounts of power.

The solar ready rooftop mandate ignores the question of whether equipment might best be located elsewhere on-site or off-site such as parking areas where they might be paired with electric vehicle charging equipment or part of a larger ground-based array.

The requirement would encumber roof space that is often used for heating, air conditioning and ventilation systems or communications equipment that cannot be located on the ground. Rooftops also often provide tenant amenities and skylights often help meet targets for daylighting and reduce power consumption to meet lighting requirements.

+ **40% Energy Reduction – Cost Effectiveness and Danger of Stranded Assets** – Capturing energy efficiencies is integral to good building management for many reasons. The business case is compelling because of the positive effect that reduced operating costs have on net operating income which can increase the value of a commercial building under the right circumstances. However, policy makers should be aware that the leverage that improves building valuation when operating costs are reduced operates in the opposite direction too. Increased operating costs or long payback periods can reduce building valuation.

Energy retrofits often work but are unpredictable. A Sizeable percentage of retrofits will provide an acceptable return on investment, but many will not, and subsidies will be necessary. It should also be noted, a major renovation also triggers requirements in the building code to bring fire, accessibility, and other building elements up to current code standards in addition to the energy improvement. For some buildings, the combined costs may be prohibitive. A recent report issued by the Senate Democratic Special Committee on the Climate Crisis predicts climate change will drive down the value of property held as collateral by banks when those assets are repriced to reflect increased physical risks or operating costs. This is one reason why the Climate Commission's building stock analysis is so important.

The bill provides for a waiver if the energy efficiency measures do not provide a return on investment within 15 years. As discussed below, energy projects for state buildings are based on 5 yr. returns. As discussed above, the ownership group at Empire State Building were guaranteed a 3 yr. return. By way of comparison, the US Department of Energy's National Renewable Energy Lab [NREL] evaluates the economic potential of energy efficiency measures using a simple payback period of five years or less.

+ **Focus Should be on Carbon Reductions Not Eliminating Energy Use** – According to MDE's emissions inventory carbon emissions from commercial buildings amount to about 7% of annual state-wide emissions. The bill's focus on requiring Zero Energy Balance new construction and deep energy retrofits in existing buildings **changes the center of effort away from carbon reductions**. Energy conservation

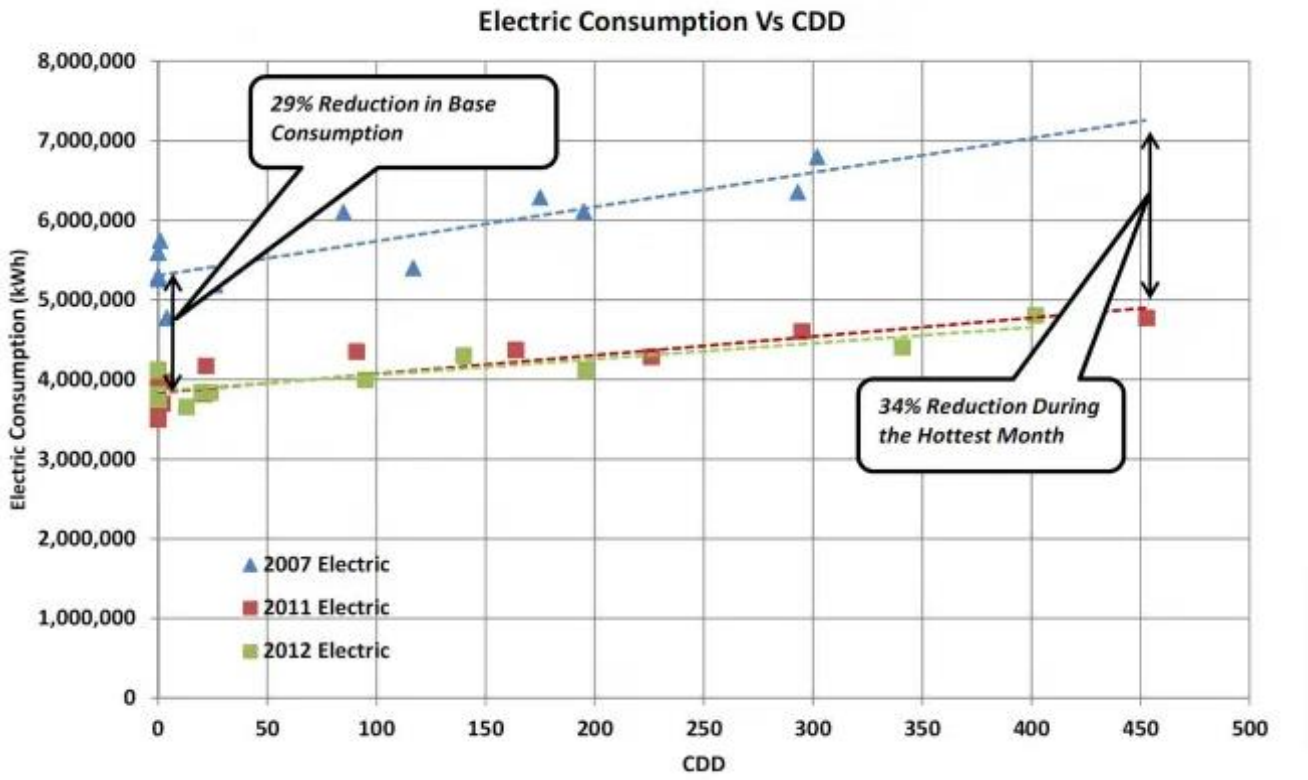
practices can be cost effective, but at deeper levels provide diminishing returns on investment. Energy efficiency only reduces greenhouse gas emissions when displacing energy generated by carbon-based fuels. The approach required by the bill will provide fewer emissions reductions at higher cost as the Renewable Portfolio Standard increases the percentage of zero carbon electricity generation.

+ **Climate Commission's Building Sector Policy Making Is A Better Alternative** - This bill would make moot the Climate Commission's recommended workplan for **developing a cost-effective emissions reduction strategy for the building sector.** During 2020, the climate commission held a series of subgroup and working group meetings on energy use and emissions in the building sector. The Commission's work plan for 2021 includes a series of recommended actions related to reducing emissions from the building sector, including:
    1. Allowing utility incentive programs to pay for reducing emissions via fuel switching of space and water heating equipment.
    2. Commissioning a study of the market potential and consumer economics of building electrification examining incremental first costs payback periods, appropriate incentive levels and the greenhouse gas reduction potential. [Rhode Island, Connecticut, and New York State have conducted studies to focus efforts on least cost pathways to carbon reduction.]
    3. Incentivize Net Zero construction
    4. Producing an energy transition plan for the building sector by the end of 2021.

    The Net Zero Energy Balance new construction and deep energy retrofit strategies were not presented during the commission's 2020 work, therefore the economic and emissions outcomes have not been modeled. By mandating means and methods and limiting technologies, the bill by-passes GGRA provisions in ENV 2-1206 that require an MDE feasibility analysis as well as the allowed use of alternative compliance mechanisms such as offsets and credits or technologies including carbon sequestration.

+ **Lessons Learned from the Empire State Building Energy Efficiency Project** – The Empire State Building is one of the highest profile buildings to undergo a major energy efficiency retrofit. The building completed a renovation and energy efficiency retrofit that resulted in more than a 38% reduction in energy use. It is an inspiring project, but **the process may be more repeatable than the results**. **The energy reductions and a 3-year payback period were** guaranteed by Johnson Controls the mechanical contractor on the project. Vacancy in the building permitted the project team to remanufacture 6,500 windows in the building. Empire State Building had the benefit of ~$100m per year income from the observation platform during the renovation.

    The Energy Institute presented a before and after comparison of energy consumption data for the Empire State Building. The blue line is the pre-construction energy consumption, red and green are post construction. The amounts are impressive but vary based on weather conditions and tenant activity. As much as **50% of the energy cost savings were achieved through tenant behavioral changes** and reductions in plug loads.



By way of comparison, Jonson Controls expected to **achieve a 20%** **reduction in energy for the City of Baltimore.**

+ **Monetizing a $50 per ton Social Cost of Carbon** – One of the reasons NAIOP has supported the GGRA over the years is that the policies implemented to achieve greenhouse gas reductions must also increase jobs and economic benefits. Even under this approach an economy-wide net benefit can mask significant and disproportionate costs on certain sectors of the economy.

While NAIOP has supported the Regional Greenhouse Gas Initiative - which prices powerplant emissions like a carbon tax - and are receptive to the Transportation Climate Initiative's carbon cap and fee approach to decarbonizing motor fuels, we have concerns about an economy-wide $50 per ton cost of carbon built into all climate planning decisions. Advocates argue this information would be important for future planning purposes. That may be, but it would almost certainly **lead to adoption of compliance strategies based on future environmental benefits or avoided costs that cannot be monetized today by businesses and households** that have pay for and implement the practices. This is of particular concern for the building sector because increased capital costs and operating expenses reduce building valuations and create problems for debt financing.

Fortunately, Maryland has successfully balanced economic growth and emissions reductions. Maryland was recently recognized by the World Resources Institute for decoupling the two - achieving deep greenhouse gas reductions and growing the economy. This combination is vital to future success and public support as the pathway forward gets more difficult.

+ **State Lead-by-Example - Mandates on Private Buildings Are More Stringent than State** – Targets for energy efficiency in state buildings were established by the General Assembly in the 2020 session. Chapter 289 / House Bill 662 directs the Department of General Services [DGS] to assist state agencies in **reducing average energy consumption 10% from 2018 levels by 2029**. The Department is to identify low-cost measures for increasing energy efficiency that, **over the following 5 years, will result in energy cost savings that meet or exceed the costs of the measures.** For larger projects the state, at its discretion, can enter energy services contracts that guarantee up to a **20% reduction in energy use over a 15-year period.** The bill requires private buildings to achieve a 40% reduction in energy use over 15-year period at every major renovation and change of use.

  State projects conduct a **life-cycle analysis** specified in the DGS Procedure Manual for Professional Service. The analysis must review four alternative HVAC systems. Unlike the life cycle analysis in the bill, the **state version does not include future costs of fossil fuel combustion from and carbon pricing** to be included in life cycle costs standards. [SB 414 pg. 27, ln 1-24]

  Net Zero Energy school construction applies only to one to public school building per county and then only when special funds are available. The requirement can be waived. The corresponding private buildings zero energy requirement does not include these accommodations.