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GSA Green Building Advisory Committee Advice Letter: Recommendations for Achieving EO 14057 Green Lease Targets

December 4, 2023

Kevin Kampschroer
Chief Sustainability Officer and Federal Director,
Office of Federal High-Performance Green Buildings
U.S. General Services Administration (GSA)

RE: Policy Recommendations for Achieving EO 14057 Green Lease Targets

Dear Mr. Kampschroer:

This letter provides an overview of the recommendations the Green Building Advisory Committee (the Committee) provided based on the diligent efforts of its Green Leasing Task Group (GLTG). The primary objective of forming the GLTG was to identify opportunities to assist the General Services Administration (GSA) Public Buildings Service (PBS) in effectively attaining the goals outlined in Executive Order (EO) 14057, specifically the goal to procure federal leases in net zero greenhouse gas emissions (NZE) buildings. Simultaneously, the task group aimed to bolster the agency's knowledge base and policy and programmatic options.

Having identified substantial opportunities, the GLTG has produced actionable and effective recommendations for GSA to meet federal mandates regarding NZE when leasing space in privately owned commercial buildings.

Background

We write to offer insights on how GSA can comply with federal mandates to achieve net-zero greenhouse gas (GHG) emissions in the privately owned commercial space leased for federal use. We also recognize climate change as a pressing global challenge and acknowledge that buildings—as end users of energy—are pivotal contributors responsible for nearly 40% of global energy-related emissions. Therefore, the need to transition the commercial real estate industry and the broader built environment toward more net zero solutions has never been greater.

In response, the White House has set ambitious requirements for new lease solicitations issued after September 30, 2030 that are 25,000 rentable square feet (RSF) or greater and where the federal government leases at least 75% of the total building square footage. In those cases, EO 14057 requires that new leases be in buildings that have achieved net zero greenhouse gas emissions (NZE) as well as meeting overall GSA green lease requirements. By implementing EO 14057, the government is tasked with pursuing NZE inventory for lease solicitations issued in FY 2031 and

beyond. Currently, there is limited inventory to meet this mandate, particularly given the need to obtain cost-reasonable rents. This Advice Letter recommends approaches to help GSA meet these requirements for net zero GHG emissions in leased space in privately owned commercial buildings for federal use.

Executive Summary

According to a Jones Lang Lasalle study, [Green Leasing 2.0](#), the current supply of zero net energy/emissions buildings in the US is roughly 23 MM sq. ft. (and is primarily fully leased and committed) compared to the demand for such space (based on major corporate commitments) totaling roughly 310 MM sq. ft. Including GSA demand, this number could approach 500MM sq. ft., though these figures are likely to vary considering the impact of remote work on workplace policies. The space GSA currently leases does not meet the NZE requirements mandated by EO 14057, and there is insufficient NZE building stock available in the private sector to meet GSA's leasing requirements.

GSA must encourage private sector building owners to drive their buildings toward NZE by engaging with all stakeholders, including leasing teams, tenants, and building owners, and communicate a practical solutions message clearly, broadly, and immediately to move toward meeting the requirements of EO 14057.

Articulating the Business Proposition to Overcome Private Sector Resistance

There is a belief or perception that renovating an existing building to NZE is too costly and that the returns on that investment are very low. The perceived "Split Incentive," whereby the owner pays for energy efficient improvements, and the tenant is the beneficiary of lower energy bills coupled with the lack of knowledge around where to start and how to access the proper resources for a net zero renovation, are barriers for many owners. Even when owners are highly motivated to convert their building stock to NZE, capital availability for these renovations in the current economic environment can be challenging to access. Some representatives of building owners have expressed concerns about meeting a new set of building standards to conform to GSA lease requirements and recommend leveraging existing initiatives and requirements (i.e., state and local Building Energy Performance Standards (BEPS), net-zero energy codes, etc.) to attain NZE goals.

Attaining and Verifying Net Zero Emissions (NZE)

The EO 14957 Implementing Instructions define "Net-zero emissions" as "reducing greenhouse gas emissions to as close to zero as possible, and balancing remaining emissions with an equivalent amount of emissions removal, through natural carbon sinks, carbon capture and storage, direct air capture, or other methods." Based on this definition, there are third party tools and certifications available that can be utilized to support the achievement of Net Zero Emissions. For example, certifications include USGBC'S [LEED Net Zero Carbon](#) Certification, which recognizes net zero carbon emissions from energy consumption through carbon emissions avoided or offset over a period of 12 months and the Green Building Initiative's [Green Globes Net Zero Carbon Program](#)

based on a continuous improvement process with benchmarks to achieve net zero carbon emissions. We think there's an opportunity for the federal government to leverage green building rating systems to evaluate lessors on net zero requirements. *See Section IV for additional information.*

Conclusion

We encourage GSA to implement measurable actions, as described in this Advice Letter, to acquire space in NZE buildings within its leased portfolio. NZE buildings present tangible financial, environmental, and health & wellness advantages that harmonize seamlessly with GSA's net-zero GHG emissions objectives.

Sincerely,

Ralph DiNola, Chair
Green Building Advisory Committee

Fernando Arias, Acting Co-Chair
Green Building Advisory Committee

Kevin Bates, Co-Chair
Green Leasing Task Group

Fernando Arias, Co-Chair
Green Leasing Task Group

Task Group Participants ***GBAC Members and Designees***

Kevin Bates (Co-Chair), Sharp Development Company
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Nic Baker, Smita Gupta, Council on Environmental Quality
Ralph DiNola, New Buildings Institute
Joyce Lee, IndigoJLD Green+Health
Andrew Persily, National Institute of Standards and Technology
Jane Rohde, JSR Associates

GSA Observers

Included representatives of GSA Offices OFHPGB and PBS, from both Central Office and Regions. Alexandra Kosmides and Ken Schelbert were the primary representatives of the PBS Leasing Office to this Task Group.

Public Observers

Included representatives of such organizations as Arco, ASHRAE, BOMA, BREEAM, CBRE, CoStar, Cyclone Energy, Cushman & Wakefield, DHS, DOE, DOJ/DEA, Deloitte, Duane Morris, Easterly Govt Properties, EPA, FAA, Fitzgerald, GBI, Gensler, IAPMO, IDeAS Consulting, IMT, JLL, NAREIT, Real Estate Roundtable, ULI, USGBC, USDA, Verdacity and Vornado

Background to the Challenge:

Sustainable Leasing Requirements

The construction and operation of the built environment is a cost, energy, and emissions-intensive activity of the Federal government and other organizations. To increase the operational efficiency of the Federal government, reducing direct costs through energy efficiency and limiting societal costs through emissions reduction are paramount for the nation's competitive stance and security in addressing climate change impacts.

GSA manages over 360 MM RSF of space, divided roughly evenly between Federally owned and leased space from the private sector. Recognizing that GSA will need to rely on the commercial real estate industry to provide roughly half of the space through competitive leased space procurement, novel and innovative approaches will be key to the Federal government's ability to meet the sustainability challenges of meeting EO 14057.

Sustainable leasing requirements are a key component of *Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (December 2021) and the accompanying [Implementing Instructions](#) (April 2022). EO 14057 set new climate and sustainability goals for the Federal government, with the target of a net-zero emissions owned building portfolio by 2045.

In addition to the mandates mentioned in the above "Background" section, the Implementing Instructions in EO 14057 also state, "...Agencies should seek to lease space in net-zero emissions buildings prior to the 2030 requirement to spur market development and innovation in the private sector."

The requirement to develop standards and guidelines for net-zero emissions building leases no later than the end of FY 2024 prompted GSA to seek the GBAC's assistance with developing recommended solutions.

GSA Green Lease Standards, Definitions, and Guidelines for Private Sector Buildings

Per requirements noted above, the Implementing Instructions define a "green lease" as:

A lease for space in a privately-owned, commercial building that includes environmental and sustainability criteria for the building and operations to:

1. Reduce energy, water, material resources use, and emissions.
2. Improve indoor environmental quality.
3. Reduce negative impacts on the environment.
4. Increase the use of sustainable products and services.
5. Increase reuse and recycling opportunities.

6. Reduce impacts of transportation through building location.
7. Consider the effects of the building on human health and the environment; and
8. Track impacts of emissions, energy, water, and waste.

The E.O. 14057 Implementing Instructions further require:

“GSA must issue green lease standards and guidelines to be applied to Federal leases, including provisions that promote a standard framework for lessor reporting of emissions, energy, water, and waste associated with leased space. Agencies with independent leasing authority must incorporate the guidelines and language into agency-specific leasing policies and procedures.”

FY 2023 and Beyond

GSA has had a range of green leasing provisions for years. In FY2023, GSA issued the Green Lease Standards and Guidelines (GLSG) to execute sustainable leasing requirements in Executive Order 14057, including progress toward meeting the NZE goal. The GLSG contains required and recommended green leasing provisions to be included in a federal lease procurement.

Effective October 1, 2023, the GLSG apply to leases that GSA directly procures and to agencies that delegate GSA to procure on their behalf. GSA’s current October 2023 Request for Lease Proposals (RLP) and Lease documents contain the required GLSG provisions. GSA will pilot and assess some of the newer guidelines in FY2024 to evaluate whether these additional provisions will be subsequently required by GLSG in FY2025. The newer, recommended guidelines include the following:

- a) Electrification of Building Systems Equipment.
- b) Energy Efficient Equipment and Appliances (Energy Star labeled or FEMP-designated).
- c) Tracking/Reporting Individual Government Tenant Energy Use Documenting Reduction of Energy Use of Time.
- d) Periodic Recommissioning.
- e) Lessor Reporting of Waste Generation.

GSA will gather feedback on these newer GLSGs in FY24 from internal stakeholders (regional leasing specialists and tenant agencies) and external stakeholders (commercial building owners). Stakeholder feedback will inform GSA as future versions of the GLSG are developed. Stakeholder feedback will help GSA take iterative steps with the GLSG to develop a roadmap to net zero by Fiscal Year 2031. The roadmap will include GBAC recommendations to move the commercial real estate market toward net zero emissions.

Recommendations from the Green Leasing Task Group to GSA

The GBAC identifies and recommends various strategies for reaching Net Zero Emissions per EO 14057, including evaluation of financial return on investment and equitable distribution, identification of capital resources for private building owners, and sharing the rewards from implementation of systems and reduction of costs resulting from the accomplishment of NZE. There are standards and guidelines available to assist with achieving NZE, with the caveat that a consistent definition for NZE has to be utilized for an approach to be replicable in verifying outcomes coupled with the implementation of program parameters that establishes a process resulting in a successful solution – beneficial to both the building owner and GSA.

The Task Group convened a broad spectrum of industry participants, and following a series of meetings and discussions from guests representing many aspects of the GSA leasing ecosystem, the Task Group members organized our recommendations into several key categories, broadly:

- Financial concerns, incentives, and return on investment (ROI);
- Access to capital;
- Issues surrounding split incentives;
- The use of third-party independent NZE certification/verification standards to amplify GSA Office of Leasing efforts; and
- Opportunities for communication and education.

I. Financial Returns

Many building owners in the private sector believe that the return on investment is too low to justify renovating their buildings to achieve net zero. If GSA can help building owners understand the financial benefits of driving their buildings toward net zero, owners will better understand opportunities for ROI and be encouraged to expand the NZE building stock.

We recommend that GSA clearly, broadly and quickly communicate the potential financial benefits to building owners of renovating existing buildings to net zero emissions/energy. This includes reaching out to real estate development organizations to educate and convey the immediate need and reward for providing NZE building space. Some of the financial benefits are as follows:

1. Thoughtful, simple, energy-efficient upgrades to building envelope and interior systems have high returns on investment and short payback periods. Some retrofits are cost-neutral while also reducing future maintenance costs and replacement requirements. *See Section I of attached Exhibit A for more detail.*
2. Energy-efficiency improvements, combined with the installation of on-site renewables, such as solar with battery storage, can often eliminate the remaining power bill in a manner that increases cash flow and building value while reducing the risk of losing an existing tenant or acquiring a new tenant (occupancy risk). This reduced occupancy risk also often results in

lower capitalization (cap) rates and higher building values, which lead to lower loan-to-value ratios, which may increase the borrower's loan amount and lower interest rates. *See Section II of Exhibit A for a case study on how this worked on a real project.*

3. With the standard Full-Service Lease form, 100% of the savings in power rates accrue to the building owner. When capitalized, these additional savings, or increase in income, can create additional building value for the owner that exceed the net cost of the energy efficiency improvements as well as solar and battery systems. *See Section III of Exhibit A for additional detail and examples.*
4. With this additional revenue, a building owner can amortize the net cost of the improvements over the life of the on-site generation system (e.g., solar) and generate additional cash flow immediately. A more conservative approach includes applying 100% of the additional rent toward paying the improvements off quickly to increase future cash flow, subsequently positioning the building to compete for occupancy in the future. We recommend GSA consider aligning its firm lease term with the time needed for the building owner to amortize the net cost of the capital improvements for which it paid. *See Section IV of Exhibit A for an example.*
5. Renovating to NZE now is an opportunity for an owner to get ahead of future regulatory requirements already being legislated in some states and continuing to expand across the country, at a potentially lower cost. Strong government subsidies may be available to further reduce first costs and facilitate differentiating a building from other competitive space available, while reducing potential future escalations in power rates.
6. The Inflation Reduction Act (IRA) and other federal, state, and local programs provide significant cost-reducing incentives for clean energy improvements, specifically:
 - a. 30%-50% of the total cost for the building owners' solar and battery costs can offset federal taxes through 2032, phasing out in the 2035 tax year.
 - b. Many states offer accelerated depreciation of all solar and battery system costs.
 - c. Other programs, such as the [179D energy efficient commercial buildings tax deduction](#) and local power provider incentives, can further offset costs within the first year.

See Section V of Exhibit A for more information associated with these incentives.

7. Any tenant, including GSA, is insulated from increased operational energy costs when a NZE space generates its own on-site renewable power. The space will then have more power resilience due to on-site renewables and battery storage, meeting federal EO 14057 requirements and/or private sector ESG (environmental, social, and governance) goals at no additional cost. As a result, NZE buildings will be more attractive to prospective tenants and tenant retention would occur. *See Section VI of Exhibit A for information on the additional cost to a building owner when a tenant moves out and space has to be made ready for re-lease, identifying the resulting turnover costs that are incurred versus the value of retaining tenants over time and avoiding the lost revenue.*
8. There are health and wellness benefits (i.e., improved indoor air quality, access to natural light, connection to nature, etc.) that result from well-executed energy efficiency improvements. These are benefits with little to no additional cost that can further differentiate a

building in the market by making its occupants more satisfied, reducing absenteeism, increasing staff retention, and reducing vacancy risk.

II. Availability of Capital

Once building owners understand the strong returns on investment (ROI) in a net zero retrofit and are more likely to be motivated to undertake such investments, they still need to find the up-front capital to complete the NZE improvements. This can be a challenge in today's economic environment. **We recommend that GSA educate owners on alternative ways to procure capital, including the following:**

1. Among the sources of capital available today to help finance the up-front costs of NZE improvements are: Property Assessed Clean Energy (PACE) Loans, Power Purchase Agreements (PPAs), Energy-Saving Performance Contracts (ESPCs), Utility Energy Service Contracts (UESCs), and self-financing (which has the highest returns) by using "Green Addendums" for appraisals, cash, or other credit enhancements. *See Section VII of Exhibit A for more detail on these sources of capital, about which GSA could make building owners aware.*
2. As delineated in Section I (4), it is prudent for GSA to adopt a tailored firm lease term alignment approach to foster a conducive financial landscape for building owners aiming to undertake NZE improvements. This approach seeks to harmonize GSA's lease terms with the building owners' amortization timeframe for the additional NZE improvements, thereby bolstering the owners' capacity to secure sufficient capital through conventional financing channels while concurrently mitigating the risk associated with cost recovery. To optimize this alignment, it is advisable to bifurcate the capital improvements discourse into two distinct segments. The first segment should encompass enhancements that exhibit a payback within a typical GSA lease term, propelled further by the incentive programs outlined in recommendation #1. Such enhancements are not only financially viable but also contribute to the immediate energy efficiency goals.
3. Conversely, the second segment should deliberate on larger-scale improvements, encompassing major system replacements that may not yield a payback within standard lease durations, yet significantly extend the building's lifespan and enhance its sustainability profile. It is pivotal to engage in a separate discussion regarding these substantial improvements, exploring alternative financing arrangements or lease term extensions that can accommodate the longer amortization periods and ultimately incentivize building owners to undertake these larger, long-term sustainable upgrades. This nuanced, two-pronged approach facilitates a more collaborative and financially feasible pathway for both GSA and building owners to navigate the NZE transition, aligning lease terms with capital improvement amortization timelines, and segregating discussions based on the scale and payback period of the proposed improvements.
4. If a building owner is diligently and demonstrably working toward completing the predictively modeled required improvements, GSA should have the flexibility to extend the completion date for the required improvements when it deems necessary. There are building renovation

dynamics outside the owner's control, such as supply chain issues (especially with solar panels) as well as city and utility approvals that can cause delays outside of the building owners control. Potentially, this flexibility could also help with borrowing capacity and provide additional capital for improvements. GSA will also need to provide flexibility on timing and schedules for the completed improvements to be measured after occupancy to ensure compliance.

5. If the retrofits do not meet the anticipated and identified NZE goals, there should be required lease language that supports remedies to meet NZE as defined by GSA. Additional measures could include a requirement to purchase offsets, financial penalties, etc.

III. Split Incentives

GSA typically uses a full-service lease form (roughly 97% of the time), under which the landlord pays for all operating expenses and which includes the estimated tenant expenses in the charged rent. In the rare event that GSA is using a net of utilities lease form (currently roughly 3% of the time), in which the tenant is responsible for paying for the operating expenses, it creates a situation where the building owner is paying for the energy efficiency and power generation improvements while the tenant is receiving the economic benefits of a lower power bill. In these rare situations, **we recommend that GSA convert most of these savings in operating expenses to additional base rent within its lease.** This will enable the building owner to utilize that higher rent (which is equivalent to the reduction in GSA's power bill) to recover the cost of improvements.

GSA's procurement process may actually penalize NZE net of utilities buildings if it assesses a prospective building for market rent compliance without considering the reduced operating expenses. **In these instances, we recommend that it look at the overall occupancy cost of a building (net of utilities rent plus operating expenses) to see if it meets the market rate standard for approval.** By looking at the overall occupancy cost in net of utilities rental situations (net of utilities rent + utility bill), GSA's rent will be at an amount that allows the building owner to recoup its investment in net zero improvements while ensuring that the subject lease is within the range for reasonable market rental rates.

IV. Amplification of GSA Green Lease Goals Via Third-Party Standards

Currently, several green building rating systems and standards employ a variety of definitions and approaches to achieving net zero energy and net zero GHG emissions in a variety of building types. Given the scope of private sector buildings that need to be moving forward on NZE improvements, and the varied needs of GSA in obtaining leased space, it is important for GSA to work with these rating systems to identify how they may help amplify GSA's goals in the private sector marketplace by providing third-party certification and verification pathways that will bring more buildings into alignment with GSA needs. *See Exhibit B for a detailed summary of the current state of these programs.*

Third-party rating systems, which all approach NZE goals from a slightly different procedure or perspective, can be confusing and difficult for building owners and tenants to navigate. Through continued work and communication with GSA about federal NZE goals and objectives, rating systems

will be able to assist building owners and tenants in understanding GSA needs and navigating improvements to ensure compliance with GSA's goals.

Third-party standards do not all approach progress toward NZE in the same way. For example, EPA ENERGY STAR's proposed NextGen Building Certification program, still under development, does not require NZE. Instead, it would promote decarbonization by requiring a minimum ENERGY STAR score of 75 and obtaining 30% of energy use from renewable sources. This means that buildings certified under this program may still produce GHG emissions.

Other standards, such as the International Living Future Institute's (ILFI) Living Building Challenge, are more rigorous in requiring zero energy and zero carbon. The U.S. Green Building Council (USGBC) also has a LEED Zero Carbon (beta) program with stringent requirements, such as no on-site combustion, deep efficiency with an ENERGY STAR Portfolio Manager score of greater than or equal to 85 and refrigerants leakage less than or equal to 5%. Such standards can be more expensive to achieve, especially in existing buildings.

If GSA chooses to rely on third-party net zero rating systems to verify the achievement of NZE, then it will also be important for the various NZE rating systems to reference GSA's definition of NZE. The White House Climate Policy Office has announced plans to develop a standard definition of NZE in commercial real estate settings that is due to be finalized in early 2024. The major rating systems referenced above are providing input and working with the White House as the definition is being developed, and identifying opportunities for alignment with the definition once it is finalized.

Exhibit B at the end of this Advice Letter is a current summary of the rapidly evolving state of the market in regard to third party rating systems offering net zero programs. The table below summarizes key features of net-zero building system net zero options currently available in complete or pilot forms:

Standard	Focus	Requirements
ILFI Living Building Challenge	On-site renewables, comprehensive	100% on-site renewable energy, no combustion, 12 months of metering data
ILFI Zero Energy ILFI Zero Carbon	On-site renewables 100% renewable energy (on and off site); embodied carbon reduction	100% on-site renewable energy, no combustion, 12 months of metering data 100% on or off-site renewable energy, no combustion, 12 months of metering data, whole building LCA, embodied carbon offset
GBI Green Globes Net Zero Energy and Net Zero Carbon	Flexible, targeting all building types and allowing for certified offsets	30% energy cost improvement or ENERGY STAR rating of 75 or higher, Path to Zero: third-party certified off-site renewables and carbon offsets

EPA ENERGY STAR NextGen Building Certification	Decarbonization allowing for offsets	ENERGY STAR score of 75 or higher, 30% renewable energy, all-electric or space-type based targets
LEED's Zero Carbon (2023 beta)	No on-site combustion; 100% renewable energy (on and off site)	ENERGY STAR Portfolio Manager score of greater than or equal to 85; LEED Gold as baseline holistic approach

It is important to note that this is not an exhaustive list of all net zero building standards. Other standards are available, and new standards are continuously being developed. However, compounding the challenge are the evolving definitions of NZE buildings and green building certifications, which can paralyze building owners, especially smaller portfolio owners, for several reasons:

- **Complexity:** The different definitions and certifications can be complex and difficult to understand, even for experienced building professionals. This can make it challenging for building owners to know which standard to choose and how to comply.
- **Time and resources:** Staying on top of the evolving standards can be time-consuming and requires specialized expertise. Smaller portfolio owners may not have the time or resources to do this internally.
- **Uncertainty:** The lack of clarity and consensus around NZE can lead to uncertainty for building owners. They may hesitate to invest in energy efficiency and renewable energy upgrades until they know the future standards.

This situation can prevent building owners from taking action to reduce their GHG emissions and achieve net zero goals. This particularly concerns smaller portfolio owners, who significantly provide leasable space to GSA in less dense metropolitan markets. Therefore, it might make more sense for smaller portfolio owners to begin the NZE certification process with less technically challenging certifications.

Here are some specific examples of how the evolving definitions and certifications can paralyze building owners:

- A building owner may start planning a net zero retrofit but then hesitate to move forward when a new definition or certification is released with stricter requirements.
- A building owner may choose one standard over another, only to find out later that the standard they chose is not widely accepted or respected.
- A building owner may invest in energy efficiency upgrades that meet the requirements of one standard but then find that those upgrades are insufficient to meet the requirements of

a more stringent standard.

Therefore, we suggest that GSA consider the following additional recommendations to overcome the challenges or risks of the evolving definitions and certifications of NZE buildings, especially for smaller portfolio owners:

- Connecting property owners with non-governmental organizations (NGOs) and local resources with the technical background and experience necessary to support building owners in creating a clear and concise net zero roadmap. This roadmap, presented in an authoritative GSA resource such as the [Sustainable Facilities Tool \(SF Tool\)](#), should define the building owner's NZE goals, timelines, and strategies. It should also identify the specific standards and certifications the building owner plans to pursue.
- Facilitate introductions to professional guidance from experienced building professionals. These professionals can help building owners understand the different standards and certifications, choose the right ones for their needs, and develop a plan to comply.
- Encourage rating systems to develop assessment pathways that provide the opportunity to engage smaller portfolio owners in continuous improvement of their buildings. *See as an example: GBI's Green Globes Journey to Net Zero pathway.*
- Connect property owners with non-governmental organizations (NGOs) and local resources to provide the technical background or experience necessary to assist building owners in planning a phased approach to NZE retrofits. This will allow building owners to spread out the costs and risks of the retrofit process. It will also give building owners flexibility to adapt to changes in the standards and certifications.
- Provide resources like web pages that help owners take advantage of government incentives and financing programs. Several government programs are available to help building owners finance energy efficiency and renewable energy upgrades. These programs can help reduce retrofit upfront costs and make them more affordable for smaller portfolio owners.
- Foster working groups and town halls to collaborate with other building owners and stakeholders. Building owners can work together to share information and resources and to learn from each other's experiences. They can also advocate for policies and programs that support net zero-building goals.
- Establish a GSA-led Standardization Initiative within the GSA to collaborate with prominent rating systems like those mentioned in the sections above. Under this initiative, GSA can foster a collaborative dialogue through regular engagements such as workshops and joint research projects, aimed at harmonizing net zero definitions and criteria. Initiatives like this can collaboratively develop and publish a set of standardized criteria for net zero designations, encompassing key sustainability aspects like energy efficiency, renewable energy utilization, water efficiency, and waste reduction. GSA can make these standardized criteria publicly available, and ensure they are updated periodically to align with evolving best practices and technological advancements in the green building sector.
- Develop a Recognition and Endorsement Protocol within the GSA to recognize and

endorse rating systems that adhere to the standardized net zero criteria. GSA should create and publish a list of recognized standards and criteria, guiding rating systems on the requisite standards for their designations to be acknowledged by the GSA as meeting net zero objectives. It can also publicize the recognition of compliant rating systems to encourage broader adherence to the standardized criteria, and to provide clear guidance to building owners and developers aiming to achieve net zero designations. Through this protocol, the GSA can promote a unified approach to net zero designations, ensuring a coherent and effective pathway towards achieving sustainability objectives within the federal real estate portfolio.

These recommendations will also necessitate regular updates to ensure that the examples disseminated and resources cited persistently enhance market comprehension and remain in sync with the evolving best practices within the green building sector.

V. Communicating the Value of NZE to Potential Lessors

Messaging is one of the biggest challenges to promoting NZE buildings. The effective communication of the GSA 2030 Net Zero Emissions leasing requirements is needed to prepare the market to meet the need. In order to reach the GSA 2030 Net Zero Emissions requirements, it is imperative for GSA to share information through events that GSA's Leasing Office regularly hosts, including industry events and training to communicate new policies and standards to building owners, the leasing community, and tenant agencies. Additionally, GSA subject matter experts should regularly present at real estate industry events that provide additional opportunities to convey the approach to achieving NZE. GSA should continue to find opportunities to collaborate with key industry and government stakeholders to keep them informed and take advantage of opportunities to gather valuable feedback directly from the marketplace.

GSA should consider a targeted, focused internal and external communications campaign related to the pursuit of NZE, including some of the following best practices:

- **Use a variety of communication channels:** These could include direct communication from GSA, exhibits to the request for lease proposal (RLPs), and outreach and engagement with industry groups through channels such as the [Building Owners and Managers Association \(BOMA\)](#), the National Federal Development Association (NFDA), and the [CBRE's Federal Lessor Advisory Group](#), while noting that GSA must communicate fairly and equitably with all the building owners in the industry, including large and small building portfolio owners.
- **Direct communication with private sector building owners:** GSA should communicate directly with private sector building owners through its websites, email marketing, and social media. GSA should also develop white papers, case studies, and webinars to share with this audience. Clarity surrounding goals and specific recommendations for what private sector building owners can do to show compliance are key to helping building owners develop strategies to improve their buildings to meet GSA needs. Examples of [successful public-private partnerships](#) include practical grammar that is succinct and brief works best for the targeted group.

- **Presentations for industry groups:** GSA should formulate and deliver presentations tailored for industry group meetings, targeting building owners and key stakeholders within the brokerage and appraisers' communities. These presentations should convey comprehensive content, encompassing the government's commitment to NZE standards, financial resources available for NZE retrofits, and practical steps towards achieving these standards. By engaging at a peer level, these presentations can foster a deeper understanding and motivation towards NZE transition.
- **Brokers and Appraisers Community Engagement:** GSA should engage actively with the brokers and appraisers communities, leveraging their networks and influence to disseminate the government's NZE objectives and resources. Workshops, webinars, and one-on-one meetings can be organized to educate these professionals on the benefits and processes of transitioning towards NZE standards, thus empowering them to relay accurate information and advice to their clientele.
- **Use clear, concise, and collaborative language:** GSA should use clear and concise language in its communications, avoiding jargon and technical terms that may be unfamiliar to the audience. GSA should use collaborative language and focus on the shared values around meeting the challenge of implementing the EO and reaching NZE goals. While GSA's Office of Leasing goal is currently based on a lease for a certain square footage of space or higher, and a certain GSA occupancy level, GSA should endeavor to create materials that encourage all buildings to work toward NZE improvements.
- **Tailor the message to the audience:** GSA should tailor its message to the different audiences. For example, the message to private sector building owners through the RLPs will differ from the messaging to brokers vs. training for GSA leasing specialists.
- **Highlight the benefits of NZE buildings:**
 - **Financial benefits:** As discussed above, NZE can grow the financial performance of assets through increased cash flow and raise the building's value through simple, cost-effective upgrades such as insulation, HVAC equipment tune-ups, and LED lighting that are complemented by multiple renewable energy solutions.
 - **Environmental benefits:** NZE buildings reduce GHG emissions and other pollutants. This can help to protect the environment and mitigate climate change.
 - **Health benefits:** NZE buildings can improve indoor air quality and thermal comfort. This can lead to healthier and more satisfied building occupants, contributing to staff retention.
- **Use storytelling to share case studies:** Share the stories of property owners who have benefited from NZE buildings, including how they have saved money on energy bills, improved property values, and attracted more tenants. This will help to make the information more relatable and persuasive.

- GSA could partner with NGOs to compile existing or create a new series of case studies about property owners who have successfully retrofitted their buildings to achieve NZE status. These case studies could be published on GSA's website and social media channels, and they could also be shared with industry organizations and the media.
- **Use social media, following the example of GSA's [Sustainable Facilities Tool \(SF Tool\)](#):** Share infographics, videos, and other engaging content about NZE buildings on social media platforms. Use relevant hashtags and tag industry organizations and influencers to reach a wider audience.
 - GSA could create a dedicated social media campaign to promote NZE buildings using infographics, videos, and other engaging content to highlight the benefits of NZE buildings and the resources available to help property owners make the switch.
 - GSA could also partner with industry influencers to promote the campaign to their followers.

VI. Addressing the Challenge of Change Management

- **Make it easy to act:** GSA can make it easy for property owners to act by providing them with the resources they need to get started with NZE building retrofits, including best practices, like those [presented in the SF Tool](#). Proposed information resources include:
 - **Providing a list of successful high performance retrofits:** GSA can partner with industry associations, Federal agencies, and other organizations to identify retrofits grouped by climate zones that maximize NZE building retrofit outcomes. GSA can also provide information on the partners and contractors involved in the retrofits, including criteria to consider and questions to ask. [These could then be supported by the case studies below. For instance, “95% of LED lighting retrofits have a positive payback in 4 years or less” or “MagLev chillers paid back in 8 years on average.”]
 - **Development of a Financial Resource Guide:** The GSA should compile and disseminate a comprehensive Resource Guide elucidating various financing avenues available for NZE building retrofits. This guide should encompass a breadth of financial resources including government-sponsored loans and grants, private sector financing options, and the utilization of Energy Savings Performance Contracts (ESPCs). The objective would be to demystify the financial landscape, enabling private sector building owners to make informed decisions towards achieving NZE standards.
 - **Offering case studies of successful NZE building retrofits:** GSA can develop case studies highlighting the successful NZE building retrofits that property owners have completed. These case studies could include information on the specific measures that were implemented, the cost savings that were achieved, and the environmental benefits realized. The more detail provided,

the better, as specific highlighted benefits and cost savings are motivators for private sector decision making.

- **Creating or enhancing existing websites:** Share online resources dedicated to NZE buildings that provide information about the benefits of NZE buildings, the resources available to help property owners make the switch, and case studies of successful projects. These websites could also include a blog where GSA publishes articles about NZE buildings and related topics.
- **Partnering with industry and non-profit organizations to promote NZE buildings:** This could involve co-hosting webinars, writing blog posts, or attending industry events and working with partners to develop educational materials and resources for property owners. This can also include the launch of a collaborative forum fostering continuous dialogue with offerors and lessors, focused on sharing insights and experiences pertinent to climate-adaptive NZE retrofit strategies. This platform should serve as a conduit for collaborative problem-solving and refinement of financial, leasing, and technical strategies in sync with regional climatic nuances.
- **Leading by example:** GSA can convey how it is leading by example through continuing to retrofit its Federally owned buildings to achieve NZE status. This will strongly send a message to the private sector that NZE buildings are feasible and desirable. GSA should also include “reality check” information that openly talks about specific challenges that it encounters on these projects, and how they overcome those challenges. Very often private sector building owners dismiss GSA examples because it is perceived that the government “can do anything it wants,” and that it can “print money” to get around problems in a way that private sector building owners cannot.
- **Proposed leasing process changes to facilitate progress on NZE include:**
 - **Submission requirement:** Mandate a sustainability submittal, similar to the ENERGY STAR requirement, within the offer process, where offerors delineate their planned building improvements, with a focus on sustainability upgrades.
 - **Offeror engagement:** Provide a structured menu of potential sustainability improvements to guide offerors in identifying viable upgrades, enabling them to articulate the extent of their willingness and capability to augment sustainability standards.
 - **Continuous communication:** Maintain open and continuous dialogue through the procurement communications protocols with offerors to foster a collaborative environment, encourage the sharing of insights, and further refine the RLP component to better align with both governmental and private sector sustainability objectives.
 - **Incentivization:** Introduce an incentive similar to the historic preference calculation. This incentive will aim to reward offerors committed to advancing to higher sustainability standards, ensuring value optimization for the Government.

VII. Internal Communications & Training

- GSA should communicate with its internal leasing specialists about NZE terminology, building savings, benefits, etc. This can be done through training sessions, email updates, and other forms of communication. GSA should also provide leasing specialists with the education, approach outline, and resources to promote leasing in NZE buildings to property owners, and training about the various third-party rating systems in the marketplace that can help amplify GSA goals and needs.
- **Use gamification:** Create a gamified learning experience for building owners and their employees to learn about NZE buildings and the benefits of promoting them. This could involve creating a quiz or scavenger hunt that teaches employees about the benefits of NZE buildings and GSA's initiatives to promote them. Employees could earn badges or points for completing the activities and compete on a leaderboard to see who can learn the most about NZE buildings.

By implementing these recommendations, GSA can reach a wider audience and spread the message about the benefits of NZE buildings. By taking these steps, GSA can effectively communicate the importance of NZE buildings and help to accelerate their adoption in the private sector.

Conclusions

Findings

There is a significant lack of NZE buildings available in the private sector to meet GSA's leasing needs to comply with EO 14057 by September 30, 2030 and renovating existing building stock to meet these needs is a relatively new priority. There is a lack of clarity with some building owners about the benefits of pursuing NZE renovations and what condition the buildings must be delivered to comply with GSA's needs. Communicating the information necessary to the private sector building owners to motivate them to renovate their buildings to the NZE standards that GSA requires, both broadly and clearly, will be critical to increasing the available NZE building stock. Private, third-party rating systems are working to develop NZE programs that may serve as tools to align and amplify GSA goals in order to expand the number of buildings seeing and achieving NZE improvements.

Recommendations

- 1) Communicate the potential financial benefits of renovating existing buildings to NZE standards to the private sector building owners. These benefits include reduced occupancy risk; increased cash flow; increased asset value, insulation from future power rate increases and regulatory requirements; IRA and local jurisdiction cost benefits; and increased operational resistance.
- 2) Educate private sector owners on alternative ways to procure capital, including: PACE financing; PPAs; ESPCs; UESCs; and conventional borrowing.
- 3) GSA should consider aligning its lease terms appropriately to enable owners to amortize the cost of NZE improvements and procure adequate capital.
- 4) GSA should provide flexibility around the timing for completing NZE improvements when warranted.
- 5) When utilizing a net of utilities lease form, GSA should enable the landlord to increase the base rent by an amount commensurate with the energy savings generated by the NZE improvements and include these operating costs with the base rent when evaluating market rent compliance.
- 6) Build on existing, commonly used and accepted building standards to create a flexible third-party verification system that conforms to GSA's definition of NZE and helps to amplify GSA goals with private sector building portfolio owners.

Utilize various methodologies to communicate the above recommendations and information to the private sector. GSA should execute the information contained in this Advice Letter with a partnership mentality that demonstrates that it is trying to help the real estate sector thrive by informing it of available resources and information of which it may not be aware, as opposed to a position of mandating additional burdensome requirements.

The strategic dissemination of financial and technical assistance advice to private sector building owners, as outlined in the advice letter, is pivotal for accelerating the GSA's alignment with the mandates of Executive Order 14057 by the deadline of September 2030. The GSA's extensive [inventory of owned and leased properties](#) across the nation showcases a significant leasing space that can be transitioned towards NZE standards, given the right impetus.

The outreach encompassed in disseminating this information is instrumental in mobilizing the private sector towards making NZE upgrades to their buildings, thereby expanding the pool of NZE rentable space available to the GSA. [The current landscape of GSA leased buildings](#), as depicted through the age distribution graphs, underscores a vast potential for enhancing energy efficiency and transitioning to NZE standards.

By [leveraging platforms like the Automated Advanced Acquisition Platform \(AAAP\)](#) to promote competitive leasing opportunities, the GSA can facilitate a market-driven approach to achieving sustainability goals. This initiative not only supports private sector engagement in sustainable practices but also fosters a competitive environment for the acquisition of NZE rentable space.

The ripple effect of this dissemination endeavor will extend beyond mere compliance with EO 14057. It lays the groundwork for a broader transformation within the commercial real estate market, nudging it towards a more sustainable trajectory. This initiative requires a collaborative approach between the public and private sectors in advancing towards a common goal of sustainability and low-carbon footprint in the real estate domain. Moreover, it exemplifies a proactive strategy to harness the potential of the private sector in contributing to national sustainability objectives, while also meeting the GSA's leasing requirements for NZE spaces. Through such collaborative endeavors, the path towards achieving a greener and more sustainable built environment becomes more attainable and well-defined.

EXHIBIT A

Section I

Converting to a High-Performance Building cost-effectively.

When retrofitting a building to NZE, understanding that many improvements will be interrelated and affect the performance of other aspects of the building will be important to maximize energy efficiency while keeping costs to a minimum. All improvements should be examined together during the design process, rather than in silos, to develop a holistic and integrated design approach. When done thoughtfully, it can create a positive financial domino effect.

For example, money spent on the building envelope by upgrading wall and roof insulation, applying a reflective coating on the roof, and applying window film, may be offset by the reduced need for both the amount of HVAC tonnage and the amount of time it will need to run. This, in turn, will reduce the overall energy use intensity (EUI) for the building, which reduces the size of the solar array needed to offset the reduced energy need.

The cost of maximizing the thermal efficiency of the shell is partially offset by the reduced first cost of less HVAC equipment and a smaller solar and battery system while reducing the energy bill. Since the shell will perform thermally more efficiently, the reduced amount of HVAC equipment will need to run less often. This will require less quarterly maintenance and fewer replacement reserves (since the equipment running less often will last longer), further reducing operating expenses while increasing the occupant's thermal comfort.

The architect and design engineers must work together to know how much insulation to apply and whether operable windows and ceiling fans make economic sense for thermal comfort and ventilation to maximize the impact on HVAC and solar.

- Money spent on skylights, light shelves, and electrochromic glass or window films will let in more natural light, reducing the need to run the less energy-intensive electric lights.
- Furthermore, using LED lights and other efficient lighting systems will further reduce the operating costs of the mechanical systems.
- Including the heat gain from inefficient lighting fixtures will further reduce the EUI and size of the solar array while reducing operating expenses.
- This will also enable the health and wellness benefits of working under more natural than artificial light while creating more opportunities to connect the occupants to nature and outdoor views.

Depending on the location and nature of a building, the previous [GSA Green Building Advisory Committee Advice Letter: Recommendations for Advancing GHG Reductions in Existing Federal Buildings](#) may help guide an economically effective retrofit. In particular, Appendix C, pages 23-28, lists opportunities for cost-effective carbon emissions reduction.

Moreover, the Inflation Reduction Act (IRA) of 2022, signed by President Biden on March 11, 2022, includes several key building efficiency provisions:

- **Section 179D:** This segment broadens the scope of the energy-efficient commercial buildings deduction, enabling enterprises to offset the expenditures incurred from integrating energy-efficient apparatuses and materials in the construction of new commercial edifices.
- **Section 48:** This part augments the Investment Tax Credit (ITC) for energy property, granting businesses the leeway to deduct a fraction of the outlays associated with the procurement of energy-efficient equipment and materials for new building projects.
- **Section 13601:** This clause allocates funds to the Energy Efficiency and Conservation Block Grant (EECBG) program, fostering financial support for energy efficiency enhancements in buildings, encompassing new construction.

The inception of these incentive programs, synergized with potent strategies for propelling NZE buildings, can galvanize private building proprietors to channel investments into refurbishing their buildings in adherence to the stipulations of Executive Order 14057.

Section II

Case Study.

An 82,408 sq. ft. manufacturing building located in Fremont, CA, was purchased in 2011 by a local value-added developer. A conventional retrofit was completed, and a lease was signed for 12 years.

While the tenant ran two shifts in the building 16 hours a day, the owner converted the building to net zero energy. This project was done in 3 phases over roughly two years (2017-2018). It was then sold in November of 2020. The actual economics and how the owner, tenant, lender, buyer, and environment were affected are as follows.

PHASE I

Scope: The tenant needed a new HVAC unit for roughly \$141,000. It asked if the landlord would pay for this investment and amortize the cost over a 10-year term. The landlord proposed that if it spent an additional \$145,000 on energy efficiency measures, it could amortize the cost of both for less than the reduction in the tenants' energy bill.

The economics for Phase I are as follows:

Total cost of energy efficient (EE) upgrades and the desired HVAC unit:	\$286,566
Increased rent needed to amortize the cost over 10 years at 12%:	\$48,144
Annual energy savings from the energy efficiency upgrades:	\$49,960

The tenant got the new mechanical equipment it needed for free and will experience no increases in cost on \$49,960 of annual power for the remainder of its occupancy.

The building owner saw an increase in annual rent of \$48,144, which, at the 5.15% cap rate the building sold for, resulted in \$934,835 of additional building value from an investment of \$286,566.

PHASE II

Scope: A 749.7 kW solar system was installed on a new 25-year roof.

The total cost of a rooftop solar system:	\$1,884,043
The total cost of a new roof and additional EE improvements:	<u>\$376,607</u>
Total project cost:	\$2,260,650
Less year 1 tax incentives:	<u>(\$1,025,428)</u>
Net cost after year 1:	\$1,235,222
Power bill savings from solar generation:	\$222,065
Power bill savings from additional EE measures:	<u>\$45,040</u>
The total power bill savings to tenant:	\$267,105

PHASE III

Scope: A 269.1 kW canopy structure solar system was installed in the parking lot.

The total project cost:	\$785,772
Less year 1 tax incentives:	<u>(\$345,604)</u>
Net cost after year 1:	\$440,168
Energy savings to a tenant:	\$86,478

CUMULATIVE RESULTS:

The total cost:	\$3,332,988
Less year 1 tax incentives:	<u>(\$1,371,032)</u>
Net cost after year 1:	\$1,961,956
Increase in tenant's rent for solar improvements:	\$300,000
Increase in tenant's rent for EE improvements:	<u>\$48,144</u>
Total increase in tenant's annual base rent:	\$348,144
Reduction in power bill to tenant Year 1:	\$403,543

From the Tenant's Perspective:

- 1) Saw an overall reduction in its initial occupancy cost of \$55,399/yr.
- 2) Eliminated all power rate increases for the term of its occupancy.
- 3) Got its 2 necessary HVAC units for free.
- 4) Has a new 20-year warranted roof that it is responsible for maintaining.

From the Landlord's Perspective:

- 1) The \$348,144/yr. of rent increase (or operating expense savings on a full-service lease) equated to \$6,760,078 of value at the 5.15% sale cap rate. At a net cost after year 1 tax incentives of \$1,961,956, it added \$4,798,122 of additional net value to the project.
- 2) The market cap rate for this building, given the tenants' credit strength before these energy-efficient improvements, was roughly 6.25%. Before the time of sale, due to PG&E (the local power provider) rate increases, the energy retrofit had reduced the power bill by \$504,793 per year, or \$.51/SF/mo. The buyer was astute to recognize that the tenants' credit strength was not an issue since if the tenant ever went out of business or vacated the space at the end of the lease term, it could re-lease the space at significantly higher rents due to the \$.51/SF/mo. of power being generated for free. Although this is not a material issue if GSA is the tenant, it speaks to the building's market resiliency if leased to another tenant or if GSA ever vacates.

When applied to the original base rent (before improvements), this reduction in the cap rate generated an additional \$5,646,505 in net value. Even though it priced the building at a below-market cap rate (5.15%), due to the generated free power, it purchased a much lower-risk building than a market-rate building without energy generation.

The total difference in value is as follows:

Initial gross rent:	\$1,232,064
Net operating income (NOI) after 5% for vacancy and reserves:	\$1,170,461
Value at market cap rate (6.25%):	\$18,727,373
Value of antenna rent (based on offers):	<u>\$428,000</u>
Total value before energy improvements:	\$19,155,373
Gross rent after increases for solar & EE:	\$1,580,208
NOI after 5% for vacancy and reserves:	\$1,501,197
Sales price of the building (net of commissions):	<u>\$29,600,000</u>
Total increase in value:	\$10,444,627 (\$126.74/SF)

Return on initial \$1,961,956 investment after year 1 = 5.34X

From the Lender’s Perspective:

- 1) The increased value significantly reduced its loan-to-value ratio.
- 2) Increased tenant rent resulted in a higher debt coverage ratio (net operating Income/debt obligations).
- 3) Tenant benefits and power generation reduced the occupancy and loan risks.

From the Buyer’s Perspective:

The above lender benefits enabled the buyer to borrow more dollars at a lower rate. This increased its leverage and return on equity, enabling it to pay more for the building.

From an Environmental Perspective:

The renovation offset the burning of over 95 million gallons of gasoline over 20 years, representing roughly 32,000 metric tons of CO2 emissions.

Although this actual example represents a “perfect storm” of building conditions (the tenant was a very large power user in a single-story building, with a large parking lot to accommodate the necessary solar, had generous accelerated depreciation incentives along with a cooperative climate for generation) and although a building’s location and situation may not result in these types of returns, it can act as an example to demonstrate the many different ways that net zero improvements add value to buildings.

Section III

GSA Lease Advantages

GSA utilizes a full-service lease form roughly 97% of the time. This will enable the building owner to benefit from 100% of the reduced operating expenses. Reducing operating expenses will effectively act as additional rent to the landlord. This reduction in operating expenses results from:

1. Reduced power bills. The power bill will be eliminated by making the building all-electric, enhancing the building's energy efficiency (EUI: energy use intensity), and installing an on-site renewable power generation system.
2. Reduced HVAC maintenance. Improvements to the building envelope and the adoption of passive heating and cooling methodologies will reduce the amount of equipment needed and the amount of time it needs to run.
3. Reduced replacement reserve requirements. Since less HVAC equipment will likely run less often, the replacement reserves from cash flow will be reduced.
4. With LED lighting alongside natural light, the need to replace and maintain fluorescent and incandescent lamps is eliminated.
5. Other operating expense reductions can be achieved by replacing lawns with native, drought-resistant landscaping that will reduce maintenance and irrigation costs.
6. Performing janitorial services during the day reduces lighting costs and often results in cleaner space.

We recommend that GSA try to align its firm lease term with the owners' needs to fully amortize the cost of driving its space to net zero during GSA's tenancy. The owner will effectively have a bondable (GSA credit) tenant guaranteeing the lease payments. This enables the owner to finance the improvements while maximizing the added value through the below-market cap rates that typically accompany GSA leases. At the end of GSA Lease Term, the building owner will keep the improvements and power generating system free and clear, giving them an advantage over competitive space to renew GSA or lease another tenant.

We recommend that GSA cooperate with landlords regarding the timing of the net zero improvements to help facilitate owners' financing objectives for the retrofit. If a landlord diligently pursues the agreed-upon improvements, they should be allowed to complete the improvements shortly after GSA commences its lease.

Section IV

Average Return on Investment

Different building types in different geographic locations with different labor costs and varying power costs will deliver a wide range of returns on investment for owners to drive their buildings to net zero.

Below is an average return for a solar installation with a national average cost of power, prevailing wage rate, and federal incentives only (does not include state modified accelerated cost recovery system (MACRS)). As energy efficiency improvements typically have a very high return on investment but vary widely from building to building, they should materially improve the below returns on investment.

As seen below, with conservative assumptions, the simple payback is 6.5 years with a lifetime IRR of 14%. That is a strong return on investment for a bondable lease with GSA.

725 kW Rooftop Solar PV System - 25 year cash flow

	Project Basis	Tax Benefits*	Utility Savings	AMPS	Annual Cash Flow	Cumulative Cash Flow
	(A)	(B)	(C)	(D)	(A)+(B)+(C)+(D)	
Year 1	(\$1,450,000)	\$750,520	\$113,100	(\$11,876)	(\$598,256)	(\$598,256)
Year 2		\$0	\$115,348	(\$12,172)	\$103,175	(\$495,080)
Year 3		\$0	\$117,637	(\$12,477)	\$105,161	(\$389,919)
Year 4		\$0	\$119,969	(\$12,789)	\$107,181	(\$282,739)
Year 5		\$0	\$122,344	(\$13,108)	\$109,236	(\$173,502)
Year 6		\$0	\$124,763	(\$13,436)	\$111,327	(\$62,175)
Year 7			\$127,226	(\$13,772)	\$113,455	\$51,279
Year 8			\$129,735	(\$14,116)	\$115,619	\$166,898
Year 9			\$132,289	(\$14,469)	\$117,820	\$284,718
Year 10			\$134,890	(\$14,831)	\$120,059	\$404,778
Year 15			\$148,621	(\$16,780)	\$131,841	\$1,011,023
Year 20			\$163,631	(\$18,985)	\$144,646	\$1,708,221
Year 25			\$180,019	(\$21,480)	\$158,539	\$2,472,682

Assumed PG&E Escalation	2.5%
Assumed Owner Fed Tax Rate	32.0%
Assumed Owner State Tax Rate	9.3%
Assumed Discount Rate	6.0%
Solar Degradation Rate	0.5%

OWNER IRR (25 yrs.)	14%
OWNER NPV (10 yrs.)	\$145,507
OWNER NPV (25 yrs.)	\$875,048
Simple Breakeven	6.5 years

Specific Yield*	1,300 kWh/kWdc
Avoided Cost*	\$0.12 /kWh
Install Cost*	\$2.00 /watt DC

*based on national averages, assumes Prevailing Wages

Federal Tax Credit	30%
Federal Bonus Depreciation	80%

Additional Tax Credits (not included)	
LMI Census Tracts	up to 20%
Domestic Content	10%
Energy Communities	10%

Mynt Systems, Inc. performed the above generic proforma in February of 2023, and to be conservative, only includes the 30% Federal ITC and MACRS. See Section V below for additional possible cost-reducing incentives that could further enhance returns.

Section V

Potential Federal and State Tax Incentives along with Power Provider programs

Federal:

- An [Investment Tax Credit](#) (ITC) equal to 30% of total solar and battery costs can be utilized to offset actual federal taxes due. If there is insufficient income to use the investment tax credit, it may be carried forward to offset taxes due in the future.
 - The ITC applies to costs including solar panels, inverters, racking, balance-of-system equipment, sales and use taxes on equipment, installation costs, indirect costs, step-up transformers, circuit breakers, surge arrestors, and energy storage devices such as

batteries (if charged by a renewable energy system more than 75% of the time).

- If the property is in a low-income census tract, it may be eligible for an additional ITC equal to 10% of the energy efficiency costs.
- If the improvements are completed with US-made materials, the project may qualify for an additional 10% ITC.
- A project may earn up to an additional 10% ITC if the project is determined to be in an “Energy community.” This area has (or at any time beginning after December 31, 1999) had significant employment related to the extraction, processing, transport, or storage of coal, oil, or natural gas (as determined by the Secretary of the Treasury).
- An accelerated depreciation schedule called MACRS (Modified Accelerated Cost Recovery System) may be used to offset federal taxes further.

State:

- Many states offer MACRS to help offset state taxes due. Owners must check with local state policies to determine eligibility for their projects.

Local Power Provider Incentives:

- Many local power providers offer rebates and incentives for energy efficiency and power production to help offset “Peak Demand” challenges. Before finalizing the project design, owners should check with local power providers to see if it has any incentive programs.

Section VI

The additional cost to a building owner when it loses a tenant

Below is an example of the average potential cost to a landlord when an existing tenant vacates. The ability to position a building through net zero to make it disadvantageous for a tenant to move could save an owner a large part of the equity in its building.

Best Case Timeline: Tenant vacates.

Make space market ready	30 Days
Market space and find a tenant	45 Days
Negotiate terms and sign LOI	15 Days
Get the lease negotiated and signed	30 Days
Design and permit drawings for TI'S	60 Days
Approval for building permits	60 Days
Construction & move-in	<u>120 Days</u>
Total to lease commencement	12 Months

Lost revenue at \$3.00 NNN*	\$36 / SF
Leasing commissions	\$8 / SF
Tenant improvements	<u>\$30 / SF</u>
Total Cost to Re-Tenant Building	\$74 / SF

*Assumes market rents are \$3.00/SF/mo. NNN

Section VII

Financing Resources

- Self Financing. If adequate capital is available, this is the fastest and easiest way to repay the up-front cost through additional cash flow.
- Property-assessed clean energy (PACE) financing is a mechanism that enables long-term funding for energy efficiency, renewable energy, and water conservation projects, which the property owner then pays back by increasing property taxes by a set rate for an agreed-upon term typically ranging from 5-25 years. Depending on state legislation (as not all states enable PACE financing programs), PACE financing can finance building envelope energy efficiency improvements, including cool roofs, insulation, LED lighting, rooftop solar, and other energy-efficient improvements.
 - In areas with PACE legislation in place, governments offer specific bonds to investors, or private lenders may provide financing to building owners to allocate toward an energy retrofit to the building. This PACE loan is attached to (collateralized by) the property, not the individual. Building owners can check to see if their property is in a qualified location.
- Power purchase agreement (PPA). A PPA is an arrangement in which a third-party developer installs, owns, and operates an energy system on a customer's property, such as a solar array on its roof or parking lot. The customer (building owner or possibly GSA) then purchases the system's electric output for a predetermined period. A PPA allows a customer to receive stable and often low-cost electricity with no upfront cost while also enabling the system owner to take advantage of tax credits and receive income from the sale of electricity.
- Energy saving performance contracts (ESPCs) guarantee some energy savings for the customer. They are offered by energy services companies (ESCOs), commercial businesses, or nonprofits that provide various energy solutions, including designing and implementing energy-saving projects. The ESCO may finance the capital for a project and then receive revenue from the energy savings achieved over an appropriate period.
- Utility energy service contracts (UESCs) are like an ESPC, but where the projects are financed and implemented through the utility companies.
- Conventional financing through a real estate lender. As Section II above shows, energy-efficient improvements typically significantly increase the property's appraised value. This will reduce the lender's loan-to-value while increasing its debt coverage ratio, allowing it to lend more money through an additional advance on an asset and borrower with which it is already familiar.
- When applying for a Loan or additional advance to an existing loan, owners can request a

“Green Addendum” routing its appraisal to a qualified “Green Appraiser” through the appraisal institute. These appraisers have been trained to accurately value energy-reducing improvements, often resulting in higher valuations for buildings being renovated toward net zero. These higher appraised values will increase the borrowing capacity, reducing the amount of upfront capital needed.

See Section III above for ways a GSA Lease may help with financing.

EXHIBIT B: THIRD PARTY RATING SYSTEM NET ZERO INITIATIVES

DRAFT GSA Research - as of 11/22/23

For more information on net zero and decarbonization definitions and strategies, see the [SFTool's Building Decarbonization page](#).

Net Zero Energy rating systems available for use, and relevant to commercial building types (including Federal buildings) as of summer 2023, are:

- LEED Zero Energy
- ILFI Zero Energy Certification
- Architecture 2030's Zero Code

Net Zero Carbon rating systems available for use, and relevant to commercial building types (including Federal buildings) as of summer 2023, are:

- LEED Zero Carbon
- ILFI Living Building Challenge and Zero Carbon Certification

As detailed below, there are also certification systems for zero operational carbon, and zero energy homes (though strictly residential programs are not discussed here). Several other net zero certification systems are under development.

3rd Party Rating Systems

USGBC/LEED

[LEED Zero](#): Since 2019, LEED has offered [four types](#) of net zero ratings that are available to buildings that already have an existing LEED Building Design and Construction (BD+C) or Operations and Maintenance (O+M) certification. The following are certification requirements:

1. Must be LEED certified (BD+C or O+M)
2. Candidates must provide twelve months of performance data through LEED Online
3. Initiate the Green Building Certification, Inc. (GBCI) review process once their use balance (carbon, water, energy, waste) is zero for a period of 12 months. Once achieved, each certification is valid for three years.
 - **LEED Zero Carbon beta (2023)**: Requires buildings to be highly energy efficiency with an ENERGY STAR score of 85 or greater; have no on-site combustion (with some exceptions); 100% clean energy including on and off site; report recharge of refrigerants for one year (tenants excluded) and leakage rate < 5%; policy for reduction of embodied carbon during renovations; and transportation requirements (EV charging or sustainable transportation performance options).
 - **LEED Zero Carbon (original version - still available for use)**: Recognizes net zero carbon emissions from energy consumption through carbon emissions avoided or

offset over a period of twelve months. Currently, this includes carbon avoided from energy use and occupant transportation, but will later include all carbon associated from water, waste and embodied carbon in building materials.

- Total Carbon = Carbon Emissions - Carbon Sequestration
- **LEED Zero Water:** Recognizes a potable water use balance of zero over a period of twelve months. A building has achieved zero water if its alternative water sources and water returned meets or exceeds its potable water consumed.
- **LEED Zero Energy:** Recognizes a source energy use balance of zero over a period of twelve months. A building has achieved zero energy if its non-renewable energy displaced (i.e. renewable energy used) meets or exceeds its energy delivered.
- **LEED Zero Waste:** Recognizes buildings that achieve GBCI's [TRUE](#) certification at the Platinum level. A building has achieved zero waste if it achieves an average of 90% or greater overall diversion from landfill, incineration, and the environment for solid, non-hazardous wastes for the most recent twelve months.

GBI/Green Globes

[Green Globes Net Zero Programs](#): Beginning July 2023, GBI is offering two net zero certification programs that are available to new buildings, existing buildings, interior spaces, and portfolios. The programs have stand-alone minimum requirements and pre-certification with Green Globes Green Building certification is not required. New buildings may achieve a “Designed to Achieve” rating. Existing Buildings and Portfolios that meet all requirements achieve a Green Globes Net Zero Energy or Green Globes Net Zero Carbon certification. The programs are designed to support all building sizes and building types. The following are certification requirements:

- Demonstrate a minimum of 30% energy cost or EUI reduction from a baseline.
- Green Globes Net Zero Energy: Demonstrate 100% reduction in net site EUI.
- Offsite renewables and third-party certified RECs count after initial 30% energy cost improvement or reduction is met.
- Green Globes Net Zero Carbon: Demonstrate 100% reduction in net CO₂e.
- Offsite renewables, third-party certified RECs, and third-party certified offsets count after initial 30% energy cost improvement or reduction is met.

Public input periods and pilot programs are being run simultaneously on GBI's Green Globes NZ programs through Dec. 31, 2023. Updated program requirements will be issued early in Q1 2024. GBI is also providing certificates of achievement for building owners that obtain GBI third-party assurance of direct emissions reductions of at least 50% or greater moving toward the goal of 100% onsite decarbonization / electrification."

ENERGY STAR NextGen:

[ENERGY STAR NextGen for Commercial Buildings](#): ENERGY STAR NextGen is a proposed

certification system for commercial buildings. It will recognize energy-efficient, low-carbon buildings, and will encourage U.S. building stock to move towards efficient electrification while contributing to the growth of renewable energy.

- This certification is currently in the proposal stage and targets early 2024 release. Energy Star has released an [informational webinar](#) and the [proposed standard](#).
- The three main requirements are:
 - ENERGY STAR Certification - The building achieves an ENERGY STAR score of 75 or higher and meets all criteria associated with ENERGY STAR certification.
 - Use Renewable Energy - The building obtains at least 30% of the total energy it consumes from renewable sources.
 - Direct Emissions Target - The building's direct (i.e., onsite) greenhouse gas emissions intensity (GHGi) is at or below a specified level.

BREEAM

[BREEAM](#) (Building Research Establishment Environmental Assessment Method): BREEAM does not currently have a net zero carbon certification available for use, but states that its certifications play a role in guiding buildings “closer” to net zero.

- [Carbon Risk Real Estate Monitor Project \(CRREM\)](#) is currently being developed to publish trajectories that show a pathway to net zero carbon by 2050 to be in line with the 1.5°C and 2.0°C scenarios. CRREM will provide insight into the risk of “stranded assets” – properties that will not meet future energy efficiency standards and market expectations, and may be increasingly exposed to the risk of early economic obsolescence.
- BREEAM is also currently working to establish the external standards and definitions that will be included in their [Net Zero Carbon module](#), including any minimum requirements that may be required for inclusion (for example, caps on the proportion of emissions that are allowed to be offset).

BOMA

[BOMA](#): In 2018 - 2020, BOMA Best offered the Net Zero Challenge to recognize organizations that pursue net zero carbon and net zero energy buildings. Here are [reports](#) on lessons learned from previous challenges.

International Living Future Institute

The International Living Future Institute (ILFI) offers three building certifications that require at least net zero operation as well as building decarbonization. Compliance for all three is determined through third-party audit.

[Zero Energy \(ZE\) Certification](#): Launched in 2010

- Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new onsite renewable energy

(offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception.

[Zero Carbon \(ZC\) Certification](#): Launched in 2018

- Buildings must reduce their operational energy use by a set % relative to comparable buildings.
- Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new on/offsite renewable energy. Combustion is not allowed, with very limited exception
- Buildings must reduce and disclose the embodied carbon emissions associated with [life cycle assessment stages A1-5](#) of the project and offset 100% of the emissions.

[Living Building Certification \(LBC\)](#): Launched in 2006 based on a theory of closed-loop systems, LBC certification requires net *positive* operational energy, along with compulsory performance in six other sustainability categories addressing waste management, water conservation, indoor environmental health, equity, and site ecology. The principle energy requirements are:

- Buildings must reduce their operational energy use by a set % relative to comparable buildings.
- Buildings must demonstrate over a continuous 12-month performance period that net 105% of the energy use associated with the building is supplied by new onsite renewable energy (offsite permitted in some circumstances). Combustion is not allowed, with very limited exceptions.
- Buildings must reduce and disclose the embodied carbon emissions associated with [life cycle assessment stages A1-5](#) of the project and offset 100% of the emissions.

ASHRAE

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) provides standards for measuring and attaining net zero energy and carbon. ANSI/ASHRAE Standard 228-2023, Standard Method of Evaluating Zero Net Energy and Zero Net Carbon Building Performance, sets requirements for evaluating whether a building or group of buildings meets a definition of “zero net energy” or a definition of “zero net carbon” during building operation. The standard draws from ASHRAE Standard 105, among others, to address energy and carbon flows across a site boundary, their measurement, and their balance. ANSI/ASHRAE/IES Standard 90.1, Energy Efficiency Standard for Sites and Buildings Except Low-Rise Residential Buildings is anticipated to include an “informative appendix” that is zero energy. This appendix has completed one advisory public review, and the committee is targeting October to have it available for adoption.

International Passive House Association

[The International Passive House Association](#) provides standards for buildings to require very little energy to achieve a comfortable temperature year round, often eliminating the need for conventional heating and air conditioning systems. While they do not currently offer a net zero certification, their buildings do have to meet the following standards:

- Buildings must not exceed certain space heating and cooling demands (with some allowance for dehumidification), and must limit the energy that can be used for domestic applications per square meter of usable living space.
- Requires that buildings meet an “air tightness” standard and maximum air changes per hour, as well as thermal comfort of not more than 10% of the hours in any given year exceeding 77°.
- Passive House buildings must be planned, optimized, and verified with the Passive House Planning Package and checklist.

Architecture 2030’s Zero Code

[Zero Code Renewable Energy Procurement Framework](#): Provides framework to support the development of decarbonization policies with on- or off-site renewable energy requirements for meeting a building’s anticipated energy needs. It uses ASHRAE Standard 90.1-2019 as a base standard for energy efficiency.

- [Zero Code 2.0](#): Applies to new commercial, institutional, and mid- to high-rise residential buildings. The proposed building zero energy performance (without considering renewable energy systems) must be less than or equal to the zero energy performance index target, as calculated in accordance with the performance rating method of ASHRAE Standard 90.1-2019.

World Green Building Council





[World Green Building Council](#): The World Green Building Council (WorldGBC) is a global action network working with local green building councils to address whole life carbon emissions of existing and new buildings; enable resilient, healthy, equitable and inclusive places; and secure regenerative, resource efficient and waste-free infrastructure.




- [Net Zero Carbon Buildings Commitment](#): As of May 2023, 140 global business organizations, 29 cities, and six states/regions have committed to the Net Zero Carbon Buildings Commitment, including the State of California. This commitment states that by 2030:
 - Existing buildings must reduce their energy consumption and eliminate emissions from energy and refrigerants removing fossil fuel use as fast as practicable (where applicable). Where necessary, compensate for residual emissions through offsets or sequestration.
 - New developments and major renovations are built to be highly efficient, powered by renewables, with a maximum reduction in embodied carbon and compensation of all residual upfront emissions.

New Buildings Institute

[New Buildings Institute](#): As of 2023, New Buildings Institute does not offer any net zero standards. They offer a [Getting to Zero forum](#), a [zero buildings database](#), and decarbonization-related [tools and guides](#).

Green Building Certification Systems with Net Zero Programs: Summary

Certification System	Certification Requirements	Getting Started	Program Overview	Offsets Allowed?
Green Building Initiative's Green Globes Journey to Net Zero	<ol style="list-style-type: none"> ENERGY STAR Certification—the building must achieve or higher (80 or higher for multifamily properties), or, Minimum 30% site EUI improvement vs ASHRAE 2016 base year (EB) Further reduction with onsite/offsite renewables Certified RECs and offsets allowed Carbon reduction targets based on percentage reduction in net CO₂e relative to baseline 	<p>To learn more and join the pilot:</p> <p>https://the gbi.org/net-zero-public-input</p>	<p>Two options, Net Zero Energy and Net Zero Carbon. Both programs offer certification at 100% reduction of either net site EUI, or net CO₂e, as well as a pathway for recognition as buildings move toward certification</p>	<p align="center"></p> <p>Allows the purchase of some certified RECs and offset packages</p>
USGBC/LEED Net Zero Carbon	<ol style="list-style-type: none"> Must be LEED certified (BD+C or O+M) Candidates must provide twelve months of performance data through LEED Online Initiate the Green Building Certification, Inc. (GBCI) review process when the project meets the requirements with performance data for a period of 12 months. Once achieved, each certification is valid for three years. 	<p>Utilize the steps on this page</p>	<p>Four types of net zero ratings in carbon, water, energy, and waste</p>	<p align="center"></p> <p>Allows the purchase of carbon offset packages</p>
ILFI Zero Energy	<ol style="list-style-type: none"> Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new onsite renewable energy (offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception. 	<p>Utilize the steps on this page</p>	<p>This is one of three types of net zero certifications from LBC</p>	<p align="center"></p> <p>Allows the purchase of carbon offset packages only in special circumstances</p>
ILFI Zero Carbon	<ol style="list-style-type: none"> Buildings must reduce their operational energy use by a set % relative to comparable buildings. 	<p>Utilize the steps on this page</p>	<p>This is one of three types of net zero certifications</p>	<p align="center"></p>

	<ol style="list-style-type: none"> Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new on/offsite renewable energy. Combustion is not allowed, with very limited exception. Buildings must reduce and disclose the embodied carbon emissions associated with life cycle assessment stages A1-5 of the project and offset 100% of the emissions. 		from LBC	Allows the purchase of carbon offset packages only in special circumstances
ILFI Living Building Challenge	<ol style="list-style-type: none"> Buildings must reduce their operational energy use by a set % relative to comparable buildings. Buildings must demonstrate over a continuous 12-month performance period that net 105% of the energy use associated with the building is supplied by new onsite renewable energy (offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception Buildings must reduce and disclose the embodied carbon emissions associated with life cycle assessment stages A1-5 of the project and offset 100% of the emissions. 	Utilize the steps on this page	In addition to net positive energy, compliance with requirements related to water, waste, equity, resilience, IAQ and siting is compulsory	 Allows the purchase of carbon offset packages only in special circumstances
Architecture 2030's Zero Code	<ol style="list-style-type: none"> Applies to new commercial, institutional, and mid- to high-rise residential buildings. The proposed building zero energy performance (without considering renewable energy systems) must be less than or equal to the zero energy performance index target, as calculated in accordance with the performance rating method of ASHRAE Standard 90.1-2019. An online Energy Calculator is provided to estimate building energy consumption and off-site renewable energy requirements 	Access to the code here	One option focused on net zero energy	 Can use offset packages only once all other options are exhausted
Energy Star's Next Gen ****(Pilot to be released in 2024)	<ol style="list-style-type: none"> ENERGY STAR Certification - The building achieves an ENERGY STAR score of 75 or higher and meets all criteria associated with ENERGY STAR certification. Use Renewable Energy - The building obtains at least 30% of the total energy it consumes from renewable sources. Direct Emissions Target - The building's direct (i.e., onsite) greenhouse gas emissions intensity (GHGi) is at or below a specified level. 	Access to the plan here	One possible option focused on net zero energy	 Allows the purchase of carbon offset packages