Energize Denver: Frequently Asked Questions

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Why Energize Denver?

Why is Denver pursuing energy efficiency?

A more-efficient Denver will benefit the economy. Investing an estimated $340 million to improve building energy efficiency in Denver would result in $1.3 billion in energy savings over 10 years. In turn, these energy savings would result in the creation of 340 permanent, new, local jobs in clean energy. [1]

Unlocking this energy efficiency potential will benefit building owners because energy-efficient investments lower operating costs, increasing net operating income and resulting in a more valuable asset. Local businesses will experience the equivalent to about a $0.50 discount in rent per square foot by being in an energy-efficient building.[2] And Denver will continue to attract top-rate businesses that want to operate in sustainable buildings. Energy efficiency can help keep housing costs affordable in Denver and could especially help low-income residents, as research from the U.S. Environmental Protection Agency (EPA) has shown that energy efficient buildings are 35% more efficient than the average building, putting money back in families' pockets and enabling affordable housing owners to limit rent for tenants while improving resident services. Helping unlock these savings is the top strategy in Denver's Climate Action Plan.

What is the goal?

The goal of the Energize Denver initiative is to reduce energy consumption of commercial and multifamily buildings by 10% by the end of 2020 and double that in the following decade.

How was this goal set?

The goals is based on what it will take for Denver to meet its 2020 climate goal as well as get on a path to meet our goal of reducing emissions 80% by 2050. In addition, the goal generally aligns with the scale

[1] "United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models." Rockefeller Foundation and Deutsche Bank Group. March 2012. Numbers scaled to City and County of Denver. This report's source for jobs numbers is an analysis done by PERI researchers at the University of Massachusetes Robert Pollin, James Heintz, and Heidi Garrett-Peltier in a 2009 paper entitled "The Economic Benefits of Investing in Clean Energy." The PERI study shows that for every $1 million invested, 7 jobs will be directly created. We assume the investment would be spread over 7 years, giving one job per $1 million invested.

of the economic opportunity that we estimate is available for energy efficiency with today's off-the-shelf technologies.

What would this ordinance mean for businesses renting space in Denver?

Energy-efficient buildings are 35% more energy-efficient according to the EPA, with the EPA defining an energy-efficient building as an ENERGY STAR-certified building. Energy efficiency will benefit businesses and help attract business to Denver because the energy savings in an energy-efficient commercial office building is equivalent to about a $0.50 discount in rent per square foot.

Sustainability is becoming increasingly important to investors and it will be progressively more important to companies in the future. The Energize Denver initiative will ensure Denver remains an incredible place to live, work, and play.

How might this help improve the affordability of housing in Denver?

Energy efficiency can help keep housing costs affordable in Denver and could especially help low-income residents. Research has shown that energy-efficient buildings are 35% more efficient than the average building[3], putting money back in families' pockets.

How would the ordinance benefit the real estate industry?

The benefits to building owners are potentially large in terms of energy savings once buildings are benchmarked and owners have the necessary information to take action and make improvements. The cost of benchmarking is minimal compared to the energy and cost savings over the decades of a building's life. Further, the benefits to the city as a whole in terms of jobs, reduced pressure on the electricity grid, and improved air quality are potentially huge.

Why is government intervention needed?

The task force recommendations aim to help Denver's buildings overcome market barriers currently impeding cost-effective investments in energy efficiency by providing information and resources that will better align the interests of different actors in the market. One barrier in tenant-occupied buildings is the split incentive, where owners pay for improvements that would increase a building's energy efficiency, but tenants see the savings when they pay the energy bill. A critical barrier in owner-occupied buildings is that upgrades are usually paid out of the capital budget, but energy savings will be seen in the operating budget, and often decisions about these two budgets are made separately.

Voluntary benchmarking programs have been proven not to have the same effect at overcoming market barriers to energy efficiency due to their low enrollment levels. Denver has had a voluntary benchmarking program in place for nearly two years, and to date only 109 buildings representing 5.4% of the square footage of Denver have enrolled. Portland also ran a voluntary benchmarking program for years and did not see more than 10% participation before moving to a formal requirement.

[3] Energy efficient buildings are 35% more energy efficient comes from the USEPA: https://www.energystar.gov/ia/partners/publications/pubdocs/C+I_brochure.pdf?442a-1e83

Who is on the Energize Denver Task Force?

How was the Energize Denver Task Force selected?

The city was careful to include a balanced group of property managers, owners, and investors from commercial and multi-family buildings, efficiency service providers, affordable housing advocates, large institutional owners, hotels, state government, Xcel Energy, and other interests. Task force members:

Adam Knoff, Unico Properties, 2030 District member
Bob Macauley, Xcel Energy
Christian Williss, Colorado Energy Office
Dawn Murray, KW Commercial Real Estate, DMCAR member, ICSC member
Elizabeth Babcock, Denver Department of Environmental Health
Elizabeth Caswell-Dyer, Sopra Communities, BOMA member, CAI member
J Drever, Mapleton Asset Management, NAIOP member
Jarrett Wendt, Panasonic
Jennifer Gremmert, Energy Outreach Colorado, Housing Colorado member
Jerry Glick, Columbia Group LLC, Former Chair of the Downtown Denver Partnership, and of Denver Civic Ventures
Jim Ptacek, NORESCO, ULI member
John Hersey, Enterprise Community Partners
Michael Totten
Mike Hicks, AIA member & ULI member
Mike Michna, Sage Hospitality
Patti Mason, USGBC Colorado
Phillip Saieg, McKinstry, BOMA member, USGBC member, advisor to NREL
Robin Kniech, City Council
Robert Martinez, Kaiser Permanente, DMCC member
Tony Massaro, Coalition for an Energy Efficient Denver

What is the role of the task force?

Energize Denver Task Force is recommending building efficiency programs and policies that will help Denver become a globally competitive leader in energy efficiency and meet the Energize Denver goal of reducing the energy consumption of commercial and multifamily buildings by 10% by the end of 2020 and double that in the following decade. Based on the task force's recommendations, the City will develop and implement new building efficiency programs and policies.

What criteria is the task force using to evaluate policy options?

The task force members are dedicated to keeping interests of all the buildings in mind, as evidenced in the criteria they developed in their first meeting: https://energizedenver.files.wordpress.com/2016/01/criteria-energize-denver.pdf Among these are promoting sustainability, contributing to a thriving economy, ensuring their approach is realistic for individual building owners, protecting low-income residents, and ensuring the policy is effective and implementable. In each task force meeting, members voice the importance of ensuring the views of all stakeholders who are not at the table are also reflected in the recommendations.

High-Level Questions about the Proposal

What would the proposed ordinance require?

Details of the task force's current proposal can be found at www.energizedenver.org. The following is a high-level summary. The task force is proposing a policy in which, over a two-year phase-in period, all buildings over 25,000 square feet would be required to benchmark their energy performance annually using the free ENERGY STAR Portfolio Manager tool. This tool results in a 1-100 performance score (where 50 is the national average) or an energy use intensity (EUI) for the building. Building owners would then be required to report that score to the City each year, and the City would use those scores as the basis of outreach and education to building owners on opportunities to improve their buildings' energy efficiency. The scores would be made public each year to drive further market awareness of energy efficiency.

In addition, buildings that aren't already in the top quartile of buildings nationally would be required to make periodic cost-effective, quick-payback, incremental, improvements to their energy efficiency. Any building in the top quartile of buildings would be exempt from additional requirements and will be celebrated as top performers. Buildings that are not exempt, starting in 2021, and every five years thereafter, would pick among three flexible performance-based or prescriptive-based options for how they want to become more energy efficient.

What are median performance scores from other cities?

In San Francisco the median ENERGY STAR score for office buildings reporting in 2014 was 87. In Seattle the median ENERGY STAR score in 2013 for commercial buildings was 68. In Philadelphia the median ENERGY STAR score in 2014 for all reporting buildings was 59. While 50 is the national average score, Denver may find our median to be higher than the national average if our buildings are similar to these other cities.

What would the cost and consequence of not complying with the ordinance be?

Penalties for non-compliance with the benchmarking requirement shall be an annual fee slightly higher than typical costs to pay a contractor to benchmark a building. In other cities these penalties have typically been in the range of $1000-$3000 per year. The penalty will be determined by the City attorney based on what works with Denver's code. The City should consider leaving the implementing department some discretion so that in the early years of the policy you can let owners have more time to figure out how to comply before they are penalized.

Penalties for non-compliance for policies 3, 4, and 5 shall be an annual fee slightly higher than typical costs to pay a contractor to perform the required improvements. In other cities, these penalties have been in the $5,000-$20,000 range depending on building size. The penalty will be determined by the City attorney based on what works with Denver's code. The City should consider leaving the implementing department some discretion so that in the early years of the policy you can let owners have more time to figure out how to comply before they are penalized.

What incentives and financing options can help owners pay for improvements?

Xcel has many energy efficiency incentives available. All Xcel Incentives references are in its business programs summary, available online at https://www.xcelenergy.com/staticfiles/xe/Marketing/Files/CO-

Business-Program-Summary.pdf. While none of Xcel's programs are final at this point beyond 2017 and 2018, the proposed requirements should not affect the availability of Xcel's energy efficiency incentives. Xcel would still be able to claim attribution for building owners using the incentives they offer because:

- Xcel incentives would be included in the 2.5 year payback threshold for audit and RCx implementation, so action required by the ordinance would be additional to those incentives.
- Any use of incentives by building owners before the 2021 compliance deadline for a building's perform/improve requirements would be considered early action and therefore not be a problem to attribute to Xcel Energy.

PACE enables owners of eligible commercial and industrial buildings to finance up to 100% of energy efficiency, renewable energy, and water conservation improvements. Financing is provided by private capital providers at competitive rates with repayment terms up to 20 years. For details on the C-PACE program, go to www.copace.com.

How will the City help owners comply?

The City and its partners would provide education and training resources as well as an on-call help center to help owners comply with the ordinance. The help center would provide technical help by phone as well as in-person with office hours and consultations. The City would also set up a great website making the compliance process clear with lots of resources to help building owners. The education and training would include online and in-person training and tips for owners on how to benchmark and how to develop a plan to comply with the perform/improve policies 3, 4, and 5.

Who would administer the program and how will that be paid for?

The Air, Water and Climate Section of Denver's Department of Environmental Health Environmental Quality Division will administer the program in all its aspects, both for compliance and quality assurance, as well as to provide assistance and support. The Section currently has grant funds that support staff time and they intend to pursue more grant funding. Any new positions to support the program would be paid for in the same as all other Environmental Quality Division work in the City out of the Enterprise fund, which is funded with landfill tipping fees.

What buildings would be included?

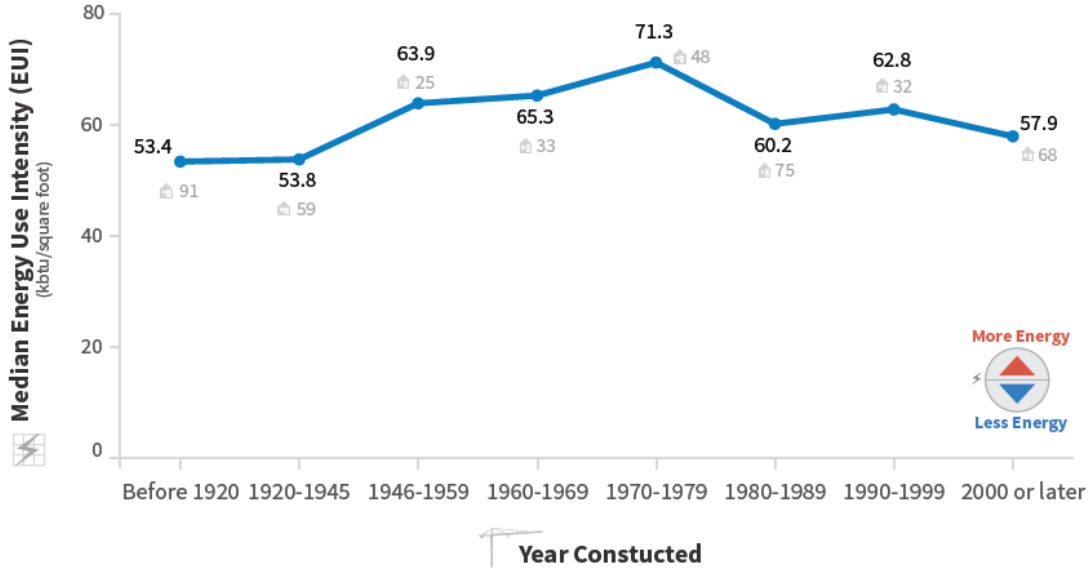
Would municipal buildings have to comply with any ordinance?

Yes. In fact, Executive Order 123 already requires city buildings to do much of what the task force is considering. It also has a more aggressive goal to save 20% on energy use by 2020.

How would a benchmarking ordinance affect older or historic buildings?

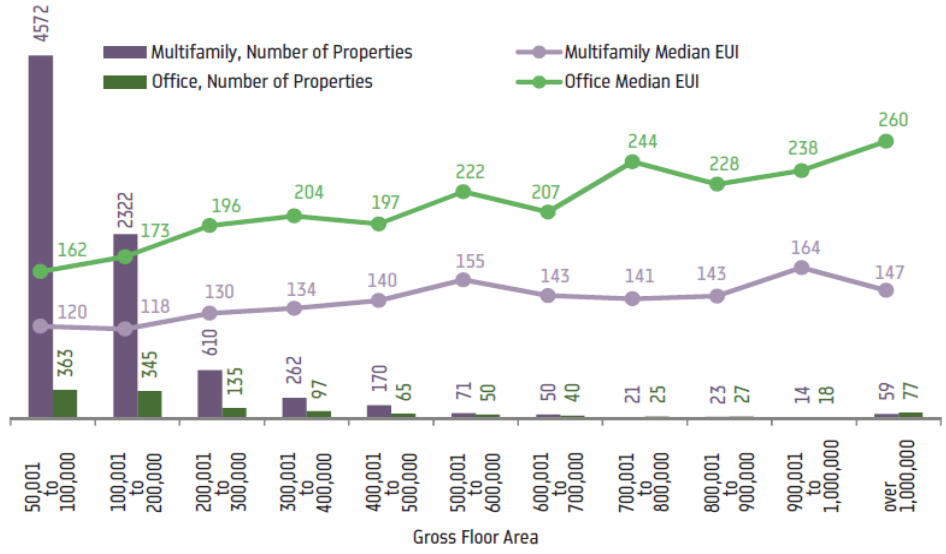
The benchmarking data collected in New York City and Seattle found that older buildings, on the whole, perform better than newer buildings on energy use intensity and benchmarking scores. More analysis is necessary to determine exactly why this is, but some early hypotheses include a higher thermal mass with less window glazing, as windows are a significant source of heat loss. Granted, this may not be the case in Denver, but the data to date at least show that older and historic buildings are not disproportionately disadvantaged when it comes to energy efficiency. The following figure shows the median site EUI by year constructed in Seattle.

Figure 18: **Office Median Site EUI by Year Constructed**



Do smaller buildings owners have to take action under the task force's proposal so far?

No. The square footage threshold for covered buildings is set to 25,000 square feet in order to exclude small building owners. Smaller building are typically less energy intensive anyway, see the following data from New York City:



[Fig. 16] **Number of Multifamily and Office Properties by Gross Floor Area (square feet) and Median EUI**

Source: NYU and NYC Mayor's Office

Who goes first with perform or improve requirements? Are there winners and losers?

Under the current task force proposal compliance with perform and improve requirements (policies 3, 4, and 5) isn't required until 2021 for buildings over 50,000 square feet and 2022 for buildings 25,000 square feet -50,000 square feet. Twenty percent of the buildings would have to comply with the perform-or-improve requirements each year, and buildings would be assigned their group of 20% randomly. All buildings would have the option of complying with the perform–or-improve requirements at any point during their performance period. See the discussion in the recommendations document on how buildings can have flexibility to change groups to get credit for early action or because the assigned group doesn't fit in the capital plan of the building owner.

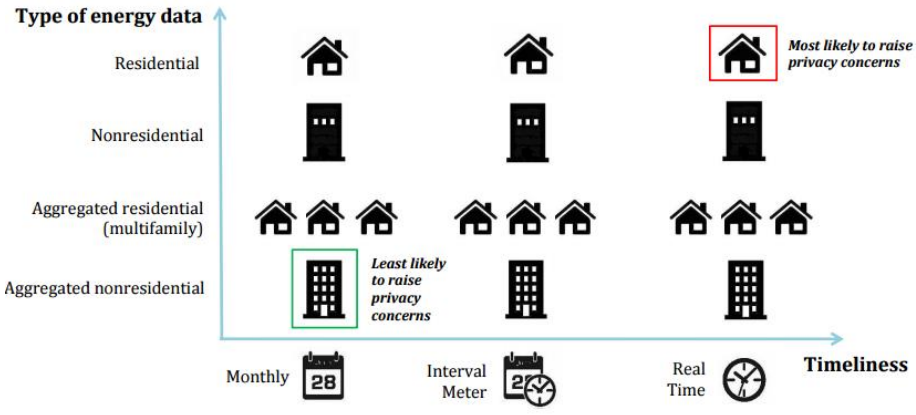
Questions about benchmarking and transparency

What is the City going to do with my building's benchmarking data?

ENERGY STAR Portfolio Manager scores for every building over 25,000 square feet shall be published publically each year in a searchable database and clickable map. A notes field will be available next to the score so the owner can explain the score if he or she wishes and past scores will be shown so that improvements can be easily seen. The data will not be downloadable as a whole data set. The City will be allowed to share the data set with Xcel Energy for the purpose of targeting its Demand Side Management programs.

Should I have any privacy concerns?

There are no privacy concerns with most annual energy usage data that would be reported to the City under this ordinance. Annual energy usage data is the least sensitive type of energy data. The City would not receive any real time, interval, or monthly data under the ordinance. The City also would not receive individual tenant or resident data, only whole building energy data. In fact, building owners can obtain this data today under current Public Utilities Commission rules. The following chart from the Institute for Market Transformation shows the sensitivity of different types of energy information. Annual aggregated energy usage data that would be reported to the City is even less sensitive than the monthly data show on this chart.



In the case where a building owner can show that his or her energy performance is a confidential business practice an exemption would be granted. An exemption from transparency would also be included for any building whose owner can show that his or her energy performance is a confidential business practice that includes trade secrets, privileged or confidential commercial information. The owner shall specifically identify such information and provide a statement of the manner in which public disclosure would cause substantial harm to the owner's competitive position. Any information submitted without such a statement may be disclosed publically. Inefficient energy usage alone will not be considered confidential commercial information.

What other cities have benchmarking and transparency requirements?

Atlanta; Austin; Berkley; Boston; Boulder; Cambridge; Chicago; Kansas City; Minneapolis; Montgomery County, Md.; New York City; Philadelphia; Portland; Seattle; San Francisco; and Washington D.C.

Are these policies effective in other cities?

Yes. Two percent to three percent savings each year was seen in New York, San Francisco and Washington, D.C from owners taking action after a benchmarking and transparency law was put in place. (These three cities that have required benchmarking and transparency for the longest). This is a significant amount of energy savings across a large portfolio of buildings. The numbers are summarized here: http://www.buildingrating.org/graphic/us-commercial-building-policy-comparison-matrix.

What buildings are included?

1800 commercial and multi-family buildings over 50,000 sq ft would have to comply with benchmarking in 2017, and begin to perform or improve in 2021. Another 1200 buildings over 25,000 sq ft would start benchmarking in 2018, and begin to perform or improve in 2022. 81 buildings in Denver were ENERGY STAR certified in 2015, 143 buildings in Denver have been certified at some point in time.

How much could benchmarking cost?

ENERGY STAR Portfolio Manager is a free tool. It takes 4-8 hours to set-up an account for a building and 1-2 hours of staff time to enter data annually. Time estimates for Portfolio Manager come from experience in other cities, and are the standard estimates help centers hear back from stakeholders. Actual time will depend on building size and complexity, especially for initial set-up. Xcel Energy now offers to automatically upload energy bill data to Portfolio Manager for building owners, so the annual reporting time should actually be less than the 1-2 hour estimate because the account should update automatically once that is set up.

Benchmarking has been available to property owners as a voluntary measure for years. What else can be achieved through requiring benchmarking?

Voluntary benchmarking captures only a fraction of the building stock—typically the leading edge. However, improvements at the low end, where buildings can use three-to-seven times more energy than the best performers, is where many of the most cost-effective efficiency gains are going to be found. Requiring benchmarking will capture these buildings, too, thereby spurring widespread efficiency improvements. Also, a benchmarking requirement captures a complete data set, which is critical to improving our understanding of how buildings use energy.

Much of the energy use in large buildings is controlled by the tenants. What can building owners do to encourage their tenants to be more energy efficient?

All buildings have this same challenge and ENERGY STAR Portfolio Manager is designed to address it by adjusting a building's score for statistically significant factors such as occupancy, operating hours, number of computers, number of bedrooms, and more.

There are also many ways owners can encourage tenants to improve their energy efficiency through tenant education and outreach. One reason that tenants are not discouraged from using excessive amounts of energy today is that they often don't pay for exactly what they use. An owner can ensure that tenants are incentivized to reduce their consumption by sub-metering their space and then billing the tenant according to consumption. Since sub-metering an entire building can take time, a building owner or manager can work with his or her tenants to help them reduce their consumption in the interim by sharing information about best practices.

How does Portfolio Manager create metrics for buildings types where ENERGY STAR scores are unavailable?

Any building can use Portfolio Manager tool to benchmark energy use. While some building types cannot receive a 1-to-100 ENERGY STAR score using the tool, every building can get an Energy Use Intensity (or EUI) benchmark. Energy Use Intensity is the amount of energy used per square foot. In addition, EPA Portfolio Manager has some key benefits that make it the ideal method of complying with a benchmarking ordinance. First, it is free and easy to use. Second, it is already used by many building owners, so it is recognized in the marketplace. And third, Portfolio Manager has ongoing support from the EPA for upgrades and expansion. This includes expansion to include additional types of buildings. Scores for multifamily buildings were recently added, and new building types are under development. With Portfolio Manager, even if a building can't receive a 1-to-100 score, it still serves as an excellent tool for managing reporting to the city.

How does the Portfolio Manager account for high density occupancies, such as trading floors, or other special uses?

The EPA Portfolio Manager tool normalizes for hours of use and density of occupancy. In addition, various space types like data centers can broken out by square footage so the score adjusts for all space types in a building.

What dataset is Portfolio Manager based on?

Portfolio Manager uses the Commercial Buildings Energy Consumption Survey (CBECS) dataset, which remains the best and most complete dataset available of building energy use. Also, overall energy efficiency of the entire building stock in the country changes very slowly, which means this data set remains reasonably accurate over the years.

Why can buildings with industrial and agricultural operations in them opt-out?

Industrial and agricultural buildings can opt-out for a few reasons, primarily because the policy wasn't designed for them. The types of energy performance metrics and improvement measures that are relevant for them are different from other buildings since much of their energy usage is for process energy. They also represent a smaller portion of energy usage in the City. In 2009 (the last year we

have data from Xcel Energy) industrial energy use was only 4% of all electric and natural gas use in Denver. Marijuana grow houses, the primary agricultural product from Denver's buildings, use less than 1% of all electricity consumed in Denver.

Questions about requirements to perform or improve

What sorts of investments might low-performers need to make to improve their energy efficiency?

This is still being discussed by the task force, but they are focused on low-cost, quick-payback improvements. Low-performing buildings would receive help to make quick-payback investments to improve the energy efficiency of their building. No improvements with a payback longer than three years will be required. In the current proposal, building owners would have the option to pick between improving efficiency any way they want, retrocommissioning the building, or undertaking an energy audit and implementing all items identified with less than a three-year payback. Retrocommissioning results in 16% average energy savings[4]. The retrocommissioning study and implementation cost about $0.75/sq ft. Owners will see a two-month-to-two-year payback. Xcel pays 75%, up to $25,000, and many other incentives exist from Xcel Energy for other improvements. See Xcel's Business Programs Summary here: https://www.xcelenergy.com/staticfiles/xe/Marketing/Files/CO-Business-Program-Summary.pdf

What other cities have perform or improve requirements?

Some type of perform or improve requirement is in place in New York City, Boston, San Francisco and Boulder. The options the task force is proposing provide owners with greater flexibility in how they improve than any of these other cities.

Why might low-performers have to make improvements on a 5 year cycle?

The 5 year cycle came from the need to see regular continued improvement, our models show Denver likely needs to be on the five-year end of this scale to hit its 2030 goal for the task force. The task force has in its criteria that improvements fit in the capital budget cycle of building owners, and to date seem to think that a moderate improvement every five years is reasonable. Also, many operational improvements, like those done with retrocommissioning, need to be repeated every 5 years because the operational efficiencies degrade over time.

How will the payback analysis be done?

The private firms conducting the energy audit will use their expertise to determine the payback for different measures. In cases where an owner may finance upgrades, the financing costs might be included in this analysis. Such decisions will be left to the discretion of the building owners working with their private sector providers and not decided by the City.

How can my building be exempted from the perform or improve requirements?

Any building that has earned any of the following would be exempt from improve requirements.

- ENERGY STAR certification for existing buildings or multi-family high-rise in the last year
- Any building type that cannot qualify for ENERGY STAR certification will need to prove they are in the top quartile nationally. The process to do this is relatively straightforward, but the City

[4] Lawrence Berkley Labs: http://cx.lbl.gov/documents/2009-assessment/lbnl-cx-cost-benefit.pdf

will make sure the process is clear and will help these buildings with the process, including the process of finding buildings against which to compare.
- Any building with an EUI less than 20. These buildings are simply using very little energy and are unlikely to find improvement opportunities.
- Any building that was built in the last five years.

A review committee will be formed by the City to allow a building owner to petition for an exemption for other reasons as well. The review committee will have similar make-up and function as the Board of Adjustment for Zoning Appeals, which consists of five members, as well as two alternates, who are appointed by the Mayor for staggered terms of five years. A small fee will be charged to go the review committee to ensure that applicants have a valid reason to appeal. The amount of the fee might be similar to the board of adjustment appeal fee of $100-$400. Special cases that might need to be brought to the review committee might include, but are not limited to:

- A building is about to be sold and redeveloped;
- An owner cannot afford upgrades despite the presence of incentives and available financing (non-profit, or others similar);
- An owner is in a situation where they have negative revenue from the building.
- An owner's investment plans include efficiency upgrades in the future, but the owner requires more time to make other critical investments in the near-term. In this case a building might petition to move to another compliance group;
- Major shifts in occupancy and operating hours increase EUI and make it tougher for a building to meet the performance pathway, so that building's baseline and target EUI need to be adjusted for occupancy and operating hours.

Off-ramps that exempt a building from future performance periods will exist for buildings where all energy efficiency improvements with less than a 2.5-year payback are complete. Completion of all low-hanging fruit can be demonstrated in the following ways:

- Owner completes an audit to demonstrate that all measures with a payback period of 2.5years or less are complete.
- If the audit indicates it is needed, then retro-commissioning with implementation would need to be done in the next cycle, at which point a building would then qualify for the off-ramp; or
- And, the ENERGY STAR score or EUI of the building doesn't decline significantly over time.

How will new buildings be phased in?

A new building will be phased into the benchmarking requirement once it has a certificate of occupancy for an entire year and has reached 60% occupancy. A new building will be phased into the perform or improve requirements 5 years later.

What sort of ENERGY STAR score might new developments built under the IECC 2015 Code expect?

Most buildings built under the new IECC 2015 code should qualify for ENERGY STAR certification once they have a year of utility bill data, which would exempt them from any improvement requirements when those kick in 5 years after the building is built. In Washington DC, which is on the IECC 2012 Code, which is very similar to the IECC 2015 Code on energy requirements, the average estimated ENERGY

STAR score[5] for21 new construction projects submitted to the City in 2015 was 82, well above the score of 75 needed for ENERGY STAR certification.

Can an owner get credit for past improvements or bank savings?

Credit will be given for improvements made prior to the enactment of the ordinance as far back as 2014. In order to receive credit for improvements prior to the enactment of the ordinance, an owner will need to submit the EUI of the building via Portfolio Manager for a past baseline year he or she is petitioning to use. Savings beyond those required can be banked for future performance periods.

What is retrocommissioning?

People tune up their cars every year, but typically, they never tune up their buildings. That's where retro-commissioning comes in. Retrocommissioning is a one-time building "tune-up" that does not require capital upgrades. It seeks to improve a building's operations and maintenance procedures to enhance overall performance without many capital improvements. It can often resolve problems that occurred during design or construction, or problems that have developed during the building's life—such as fans that run backwards, or lighting that never turns off. In retrocommissioning, the existing base building systems—including the HVAC, electrical and lighting systems, and building envelope—are thoroughly evaluated and optimized to ensure that they are running properly. The professional doing the retrocommissioning checks that equipment manuals are on site and trains operators in the use of the building's equipment.

Why is retrocommissioning important?

Buildings waste 10 to 20 percent of the energy they consume because they're not tuned properly. Owners lose money because their buildings' systems are out of whack. Retrocommissioning can fix these problems at very low cost, often on the spot. Over their lives, all buildings undergo changes that strain the mechanical, electrical, and controls systems and hinder optimal performance. And because systems in buildings can be highly interactive, small problems can have big effects on overall performance. No matter how well building operators maintain equipment, energy waste and reliability problems can occur without regular tune-ups.

How is retrocommissioning different from performing an audit?

Retrocommissioning focuses on optimizing existing equipment, while an energy audit identifies potential capital improvements. To obtain the most comprehensive assessment of a building's energy performance and ways it can become more energy efficient, both retrocommissioning and an audit are needed.

What is an energy audit?

An audit is a detailed assessment of how a building could improve its performance through upgrading its equipment and systems. Audits provide building owners with actionable information on the financial impacts of a range of potential improvements they could make to their buildings. And this information enables them to make good business decisions about improving their buildings' energy performance.

[5] ENERGY STAR scores were estimated by the building owner and submitted to the City using the ENERGY STAR target finder tool.

The audit will study systems that use energy, such as lighting, boilers, AC units, and water heaters, and any installed measures working to conserve them (such as insulation, air sealing, and windows). Upon completion, the audit determines where the building is wasting energy, and the audit report recommends capital improvements that will make the building more efficient, such as replacing lighting or HVAC systems. The report also gives an estimate of project costs, calculated energy savings, and payback period (the amount of time it would take for a building owner to recuperate the cost of the improvement based on the energy saved). The analysis is typically performed by an engineering firm, energy consultant, or energy service company (ESCO).

How do an audit and benchmarking work together?

While benchmarking and transparency provides building owners, managers, and operators with a measure of how well their buildings are performing, the process does not take a deeper look into exactly what actions can be taken to improve a building's performance. An audit provides the specific information necessary for building owners and managers to make informed decisions about capital improvements. Without an audit, a building owner may not know how much energy and water he or she could be saving. The only way to unlock those savings is to have an expert perform an analysis. Unless they go through this process, owners and managers won't know what measures to take. Something can be done to improve performance in almost all existing buildings.