CITY ENERGY

A JOINT PROJECT of NRDC + IMT

DECEMBER 2018

ANNOTATED MODEL ORDINANCE LANGUAGE FOR IMPROVING PERFORMANCE OF EXISTING BUILDINGS

ABOUT CITY ENERGY PROJECT AND THE CITY ENERGY PROJECT RESOURCE LIBRARY

A joint initiative of the Institute for Market Transformation and the Natural Resources Defense Council, the City Energy Project supported bold yet practical ways to deploy energy efficiency at the city level to boost local economies, reduce pollution, and create healthier, more prosperous communities nationwide.

The project partnered with 20 local governments across the U.S. from 2013–2018 to design locally appropriate energy efficiency policies and programs. Building upon the past successes and innovation of cities, the City Energy Project established best-in-class practices for energy efficiency to be customized and replicated nationwide. Models and recommendations have been distilled into the City Energy Project Resource Library. This curated set of resources contains the necessary blueprints for a city government to craft and implement customized solutions to productively manage energy efficiency initiatives across commercial, multifamily, and public buildings in its jurisdiction.

For more information on the participating cities and counties in the City Energy Project, and to search the City Energy Project Resource Library, visit cityenergyproject.org.

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ANNOTATED MODEL ORDINANCE LANGUAGE FOR A POLICY TO IMPROVE THE PERFORMANCE OF EXISTING BUILDINGS

INTRODUCTION

This document presents sample language that can be used by jurisdictions interested in drafting a comprehensive existing building performance policy that encompasses provisions for benchmarking, as well as additional actions beyond benchmarking. The model language, based on best practices that have been identified while working with many of the jurisdictions that have enacted successful policies, can be easily customized by policymakers to meet the unique needs of their city. The text has been annotated extensively to describe the rationale behind some of the recommendations and to provide additional background on some of the decision points. A companion document of the Model Ordinance Language for a Policy to Improve the Performance of Existing Buildings (without annotations) is also available for city use.

POLICY FRAMEWORK

The approach laid out by this suggested policy language begins by applying annual requirements for building benchmarking, reporting, and transparency to a broad swath of municipal and privately owned buildings in the city (Sections B through E). Beyond Benchmarking requirements (Sections F through M) are then applied to some or all of the buildings that benchmark. These provisions require that on a periodic basis (suggested as every five years) properties demonstrate that they have achieved pre-defined energy and water performance targets or that they have completed certain actions such as an audit or retuning that can help improve their energy and water efficiency. By providing a performance-oriented compliance path, building owners have maximum flexibility in determining what steps they will take to improve or maintain their building's performance. Those unable or unwilling to achieve the performance path's targets have the option to complete approved prescriptive actions to ensure compliance with the ordinance.

USING THIS RESOURCE

Developing a building performance policy that is responsive to local conditions and concerns and that results in improvements in the performance of local properties can be a demanding process requiring extensive engagement and discussion with stakeholders. City staff will have to make many decisions, ranging from which buildings the policy will cover, to what expectations there will be, if any, for the performance of these properties. City Energy Project (CEP) has developed a separate resource, the Creating a High-Impact Building Performance Policy: A Decision Framework for Local Governments, to provide guidance on the key considerations that go into developing a building performance policy and presents a framework for collecting input and ultimately resolving these issues. Once the Policy Decisions Matrix has been completed and vetted, this Model Ordinance Language for a Policy to Improve the Performance of Existing Buildings provides the template for transforming those decisions into an enforceable regulation.

As every city is unique, it is highly unlikely that any jurisdiction would opt to include all of the provisions of this model ordinance language as written. Where appropriate, the model language includes initial recommendations for dates, sizes, or other values, shown within [brackets]. Local jurisdictions will likely need to adapt the model language, and modify many of these bracketed values, to reflect the decisions that they documented in their completed Policy Decisions Framework.

ANNOTATED MODEL ORDINANCE LANGUAGE FOR A POLICY TO IMPROVE THE PERFORMANCE OF EXISTING BUILDINGS

SECTION A: DEFINITIONS

The following words and phrases, whenever used in this Chapter, shall be construed as defined in this section unless context indicates otherwise.

1. "Aggregated, whole-building data" means energy or water data that has been summed for an entire property, which may include a single occupant or a group of separately metered tenants.
2. "Anonymized data" means data that does not reveal names, addresses or any other information that would identify an individual or business.
3. "Audit" means a systematic evaluation process to identify modifications and improvements of the base building systems, including but not limited to alterations of such systems and the installation of new equipment, insulation or other generally recognized energy and water efficiency technologies to optimize energy and water use performance of the building and achieve energy and water savings.
4. "Audit report" means the final document produced by the qualified auditor including but not limited to:
    a. The summary audit report;
    b. Functional performance testing reports;
    c. An assessment of how the major energy and water consuming equipment and systems used within tenant spaces impact the energy and water consumption of the base building systems based on a representative sample of spaces as determined by the Director; and
    d. Narratives, photographs and any additional explanatory information as required to describe the results of the audit.
5. "Base building systems" means the systems or subsystems of a building that use or distribute energy and/or water and/or impact energy and/or water consumption, including:
    a. The building envelope;
    b. The heating, ventilating, and air conditioning (HVAC) systems;
    c. Conveying systems;
    d. Electrical and lighting systems;

e. On-site generation systems;
f. Domestic hot water systems;
g. Water distribution systems;
h. Plumbing fixtures and other water-using equipment; and
i. Landscape irrigation systems and water features, including fountains.

EXCEPTION: "base building systems" does not include:

1. Systems or subsystems owned by tenants, condominium unit owners or cooperative unit shareholders, or a system or subsystems for which such entities bear full maintenance responsibility, that are within such entities' leased or owned space, and for which such entity pays all the energy bills according to usage and demand as measured by a meter or sub-meter.
2. Systems or subsystems that operate industrial applications or processes.

Discussion: The intent of defining base building systems is to identify the equipment that will be subject to the energy and water audit and retuning requirements. Base building systems are the energy and water systems that the property owner owns, operates, and pays the utility bills for. Therefore, any improvements from an audit or retuning will serve to benefit the owner. Limiting the audit and retuning to base building systems helps diminish the issue of split incentives between owners and tenants.

Note that the exception may also serve as an encouragement for owners to submeter and bill their tenants according to usage and demand—a practice that has been shown to reduce energy consumption.

6. "Baseline year" means, for any individual property, the latter of a) the first calendar year such property is required to benchmark or b) the calendar year containing the date five years prior to due date of the property's next performance verification.

7. "Benchmark" means to input and submit the total energy and water consumed for a property for the previous calendar year and other descriptive information for such property as required by the benchmarking tool. Total energy and water consumption shall not include separately metered uses that are not integral to building operations, as determined by
the Director.

8. "Benchmarking submission" means a subset of:

   a. Information input into the benchmarking tool; and
   b. Benchmarking information generated by the benchmarking tool, as determined by the Director.

9. "Benchmarking tool" means the U.S. Environmental Protection Agency's ENERGY STAR® Portfolio Manager, or any additional or alternative tool adopted by the Director, used to track and assess the energy and water use of certain properties relative to similar properties.

10. "Building management system" means a computer-based system that monitors and controls a building's mechanical and electrical equipment, such as HVAC, lighting, power, water, fire, and security systems.

11. "Condominium" means a property that combines separate ownership of individual units with common ownership of other elements such as common areas.

12. "Continuous commissioning ®" means an ongoing process of comparing data obtained through the building management system with analytic models; identifying problematic sensors, controls and equipment; and resolving operating problems, optimizing energy use and identifying retrofits for existing buildings.

Discussion: The term continuous commissioning is a registered trademark of the Texas A&M Engineering Experiment Station, a member of the Texas A&M University System, an agency of the State of Texas.

13. "Covered city property" means a property that:

    a. Exceeds [20,000] gross square feet in total floor area; and
    b. Is owned, leased, or managed by the city such that the city regularly pays all or part of the annual energy and/or water bills.

Discussion: The term "city property" is used rather than "public property" or "government property" to highlight that a city ordinance does not have jurisdiction over county, state, or federally owned properties. Though those properties will not be covered by this ordinance, cities can work with other public authorities to encourage them to voluntarily comply with these requirements.

Many cities have established a lower size threshold for benchmarking of municipal properties than for privately owned properties. Setting a lower threshold for the city properties creates a positive example, and allows the city to get a better understanding of how its smaller properties are performing. However, it may be appropriate to stay with the higher size threshold for beyond benchmarking requirements, since actions such as auditing and retuning can be more costly and resource intensive than benchmarking.

Inclusion of clause b serves to ensure that properties where the city is the primary tenant would be subject to the same requirements as those owned by the city.

14. "Covered non-city property" means a property, other than a covered city property, that exceeds [30,000] gross square feet in total floor area.

Discussion: Local governments should focus initially on larger properties, to maximize citywide impacts. This document recommends a minimum threshold of 30,000 square feet for privately owned properties.

15. "Covered property" means any covered city property or covered non-city property.

    EXCEPTIONS:

    The following properties are not considered to be covered properties, and are not subject to any of the requirements of this chapter:

    a. Single family, duplex, triplex and fourplex residential homes and related accessory structures, or any other residential building with less than 5 units;
    b. Properties classified as industrial per designated Standard Industrial Classification (SIC) codes 20 through 39;
    c. Properties owned by government bodies not subject to the authority of this ordinance;
    d. Other building types not meeting the purpose of this Chapter, as determined by the Director.

Discussion: Some cities have chosen to exclude certain types of buildings, such as industrial buildings, based upon their use. Exceptions based on the use of a property should refer to the categories defined in the local building codes, NAICS codes, or other authoritative source.

16. "Current facility requirements" means the owner's current energy and water related operational needs and requirements for a building, including temperature and humidity set points, operating hours, filtration, and any integrated requirements such as controls, warranty review, and service contract review.

17. "Department" means the [agency/department overseeing administration of the ordinance].

18. "Director" means the Director of the [agency/department overseeing administration of the ordinance].

Discussion: Director is the term used in this model ordinance. However, each city must determine the appropriate individual or group that will be responsible for oversight. Director can be replaced by "agency," "department," "mayor," or another option that makes the most sense for that particular city.

19. "Energy" means electricity, natural gas, steam, or other product sold by a utility to a customer of a property, or renewable on-site electricity generation, for purposes of providing heating, cooling, lighting, water heating, or for powering or fueling other end-uses as recorded in the benchmarking tool.

20. "Energy audit" means that part of an audit that addresses the energy systems.

21. "ENERGY STAR score" means the 1-100 numeric rating generated by the ENERGY STAR Portfolio Manager tool as a measurement of a building's energy efficiency.

22. "ENERGY STAR Portfolio Manager" means the tool developed and maintained by the U.S. Environmental Protection Agency to track and assess the relative energy performance of buildings.

23. "Financial hardship" (of a property) means that a property:

    a. Had arrears of property taxes or water or wastewater charges that resulted in the property's inclusion, within the prior two years, on the city's annual tax lien sale list; or
    b. Has a court appointed receiver in control of the asset due to financial distress; or
    c. Is owned by a financial institution through default by the borrower; or
    d. Has been acquired by a deed in lieu of foreclosure; or
    e. Has a senior mortgage subject to a notice of default.

24. "Gross floor area" means the total property area, measured between the outside surface of the exterior walls of the building(s). This includes all areas inside the building(s) including but not limited to lobbies, tenant areas, common areas, meeting rooms, break rooms, atriums (count the base level only), restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, and storage rooms.

    Discussion: This definition of gross floor area is consistent with the way the term is defined by Portfolio Manager. It may be defined differently if the term is used elsewhere in city statutes, so it is important to verify that there is no conflict or ambiguity in how this term is being interpreted here.

25. "Net present value" means the value in today's dollars of all future costs and benefits from an investment over a twenty-year time horizon or the lifetime of the equipment, whichever is shorter, analyzed with a 3% discount rate per United State Office of Management and Budget Circular A-4 guidance.

26. "Owner" means any of the following:

    a. An individual or entity possessing title to a property;
    b. The board of the owners' association, in the case of a condominium;
    c. The master association, in the case of a condominium where the powers of an owners' association are exercised by or delegated to a master association;
    d. The board of directors, in the case of a cooperative apartment corporation; or
    e. An agent authorized to act on behalf of any of the above.

Discussion: All potential use cases are included under this definition, so that the term owner can be used generically throughout the remainder of the ordinance without having to call out special cases.

27. "Property" means any of the following:

    a. A single building;

b. One or more buildings held in the condominium form of ownership, and governed by a single board of managers; or
c. A campus of two or more contiguous buildings which are owned and operated by the same party, have a single shared primary function, and are:
    1. Behind a common utility meter or served by a common mechanical/electrical systems (such as a chilled water loop) which would prevent the owner from being able to easily determine the energy use attributable to each of the individual buildings; or
    2. Used primarily for one of the following functions:
        a. K-12 school
        b. Hospital
        c. Hotel
        d. Multifamily housing
        e. Senior care community

Discussion: While buildings that fall under item c.1, such as an office park or a university campus, may be treated as a campus for benchmarking purposes, the buildings under item c.2 must be benchmarked as a campus to receive a valid ENERGY STAR score. As defined here, the term property may refer to either a single building or a collection of buildings, depending on the situation. To consistently maintain this perspective, the term "property" is used throughout this ordinance rather than "building."

28. "Qualified auditor" means an individual who is not on the staff of the property being audited and possesses qualifications to perform or directly supervise individuals performing energy and water audits, and to certify audit reports required by this ordinance. The qualified auditor must be an employee or contractor hired by the reporting entity, an employee of a utility, or a third-party service provider, who has two or more years of auditing experience and possesses one or more of the following certifications:

    a. An accredited certification that has been designated a "Better Buildings Recognized Program" by the U.S. Department of Energy meeting the criteria set forth in the Better Buildings Workforce Guidelines (BBWG) for Building Energy Auditors or Building Energy Managers;
    b. A Professional Engineer (PE) registered in the State of [insert state here];
    c. Certified Facilities Manager (CFM), issued by the International Facility Management Association (IFMA);
    d. System Maintenance Administrator (SMA) or System Maintenance Technician (SMT), issued by Building Owners and Managers Institute (BOMI) International;
    e. For audits of multifamily residential buildings only, a Multifamily Building Analyst (MFBA), issued by the Building Performance Institute (BPI); or
    f. Additional qualified certifications as the Director deems appropriate.

After the establishment of a DOE-recognized standard for a water auditor, the Director may adopt the qualifications of the DOE-recognized standard with modifications as the Director deems to be appropriate.

Discussion: The U.S. Department of Energy (DOE) has issued guidelines for competency-based certifications for several energy-related jobs, in order to help ensure quality and consistency across the training and certification industry. Certification programs that apply for and meet the Better Buildings Workforce Guidelines (BBWG) will be recognized by the DOE and allowed to use the "Better Buildings Recognized Program" designation alongside their certification offerings. As of October 2018, the following BBWG programs were approved for a building energy auditor: a) the Building Energy Assessment Professional (BEAP), issued by American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE); and b) the Certified Energy Auditor (CEA), issued by the Association of Energy Engineers' (AEE). In addition, the following BBWG programs were approved for a building energy manager: a) the Certified Energy Manager (CEM), issued by the Association of Energy Engineers' (AEE); and b) the Energy Management Professional (EMP), issued by Energy Management Association (EMA).

The city should also include other regional or national certifications that may indicate sufficient competency, even if they have not yet been recognized by the BBWG. If it wishes to include specific requirements for those qualified to perform water audits, the city should identify an appropriate water credential through conversations with the local stakeholders.

Establishing baseline requirements for those qualified to perform benchmarking, analogous to the requirements for a qualified auditor, is an effective strategy for improving the quality of benchmarking submissions. However, few cities have chosen to include this requirement since this increases the costs for building owners. If a city does desire to do so, it can incorporate the following definition for a qualified benchmarker.

"Qualified benchmarker" means an individual or entity that possesses one of the following certifications, or other credentials as approved by the director:

(a) Any certification deemed sufficient for approval as a qualified auditor;

(b) Registered Architect (RA);

(c) Sustainable Facilities Professional (SFP) as issued by the International Facility Management Association (IFMA);

(d) Real Property Administrator (RPA), Facilities Management Administrator (FMA), or High Performance Manager (BOMI-HP) as certified by Building Owners and Managers Institute (BOMI) International;

(e) Certified Healthcare Facility Manager (CHFM) as certified by the American Hospital Association; or

(f) Certified Professional Maintenance Manager (CPMM) as certified by the Association for Facilities Engineering (AFE).

The qualified benchmarker may be either the owner or a party acting under the direction of the owner.

29. "Qualified retuning professional" means an individual who is not on the staff of the property being retuned and possesses qualifications to perform or directly supervise individuals performing the retuning work required by this ordinance. The qualified retuning professional must be an employee or contractor hired by the reporting entity, an employee of a utility, or a third-party service provider, who has two or more years of commissioning or retuning experience and possesses one or more of the following certifications:

    a. An accredited certification that has been designated a "Better Buildings Recognized Program" by the Department of Energy meeting the criteria set forth in the Better Buildings Workforce Guidelines (BBWG) for Building Commissioning Professionals;
    b. A Professional Engineer (PE) registered in the State of [insert state name here];
    c. Certified Building Commissioning Professional (CBCP) or Existing Building Commissioning Professional (EBCP), issued by the Association of Energy Engineers (AEE);
    d. Commissioning Process Management Professional (CPMP), issued by American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE);
    e. Accredited Commissioning Process Authority Professional (ACPAP) approved by the University of Wisconsin; or
    f. Additional qualified certifications as the Director deems appropriate.

Discussion: The U.S. Department of Energy has issued guidelines for competency-based certifications for several energy related jobs, in order to help ensure quality and consistency across the training and certification industry. As of October 2018 the following Better Buildings Workforce Guidelines (BBWG) programs were approved for a building commissioning professional: a) Certified Building Commissioning Professional (BCxP), issued by ASHRAE; b) Certified

Commissioning Authority (CxA), issued by AABC Commissioning Group (ACG); d) Certified Commissioning Professional (CCP), issued by Building Commissioning Association (BCA); and Commissioning Process Professional (CxPP), issued by National Environmental Balancing Bureau (NEBB).

In discussions with industry experts it has been determined that water system retuning could likely be performed adequately by an energy retuning professional. Therefore, to keep costs down, the summary retuning report should only be required to be stamped by one design professional; requiring a separate water credential for a member of the team does not seem necessary. If water is a high priority concern for the city and the director determines that a separate certification should be required for water-systems, the following credentials can be referenced:

(a) Certified Plumbing Designer (CPD) certified by the American Society of Plumbing Engineers

(b) Master Plumber certified by the City, County, State, or other governmental body having jurisdiction.

(c) Green Plumber certified by the Master Plumbers & Mechanical Services Association (MPMSAA)

(d) GPRO Plumbing (PL) certified by Urban Green Council.

30. "Retuning" means a systematic process for optimizing building performance through the assessment, identification and correction of deficiencies in existing base building systems, including but not limited to repairs of defects, cleaning, adjustments of valves, sensors, controls or programmed setpoints, and/or changes in operational practices.

31. "Retuning report" means the report produced by the retuning professional and provided to the building owner, including but not limited to:

    a. Summary retuning report;
    b. Energy end use breakdown;
    c. Water end use breakdown;
    d. Functional performance testing reports; and
    e. Operational training conducted.

32. "Shared benchmarking information" means information generated by the benchmarking tool and descriptive information about the physical property and its operational characteristics, which is shared with the public. The information, as defined by the ENERGY STAR Portfolio Manager glossary, shall include, but need not be limited to:

    a. Descriptive information
        1. Property address
        2. Primary use;
        3. Gross floor area;
        4. Number of floors;
        5. Number of years the property has been ENERGY STAR® Certified and the last approval date, if applicable; and
        6. Individual or entity responsible for the benchmarking submission.
    b. Output information
        1. Site and source energy use intensity;
        2. Weather normalized site and source energy use intensity;
        3. The ENERGY STAR score, where available;
        4. Total annual greenhouse gas emissions;
        5. Monthly energy use, by fuel type;
        6. Indoor water use and water use intensity (consumption per gross square foot);
        7. Outdoor water use (where available);
        8. Total water use;

9. The ENERGY STAR Water Score, where available; and
10. General comments section, if needed, to explain the building's ENERGY STAR scores.

c. Compliance or noncompliance status.

Discussion: Shared benchmarking information is a subset of the benchmarking submission information reported to the city. Collecting and sharing the greenhouse gas metric is encouraged if the city does not have more accurate, localized figures on greenhouse gas (GHG) emissions. Cities should evaluate the accuracy of the output generated by Portfolio Manager for their individual city, as the EPA uses regional coefficients to calculate greenhouse gases and the results do not always reflect localized conditions.

33. "Simple payback" means the number of years for the projected annual energy or water savings to equal the amount invested in the energy or water conservation measure, as determined by dividing the investment by the annual energy or water savings.

34. "Space" means an area within a building enclosed by floor to ceiling walls, partitions, windows and doors.

35. "Summary audit report" means the abbreviated report certified by the qualified auditor in a form determined by the Director that includes at a minimum:

    a. Information on the qualified auditor and his/her team;
    b. The date the audit was completed;
    c. Property address;
    d. Building ID number, as referenced in the benchmarking submission;
    e. Property age;
    f. Gross floor area;
    g. Number of buildings on the property;
    h. Year of major renovations or remodels;
    i. Information on the geometry of the buildings on the property;
    j. Base building systems and equipment inventory;
    k. All reasonable conservation measures, including capital improvements, that would, if implemented, reduce energy and/or water use and/or the cost of operating the property;
    l. For each measure, the associated annual energy (by fuel type) or water savings, the cost to implement, the net present value, and the simple payback, calculated by a method determined by the Director;
    m. A list of recommended measures, chosen from the complete list of measures, that would, if implemented, reduce energy and/or water use and/or the cost of operating the property, the savings predicted from that package of measures, and the estimated costs to implement those measures;
    n. The building's benchmarking submission for the previous calendar year;
    o. A report of energy usage by system and predicted energy savings by system after implementation of the recommended measures;
    p. A report of water usage by system and predicted water savings by system after implementation of the recommended measures;
    q. Acknowledgement that an American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) Level II Audit in conformance with ASHRAE Standard 211 (latest edition at the time the audit is initiated) was conducted; and
    r. Acknowledgement of any water audit standard utilized.

36. "Summary retuning report" means the abbreviated report certified by the qualified retuning professional in a form determined by the Director that shall include at a minimum:

    a. Retuning team information;
    b. The date the retuning was completed;
    c. Property information (such as building address, building age, gross floor area as defined by ENERGY STAR

Portfolio Manager's glossary, number of buildings on the property, etc.);

d. Building staff information;
e. Review and verification of the building's benchmarking submission for each of the previous [five] calendar years;
f. Inventory of base building systems;
g. List of repairs or adjustments completed during investigation; and
h. Master list of adjustments, repairs, or deficiencies corrected, including for each, the name of the retuning measure, a brief description of the measure, corrections recommended or completed, the date corrected, the benefits attained, estimated annual savings (energy/water use and cost), the estimated implementation cost, the net present value, and the simple payback.

37. "System" or "subsystem" means a building assembly made up of various components that serve a specific function including but not limited to exterior walls, windows, doors, roofs, ceilings, floors, lighting, piping, ductwork, insulation, HVAC system equipment or components, electrical appliances and plumbing appliances.

38. "Tenant" means a person or entity occupying or holding possession of a building, part of a building or premises pursuant to a rental or lease agreement;

39. "Utility" means an entity that distributes and/or sells natural gas, electric, water, or thermal energy services for buildings.

40. "Water audit" means that part of an audit that addresses the water systems.

SECTION B: COLLECTING AND ENTERING BENCHMARKING DATA

1. Each year the owner of each covered property shall collect and enter all data needed to benchmark the entire property for the previous calendar year into the benchmarking tool, in a manner that conforms to latest guidance provided by the U.S. Environmental Protection Agency for use of the tool. Aggregated whole-building data for the property's energy and water use shall be compiled using one or more of the following methods:

   a. Obtaining aggregated whole-building data from a utility
   b. Collecting data from all tenants
   c. Reading a master meter

Discussion: Ideally, the local utility will be set up to upload aggregated whole-building data to the owner's account on a regular, recurring basis after the initial set-up is completed. See the City Energy Project resource, Engage with Utilities to Implement Energy Performance Policies.

2. If the owner of a covered property does not have access to aggregated whole-building energy and water data, such property owner shall request aggregated whole-building data from each utility that provides energy or water service to the property. When a utility does not provide aggregated whole-building energy or water data, the owner of a covered property shall request energy and water data from tenants as per the provisions in the remainder of this section.

3. Each nonresidential tenant located in a covered property shall, within 30 days of a request by the owner and in a form to be determined by the Director, provide all information that cannot otherwise be acquired by the owner and that is needed by the owner to comply with the requirements of this ordinance.

Discussion: This provision refers to both energy consumption and operational characteristics (e.g. number of employees or computers) that an owner may not be able to easily determine. In practice, this provision should have limited applicability.

Owners of buildings with tenants often have difficulty benchmarking because they may not know all of the space-use characteristics of their tenant spaces and, if their tenants are individually metered, they won't have access to their energy consumption. This provision requires commercial tenants to provide the property owner with the energy consumption and space use characteristics required to benchmark.

4. When the owner of a covered property receives notice that a nonresidential tenant intends to vacate a space within such property, and the utilities do not provide aggregated whole-building energy and water data, the owner shall request information relating to such tenant's energy and water use for any period of occupancy relevant to the owner's obligation to benchmark. Such tenant shall report such information to the owner of the covered property within 30 days of a request by the owner.

5. Nothing in this Chapter shall be construed to permit a property owner to use tenant energy usage data for purposes other than compliance with benchmarking report requirements, nor shall the reporting requirements of this Chapter be construed to excuse property owners from compliance with federal or state laws governing direct access to tenant utility data from the responsible utility.

6. When a covered property changes ownership, the previous owner shall provide the new owner with all information needed to benchmark for the period during which the previous owner was in possession of the property.

SECTION C: BENCHMARKING REPORTING

1. For every covered property subject to this chapter, the owner shall annually submit to the Director an energy and water benchmarking report in an electronic format as established by the Director, by the date specified in Section D: Benchmarking Schedule.

Discussion: This provision requires the benchmarking data for each covered property to be electronically submitted to the city, using Portfolio Manager. Each city will need to select the fields from Portfolio Manager that they would like to collect, and create a custom reporting template that includes these field definitions. Owners will then be able to select the city's template from a dropdown menu within Portfolio Manager and submit their data to the city.

2. The information included in the annual energy and water benchmarking report shall include, at a minimum, the shared benchmarking information, as defined in Section A.32, for the previous calendar year.

Discussion: The fields that can be collected in Portfolio Manager are continually updated, and it is difficult to predict which fields will ultimately be of greatest value to the market and to researchers. Therefore, where possible, the listing of fields to be collected each year should be defined through a separate rulemaking process rather than in the ordinance, to maintain flexibility.

3. The owner of each covered property shall enter data into the benchmarking tool such that the energy and water benchmarking report shall be based on an assessment of the aggregated total energy and water consumed by the whole property for the entire calendar year being reported.

4. Before submitting a benchmarking report the owner shall run all automated data quality checker functions

available within the benchmarking tool and shall verify that all data has been accurately entered into the tool. In order for the benchmarking report to be considered in compliance with this ordinance, the owner shall correct all missing or incorrect information as identified by the data quality checker prior to submitting the benchmarking report to the Director.

Discussion: Portfolio Manager includes a number of automated checks, which can flag possible typos, incorrect meter readings, missing information, incorrect units of measure, and other common data entry problems. Although the checker is an automated function, it must be manually initiated by the user. This provision should be included to require that the benchmarker run these functions and correct any errors that are found before submitting their report.

5. Where the current owner learns that any information reported as part of the benchmarking submission is inaccurate or incomplete, the owner shall amend the information reported within the benchmarking tool, and shall provide the Director with an updated benchmarking submission within 30 days of learning of the inaccuracy.

6. [Utilities providing energy or water service to a covered property shall maintain aggregated whole-building data for each property for at least the most recent 24 months in an electronic format capable of being uploaded to the benchmarking tool.]

Discussion: This provision requires utilities to maintain historical energy and water consumption data for properties in their service territories that are required to benchmark. However, this provision will be enforceable only for city governments with authority to regulate utilities—typically municipally owned utilities.

SECTION D: BENCHMARKING SCHEDULE

1. The owner of a covered property shall ensure that for each such property a benchmarking report is generated, completed, and submitted to the Director annually.

2. The initial benchmarking reports for each covered property shall be filed in accordance with the schedule in the following table. Subsequent benchmarking reports for each covered property shall be due by [May 1] of each year thereafter.

Discussion: It is recommended that the city lead by example by having covered city properties benchmark one year earlier than non-city properties. This sample schedule also delays submittal of benchmarking information for residential properties until one year after the benchmarking information for similar non-residential properties. However, some cities have chosen to have the initial benchmarking for all covered, non-city properties begin on the same date. This approach is simpler and provides a faster roll-out, and is recommended if the total number of buildings that will be reporting is relatively small (e.g. under 1,000) as this allows for uniform outreach and makes implementation easier for both the city and property owners.

The earliest possible compliance date is recommended so that building owners and managers get rapid feedback. Generally, the previous year's energy data is not available from the utility until the end of January or early February, as it takes time to process the final billing cycle of the previous year. However, cities with utilities providing automatic uploading will be able to set an earlier reporting date because less time is needed to process the data.

Sector	Property	Initial Reporting Date
Non-Residential	Covered city properties ≥ [50k] sq. ft.	[May 1, 2019]
	Covered city properties ≥ [20k] sq. ft.	[May 1, 2020]
	Covered non-city properties ≥ [50k] sq. ft.	[May 1, 2020]
	Covered non-city properties ≥ [30k] sq. ft.	[May 1, 2021]
Residential	Covered city properties ≥ [50k] sq. ft.	[May 1, 2020]
	Covered city properties ≥ [20k] sq. ft.	[May 1, 2021]
	Covered non-city properties ≥ [50k] sq. ft.	[May 1, 2021]
	Covered non-city properties ≥ [30k] sq. ft.	[May 1, 2022]

3. The Director shall annually make available on a publicly accessible website the shared benchmarking information, as defined in Section A.32, for the previous calendar year for each covered property.

4. The shared benchmarking information for each covered property shall first be made available to the public beginning the year after each such property is first required to submit a benchmarking report.

Discussion: The annual publication of benchmarking information for each covered property begins with the second year that that property reports to the city. This delay provides building owners with a one-year window to improve their property's energy performance before it becomes public, and allows the city to identify methods to improve data quality and compliance, if necessary.

5. The Director will determine if any benchmarking shared summary data shall be excluded from publishing because it is not in the public interest.

Discussion: This provision provides the director with the authority to address specific, definable stakeholder concerns regarding data privacy.

SECTION E: BENCHMARKING EXEMPTIONS AND TIME EXTENSIONS

1. Benchmarking is not required for a covered city property for the current reporting year if the owner submits documentation to the Director, in such form and with such certifications as required by the Director, establishing that the property met one or more of the following conditions for the calendar year to be benchmarked:

    a. The property did not have a Certificate of Occupation or temporary Certificate of Occupation for that full year;
    b. A demolition permit for the entire building was issued during that year, provided that demolition work commenced and legal occupancy was no longer possible prior to end of that year;
    c. The property did not receive energy or water utility services for at least 30 days during that year;
    d. The property had an average physical occupancy rate of less than [50 percent] over that year; or
    e. Due to special circumstances unique to the property, strict compliance with provisions of this ordinance would not be in the public interest.

Discussion: The final exemption is intended to give the director discretion to exempt "sensitive" facilities, such as those related to public security or crisis management. These are potential terrorist targets that could be compromised if certain information about their operations is publicly disclosed.

2. Benchmarking is not required for a covered non-city property for the current reporting year if an owner submits documentation to the Director, in such form and with such certifications as required by the Director, establishing that the property has met one or more of the following conditions:

    a. It meets any of the exemptions defined for a covered city property;
    b. Due to special circumstances unique to the applicant's facility and not based on a condition caused by actions of the applicant, strict compliance with provisions of this ordinance would cause undue hardship;
    c. The property is under financial hardship; or
    d. More than [50%] of gross floor area is used for residential purposes and:
        1. More than [four] meters are associated with the property; and
        2. The owner is not able to obtain aggregated whole-building data; and
        3. The serving electric utility does not provide access to aggregated whole-building data. Once such services are available from the utility, as determined by the Director, such properties will no longer be exempt from benchmarking requirements, and shall file initial benchmarking reports in the first required reporting year following such data availability.

Discussion: The list of exemptions included is a fairly exhaustive listing of the types of exemptions that have been considered by other jurisdictions. Only those exemptions from this list that are appropriate for local conditions, as based on input from stakeholders, should be included. Properties that are facing financial hardship would likely not be able to afford pursuing any significant energy efficiency upgrades. Therefore, it is recommended that these properties be exempt from complying until such time they have the financial means to do so.

3. Any owner requesting an exemption from benchmarking shall, by March 1 in the year for which the exemption is being requested, submit to the Director any documentation reasonably necessary to substantiate the request or otherwise assist the Director in the exemption determination. Any exemption granted will be limited to the benchmarking submission for which the request was made and does not extend to past or future submittals.

4. An owner may apply for a time extension to complete and submit a benchmarking report if, despite such owner's good faith efforts, they are unable to complete the required actions prior to the scheduled due date due to the failure of either a utility provider or a tenant (or both) to provide the owner with information needed to complete this report. The owner requesting an extension shall submit to the Director any documentation reasonably necessary to substantiate the request or otherwise assist the Director in the determination. For each property, the Director may grant no more than two such extensions per year of no more than [30] days each.

SECTION F: BEYOND BENCHMARKING REQUIREMENTS

Discussion: This section and the next two sections describe the high-level requirements for additional actions that all covered properties will be expected to complete beyond benchmarking. These additional actions are organized under two pathways that define the two ways that a property can show that it is in compliance:

(a) Performance pathway: a property verifies that it has achieved defined energy and water performance targets, or has made sufficient progress toward achieving these targets.

(b) Prescriptive pathway: a property verifies that it has completed at least one of the prescribed actions that are considered to be indicative that it is making meaningful progress toward improving its performance.

Cities that require covered properties to undertake additional actions beyond benchmarking, and want to leverage

existing utility incentives for audits or retuning, should engage with their utilities to establish a clear framework for doing so. The model ordinance has been intentionally written to provide multiple pathways for compliance, to help mitigate common concerns raised by utilities when providing incentives to support local requirements. For more information on why utilities raise these concerns and how cities can mitigate them through policy development and implementation, see the City Energy Project resource, Engage with Utilities to Implement Energy Performance Policies.

1. Every five years each covered building [that exceeds 50,000 gross square feet in total floor area] shall submit performance verification documentation demonstrating that it has either achieved the performance targets defined under Section G: Performance Path, or has completed actions to fulfill the requirements defined under Section H: Prescriptive Path.

Discussion: Though they are much more likely to lead to actual energy and cost savings, the additional actions described in the following sections are not necessary to perform each year, and will impose a greater burden on building owners than benchmarking alone. Therefore, while each property must benchmark and report each year, the requirements for additional energy and water efficiency actions apply only once every five years. In addition, these actions may not be cost effective for smaller buildings, so cities may decide to only establish these requirements for the larger covered buildings, with 50,000 square feet being a typical threshold.

2. The performance verification documentation for each covered building shall be due in the years listed in the schedule in Section M: Performance Verification Reporting Schedule.

3. No performance verification shall be required for a covered property for its current five-year reporting cycle if a qualified professional submits documentation with the department, in such form and with such certifications as required by the Director, establishing that the property has met one of the following conditions:

    a. The property is exempt from benchmarking requirements per the provisions of Section E: Benchmarking Exemptions.
    b. The initial Certificate of Occupancy for the property was issued less than five years prior to the date when the first performance verification would otherwise be due.
    c. The property has undergone substantial rehabilitation, as certified by a registered design professional, within the five-year period prior to the calendar year in which a performance verification is due, such that at the commencement of such calendar year all of the base building systems of such property are in compliance with the most recent [city/state energy conservation code and any codes impacting water consumption in existence at the time this ordinance takes effect].

SECTION G: PERFORMANCE PATH

1. To fulfill the Performance Path requirements, the owner of a covered property shall ensure that a qualified professional submits documentation to the department, in such form and with such certifications as required by the Director, verifying that the property has achieved one or more of the following energy targets and one or more of the following water targets for at least two of the five years following the baseline year.

Discussion: The baseline year is five years prior to the date when the property is next due to submit verification that it has achieved the performance targets or that it has completed acceptable prescriptive actions.

    a. Energy targets:
        1. The property received an ENERGY STAR score of [75] or higher.
        2. The property's energy use intensity (EUI) was equivalent to or better than the performance of [75%] of all local covered properties of its type.

3. The property achieved an ENERGY STAR score at least [15] points higher than the score it received during its baseline year.
4. The property's weather normalized source energy use intensity was reduced by at least [15%] relative to its performance in the baseline year.

Discussion: The energy targets allow a property to demonstrate that it has either achieved an acceptable level of performance compared to its local peers, or has been making sufficient progress toward achieving the desired level of performance. The targets for a "high-performing" building, as defined under items 1 and 2, are often set to an ENERGY STAR score of 75, which equates to an energy use intensity (EUI) value in the top quartile. This is the value that must be achieved to apply for ENERGY STAR certification, and is thus generally considered to represent a high-performing building. The provisions in items 3 and 4 are designed to accommodate properties that started out as very poor performers but have been showing good improvement, even though they may still be well below the standard the city would like them to eventually achieve.

These options allow a building owner several paths to make improvements. Each path does not produce the same level of savings, so cities should be aware of the potential to abuse more generous options. For example, the ENERGY STAR score evaluates a building's performance compared to its peers. Depending on the shape of the local distribution curve for each property type, a property that improves its EUI by 15 percent could see gains of much more than 15 points in its ENERGY STAR score, or much less. The city may wish to modify the values it initially sets for each of these targets after evaluating the benchmarking results for the local building stock.

b. Water targets
   1. The property received an ENERGY STAR water score of [75] or higher.
   2. The property's water use intensity (WUI) was equivalent to or better than the performance of [75%] of all local covered properties of its type.
   3. The property achieved an ENERGY STAR water score at least [20] points higher than the score it received during its baseline year.
   4. The property's water use intensity was reduced by at least [20%] relative to its performance in the baseline year.

Discussion: Some cities feel that improving water use has received even less attention that reducing energy use, and that many buildings still have large untapped opportunities for cost-effective improvements. To accelerate the rate of adoption for water conservation measures, we suggest establishing improvement targets of 20 ENERGY STAR points, or a 20 percent water use intensity (WUI) improvement, as compared to the targets of 15 points or a 15 percent improvement in EUI for reducing energy use.

2. A covered building that fails to achieve at least one of the energy targets must complete prescriptive measures as needed to fulfill the Prescriptive Path energy requirements.

3. A covered building that fails to achieve at least one of the water targets must complete prescriptive measures as needed to fulfill the Prescriptive Path water requirements.

Discussion: The energy and water performance of each property will be evaluated separately. Properties that achieve either the energy performance targets or the water performance targets, but not both, will be required to perform additional actions only for the area where they fell short.

SECTION H: PRESCRIPTIVE PATH

1. The owner of a covered property may fulfill both energy and water requirements under the Prescriptive Path by ensuring that a qualified professional submits documentation to the department, in such form and with such certifications as required by the Director, verifying one or more of the following:

    a. The property has completed an approved energy and water audit within the three years prior to the due date for filing of the property's performance verification documentation.
    b. The property has completed a full retuning procedure within the three years preceding the due date for filing of the property's performance verification, with documentation that the property's performance for both energy and water was optimized.
    c. The property has participated in and successfully completed an approved utility retuning incentive program within the three years preceding the due date for filing of the property's performance verification documentation.
    d. The property has received certification under the Leadership in Energy and Environmental Design (LEED) 2009 or later rating system for Existing Buildings, the LEED Operation and Maintenance: Existing Buildings Version 4 rating system published by the USGBC, or other comparable rating system for existing buildings, as determined by the Director, within the three years prior to the due date for filing of the property's performance verification documentation and has earned the LEED point for Existing Building Commissioning investigation and analysis and the LEED point for Existing Building Commissioning implementation.

Discussion: The preceding section describes the prescriptive activities that, when completed, will fulfill both the energy and water requirements.

2. The owner of a covered property may fulfill the energy requirements under the Prescriptive Path by ensuring that a qualified professional submits documentation to the department, in such form and with such certifications as required by the Director, verifying one or more of the following:

    a. The property has completed an approved energy audit within three years prior to the due date for filing of the property's performance verification documentation.
    b. The property performs continuous commissioning of its electrical and mechanical systems.
    c. A [list the state] licensed engineer or architect certifies that the building conforms to the requirements of the [include reference to the local energy code] in effect at any time during the years following the baseline year.

Discussion: Provision c should be included only if the local energy code is up to date and there is a process in place to ensure that this code will continue to be updated on a regular basis.

    d. The property has received a Net-Zero Energy Certification from the International Living Future Institute at any time during the years following the baseline year.
    e. The property does not have a central cooling system and four of the following six measures were completed within the five years following the baseline year. A report, certified by a qualified professional, detailing the measures performed is required.
        1. Common area and exterior lighting. Common area (lighting outside of tenant spaces) and exterior lighting fixtures have been installed in accordance with the [insert relevant Building Code reference] in effect at any time during the five-year compliance cycle being reported.
        2. Pipe insulation. All exposed pipes that are used to convey heat or hot water have been insulated in accordance with the [insert relevant Building Code reference] in effect at any time during the five-year compliance cycle being reported.

3. Cool roof. A cool roof has been installed in accordance with the [insert appropriate code reference if any] in effect at any time during the five-year compliance cycle being reported.
4. Demand response. The property owner is participating in an approved demand response program.
5. Solar thermal. A solar water heating system has been installed.
6. Domestic hot water. A new water heater has been installed in accordance with the [insert relevant building code reference] in effect at any time during the five-year compliance cycle being reported.

Discussion: The preceding section describes the prescriptive activities that, when completed, will fulfill only the energy requirements.

3. The owner of a covered property may fulfill the water requirements under the Prescriptive Path by ensuring that a qualified professional submits documentation with the department, in such form and with such certifications as required by the Director, verifying one or more of the following:

   a. The property has completed an approved water audit within three years prior to the due date for filing of the property's performance verification documentation.
   b. The property performs continuous commissioning of its water systems.
   c. A [list the state] licensed engineer or architect certifies that the building's water use conforms to the requirements of the [list relevant code reference] in effect at any time during the five-year compliance cycle being reported.

Discussion: Provision c should be included only if the local code being referenced is up to date and there is a process in place to ensure that this code will continue to be updated on a regular basis.

   d. The property does not have a central cooling system and two of the following three measures were completed within the five years following the baseline year. A report, certified by a qualified professional, detailing the measures performed is required.
      1. Low flow faucets and shower heads. All faucets and showerheads within the property have been replaced and meet the [insert relevant Building Code reference] in effect at any time during the five-year compliance cycle being reported.
      2. Washing machines. Front loading clothes washing machines have been installed in all common laundry facilities.
      3. Water closets and urinals. All water closets and urinals within the property have been replaced and meet [insert relevant Building Code reference] in effect at any time during the five-year compliance cycle being reported.

Discussion: The preceding section describes the prescriptive activities that, when completed, will fulfill only the water requirements.

SECTION I: ENERGY AND WATER AUDIT REQUIREMENTS

1. The owner of each covered property that chooses to complete an energy and/or water audit shall ensure that such audit is performed on the base building systems of each such property, in accordance with the schedule of Section M: Performance Verification Reporting Schedule.

2. For any given property, an energy and/or water audit can be completed to fulfill the requirements of Section H: Prescriptive Path no more than once every ten years. If a property needs to fulfill the requirements of the prescriptive path a second time during a ten-year period, an alternative approved action other than an energy and/or water audit must be completed.

Discussion: Since audits focus on identifying opportunities for long-term capital improvements, there is little value in performing them more frequently than once every 10 years. This provision prevents an owner from simply repeatedly purchasing a low-cost audit to meet their Beyond Benchmarking requirements.

3. Energy and water audits shall be performed by or under the direct supervision of a qualified auditor.

4. All energy audits shall be performed in accordance with industry standard practices, and shall meet or exceed the criteria as defined by one or more of the following:

    a. An ASHRAE Level 2 audit as defined by ASHRAE Standard 211: Standard for Commercial Building Energy Audits;
    b. An energy assessment or audit offered by the utilities serving the covered property, providing that potential energy savings opportunities related to all fuel sources are evaluated; or
    c. Other auditing practices deemed appropriate by the Director.

Discussion: This language enables the director to require an ASHRAE Level II audit, or allow other, potentially less expensive techniques, such as remote audits, at such time as the Director determines that such techniques result in sufficiently reliable and actionable recommendations.

5. All water audits shall be performed in accordance with industry standard practices. Until such time as a third party verifiable water auditing process is developed and endorsed by a professional building association, government entity, or academic institution and approved by the Director, water audits shall include, at a minimum, the following:

    a. Potable water distribution systems
    b. Landscape irrigation systems
    c. Water reuse systems
    d. Water features
    e. The cost estimates for recommended improvements to covered properties that are regulated by any city, county, state or federal law regulating landmarks and historic buildings shall include all additional costs necessary for the proposed work identified through the energy and water audit to comply with such law.

Discussion: Currently, there is no industry-accepted standard for water audits comparable to the ASHRAE guidelines for energy audits. The City Energy Project is completing a major effort to develop guidelines for facility water assessments that are researched, rooted in best practice, developed by experts, and locally customizable. These guidelines can be made available to cities upon request.

SECTION J: ENERGY AND WATER AUDIT REPORTS

1. For each covered property that is audited, an audit professional shall complete and present the audit report to the property owner.

2. For each covered property that is audited, an audit professional shall complete, physically or digitally sign, and electronically submit to the Director an on-line summary audit report on behalf of the property owner in accordance with the schedule requirements of Section M: Performance Verification Reporting Schedule.

Discussion: The summary audit report contains the most important information from the audit report, and is the form submitted to the city. This is in contrast to the more detailed audit report that the auditor produces for the property owner. The summary audit report should be collected in an electronic format, using a tool such as the DOE's Asset Score Audit Input template, so that the data can be easily aggregated. Cities will then be able to marry the audit data to the benchmarking data and use the combined data sets for analytic purposes.

3. A randomly-selected subset of summary audit reports, not to exceed 10% of the total audit reports completed in a given year, may be subject to a third-party quality assurance review conducted on behalf of the city. Such reviews shall be conducted in a way so as to preserve the anonymity of individual properties and shall be conducted at no cost to the property owner.

SECTION K: RETUNING REQUIREMENTS

1. The owner of each covered property that chooses to perform retuning shall ensure that such retuning is performed on the base building systems of each such property, in accordance with the schedule of Section M: Performance Verification Reporting Schedule. Retuning shall ensure base building systems are maintained, cleaned and repaired, HVAC temperature and humidity set points and setbacks are appropriate, operating schedules reflect major space occupancy patterns and the current facility requirements, and that all operating parameters are adjusted to achieve efficient operations.

2. Retuning shall be performed by or under the supervision of a qualified retuning professional, in accordance with industry standard practices including ASHRAE Guideline 0.2: Commissioning Process for Existing Systems and Assemblies; ASHRAE Guideline 1.2: HVAC&R Technical Requirements of the Commissioning Process for Existing Building Systems and Assemblies; and other standards as may be defined by the Director.

3. Retuning shall consider, at minimum, all actions defined in a checklist which shall be approved by the Director, [and developed in consultation with a working group of local qualified retuning professionals and property owners].

4. The owner shall correct, through low-cost adjustments and minor repairs to the property's energy and water systems, all deficiencies identified by the retuning professional as having a simple payback of three years or less.

   EXCEPTION: A retuning measure is not required if such retuning measure would necessitate a building permit other than an electrical or plumbing permit.

Discussion: "Simple payback" is a simplistic and less than ideal metric for evaluating energy efficiency measures, as it focuses strictly on how long it will take to recoup the up-front cost of a measure, without acknowledging that savings will continue to be generated for years after a measure has paid for itself. Net present value is a preferred metric. However, since simple payback is easy to understand and calculate, it is commonly used for determining which measures identified as part of a retuning or an audit could reasonably be expected to be completed.

5. The cost estimates for recommended improvements to covered properties that are regulated by any city, county, state or federal law regulating landmarks and historic buildings shall include all additional costs necessary for the proposed retuning work to comply with such law.

6. Unless otherwise restricted by statute or contract, tenants shall allow property owners reasonable access to systems and utility information, if necessary to comply with the terms of this Chapter.

SECTION L: RETUNING REPORTS

1. For each covered property that is retuned, a retuning professional shall complete and present the retuning report to the property owner.

2. For each covered property that is retuned, a retuning professional shall complete, physically or digitally sign, and electronically submit to the Director an on-line summary retuning report on behalf of the property owner in accordance with the schedule requirements of Section M: Performance Verification Reporting Schedule.

Discussion: The summary retuning report contains the most important information from the retuning report, and is the form submitted to the city. This is in contrast to the more detailed retuning report that the qualified retuning professional produces for the property owner. The city should collect the summary data, ideally in an electronic format that can be easily aggregated, so that it will be able to combine the retuning and benchmarking data for analytic purposes.

3. Before submitting the summary retuning report, the qualified retuning professional shall verify that the energy and water consumption reported in the annual benchmarking reports for the five previous years is accurate. If found to be inaccurate, the qualified professional shall identify inaccuracies in the reports and ensure that the data entered in the benchmarking tool and reported to the city is updated prior to submitting the retuning report, so that it reflects correct historical electricity and water consumption data.

SECTION M: PERFORMANCE VERIFICATION REPORTING SCHEDULE

1. The performance verification documentation for each covered building, demonstrating that it has either achieved the performance targets defined under Section G: Performance Path, or has completed necessary actions to fulfill the requirements defined under Section H: Prescriptive Path of this Chapter shall be due by December 1 of the years listed in the schedule below.

Last digit of property ID number	1 or 6	2 or 7	3 or 8	4 or 9	5 or 0
Years performance verification documentation is due	[2024, 2029] and every five years thereafter	[2025, 2030] and every five years thereafter	[2026, 2031] and every five years thereafter	[2027, 2032] and every five years thereafter	[2028, 2033] and every five years thereafter

Discussion: This section defines when the summary audit report, retuning report, or proof that other actions have been completed must be filed with the city. The year a property is due to submit is determined by a property's tax ID number. This method helps ensure that a manageable and consistent number of buildings must comply with the beyond benchmarking requirements each year. It also randomizes the building types, the building age, and their location, which helps diversify the skill sets that will be needed by the qualified professionals each year.

EXCEPTION: A covered property shall not be required to complete and submit performance verification documentation until at least five years after such property was first required to file a benchmarking report, as defined in Section D: Benchmarking Schedule.

Discussion: Since it will take several years for the benchmarking requirements to be rolled out across all of the covered properties, it is possible that some properties (based on the last digit of their Building ID Number) may be due for their first cycle of Beyond Benchmarking requirements before they have had a full five years to assess their benchmarking results and implement improvements. This exemption ensures that all properties will have at least five years to respond before they are first subject to Beyond Benchmarking requirements.

2. An owner may apply for an extension of time to file performance verification documentation if, despite such owner's good faith efforts, the owner is unable to complete the required actions and documentation prior to the scheduled due date for such submission. The Director may grant no more than one such extension of no more than one year.

3. The owner of a property that is in financial hardship may apply for and be granted annual extensions of time to file their performance verification documentation.

4. Extensions granted pursuant to this section shall not extend the scheduled due dates for subsequent submissions of performance verification documentation. The property owner acknowledges that by requesting and receiving an extension the period of time before the property's next compliance date will be less than the typical schedule.

SECTION N: NOTIFICATION BY THE CITY

1. By December 1 of each year prior to a year in which benchmarking submissions are due, the Director may publicly post a list of all covered properties that must provide a benchmarking submission to the Director during the following year.

2. Between January 1 and March 1 of each year, for at least the first three years during which an owner is required to provide a benchmarking submission, the Director shall attempt to notify those owners of their obligation to benchmark via direct mail, electronically via email, or through a public posting on a web site.

3. The Director shall attempt to notify owners of their obligation to complete and submit performance verification documentation no less than two years prior to the calendar year in which a covered property's report is due, in the calendar year prior to the calendar year in which such report is due, and again in the calendar year in which such report is due. Such notification may occur via direct mail, electronically via email, or through a public posting on a web site.

Discussion: The actions that a property owner may need complete to achieve the beyond benchmarking performance targets will have to be initiated two or three years before their reporting deadline. Therefore, the director should notify these property owners of their upcoming obligations several years in advance of their due date.

4. Failure of the Director to notify any owner shall not affect the obligation of such owner to complete and submit their benchmarking reports and performance verification.

Discussion: Although the city should make a reasonable effort to attempt to notify all property owners of their obligations under this ordinance, the ordinance should clearly state that even if an owner does not receive formal notification because, for example, the city did not have their current contact information, the legal requirements are still in force.

SECTION O: SHARING OF DATA

1. The Director may provide non-anonymized data from benchmarking, audit or retuning submissions to any utility serving a covered property or to any federal, state, county or city-managed energy efficiency or management program, provided that the data will be used only for purposes of offering programs, services, and incentives related to energy and water efficiency and management, and provided that the Director has first obtained the

covered property owner's written or electronic permission to share the data with the utility or energy efficiency and/or management program. Where the property owner's permission can be granted electronically through acceptance of a default option, the city shall provide a clearly delineated option for owners of covered properties to choose to opt out of granting this permission.

Discussion: Ideally, the owner's approval can be collected through an online check-box where they acknowledge they have read the terms and conditions. In that situation, the city should also provide a clearly delineated option for owners of covered buildings to choose to opt out of granting this permission.

2. The Director may disclose any audit or retuning data, or data from benchmarking submissions, to a third party for academic or other non-commercial research purposes provided that such data is anonymized.

SECTION P: ANNUAL REPORT AND ANALYSIS

1. Beginning no later than [December 1, 2021] and every year thereafter, the Director shall make available on a publicly accessible website an annual report on the benchmarking of all covered properties. The report shall include a summary of energy and water consumption statistics, and an assessment of compliance rates, accuracy and issues affecting accuracy, changes across the portfolio over time, and trends observed.

Discussion: The annual benchmarking report should be more detailed the first year that all covered buildings are required to report, and roughly every five years thereafter. During other years the report can be a very high-level summary of two to five pages. However, there are a handful of key metrics (e.g. compliance rates, median EUI and WUI by building type, total energy/water consumed, and total GHG emissions) that should be determined and publicly posted each year, to demonstrate continuity and positive progress from the policy. See IMT's report, Analyzing Benchmarking Data, for further information.

2. Beginning in [2026] and every three years thereafter, the Director shall make available on a publicly accessible website a report on the performance targets achieved and prescriptive path actions completed for all covered properties, including but not limited to compliance rates, trends observed, correlations of benchmarking scores and audit recommendations, correlations of benchmarking scores and retuning measures completed, the impact of audits and retuning on EUIs, WUIs and ENERGY STAR Scores, and recommendations on how the uptake of energy and water conservation measures could be increased or the implementation of the policy provisions could be improved.

3. Nothing in this ordinance shall prevent the Director from including all such information in a combined annual energy and water efficiency report covering the progress of all of the city's energy efficiency ordinances and programs.

Discussion: This section ensures that the city analyzes the progress of benchmarking, audit, and retuning implementation, and mines the data for important trends that could help inform future policies or programs. This type of jurisdiction-wide analysis can provide useful feedback for city governments on the implementation, administration and impact of these energy efficiency initiatives. If possible, there should be a single, overall City Energy Efficiency Report which covers benchmarking, audits, retuning, and all other related ordinances and initiatives, to avoid duplication and because the interrelationships between the efforts can best be seen in a combined analysis.

SECTION Q: MAINTENANCE OF RECORDS

1. Owners shall maintain records as the Director determines is necessary for carrying out the purposes of this ordinance, including but not limited to the energy and water bills and reports or forms received from tenants and/or utilities. Such records shall be preserved for a period of five years. At the request of the Director, such records shall be made available for inspection and audit by the Director.

2. Owners shall maintain a copy of each audit and retuning report on site for a minimum of five years from the required submission date. At the request of the Director, such reports shall be made available for inspection.

3. A copy of the latest up-to-date equipment manuals shall be maintained at every covered property at all times. At the request of the Director, such manuals shall be made available for inspection and audit by the Director.

4. When a covered property is sold, the records shall be given to the new property owner and the online Portfolio Manager benchmarking records shall be transferred to the new owner.

5. The Department reserves the right to spot check records as it deems necessary to evaluate the efficacy of this Ordinance. Records shall be provided to the Director upon request.

SECTION R: SUBMITTAL FEES

The owner shall pay to the Department the following fees for each property:

1. Annual Benchmarking Disclosure Report Compliance Fee. The Department shall charge property owners a fee in the amount of [$50] for each annual benchmarking report submitted to the Department.

Discussion: This provision authorizes the director to charge a filing fee for each submission of benchmarking information, which the city could use to cover administrative costs. Note that Portfolio Manager is not set up to handle the electronic collection of fees, so collecting a fee would require the city to establish and manage a separate process. To date very few cities have assessed a fee for submission of the benchmarking report, so this provision will often be deleted.

2. Performance Verification Submission Compliance Fee (every [five] years). The Department shall charge property owners a fee in the amount of [$150] for each submission of performance verification documentation to the Department.

Discussion: It is generally easier to justify assessing a fee for these filings, as compared to the benchmarking reports. These filings only occur once every five years for each property, rather than annually, and they generally require more resources on the part of the overseeing department for review and approval. In some cases building departments have performed a detailed fee assessment analysis to determine the level the fee should be set at to provide full cost recovery.

Cities should also consider the political and motivational impacts of assessing a fee. For example, it should be very simple to review documentation for properties that claim to have met the performance targets, and if owners of these properties are required to pay a substantial fee they may feel that they are being penalized, rather than rewarded, for investing in improving the performance of their property.

SECTION S: VIOLATIONS AND ENFORCEMENT

1. It shall be unlawful for any entity or person to fail to comply with the requirements of this ordinance or misrepresent any material fact in a document required to be prepared or shared by this ordinance.

Discussion: The actual penalties that a city is able to assess, and the process by which it can do so, will be determined by other portions of the city's codes. Therefore, the city attorney will have significant input in determining the compliance and enforcement provisions of this ordinance.

2. If the Director determines that a property owner has failed to report benchmarking information as required under this ordinance, or the owner has submitted incomplete or false benchmarking information, the Director may seek the following remedies:
    a. A written warning may be issued for the violation; and
    b. If initial benchmarking information or updated benchmarking information is not reported within 30 days of the date the written warning is issued, the Director may issue a notice of violation with a penalty of up to $500.
    c. If initial benchmarking information or updated benchmarking information is not reported within 90 days of the date the notice of violation is issued the Director may then and every three months thereafter assess additional penalties of $500 for noncompliance.
    d. If the Director determines that a property owner has intentionally submitted false or incomplete information, or has misrepresented the benchmarking information, the Director may issue a notice of violation with a penalty of up to $1,000. Each year of non-compliance shall constitute a separate offense punishable upon conviction by a penalty of $1,000.
    e. If the owner of a covered property subject to this Chapter has been previously been found to be in noncompliance under this Chapter within the past two years, all subsequent violations by that property owner for failing to submit a benchmarking report may be subject to a $500 fine in addition to any other penalty imposed under this Chapter.

Discussion: Since consultants can charge $1,000–$1,500 to benchmark, the total penalty that an owner can incur must be set high enough to exceed that value and discourage non-compliance.

3. If the Director determines that a property owner has failed to provide performance verification documentation as required under this ordinance, or the owner has submitted an incomplete or false report, the Director may seek the following remedies:
    a. A written warning may be issued for the violation; and
    b. If the performance verification documentation is not submitted within 180 days of the date the written warning is issued, the Director may issue a notice of violation and assess a fine. The Director may assess an additional fine if the documentation is not submitted within 360 days of the date the written warning is issued.
    c. The maximum amount of the fines that may be assessed shall be dependent on the size of the covered property, as per the following schedule:
        1. For properties greater than or equal to 20,000 and less than 50,000 square feet:
            a. 180 days after the written warning is issued — $1,500;
            b. 360 days after the written warning is issued — $4,000.
        2. For properties greater than or equal to 50,000 and less than 100,000 square feet:
            a. 180 days after the written warning is issued — $2,000;
            b. 360 days after the written warning is issued — $8,000.

3. For properties greater than or equal to 100,000 and less than 200,000 square feet:
    a. 180 days after the written warning is issued — $2,500;
    b. 360 days after the written warning is issued — $10,000.
4. For properties greater than or equal to 200,000 square feet
    a. 180 days after the written warning is issued — $5,000;
    b. 360 days after the written warning is issued — $20,000.

Discussion: The penalty for failure to complete an audit or other beyond benchmarking action should be set at a higher level than the benchmarking penalties, commensurate with the higher cost of completing these actions. In addition, a sliding scale, with penalties proportional to the size of the property, allows the department to assess fees that are scaled to more closely align with the potential avoided cost of non-compliance.

d. If the Director determines that a property owner has intentionally submitted false information or data, or misrepresented the results of an audit or retuning report or other performance verification documentation, the Director may, in addition to any other remedy authorized by law, seek the following remedies:
    1. Assess a $5,000 fine for the first violation; and
    2. Assess a $10,000 fine for the second and any subsequent violations.

SECTION T: ADDITIONAL NON-COMPLIANCE PROCEDURES, VIOLATIONS, AND ENFORCEMENT

1. It shall be unlawful for any entity or person to fail to comply with the requirements of this ordinance or misrepresent any material fact in a document required to be prepared or shared by this ordinance.

2. Nothing in this Chapter shall obligate the Department or the Director to issue a warning notice of violation or a notice of violation before initiating a civil enforcement action.

3. The city will not reissue a [certificate of occupancy, Building Structural and/or Building Electrical recertification] to properties that have failed to comply with the benchmarking or performance verification requirements of this ordinance until such time that the required reports are submitted with all required components.

Discussion: If permissible under the city's legal structure, the ability for the city to withhold a certificate of occupancy for non-compliance can provide an effective, non-monetary enforcement mechanism for properties that are undergoing a major renovation or applying for a change in use.

4. Necessary Trust Funds or accounts shall be established by the Department to deposit monies received under this Chapter,
    a. Monies collected for report submittals (compliance purposes) under this Chapter shall be allocated to improve the energy and water efficiency of public and private sector properties within [the city], with [50%] allowed to be used to support city government administration of this Chapter and related educational activities, as well as energy and water improvements to local government facilities and [50%] allowed to be used to support educational activities as well as energy and water improvements to non-city facilities.
    b. A portion of the monies collected due to noncompliance under this Chapter shall be allocated to improve the energy and water efficiency of covered properties designated as affordable housing or as B or C class buildings within [the city].
    c. The Director shall recommend a five-year plan to the [Mayor and City Council] regarding how these funds should be allocated.

SECTION U: RULES

The Director shall promulgate such rules as deemed necessary to carry out the provisions of this ordinance.

Discussion: Some jurisdictions have chosen to include additional language stating that if the director finds it necessary to issue new rules beyond those called for in this bill or to amend this ordinance, such rules must be presented to a working group of affected parties and relevant stakeholders, which will be formed prior to amending the ordinance.

SECTION V: SEVERABILITY

If any provision, section, subsection, sentence, clause, phrase or other portion of this ordinance is for any reason found or declared to be unconstitutional or otherwise invalid, in whole or in part, by any court of competent jurisdiction, such portion shall be deemed severable, and such unconstitutionality or invalidity shall not affect the validity of the remaining provisions or portions of this ordinance, which remaining portions shall continue in full force and effect and can be implemented without the invalid provisions and, to this end, the provisions of this ordinance are declared to be severable. The [City Council] hereby declares that it would have adopted each and every provision and portion thereof not declared invalid or unconstitutional, without regard to whether any portion of the ordinance would subsequently be declared invalid or unconstitutional.

SECTION W: TIMING

This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

APPENDIX A: SAMPLE RETUNING MEASURES

Retuning requires a qualified retuning professional to both investigate and take necessary actions to correct deficiencies in a building's maintenance procedures and operating parameters, and to improve performance through maintenance, cleaning, and repair. Currently there is no industry standard for retuning; it is defined as a process. However, a process is not something a city can easily enforce.

As there is no widely accepted standard defining the systems and components that should be corrected as part of retuning, we recommend that the list of actions be developed in coordination with a local advisory group of industry experts, and documented as part of the rulemaking. This allows the requirements to be more reflective of the needs of systems most prevalent in the local building stock, and also allows the requirements to be modified over time through rulemaking as conditions and expectations change.

Sections 5.4.2 and 5.4.3 of ASHRAE's draft Standard 211 – Standard for Commercial Building Energy Audits – provide an initial listing of those items that should be considered as part of retuning. The following list can also serve as an inventory of the items that should be evaluated and corrected to achieve efficient operations. Cities should be aware that this list was originally created by New York City for the local retuning requirement, and might not cover appropriate measures for different climates.

1. Operating protocols, calibration, and sequencing:
    - 1.1. HVAC temperature and humidity set points and setbacks are appropriate and operating schedules reflect major space occupancy patterns and the current facility requirements.
    - 1.2. HVAC sensors are properly calibrated.
    - 1.3. HVAC controls are functioning and control sequences are appropriate for the current facility requirements.
    - 1.4. Loads are distributed equally across equipment when appropriate (i.e. fans, boilers, pumps, etc. that run in parallel).
    - 1.5. Ventilation rates are appropriate for the current facility requirements.
    - 1.6. System automatic reset functions are functioning appropriately, if applicable.
    - 1.7. Adjustments have been made to compensate for oversized or undersized equipment so that it is functioning as efficiently as possible.
    - 1.8. Simultaneous heating and cooling does not occur unless intended.
    - 1.9. HVAC system economizer controls are properly functioning, if applicable.
    - 1.10. The HVAC distribution systems, both air and water side, are verified as appropriately balanced, with the exception of tenant-owned systems.
    - 1.11. Light levels are appropriate to the task.
    - 1.12. Lighting sensors and controls are functioning properly according to occupancy, schedule, and/or available daylight, where applicable.
    - 1.13. Domestic hot water systems have been checked to ensure proper temperature settings.
    - 1.14. Water pumps are functioning as designed.
    - 1.15. System water leaks have been identified and repaired (booster pumps, backflow preventers, trap primes, strainers, and makeup water).
    - 1.16. Fixture water leaks have been identified and repaired (tanks, bowls, flush valves, urinals, showerheads, faucets, laundry systems, and drinking fountains).
    - 1.17. Hot and cold water supply valves (located in toilets, urinals, sinks, laundry machines, drinking fountains, etc.) have been inspected for leaks and repaired as needed.
    - 1.18. Equipment water leaks have been identified and repaired (kitchen, lab, and medical equipment).
    - 1.19. Outside water spigots and hose bibs have been inspected for leaks and repaired as needed.
    - 1.20. Exterior water leaks have been identified and repaired (irrigation system, pools, fountains, and spas).
    - 1.21. Steam quenching temperature is set no lower than allowed per local law.

1.22. Cooling tower cycles of concentration are set to minimize amount of blow down from the condenser water system.
1.23. Water treatment conductivity controller is functioning as designed.
1.24. Domestic water make-up supply to HVAC systems is functioning as designed.
1.25. Protocols are in place for monitoring for leaks in open-loop and closed-loop heating and cooling systems.
1.26. There is no improper use of domestic water to supplement cooling functions.
1.27. Outlet temperature of single pass-cooling systems is functioning as designed.
1.28. Domestic water make-up supply to recycled water systems is functioning as designed.
1.29. Plumbing fixtures are performing per nameplate specifications and are operating at approved American Society of Mechanical Engineers (ASME) rating.
1.30. System water pressure is within approved pressure range.
1.31. Automatic fixtures and flush valves sensors are properly calibrated.
1.32. Flow restrictors are functioning properly (faucets and showerheads).
1.33. Self-closing hose nozzles are installed and functioning properly (interior and exterior).
1.34. Irrigation controls, timers and rain sensors are functioning properly and in accordance with local regulation.
1.35. Swimming pool, fountain, and spa timers and controls are properly set, temperature setpoint is optimized to limit evaporation, and recirculation systems and makeup water are functioning as-designed.
1.36. Kitchen hood wash down cycle is functioning as-designed.
1.37. All equipment schedules are optimized for actual daily, weekly, holiday, and seasonal schedules
1.38. Setpoints for all zones and equipment are optimized, and reset and lock-outs for equipment are implemented.
1.39. All equipment controls are optimized for efficient energy and water operations.

2. Cleaning and repair:

2.1. HVAC equipment (vents, ducts, coils, valves, soot bin, etc.) is clean.
2.2. Filters are clean and protocols are in place to replace.
2.3. Light fixtures are clean.
2.4. Motors, fans, and pumps, including components such as belts, pulleys, and bearings, are in good operating condition.
2.5. Steam traps have been replaced as required to maintain efficient operation, if applicable.
2.6. Manual overrides on existing equipment have been remediated.
2.7. Boilers have been tuned for optimal efficiency, if applicable.
2.8. Exposed hot and chilled water and steam pipes of three inches or greater in diameter with associated control valves are insulated in accordance with the standards of the current International Energy Conservation Code.
2.9. In all easily accessible locations, sealants and weather stripping are installed where appropriate and are in good condition.
2.10. Exhaust ventilation systems do not have leakage gaps at the connection to the intake registers or at the connections to the roof exhaust vents.
2.11. Swimming pool and spa covers are in good repair, and protocol is in place to replace.
2.12. Swimming pool and spa filters are in good repair and protocol is in place to replace.

3. Training and documentation:

3.1. Permits for all HVAC, electrical and plumbing equipment are in order.
3.2. Critical operations and maintenance staff have received appropriate training, which may include labor/management training, on all major equipment and systems and general energy and water conservation techniques.
3.3. Operational and maintenance record keeping procedures (log books, computer maintenance records, etc.) have been implemented.
3.4. The following documentation is on site and accessible to the operators: the operations and maintenance manuals, if such manuals are still available from the manufacturer, the maintenance contracts, and the

most recent retuning report.

3.5. Ensure that staff has been trained in water efficiency protocols.

3.6. Ensure that protocol is in place to monitor all existing utility meters.

3.7. Ensure that protocol is in place to read, monitor, and document all existing sub-meters, and a replacement protocol is in place.

ABOUT THE INSTITUTE FOR MARKET TRANSFORMATION AND THE NATURAL RESOURCES DEFENSE COUNCIL

ABOUT THE INSTITUTE FOR MARKET TRANSFORMATION

The Institute for Market Transformation (IMT) is a national 501(c)(3) nonprofit organization that catalyzes widespread and sustained demand for energy-efficient buildings. Founded in 1996 and based in Washington, D.C., IMT specializes in driving the intersection of real estate and public policy to make buildings more productive, affordable, valuable, and resilient. A trusted, non-partisan leader, IMT focuses on innovative and pragmatic solutions that fuel greater investment in energy-efficient buildings to meet local market priorities. IMT offers hands-on technical assistance and market research, alongside expertise in policy and program development and deployment and promotion of best practices and knowledge exchange. Its efforts lead to important policy outcomes, widespread changes in real estate practices, and lasting market demand for energy efficiency—resulting in greater benefits for all people, the economy, and the environment. Visit us at www.imt.org and follow us on Twitter @IMT_speaks.

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