

# Implementing Energy Audit and Tune-Up Policies

Rory Gahagan

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## **About IMT**

The Institute for Market Transformation (IMT) is a national nonprofit organization focused on increasing energy efficiency in buildings to save money, drive economic growth and job creation, reduce harmful pollution, and tackle climate change. IMT ignites greater investment in high-performance buildings through hands-on expert guidance, technical and market research, policy and program development and deployment, and promotion of best practices and knowledge exchange. For more information, visit [imt.org](http://imt.org)

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# 1. IMT/USDN Audits and Tune-ups Collective Action Group

Falling somewhere between energy benchmarking policies and building performance standards, audit and tune-up policies assess the current state of energy systems in different buildings and encourage owners and operators to make reasonable energy upgrades within those same buildings whenever possible. To meet local governments' interest in learning more about these policies and effectively implementing them, the Institute for Market Transformation (IMT) and the Urban Sustainability Directors Network (USDN) hosted a series of calls that addressed key considerations for local governments creating and implementing audit and tune-up policies. This call series ran from February to August of 2020,

for a total of six meetings. The group's members represented local governments that had adopted or implemented energy audit or tune-up policies, and featured speakers representing the City of Seattle, the City of Philadelphia, the City of Los Angeles, and the ENERGY STAR Portfolio Manager team.

This report summarizes the issues discussed in the group's calls and in one-on-one interviews with group members whose jurisdictions have adopted and implemented audit or tune-up policies. Insights from these conversations inform this report's recommendations.



## 2. Designing Audit and Tune-Up Policies

This document is designed for local governments that are in advanced planning stages for an audit and tune-up policy. Best practices for the design of audit and tune-up policies fall outside of the scope of this report. If you are new to approaching benchmarking and beyond benchmarking policies, it may be helpful to review some example policies and design approaches before reading this document. Readers interested in learning more about policy design should refer to these resources:

[“Creating a High-Impact Performance Policy: A Decision Framework for Local Governments”](#) by the City Energy Project. This framework identifies key decisions jurisdictions must make in developing a building performance policy.

It lists seven key decisions for the design of “beyond benchmarking” requirements, including energy audits, retrocommissioning, and tune-ups, with discussion of best practices for each.

[“Annotated Model Ordinance Language for a Policy to Improve the Performance of Existing Buildings”](#) by the City Energy Project. This model ordinance includes language establishing energy and water audit requirements and tune-up requirements and can be used as a starting point for jurisdictions in developing legislation.



### 3. What Are Audit and Tune-Up Policies?

The two types of building performance policies described in this report have a common basis. They are both based on an assessment of the current state of buildings' energy systems to help owners identify specific strategies and investments that can improve the energy performance of their buildings. They represent a middle ground between the straightforward reporting requirements of a benchmarking policy and the mandated energy use or emissions reductions of a building performance standard. The purpose of audit and tune-up requirements is to direct owners to go beyond benchmarking and take an additional step toward improving the energy efficiency of their buildings.

Compared to benchmarking policies, audit and tune-up policies require greater investments by building owners, but they also point owners toward specific opportunities to improve their facilities' performance and reduce operating costs. When implemented properly, these opportunities directly result in less energy consumption and reduction of greenhouse gas emissions. In comparison to building performance standards, which often require owners to make large capital investments in their properties, these policies are a lighter lift for building owners.

**What is an Audit Policy?** An energy audit is a comprehensive assessment of factors driving building energy consumption, including systems, envelope, operational characteristics, and other elements. Energy audits help building owners and operators understand energy costs, recommend energy performance improvements, and project capital costs and energy savings of said improvements.<sup>1</sup>

An audit policy requires owners of covered buildings to complete periodic energy audits of their facilities, typically once every 10 years, unless they meet certain performance exemptions such as an ENERGY STAR score above a specified level. Most audit policies call for energy audits

to be in accordance with the standards set by ASHRAE (formerly named the "American Society of Heating, Refrigeration, and Air-Conditioning Engineers"), a professional association that issues standards and guidelines including several different levels for building systems audits. ASHRAE Level I and Level II energy audits are two such standards that are often-specified in audit policies. An audit policy may also state which licenses or certifications are required to conduct a compliant building audit.

Note: Sometimes the term "energy audit" is used interchangeably with "energy assessment," since both refer to examining and reporting the state of a building's energy systems. However, for this report, the term "audit" will be used unless specifically referring to policy language that uses "assessment."

**What is a Tune-Up Policy?** Like an audit policy, a tune-up policy requires building owners and operators to complete, on a periodic basis (often every five years), an assessment of their buildings' energy systems and controls, resulting in recommended energy conservation measures (ECMs). In contrast to audit policies, tune-up requirements focus almost exclusively on identifying opportunities to improve a building's operations and maintenance to achieve energy savings. These opportunities often include measures like changing thermostat set points, equipment scheduling, calibrating critical control sensors, optimizing outside air use for economizer cooling, or adjusting lighting or irrigation schedules. In addition to focusing on operational inefficiencies, tune-ups require low- and no- cost repairs and adjustments that can result in immediate energy savings.<sup>2</sup>

<sup>1</sup> Pacific Northwest National Labs, "A Guide to Energy Audits." September, 2011.

<sup>2</sup> Erin Beddingfield and Zachary Hart, "Putting Data to Work: Using Data from Action-Oriented Energy Efficiency Programs and Policies." IMT. 2019.

Tune-ups are similar to building *retrocommissioning*, but with less-rigorous documentation and functional testing. A tune-up report lists a building system's problems, solutions, potential benefits, and costs to fix any identified problems. The City of Seattle's definition of a tune-up includes (a) an inspection of building systems to identify operational or maintenance issues; (b) corrections to operational issues identified in the inspection that have quick paybacks; and (c) a report to the City Office of Sustainability & Environment summarizing issues identified and actions taken.<sup>3</sup>

Note: Some jurisdictions use the term "retuning" instead of "tune-up" to refer to this process.

**What is a Retrocommissioning Policy?** According to New York City's Local Law 87, retrocommissioning is:

*A systematic process for optimizing the energy efficiency of existing base building systems through the identification and correction of deficiencies in such systems, including but not limited to repairs of defects, cleaning, adjustments of valves, sensors, controls or programmed settings, and/or changes in operational practices.*

In other words, retrocommissioning (RCx) is a way for qualified professionals to make low- or no-cost improvements to a building's existing operations, through simple repairs and recalibrating energy systems and controls, which can result in immediate energy savings.<sup>4</sup> Retrocommissioning policies require periodic assessment of a building's performance relative to its modeled performance, and they often have more robust documentation requirements than a tune-up policy.<sup>5</sup>

Note: Due to the similarity in intent and process between retrocommissioning and tune-ups and the fact that the same implementation principles apply to both policies, this report will only refer to tune-ups.

## 4. Policy Implementation

Policy implementation is where a local government's consistent stakeholder engagement can pay off through effective energy service provider inspections, recommendations, and energy improvements; high building owner compliance rates; and resulting energy savings. This paper will primarily discuss the best-practices of key implementation components, such as working closely with energy service providers and other stakeholders, controlling for data collection quality, and setting up appropriate staffing and ongoing support through help desks or help centers.



<sup>3</sup> City of Seattle, [Building Tune-ups Resources](#).

<sup>4</sup> Erin Beddingfield and Zachary Hart, "[Putting Data to Work: Using Data from Action-Oriented Energy Efficiency Policies and Programs](#)," IMT.

<sup>5</sup> Erin Beddingfield, Zachary Hart, and Julie Hughes, "[Putting Data to Work](#)," IMT.

## 5. Phasing-in Policy Requirements

Local governments considering an audit or tune-up policy should strongly consider phasing implementation of the policy over a number of years.<sup>6</sup> By requiring owners of covered buildings to comply in phases, a local government can distribute its implementation workload over more than one year to ease the burden of notifying and providing compliance support to building owners. Phasing-in also allows local government to apply lessons learned from the first implementation phase to later phases, improving its implementation operations at a faster rate.

Avoiding a “boom bust cycle” of supply and demand for energy service providers (ESPs) is another reason for local governments to phase-in policy requirements. Without phase-in, all tune-up or audit reports for a policy will be due in the same year. This may make it difficult for ESPs to staff up to meet the demand, since they likely will not have work to sustain those staffing levels in the years between compliance deadlines. Relatedly, jurisdictions should consider phasing-in their policies such that the policy phase-in takes the same number of years as the compliance cycle. For example, a local government whose policy uses a five-year compliance cycle should phase-in compliance over five years, with a roughly equal number of buildings complying each year. This keeps demand for ESP services relatively constant over the lifetime of the policy.

Generally speaking, there are two main approaches to policy phase-in: phasing-in by building size or by random selection.

### Approach 1: Phasing-In by Building Size

Six cities phase-in their policies by requiring large buildings to comply first, because these owners typically have the most resources available to make energy improvements and the greatest opportunities for energy savings. “Large buildings” is a subjective term; some local governments define this as buildings over 100,000 square feet, while others say this group is over 50,000 square feet. Local governments should determine the size thresholds that work best relative to their covered building stock.

Following large buildings, local governments should consider phasing-in the next size down of buildings, or what may be called “mid-sized buildings.” Mid-size may be as small as 25,000 to 49,999 square feet or as large as 50,000 to 99,999 square feet, again, depending on how a local government chooses to divide its building stock. Buildings between 25,000 to 49,999 square feet may have mixed responses to an audit or tune-up policy,<sup>7</sup> because it is less common for this size group to be professionally-managed or found within the portfolio of a large commercial real estate firm. Thus, this group is likely to require greater support from local government to comply with the policy.

The smaller a policy’s threshold for covered buildings, the greater the number of buildings that will need to comply. This can add considerably to the jurisdiction’s implementation workload. Below 50,000 square feet, the smaller a building is, the less likely it is for owners to work within economies of scale. Therefore, they may require more compliance support than larger buildings and will usually have less energy savings potential per building in absolute terms.

However, because smaller buildings are less likely to be professionally-managed, they may have larger energy savings opportunities proportionate to their total energy use. Such buildings may especially benefit from the low-cost corrective actions of a tune-up policy. According to Barry Hooper at the City of San Francisco’s Department of the Environment, buildings under 25,000 square feet may

<sup>6</sup> The City Energy Project, “[Engaging the Community in Policy Development](#).” December 2018.

<sup>7</sup> Interview with Barry Hooper at San Francisco Department of the Environment

be better-served by efforts in addition to audit or tune-up requirements, like energy efficiency programs that address buildings door-to-door. Some local governments also adjust policy requirements for buildings below a smaller size threshold to reduce potential compliance costs for these smaller building owners. For example, San Francisco, CA and Boulder, CO require ASHRAE Level II assessments for buildings 50,000 square feet and larger, but only ask for ASHRAE Level I assessments for buildings below this size threshold.

For local governments with limited resources, focusing on large buildings will have the greatest economic return on absolute energy savings. However, local governments who can also target small buildings should do so, as this will positively impact a greater volume of building owners.

## Approach 2: Phasing-in by IDs and Random Selection

One potential drawback of the size-based phase-in approach stem from the fact that there are a much greater number of small buildings than large ones. This approach can create difficult market conditions for ESPs, whose workload increases dramatically as smaller buildings are phased-in and drops dramatically afterward.

To avoid this possibility, jurisdictions should consider assigning compliance years according to the last digit of

a building ID (assuming IDs aren't correlated to buildings' sizes), or should otherwise randomly assign buildings to compliance years, so that there is a roughly-even demand for tune-ups or audits each year of the compliance cycle. This creates an evenly-distributed, more-predictable and more-manageable workload for ESPs. For example, in a five-year compliance cycle, roughly 20 percent of covered buildings would comply each year. Atlanta, New York City, and Los Angeles chose to phase-in buildings according to the last digit of their building identification numbers for their policies. Each digit was assigned a separate compliance year so that an even number of buildings must comply each year throughout the policy's lifetime. This approach also evenly distributes the number of buildings of various sizes that need an audit or tune-up.

No matter how a local government decides to stagger its compliance deadlines, policymakers should demonstrate leadership by making municipal buildings comply before any private sector buildings are required to do so. When municipal buildings serve as "trial runs" for complying and completing required actions, the local government can work out any logistical challenges to implementation before asking private building owners to comply. Municipal buildings that successfully comply with the policy and achieve energy savings can become examples for other buildings owners and promote the benefits of an audit or tune-up policy.



## 6. Notification and Outreach to Stakeholders

Local governments implementing audit or tune-up policies should allocate ample time and resources to notifying building owners and other stakeholders, such as ESPs, of the new policy requirements. For absolute clarity on who the policy does apply to and the required deadlines, a local government can create a public version of its “covered buildings list”<sup>8</sup> as an easily-accessible resource for building owners to check if their building(s) must comply with a policy and under what deadline(s). This list typically includes the addresses, names, and building IDs (if applicable) of all buildings that must fulfill an audit or tune-up requirement. In some cases, such as Washington, DC, the list also includes the owner of record and/or property management company.<sup>9</sup>

While a covered buildings list is a useful resource for building owners to seek out themselves, local governments should plan for direct outreach to building owners to notify them of the policy and places to access more information. Initial communication(s) to stakeholders should include the following information:<sup>10</sup>

- Why local government is requiring building owners to conduct an audit or tune-up
- Which types of properties the policy covers
- What action is required for compliance
- How building owners can find their assigned building ID numbers
- What are the consequences of non-compliance
- Where building owners can find additional information (websites, emails, newsletters, etc.)
- Who to contact with questions and how

Local governments should first notify all owners of covered buildings via mail with an official letter at least one year before their compliance deadline. Costs for this can be reduced by including compliance notices with regular mailings to building owners such as tax bills. However, local governments should also strive to communicate with owners via these channels to increase awareness of the policy requirements:

- Email – local governments should prioritize collecting email addresses of people associated with covered buildings, as this is a cheaper and easier way to communicate with them than official mailings
- Regular meetings with the public via open forum or virtual meeting rooms
- Official newsletters and websites
- Networks and associations representing building owners such as the Building Owners and Managers Association
- Networks and associations representing ESPs that have an interest in helping their customers comply with the policy requirements

Some building types, which may have fewer resources or less familiarity with building energy management, may warrant tailored outreach. For example, affordable multifamily buildings, non-profit buildings, and houses of worship are several sectors that may benefit from direct, targeted outreach by the local government. Additionally, local governments often struggle to find accurate contact information for owners of small buildings and owners with small real estate portfolios, making them difficult to notify. Local government should contact organizations and companies, such as neighborhood business associations<sup>11</sup> and property management firms, that may have contacts for hard-to-reach buildings.

<sup>8</sup> For more information on creating a covered buildings list, see “[Implementing Building Performance Policies: How Cities Can Apply Legislation for Maximum Impact](#)” by the City Energy Project.

<sup>9</sup> For an example, see Boston’s covered building list, linked in the text of [this page](#).

<sup>10</sup> City Energy Project, “[Implementing Building Performance Policies: How Cities Can Apply Legislation for Maximum Impact](#).”

<sup>11</sup> For more information on connecting with small business owners, look at IMT’s [Small Business Energy Initiative](#).

## 7. Engaging Energy Services Providers

It is vital to the success of an audit or tune-up policy that a critical mass of ESPs understand the policy's purpose and are familiar with the compliance requirements so that they can not only help their customer comply, but also deliver high-quality services in the process. Therefore, working with ESPs should be a priority of any local government implementing an audit or tune-up policy. Jurisdictions should involve ESPs in the development of the policy requirements and any supporting regulations, provide training and outreach for ESPs as well as building owners, investigate methods of supporting firms with a track record of performing high quality work, and consider strategies for encouraging equitable distribution of job and contract opportunities resulting from the policy.

### **Recommendation: Involve ESPs in the Development of the Policy and Supporting Regulations**

One way that local governments can meaningfully engage ESPs is through the process of setting the rules and regulations that guide the policy's implementation. Rules and regulations processes exist to define and clarify aspects of a law that were left unspecified in the legislation.

For example, a jurisdiction might issue administrative rules declaring which professional certifications ESPs must have to conduct a compliant audit or tune-up rather than make such a determination in law. This gives the jurisdiction the flexibility to amend the list of acceptable certifications in the future without needing to go to the Council to amend the law. The same goes for other aspects of policy such as defining the specific elements of a tune-up process including which corrective actions are mandatory and which are voluntary or determining the building characteristic data that tune-up reports should collect.

In its rules and regulations process, the City of Philadelphia convened a regulatory advisory group consisting of ESPs, building owners, and other stakeholders to provide guidance, ask questions, and share concerns on the tune-up requirements in the City's Building Energy Performance

Policy (BEPP). The advisory group held a series of focused conversations on how the City should approach the following topics:

- How to define the elements of a tune-up assessment for clarity in compliance and effectiveness. This included deciding which corrective actions are required for building owners to take and which are voluntary
- How to create alternative compliance pathways for building owners
- What data would be useful to collect from ESPs and building owners, for future policy development and assessing the efficacy of the audit and tune-up policy
- Which certifications and other qualifications required for tune-up professionals to conduct tune-up assessments

The City selected the above agenda items because they were unresolved topics from the policy's initial stakeholder engagement process. By facilitating focused conversations with a group of professionals who could aptly address the policy's technicalities, the City's Rules and Regulations process gathered direct feedback on pressing implementation details within a relatively-short time frame. Forming frequent, direct channels for engagement on the policy's development and implementation increased stakeholder support for the policy and helped the City cultivate valuable ongoing relationships with the local buildings and service provider industries.



Establishing accepted qualifications for ESPs is an additional measure to assure quality work from ESPs. Existing certifications for tune-up specialists from the Cities of Seattle and Philadelphia are listed below:

	<b>Seattle<sup>12</sup></b>	<b>Philadelphia</b>
<b>Who can perform a tune-up assessment?</b>	Tune-up specialists	Qualified tune-up specialists
<b>Who can complete corrective actions?</b>	<p>A Building Owner must review the report and implement all required Corrective Actions, or an equivalent tune-up action if approved by the Tune-Up Specialist. Implementation of Corrective Actions may be conducted by a Tune-Up Specialist during or after the Building Tune-Up Assessment, or by other professionals with relevant expertise.</p> <p>For Corrective Actions made after (not during) the Building Tune-Up Assessment, the Tune-Up Specialist is required to verify that the required Corrective Actions identified in the Building Tune-Up Assessment were implemented and that all corrected equipment and systems are functioning as intended.</p>	<p>In-house staff or contracted service providers can complete the corrective actions. The final building tune-up report must be verified and signed by the qualified tune-ups specialist.</p> <p><i>Not defined in legislation: whether there are specific qualifications required for those completing corrective actions.</i></p>
<b>Tune-up specialist qualifications</b>	<p>At least seven years' experience plus one of the following credentials:</p> <ul style="list-style-type: none"> <li>• Professional Engineer in Washington State</li> <li>• Building Operator Certification Level II</li> <li>• Certified Energy Manager</li> <li>• Certified Commissioning Professional</li> <li>• Commissioning Authority</li> <li>• Existing Building Commissioning Professional</li> </ul>	<p>Licensed Professional Engineer or Certified Energy Manager</p> <p><i>Not defined in legislation: whether a qualified tune-up specialist can be in-house staff or if it must be a third party.</i></p>

As seen in Philadelphia and discussed during IMT and USDN’s April call with the collective action group, the way that a local government convenes its stakeholder meetings can be just as important as who attends them. Grouping stakeholders with similar interests allows for members to support one another’s knowledge base and may be good for focused, subject-specific conversations. Conversely, “cross pollinating” stakeholder groups by grouping participants with mixed-interests and areas of expertise can lead to valuable insights.

<sup>12</sup> <http://www.seattle.gov/environment/climate-change/buildings-and-energy/building-tune-ups/resources>

**Appendix D** contains charts with the certifications and qualifications for every local government with an audit, retrocommissioning, or tune-up requirement.

### **Recommendation: Improve Quality of Audits, Retrocommissioning, and Tune-Ups Through Training and Outreach for ESPs**

Whatever qualifications a local government decides to accept for ESPs, policy-specific training and education is recommended as an important quality assurance measure. As an audit or tune-up policy requires work done by private organizations in a competitive market, there is risk that some ESPs might offer low-cost or low-quality audits or tune-ups, perhaps to attract more customers who may want to avoid the costs of upgrades to their building or due to lack of knowledge and commitment to the policy.

This inevitably creates a “race to the bottom” among ESPs, and firms that do offer higher quality work in line with the spirit of the policy will be unable to compete with lower-cost, lower-quality competitors. To avoid this, ESPs should ideally be required to complete a short, policy-specific training to be eligible to perform audit or tune-up assessments. If this is not possible, local governments should offer a training for ESPs that will prepare them to recommend energy conservation measures that align with the policy objectives. Beyond training, certifications, and education for ESPs, local governments can consider individually approving firms for building owners to use for audit or tune-up services. Some municipalities provide lists of qualified firms that have either completed required official trainings or otherwise been individually certified by the local government. For example, [Boulder, CO](#) provides a list of qualified service providers that have met minimum qualifications and completed the City’s online policy-specific trainings to conduct energy assessments and retrocommissioning. Similarly, [Berkeley, CA](#) provides a list of providers that have registered with the City. Before conducting an energy assessment, Berkeley’s Registered Energy Assessors must meet the City’s minimum qualifications, obtain a Berkeley business license, agree to an Energy Assessor Registration Agreement, and attend an Assessor Orientation. Keeping a list of approved firms also allows local government to take firms off the list if they provide low-quality assessments and recommendations to building owners, thereby preserving a high standard of work by ESPs under the policy.

If possible, a local government should test ESP training, assessments, and policy implementation with a select group of buildings before working with its total covered buildings. Implementation of Seattle’s Building Tune Up policy was preceded by the City’s Tune Up Accelerator program, which recruited local ESPs and 102 mid-size buildings (approximately 50,000 to 100,000 square feet large) to conduct initial tune-up assessments and make appropriate energy conservation measures. The program was indispensable to the policy’s success as an opportunity for the City, building owners, and ESPs to work through implementation obstacles, test preconceived notions, and glean lessons that later improved workforce trainings and tune-up assessments. For instance, prior to the Accelerator, the City expected third-party Tune Up Specialists to identify more corrective actions than in-house Specialists. However, after completing the Accelerator program, the City found that in-house Tune Up Specialists implemented, on average, 6.7 required corrective actions and 3.0 voluntary corrective actions, whereas third-party Tune Up Specialists implemented, on average, 3.2 required corrective actions and 1.2 voluntary corrective actions.<sup>13</sup> In other words, in-house Tune Up specialists implemented more than double the number of corrective actions than their third-party counterparts.

Additionally, the City’s Accelerator program produced several lessons from this early work with ESPs for how to make the City’s tune-up policy more effective. For example, the City condensed their tune-up trainings and shortened their explanation of what a basic tune-up is while providing more specifics on what the City would view as complete tune-up documentation. This feedback helped the City train ESPs more effectively for better policy compliance. For more information and resources, see [the Accelerator’s training resources](#), or [Seattle’s Tune-Up Specialist Training Sessions](#).

<sup>13</sup> Terry Sullivan, Rebecca Baker, and Blake Ringeisen, “Scaling Commercial Building O+M – Initial Results from Mandatory Building Tune Ups in Seattle.” City of Seattle. 2020.

## Recommendation: Act to Encourage Equitable Distribution of Work Opportunities

While local governments should control for the quality of the work by specifying ESP qualifications and offering trainings, they should also encourage equitable distribution of these work opportunities whenever possible. As audit and tune-up policies drive demand for energy services, local governments should help communities benefit equitably from the economic growth stimulated by this demand. Local governments can pursue this goal in two main ways: supporting inclusive workforce development programs to help members of underserved communities access jobs resulting from the policy and using equitable procurement processes for projects on municipal buildings.

Workforce development programs can help people from low-income backgrounds and communities of color gain the skills necessary to perform some or all of the elements of building performance assessments. Local governments can work with pre-existing workforce programs offered by community colleges, utilities, unions, other governmental departments, or other providers to avoid duplicating efforts for high-road job development. If none of these opportunities exist, local governments can create their own workforce training programs with the aforementioned entities.

Another way local governments can encourage economic equity resulting from their policy is to support disadvantaged businesses by committing to inclusive contracting and hiring practices when procuring services for municipal buildings' compliance:

- **Disadvantaged Business Enterprise (DBE) provisions**, which can also include Minority Business Enterprise (MBE) provisions and Women Business Enterprise (WBE) provisions, help to ensure that people of color (POC), women, and socially- or economically-disadvantaged businesses have fair opportunities to win contracts. A DBE is a business that's at least 51 percent owner-operated and controlled by minorities, women, or disadvantaged persons. This designation can be self-identified, but the title is usually certified by a city, state, or federal agency.

- **Local-, POC-, and women-hire policies** set goals to increase the number of people with these identities that are hired for government-funded projects. By hiring local, a government organization can ensure that tax dollars are reinvested back into its own economy. Similarly, POC- and women-hire policies help to channel government revenue into these groups with traditionally lower employment rates or histories of disinvestment.
- **Community Benefit Agreements (CBAs)** are project-specific agreements between a developer and a community. A CBA identifies the ways that a project will contribute to a community. According to the NAACP, "terms from a CBA can be incorporated into an agreement between the local government and the developer, as a development agreement or lease, which gives the local government the power to enforce the community benefits terms." This way, a CBA can build community trust in a project by addressing their concerns for a development in a legally-binding and enforceable agreement.

Ultimately, standing up workforce training programs can help both the public and private-sector. Local government cannot require private sector firms to create workforce training programs or implement inclusive contracting and hiring. However, they can serve as a model for these tools and practices through their own workforce initiatives and contracting opportunities. For local governments and private sector organizations that wish to increase equitable economic opportunities in their communities, [All-in-Cities' Inclusive Procurement and Contracting Resource](#), co-authored by Emerald Cities Collaborative and PolicyLink, and the [NAACP's Just Energy Policies: Model Energy Policies Guide](#) are two resources for inclusive procurement and contracting strategies, including local-, POC-, and women-hire policies, DBE provisions, and Community Benefit Agreements.

## 8. Iterative Evaluation of Policy Efficacy

To incorporate lessons learned along the way of policy implementation, remain responsive to sudden roadblocks, and optimize an audit or tune-up policy for energy savings efficacy, local leaders should establish an iterative, flexible system that evaluates policy performance during implementation to modify and improve their ordinance. Iterative improvements can also build community support of the ordinance, as stakeholder feedback shapes the policy and stakeholders feel greater ownership of policy success.

Communications with ESPs are key to evaluating the effectiveness of a local government's policy implementation and identifying improvements or clarifications to be addressed as legislative amendments or through rulemaking. The City of Seattle developed regular communication with their tune-up specialists throughout the implementation of their policy and Accelerator program. Through surveys and in-depth interviews, the City was able to determine the effectiveness of its outreach and education materials for tune-up specialists and learn about common obstacles for specialists and owners alike. For example, the City's survey of tune-up specialists revealed that many building owners did not understand what a tune-up is nor how much time they take to complete. This feedback was valuable for making fast changes to the City's outreach and communications approach to owners and tune-up specialists and highlighted the importance of providing ongoing technical support through the tune-up help desk.

To make policy evaluation more effective, local governments should consider developing key performance indicators (KPIs) that they can use to measure the effectiveness and quality of policy implementation. By quantifying key milestones and policy objectives, KPIs help to generate quick reports, understand systematic errors, and prioritize non-compliant buildings or cohorts.

The City of Seattle developed the following KPIs for evaluating the effectiveness of its tune-up policy:

- Required corrective actions implemented
- Voluntary corrective actions identified and implemented
- Voluntary corrective actions identified and not implemented
- Overall compliance rate – the percent of buildings in a cohort that have satisfied the compliance requirements for a tune-up cycle
- Compliance impact rate – the percent of buildings in a cohort that have satisfied the compliance requirements by either conducting a tune-up or through an alternative compliance pathway
- Rate of awareness – the percent of buildings in a cohort that are aware of the requirement and have communicated with their local government in some form
- Total inquiries for customer support
- Inquiry response rate for customer support<sup>14</sup>



<sup>14</sup> Terry Sullivan, Rebecca Baker, and Blake Ringeisen, "Scaling Commercial Building O+M – Initial Results from Mandatory Building Tune-Ups in Seattle." City of Seattle. 2020.

## 9. Data Collection for Analysis

Though the primary purpose of audit or tune-up policies is to encourage building owners to improve the performance of their properties, they also present local governments with a great opportunity to collect building data that has greater analytical value than the data that can be acquired from benchmarking requirements. For example, audit and tune-up policies require the inspection of a building's heating systems and equipment, ventilation, building envelope, generation equipment, irrigation system, building automation system, and process loads. Local governments can require auditors or tune-up specialists to collect information on these systems such as equipment type, fuel source, equipment efficiency, age, and condition. Local governments can use such data to analyze the local building stock and inform the design of future building performance programs and policies that support goals like building electrification.

IMT's 2019 report, "[Using Data From Action-Oriented Energy Efficiency Programs and Policies](#)," concluded that from a data analysis perspective, the most important information to collect from an audit or tune-up policy is an inventory of the equipment and systems that affect the amount of energy consumed by a building. This data can be helpful in long-term policy planning, as it allows local government to identify prevalent but outdated systems in the building stock that are prime targets for energy and greenhouse gas emissions reductions from replacement and electrification. See pages 22 – 38 of that report for an extended discussion of the different data collection implications of implementing an audit or tune-up policy.

For tune-up policies specifically, collecting data on corrective actions will later help local government measure the impact of its policy.<sup>15</sup> Identifying which corrective actions were recommended and which were implemented, as well as the dates of the assessment and actual correction, can be used to conduct a before-and-after

analysis of tune-up efficacy to drive improvements in building stock. Additionally, specific questions on the quality and functionality of building automation systems can help regulators determine whether a Tune-up Specialist's actions (or lack thereof) make sense for the building in which they took place. All these pieces of data collection further support the importance of KPIs to measure policy performance and improve a local government's approach to tune-ups where improvement is needed.

After determining what data to collect, local government must develop a collection method. If a local government has considered or implemented a Building ID system already, incorporating Building IDs to track compliance and reported data is a straightforward way to integrate the data collected by a tune-up policy into a chosen software system with other information related to local building stock. Local governments can explore software options to support data collection, such as [SEED](#) from the Department of Energy, Salesforce, Accela, and in-house IT.

While testing and first implementing its tune-up policy, the City of Seattle developed an [Excel-based workbook](#) for data collection. In early stages of implementation, the Excel collection method was useful to Tune-Up Specialists when inspecting concrete-covered basements and underground control rooms, where internet connection was scarce; printing out the Excel sheets ahead of time allowed specialists to complete the assessments accurately and on-site. When the City later upgraded to web-based data collection, the Excel template provided useful structure to tailor the newer, more-sophisticated tool to the specialists' needs. The City still makes the Excel workbook available on its website to help building owners understand all of the information that they will need to collect in a tune-up process to achieve compliance.

<sup>15</sup> Terry Sullivan, Rebecca Baker, and Blake Ringeisen, "Scaling Commercial Building O+M – Initial Results from Mandatory Building Tune-Ups in Seattle." City of Seattle. 2020.

Local governments with audit policies should use the [Audit Template](#) from the U.S. Department of Energy to collect data from assessments. The template is a web-based feature of DOE's [Building Energy Asset Score](#) tool. After entering building audit data into the tool, users can generate an audit report that lists all the data entered and calculated tables and charts outlining the building energy use by energy type and end use, and the cost and payback of energy saving opportunities. The Audit Template follows ASHRAE Standard 211 "Standard for Commercial Building Energy Audits," but it can be customized for local jurisdictions' audit requirements.

Most local governments with audit requirements, including Atlanta, Los Angeles, New York City, and San Francisco, collected their first few years of data through spreadsheets and migrated to the use of Audit Template to standardize and streamline processes. For example, New York City, which was one of the first jurisdictions to adopt an audit policy, initially used an Excel-based data collection tool, as that was what was available to the City at the time. However, the City ran into complications with this method and recently adopted Audit Template to streamline data collection and reduce potential errors.



## 10. Staffing and Compliance Support Services

Municipal staff are vital to getting a policy off the ground and setting all prior details and considerations in motion. Administering an audit or tune-up policy will likely include the notification and ongoing outreach to building owners, setting up and running a help desk to troubleshoot any issues with policy compliance, checking collected data quality, and overseeing the enforcement processes. Continuously working with ESPs and evaluating policy effectiveness are also significant responsibilities of appointed staff assigned. Local governments can fulfill these duties either through in-house staff or third-party support.

While some functions must be fulfilled by a local government employee, others can possibly be outsourced to third parties. For example, working closely with ESPs and communicating with building owners are best accomplished by in-house staff who can build rapport and establish relationships with these important stakeholder groups. However, running a help desk and evaluating data quality may be delegated outside of the local government to a consultant or other specialist organization to maximize time and resources.

A **help desk** or help center for audit and tune-up policies is highly recommended for ongoing support to building owners and staff, as well as auditors and tune-up specialists. As an example of a [help center](#), the NYC Retrofit Accelerator was formed by the Mayor's Office to support the City's building energy laws (LL84, LL87) and use the data they produced to identify and assist privately-owned buildings in making energy-efficient upgrades. While help desks should be fully ready to address all questions on the policy in a timely manner, the City of Seattle found that only 10 to 20 percent of their help desk's inquiries required technical building knowledge. Most of the assistance provided basic compliance processes, IT and process help, and clarifying questions. Seattle designated a full-time employee for their tune-up policy's help desk, as its consistent and thorough support is essential to the program's success. A local government may similarly

consider pre-existing staff who can offer both general and expert technical building and policy support, or otherwise look to third-party vendors who can do the same.

For this report, IMT asked a handful of participating local governments to estimate their allocated staff time, estimated number of covered buildings, and identification of third-party support (if any) that they used to implement their respective policies. For examples of staffing requirements, please see the chart below that specifies several cities' allocated staff time for their respective policies, the number of buildings that staff was responsible for under the policy, and whether each city sought third-party support for certain policy-specific duties.



City	# Covered Buildings	# Staff	Third-party support?
<b>Seattle, WA</b> <i>Building Tune-up policy</i>	941	2.5 FTEs  Composition: 1 FTE for Technical Assistance/ Help Desk lead, 0.5 FTE for three other OSE staff that also support benchmarking program	Not at present.  Support during program ramp up: an IT consultant to build data collection platform, technical assistance consultant to develop checklist of Tune-Up required corrective actions, facilitator to help with technical advisory committee that developed Tune-Up Director’s Rule specifics, communications support and graphic design services to create program identity, informational materials, case studies, website.
<b>San Francisco, CA</b> <i>Audit Policy</i>	1,675 required to audit	0.5 FTE	No ongoing support specific to audits.  Have benefitted from grants, utility technical contracts, and of course PNNL developing & maintaining Asset Score/ Audit Template.  Relies on IT infrastructure that is maintained by the department or city, but not specifically by the benchmarking program, such as: <ul style="list-style-type: none"> <li>• Salesforce for recordkeeping &amp; email communication</li> <li>• City open data portal</li> <li>• PowerBI</li> <li>• Office365</li> </ul>
<b>Boulder, CO</b> <i>Audit and RCx Policy</i>	450	1.6 FTE	Yes – third party administers help desk



# Appendices

## Appendix A: Cities Phasing in by Building Size

City	First Compliance Date	Buildings	Action and Frequency
Berkeley, CA <sup>16</sup>	2018	Commercial and multifamily ≥ 50,000 sq. ft.	Must complete an energy assessment every <b>five</b> years
	2019	Commercial and multifamily 25,000 to 49,999 sq. ft.	
	2015	Commercial and multifamily ≤24,999 (including 1 – 4 unit homes)	Must complete an energy assessment every <b>ten</b> years OR, if sold prior to the deadline, complete assessment at <b>Time of Sale</b>
Boston, MA <sup>17</sup>	May 15, 2014	Non-residential buildings ≥ 50,000 sq. ft.	Must conduct an energy action and assessment (EAA) every <b>five</b> years. EAA is due four years from the buildings' previous benchmarking report.
	May 15, 2015	Residential buildings ≥ 50,000 sq. ft.	
	May 15, 2016	Non-residential buildings 35,000 to 49,999 sq. ft.	
	May 15, 2017	Residential buildings 35,000 to 49,999 sq. ft. OR with ≥ 35 units	
Boulder, CO <sup>18</sup>	June 1, 2019	Existing buildings ≥ 50,000 sq. ft. New buildings ≥ 10,000 sq. ft. City buildings ≥ 5,000 sq. ft.	Energy assessments required every <b>ten</b> years. ASHRAE Level I for buildings < 50,000 sq. ft. ASHRAE Level II for buildings ≥ 50,000 sq. ft.
	June 1, 2021	Existing buildings ≥ 30,000 sq. ft.	Lighting upgrades required (repeats every <b>ten</b> years). Retro-commissioning required every <b>ten</b> years.
	June 1, 2023	Existing buildings ≥ 20,000 sq. ft.	
	June 1, 2021	Existing buildings ≥ 50,000 sq. ft. New buildings ≥ 10,000 sq. ft. City buildings ≥ 5,000 sq. ft.	Implementation of cost-effective RCx measures due (repeats every <b>ten</b> years).
	June 1, 2023	Existing buildings ≥ 30,000 sq. ft.	
	June 1, 2025	Existing buildings ≥ 20,000 sq. ft.	
	June 1, 2023	Existing buildings ≥ 50,000 sq. ft. New buildings ≥ 10,000 sq. ft. City buildings ≥ 5,000 sq. ft.	
	June 1, 2025	Existing buildings ≥ 30,000 sq. ft.	
	June 1, 2027	Existing buildings ≥ 20,000 sq. ft.	
Edina, MN <sup>19</sup>	June 1, 2022	Commercial and multifamily buildings ≥ 100,000 sq. ft.	ASHRAE Level I energy audit every <b>five</b> years
	June 1, 2023	Commercial and multifamily buildings 50,000 to 99,999 sq. ft.	
	June 1, 2024	Commercial and multifamily buildings 25,000 to 49,999 sq. ft.	
Reno, NV	2026	City buildings	Retuning or an energy and water audit required every <b>seven</b> years as pathways to fulfill performance targets of the law.
	2028	Agency- and privately-owned buildings ≥ 100,000 sq. ft.	
	2029	Agency- and privately-owned buildings ≥ 50,000 sq. ft.	
	2032	Agency- and privately-owned buildings ≥ 30,000 sq. ft.	
Seattle, WA <sup>20</sup>	October 1, 2018	Commercial buildings ≥ 200,000 sq. ft.	Building energy and water tune-ups are required every <b>five</b> years.
	October 1, 2019	Commercial buildings 100,000 to 199,999 sq. ft.	
	October 1, 2020	Commercial buildings 70,000 to 99,999 sq. ft.	
	October 1, 2021	Commercial buildings 50,000 to 69,999 sq. ft., excluding parking	

<sup>16</sup> [https://www.cityofberkeley.info/uploadedFiles/Planning\\_and\\_Development/Level\\_3 - Energy and Sustainable Development/Regulations\\_current\(1\).pdf](https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Regulations_current(1).pdf)

<sup>17</sup> <https://www.boston.gov/how-complete-energy-action-and-assessment>

<sup>18</sup> <https://boulder.colorado.gov/sustainability/boulder-building-performance-efficiency-requirements>

<sup>19</sup> <https://edinamn.gov/DocumentCenter/View/8329/Efficient-Building-Benchmarking-Ordinance-PDF?bidId>

<sup>20</sup> [http://www.seattle.gov/Documents/Departments/OSE/OSE\\_DIRECTORS\\_RULE\\_2016-01.pdf](http://www.seattle.gov/Documents/Departments/OSE/OSE_DIRECTORS_RULE_2016-01.pdf)

## Appendix B: Phase-In by Building IDs

City	Date	Buildings	Action and Frequency
Atlanta, GA <sup>21</sup>	December 31, 2019	Commercial buildings with ABID ending in "9"	ASHRAE Level II energy audit required every <b>ten</b> years.
	December 31, 2020	Commercial <b>and multifamily</b> buildings with ABID ending in "0"	
	December 31, 2021	Commercial and multifamily buildings with ABID ending in "1"	
	December 31, 2022	Commercial and multifamily buildings with ABID ending in "2"	
	December 31, 2023	Commercial and multifamily buildings with ABID ending in "3"	
	December 31, 2024	Commercial and multifamily buildings with ABID ending in "4"	
	December 31, 2025	Commercial and multifamily buildings with ABID ending in "5"	
	December 31, 2026	Commercial and multifamily buildings with ABID ending in "6"	
	December 31, 2027	Commercial and multifamily buildings with ABID ending in "7"	
	December 31, 2028	Commercial and multifamily buildings with ABID ending in "8"	
Los Angeles, CA <sup>22</sup>	June 1, 2021	LADBS Building ID ending in "0"	Audit or RCx compliance. Audits are required every <b>five</b> years from the initial deadline.
	December 1, 2021	LADBS Building ID ending in "1"	
	June 1, 2022	LADBS Building ID ending in "2"	
	December 1, 2022	LADBS Building ID ending in "3"	
	June 1, 2023	LADBS Building ID ending in "4"	
	December 1, 2023	LADBS Building ID ending in "5"	
	June 1, 2024	LADBS Building ID ending in "6"	
	December 1, 2024	LADBS Building ID ending in "7"	
	June 1, 2025	LADBS Building ID ending in "8"	
	December 1, 2025	LADBS Building ID ending in "9"	
New York City, NY <sup>23</sup>	December 31, 2020	Tax block number ending in "0"	Energy efficiency report that shows both an energy audit and proof of retro-commissioning. Required every <b>ten</b> years.
	December 31, 2021	Tax block number ending in "1"	
	December 31, 2022	Tax block number ending in "2"	
	December 31, 2023	Tax block number ending in "3"	
	December 31, 2024	Tax block number ending in "4"	
	December 31, 2025	Tax block number ending in "5"	
	December 31, 2026	Tax block number ending in "6"	
	December 31, 2027	Tax block number ending in "7"	
	December 31, 2028	Tax block number ending in "8"	
	December 31, 2029	Tax block number ending in "9"	
Salt Lake City, UT <sup>24</sup>	December 31, 2021	Tax IDs ending in "0" and "1" and over 50,000 sq. ft.	Tune-up evaluations are required for governed buildings and City properties that are eligible for participation in a utility-sponsored tune-up incentive program, as determined by the utility offering the incentive program and that have an Energy Star score of 49 and below. Implementation of tune-up measures in addition to evaluations is encouraged but not required. Repeats every <b>five</b> years.
	December 31, 2022	Tax IDs ending in "2" and "3" and over 50,000 sq. ft. Tax IDs ending in "0" and "1" and 25,000 - 49,999 sq. ft.	
	December 31, 2023	Tax IDs ending in "4" and "5" and over 50,000 sq. ft. Tax IDs ending in "2" and "3" and 25,000 - 49,999 sq. ft.	
	December 31, 2024	Tax IDs ending in "6" and "7" and over 50,000 sq. ft. Tax IDs ending in "4" and "5" and 25,000 - 49,999 sq. ft.	
	December 31, 2025	Tax IDs ending in "8" and "9" and over 50,000 sq. ft. Tax IDs ending in "6" and "7" and 25,000 - 49,999 sq. ft.	
	December 31, 2026	Tax IDs ending in "8" and "9" and 25,000 - 49,999 sq. ft.	
San Jose, CA <sup>25</sup>	May 1, 2021	APNs ending in "0" and "1"	Benchmarked buildings that do not meet the performance target must complete an audit (energy and water), retuning measures, or targeted retrofits.
	May 1, 2022	APNs ending in "2" and "3"	
	May 1, 2023	APNs ending in "4" and "5"	
	May 1, 2024	APNs ending in "6" and "7"	
	May 1, 2025	APNs ending in "8" and "9"	

## Appendix C: Other Phase-In Approaches

City	Date	Buildings	Action and Frequency
Austin, TX <sup>26</sup>	Time of sale	Multifamily buildings ≥ 5 units and ten years or older	Buildings must conduct an energy audit at time of sale. After conducting an audit, multifamily owners whose energy use exceeds 150 percent of the average must implement improvements to reduce energy use by 20 percent.
	Time of sale	All single-family buildings ten years or older	
Orlando, FL <sup>27</sup>	December 1, 2025 (day of notification)	Commercial and multifamily properties ≥ 50,000 sq. ft. with an ENERGY STAR score of 50 or below City properties ≥ 10,000 sq. ft. with an ENERGY STAR score of 50 or below	Must perform an energy audit or retro-commissioning service. Evaluation and requirement repeat every <b>ten</b> years.
San Francisco, CA <sup>28</sup>	Rolling deadline	Determined by SF Environment so that buildings of a given size do not all have the same deadline	ASHRAE Level II audit for buildings ≥ 50,000 sq. ft. ASHRAE Level I audit for buildings 10,000 to 49,999 sq. ft.

<sup>21</sup> <https://atlantabuildingefficiency.com/compliance/audit/>

<sup>22</sup> [https://www.ladbs.org/docs/default-source/forms/ebewe/arcx-faqs-final-120820.pdf?sfvrsn=487fcd53\\_4](https://www.ladbs.org/docs/default-source/forms/ebewe/arcx-faqs-final-120820.pdf?sfvrsn=487fcd53_4)

<sup>23</sup> [https://www1.nyc.gov/html/gbee/html/plan/1187\\_comply.shtml](https://www1.nyc.gov/html/gbee/html/plan/1187_comply.shtml)

<sup>24</sup> [https://codelibrary.amlegal.com/codes/saltlakecityut/latest/saltlakecity\\_ut/0-0-0-62046](https://codelibrary.amlegal.com/codes/saltlakecityut/latest/saltlakecity_ut/0-0-0-62046)

<sup>25</sup> <https://www.sanoseca.gov/home/showdocument?id=38163>

<sup>26</sup> <https://austinenergy.com/ae/energy-efficiency/ecad-ordinance/energy-conservation-audit-and-disclosure-ordinance>

<sup>27</sup> <https://www.orlando.gov/Initiatives/Building-Energy-Water-Efficiency-Strategy>

<sup>28</sup> <https://sfenvironment.org/energy-efficiency-audits-overview>

## Appendix D: Auditor Certifications

City, State Professional	Certifications, Qualifications	Required Years of Experience
<p><b>Atlanta, GA<sup>29</sup></b> <i>Qualified energy auditor</i></p>	(A) Registered Architect (RA), Professional Engineer (PE), or Certified Energy Manager (CEM)	Two or more years of auditing experience
	(B) An individual with auditing certifications from the Association of Energy Engineers (AEE); the Associated Air Balance Council (AABC); or the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)	Two or more years of auditing experience
	(C) An individual or firm	Five or more years of auditing experience
	(D) An individual with certifications described in (A) or (B)	Two or more years of building energy management experience in the building undertaking an energy audit
<p><b>Austin, TX<sup>30</sup></b> <i>Certified ECAD Energy Professionals</i></p>	<p>Residential Energy Services Network (RESNET) Raters or Building Performance Institute (BPI) Building Analyst Professionals.</p> <ul style="list-style-type: none"> <li>Austin Energy provides a list of certified, registered ECAD Professionals. Companies can be added to the list if providers:                             <ul style="list-style-type: none"> <li>Have the necessary certifications</li> <li>Attend an Austin Energy orientation to understand the Austin Climate Protection Plan, the ECAD ordinance, and Austin Energy rebates and incentives programs and standards</li> <li>Meet Austin Energy guidelines</li> <li>Choose markets to provide services (residential, commercial, multifamily)</li> <li>Abide by the Austin Energy Code of Conduct and Ethical Requirements</li> </ul> </li> </ul>	N/A
<p><b>Berkeley, CA<sup>31</sup></b> <i>BESO Registered Energy Assessor</i></p>	<p>Houses (1 to 4 units):</p> <ul style="list-style-type: none"> <li>Single Unit Buildings – Must be Certified Home Energy Score Provider.</li> <li>2 to 4 Attached Dwelling Units – If units are stacked or front to back, must also be Energy Upgrade California participating Home Performance Contractor or Rater. For more information about the Energy Upgrade California program, see Energy Upgrade CA overview.</li> </ul> <p>Multifamily/Mixed Use Buildings Must have two of the following:</p> <ul style="list-style-type: none"> <li>HERS Whole House (HERS II) Rater</li> <li>BPI Certified Multifamily Building Analyst</li> <li>GreenPoint Rater Existing Home Multifamily Rater</li> </ul> <p>Commercial/Mixed Use Buildings Must have one of the following:</p> <ul style="list-style-type: none"> <li>ASHRAE Building Energy Assessment Professional Certification (BEAP)</li> <li>Association of Energy Engineers Certified Energy Manager or Certified Energy Auditor</li> <li>California Professional Engineer licensed through the National Society of Professional Engineers</li> </ul> <p>After meeting minimum qualifications, ESPs must obtain a current Berkeley Business License, sign an agreement with the City, and complete a BESO Assessor Orientation</p>	N/A

<sup>29</sup> <https://atlantabuildingbenchmarking.files.wordpress.com/2019/01/formatted-energy-audit-guide-final.pdf>

<sup>30</sup> <https://austinenergy.com/ae/energy-efficiency/ecad-ordinance/energy-professionals/energy-professionals>

<sup>31</sup> <https://www.cityofberkeley.info/BESOassessor/>

City, State Professional	Certifications, Qualifications	Required Years of Experience
<b>Boston, MA</b> <sup>32</sup> <i>Qualified Energy Professional</i>	At least one of the following qualifications: <ul style="list-style-type: none"> <li>• ASHRAE Building Energy Assessment Professional</li> <li>• ASHRAE High Performance Building Design Professional</li> <li>• Association of Energy Engineers Certified Energy Manager</li> <li>• Association of Energy Engineers Certified Energy Auditor</li> </ul>	At least two years of experience performing building energy efficiency assessments
	Licensed PE with at least one of the following qualifications: <ul style="list-style-type: none"> <li>• Two years' experience performing building energy audits</li> <li>• For residential buildings only, a Building Performance Institute Multifamily Building Analyst</li> </ul>	(See first bullet)
<b>Boulder, CO</b> <sup>33</sup>	A registered design professional (either a Professional Engineer or Registered Architect)	At least three years professional experience performing Energy Assessments of equivalent scope on similar types of buildings
	A contractor approved by the local utility/the city to perform Energy Assessments of equivalent scope on similar types of buildings as part of the utility's/the city's Energy efficiency programs	N/A
	A Certified Energy Manager (CEM) or Certified Energy Auditor (CEA), certified by the AEE	At least three years professional experience performing Energy Assessments of equivalent scope on similar types of buildings
	A Building Energy Assessment Professional (BEAP) certified by ASHRAE	At least three years professional experience performing Energy Assessments of equivalent scope on similar types of buildings
	EMC Certification from NWEEI	At least three years professional experience performing Energy Assessments of equivalent scope on similar types of buildings
	Energy Management Professional (EMP) Certification from the Energy Management Association (EMA)	At least three years professional experience performing Energy Assessments of equivalent scope on similar types of buildings
<b>Los Angeles, CA</b> <sup>34</sup>	A California licensed engineer or architect	
<b>New York City, NY</b> <sup>35</sup> <i>Energy Auditor</i>	<ul style="list-style-type: none"> <li>• A registered architect or licensed professional engineer in New York State <u>with appropriate audit or retro-commissioning qualifications</u>, OR</li> <li>• A DOB registered energy auditor or retro-commissioning agent <u>with approved training</u></li> </ul> Approved certifications: <ul style="list-style-type: none"> <li>• CEA - Certified Energy Auditor</li> <li>• CEM - Certified Energy Manager</li> <li>• BEAP - Building Energy Assessment Professional</li> <li>• HBDP - High Performance Building Design Professional</li> <li>• MFBA - Multi-Family Building Analyst</li> </ul>	
<b>Orlando, FL</b> <sup>36</sup>	Free energy audits are provided by the Orlando Utility Commission (OUC)	

<sup>32</sup> <https://www.boston.gov/how-complete-energy-action-and-assessment#energy-assessment>

<sup>33</sup> <https://bouldercolorado.gov/sustainability/service-providers>

<sup>34</sup> <https://www.ladbs.org/docs/default-source/forms/green-building/ebewe-ordinances.pdf>

<sup>35</sup> [https://www1.nyc.gov/html/gbee/html/plan/training\\_1187.shtml](https://www1.nyc.gov/html/gbee/html/plan/training_1187.shtml)

<sup>36</sup> <https://www.orlando.gov/Initiatives/Building-Energy-Water-Efficiency-Strategy>

<b>City, State Professional</b>	<b>Certifications, Qualifications</b>	<b>Required Years of Experience</b>
<p><b>Reno, NV<sup>37</sup></b> <i>Qualified auditor</i></p>	<p>The qualified auditor can be an employee or contractor hired by the reporting entity, an employee of a utility, or a third-party service provider who possesses one or more of the following certifications:</p> <ol style="list-style-type: none"> <li>(1) 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 energy managers; or</li> <li>(2) A professional engineer (PE) registered in the State of Nevada; or</li> <li>(3) Certified energy auditor (CEA) or certified energy manager (CEM), issued by the Association of Energy Engineers (AEE); or</li> <li>(4) Certified facilities manager (CFM), issued by the International Facility Management Association (IFMA); or</li> <li>(5) System maintenance administrator (SMA) or system maintenance technician (SMT), issued by Building Owners and Managers Institute (BOMI) International; or</li> <li>(6) High performance building design professional (HBPD) or building energy assessment professional (BEAP), issued by the ASHRAE; or</li> <li>(7) For audits of multifamily residential buildings only, a multifamily building analyst (MFBA), issued by the Building Performance Institute (BPI)</li> </ol>	<p>Two or more years of auditing experience</p>
<p><i>Qualified retuning professional</i></p>	<p>The qualified retuning professional can be an employee or contractor hired by the reporting entity, an employee of a utility, or a third-party service provider who possesses one or more of the following certifications:</p> <ol style="list-style-type: none"> <li>(1) 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;</li> <li>(2) A professional engineer (PE) registered in the State of Nevada;</li> <li>(3) Certified commissioning professional (CCP), issued by the Building Commissioning Association (BCA);</li> <li>(4) Certified commissioning authority (CxA) or certified commissioning technician (CxT), issued by the AABC Commissioning Group (ACG);</li> <li>(5) Certified building commissioning professional (CBCP) or existing building commissioning professional (EBCP), issued by the Association of Energy Engineers (AEE)</li> <li>(6) Certified professional certified by the National Environmental Balancing Bureau (NEBB)</li> <li>(7) Commissioning process management professional (CPMP), issued by ASHRAE;</li> <li>(8) Accredited commissioning process authority professional (ACPAP) approved by the University of Wisconsin</li> </ol>	<p>Two or more years of commissioning or retuning experience</p>
<p><b>San Francisco, CA<sup>38</sup></b> <i>Energy Auditors</i></p>	<ol style="list-style-type: none"> <li>(1) Licensed Engineer (PE) OR PhD in Mechanical Engineering</li> <li>(2) One of of the following certifications: ASHRAE Building Energy Assessment Professional (BEAP); ASHRAE Commissioning Process Management Professional (CPMP); Association of Energy Engineers Certified Energy Manager (CEM); Association of Energy Engineers Existing Building Commissioning Professional (EBCP); Association of Energy Engineers Certified Building Commissioning Professional (CBCP)* ; Energy Management Professional (EMP)*; ACG’s CxA Certification* OR Northwest Energy Education Institute Energy Management Certification (EMC)</li> <li>(3) BOC International Building Operator Certification Level II; OR - (B) International Union of Operating Engineers Certified Energy Specialist</li> </ol>	<p>At least 2 years’ experience performing energy efficiency audits or commissioning of existing buildings; OR Any certification listed in #2.</p> <p>At least two years’ experience performing energy efficiency audits or commissioning of existing buildings</p> <p>At least ten years’ experience as a building operating engineer; OR At least five years’ experience as a chief operating engineer</p>

<b>City, State Professional</b>	<b>Certifications, Qualifications</b>	<b>Required Years of Experience</b>
<p><b>San Jose, CA<sup>39</sup></b> <i>Qualified Auditor</i></p>	<p>The Qualified Auditor can be an employee or contractor hired by the reporting entity, an employee of a utility, or a third-party service provider who possesses one (1) or more of the following certifications:</p> <ol style="list-style-type: none"> <li>1. An accredited certification that has been designated a "Better Buildings Recognized Program" by the U.S. Department of Energy ("DOE") meeting the criteria set forth in the Better Buildings Workforce Guidelines (BBWG) for Building Energy Auditors or Energy Managers;</li> <li>2. A Professional Engineer (PE) registered in the State of California;</li> <li>3. Certified Energy Auditor (CEA) or Certified Energy Manager (CEM), issued by the Association of Energy Engineers (AEE);</li> <li>4. Certified Facilities Manager (CFM), issued by the International Facility Management Association (IFMA);</li> <li>5. System Maintenance Administrator (SMA) or System Maintenance Technician (SMT), issued by Building Owners and Managers Institute (BOMI) International;</li> <li>6. High Performance Building Design Professional (HBPD) or Building Energy Assessment Professional (BEAP), issued by ASHRAE;</li> <li>7. For Audits of multifamily residential buildings only, a Multifamily Building Analyst (MFBA), issued by the Building Performance Institute (BPI)</li> </ol>	<p>Two (2) or more years of auditing experience</p>
<p><i>Qualified Retro-Commissioning Professional</i></p>	<p>The Qualified Retro-Commissioning Professional can be an employee or contractor hired by the reporting entity, an employee of a utility, or a third-party service provider who possesses one (1) or more of the following certifications:</p> <ol style="list-style-type: none"> <li>1. 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;</li> <li>2. A Professional Engineer (PE) registered in the State of California;</li> <li>3. Certified Commissioning Professional (CCP), issued by the Building Commissioning Association (BCA);</li> <li>4. Certified Commissioning Authority (CxA) or Certified Commissioning Technician (CxT), issued by the AABC Commissioning Group (ACG);</li> <li>5. Certified Building Commissioning Professional (CBCP) or Existing Building Commissioning Professional (EBCP), issued by the Association of Energy Engineers (AEE);</li> <li>6. Certified Professional certified by the National Environmental Balancing Bureau (NEBB);</li> <li>7. Commissioning Process Management Professional (CPMP), issued by ASHRAE;</li> <li>8. Accredited Commissioning Process Authority Professional (ACPAP) approved by the University of Wisconsin</li> </ol>	<p>Two (2) or more years of commissioning or retuning experience</p>

<sup>37</sup> <https://www.reno.gov/home/showdocument?id=78883>

<sup>38</sup> <https://sfenvironment.org/minimum-qualifications-energy-auditors>

<sup>39</sup> [https://library.municode.com/ca/san\\_jose/codes/code\\_of\\_ordinances?nodeId=TIT17BUCO\\_CH17.85CISAJOENWABUPEOR\\_PT2DE](https://library.municode.com/ca/san_jose/codes/code_of_ordinances?nodeId=TIT17BUCO_CH17.85CISAJOENWABUPEOR_PT2DE)

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