



Resolution 31714: Achieving Seattle's Commercial Building Climate Goals

Preliminary Analysis of Seattle's Building Tune-Ups Mandate: Cohort 1

12/23/2020

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PURPOSE

Council [Resolution 31714](#) reaffirmed Seattle's commitment to our Climate Action Plan and set expectations for increasing commercial building energy efficiency efforts. In the resolution, Council requested a progress report from the Office of Sustainability and Environment (OSE) from the first cohort of buildings required to comply with the Building Tune-Ups mandate ([Seattle Municipal Code 22.930](#)). The resolution also requested examples of support structures and incentives to promote our commercial energy goals in the Climate Action Plan.

Resolution 31714

Section 1. The Seattle City Council ("Council") requests a report from the Office of Sustainability and Environment (OSE) no later than December 31, 2020, on the following:

- a) Energy savings resulting from efficiency tune-ups conducted on buildings with non-residential uses of 200,000 square feet or larger.
- b) Examples of support structures and incentives to promote the efficiency targets, reflecting engagement with relevant stakeholders.

This report provides an initial estimate of energy and emissions savings from the first cohort of buildings, summarizes OSE's work to incentivize and support the market for this new policy, and concludes with a few examples of additional work the City of Seattle is doing to support our climate goals for commercial buildings.

SUMMARY OF KEY FINDINGS

Comprehensive Support of the Market Led to Very High Tune-Ups Compliance

OSE worked with building owners to achieve 99% compliance for the first cohort of buildings. Cohort 2 is wrapping up the compliance process and is approaching 98% compliance. Extensive outreach to building owners, robust technical assistance, early municipal tune-up demonstration projects, trainings, and an early Tune-Up incentive program with City Light and the U.S. Department of Energy (DOE) helped achieve high compliance.

Findings Focus Heavily on HVAC and Uncovered Additional Savings Opportunities

Heating, ventilation, and air conditioning (HVAC) measures dominate the most commonly found deficiencies, for both required and voluntary actions. Tune-Up Specialists identified an average of eight categories of corrections per building in tune-ups to date. Many buildings have uncovered but not addressed voluntary actions, which represent opportunities for buildings to achieve deeper energy, carbon, and cost savings in the future.

Early Results Show a Range of Outcomes

In a preliminary analysis, we observed on **average a 7% energy savings per building and an 8% reduction in greenhouse gas emissions in the first year after a tune-up.** There is a wide range of outcomes from slightly higher energy use to up to 20% energy savings. Most buildings fell in the range of 1% to 12% energy savings or 2% to 14% emissions reductions. **This early analysis is based on approximately 50 buildings with reliable data to estimate initial high-level energy and emissions savings, with a more sophisticated analysis coming in early 2021.**

These estimates are slightly lower than the 10-15% savings expected when tune-ups are completed properly. Most municipal building tune-ups have demonstrated energy savings over the 10-15% expected average and we estimate that buildings participating in the early incentive program Accelerator program averaged about 12% energy savings in the first year. In the meantime, OSE is exploring two primary ways to drive higher energy and emissions savings for the next round of tune-ups: (1) adding more required corrective actions to drive higher savings and (2) exploring quality assurance measures to drive more consistency.

New City Policy Options Can Help Change the Emissions Trajectory and Complement State Policies

Proposed updates to the Seattle Commercial Energy Code will eliminate fossil gas from most commercial and large multifamily water and space heating systems, improve building exteriors to increase efficiency, and create more opportunities for solar power. OSE is also working with a broad range of stakeholders to design a proposed performance standard for existing buildings that is equitable and substantially reduces emissions in existing buildings. Both policy efforts complement utility program offerings and recent State policies to increase commercial building energy efficiency and provide funding mechanisms for building retrofits.

EARLY BUILDING TUNE-UPS RESULTS

Background on the Building Tune-Ups Policy

The policy requires non-residential building owners (over 50,000 SF) to either conduct a tune-up or pursue alternative compliance every five years. Tune-ups involve assessment and implementation of operational and maintenance (O+M) improvements to achieve energy and water efficiency. Like cars and bikes, all buildings need to be tuned regularly to keep them running as efficiently as possible. When done properly, the approach can yield 10-15% in average energy savings.¹ Since Seattle City Light's electricity is carbon neutral, OSE focused the tune-up on heating, ventilation, and air conditioning (HVAC) actions, which are often powered by fossil fuels like natural gas, to maximize the carbon impact of the energy savings.

One of the First Policies Nationwide to Regulate Building Energy Use and Emissions

Seattle's buildings account for 37% of the city's core greenhouse gas emissions and represent the fastest growing source of emissions. Our Climate Action Plan set a target of reducing commercial building sector emissions by 45% by 2030 over a 2008 baseline and to be net-zero by 2050.² In 2016, Seattle became one of the first cities in the nation to regulate building energy use within existing commercial buildings and passed the Building Tune-Ups policy ([Ordinance 125002](#)). In 2017, OSE published [Director's Rule 2016-01](#) to further define the policy based on input from a technical working group comprised of industry stakeholders. Though the expected emissions reductions from the policy are modest and only apply to large commercial buildings, the policy remains Seattle's only direct regulation of existing building emissions at scale – and is a key component of the pathway to deeper building performance upgrades.

Tune-Ups Require Qualified Professionals and Take Up to a Year to Execute

Building owners and managers must rely heavily on qualified professionals called Tune-Up Specialists for most of the compliance process, a designation OSE created in the policy development process. Building Tune-Ups include the following steps:³

1. Find a Qualified Tune-Up Specialist
2. Conduct a Building Assessment
3. Identify Required and Voluntary Corrective Actions
4. Implement All Required Corrective Actions
5. Verify Changes
6. Report to the City

¹ Seattle adapted its policy approach from the Pacific Northwest National Lab's (PNNL) Re-tuning™ program, which found a typical average range of energy savings from 10-15% in the first year, with energy savings mostly persisting for up to three years.

² See Seattle's Climate Strategy and Seattle Climate Action Plan for more information at www.seattle.gov/environment/climate-change/climate-planning/climate-action-plan

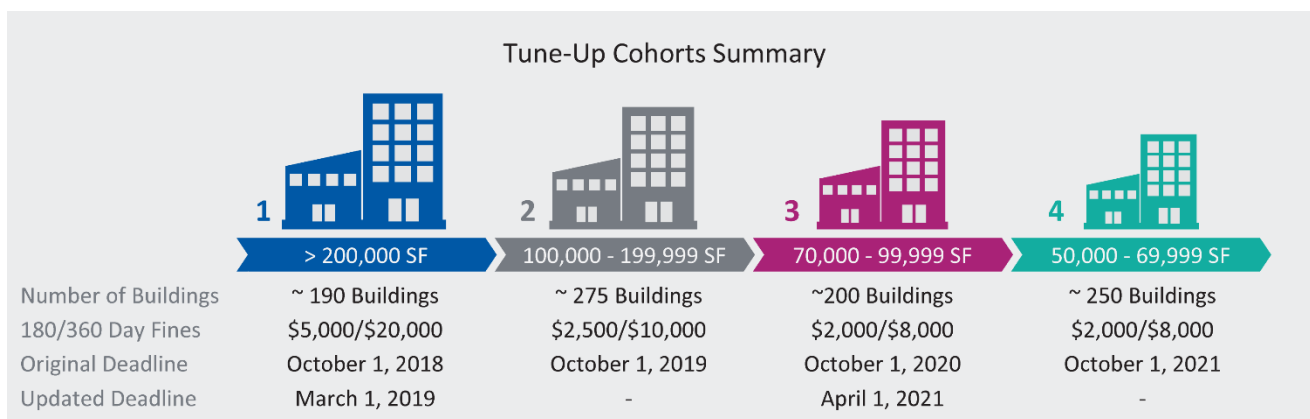
³ See our [Building Tune-Ups Overview](#) and [Building Owner's Guide](#) fact sheets for more details on the tune-up process.

This process typically takes three to twelve months, depending on a variety of factors, including (1) how difficult it is for the Tune-Up Specialist to access tenant spaces, (2) how complex the building is, (3) how many corrective actions need to be implemented by the ownership, (4) how engaged ownership is, and (5) how much back and forth is required in the final Tune-Up report that OSE reviews for compliance.

An Ongoing Requirement with Flexibility Built In

Building Tune-Ups are required every five years for buildings with 50,000 square feet (SF) or more of non-residential space, excluding parking. To support building owners and allow for a more manageable implementation schedule, compliance deadlines were phased in by building size. The policy covers over 900 of the largest commercial buildings in the City.

Although most buildings achieve compliance by conducting a tune-up, building owners have the choice of more than ten alternative compliance pathways or can apply for a waiver or extension in limited circumstances.⁴ Non-compliance leads to two potential fines, the first issued 180 days after the deadline and the second issued 360 days after the deadline, which vary in amount based on building size (see graphic for fine structures). This creates a six month “grace period” for building owners to complete and submit their tune-ups before any fines are assessed and another six months following a smaller fine to comply. The use of grace periods and a smaller initial fine are designed to encourage compliance, giving building owners and their representatives time to finish the tune-up rather than receiving a large initial fine.



Investment in Early Compliance and Additional Support for Building Owners

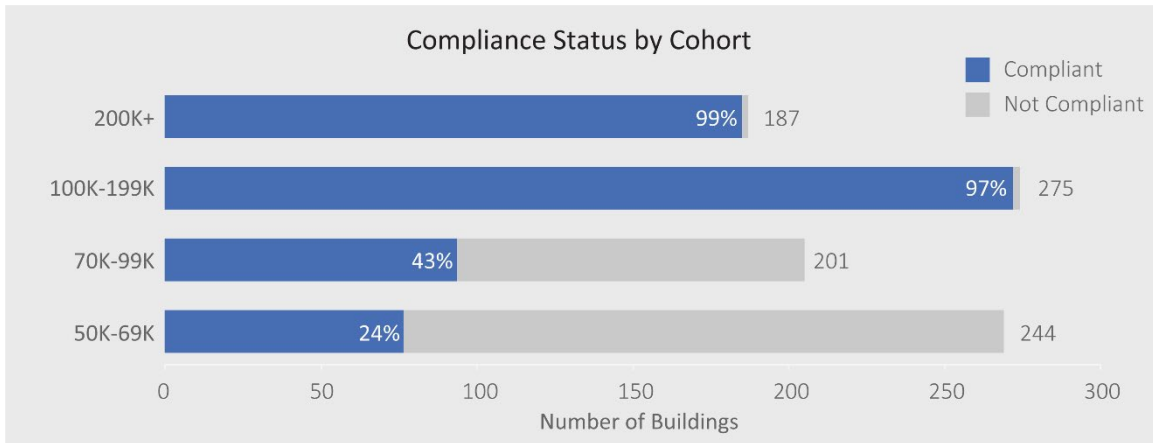
In parallel with the roll out of the Tune-Ups mandate, OSE partnered with Seattle City Light and the U.S. DOE to develop the Tune-Up Accelerator Program to support “mid-size” buildings (approximately 50,000 - 100,000 SF) to meet the tune-up requirement early, jump-start training of local energy service providers and qualified in-house facility staff, increase energy savings and improve widescale policy implementation. In the end, 102 buildings achieved early compliance through these incentives and deeper technical assistance. Learning from the Tune-Up Accelerator, along with early actions in Seattle municipal buildings, yielded important lessons to improve compliance implementation.

Preliminary Energy and Emissions Impacts from Cohort 1

As of early December 2020, OSE has approved over 450 tune-up submittals, including tune-ups submitted through the Building Tune-Up Accelerator early incentive program. Cohort 2 is wrapping up final compliance and

⁴ More details on alternative compliance pathways can be found online at www.seattle.gov/buildingtuneups.

violation processes and is already approaching 98% compliance. With Cohort 3 and 4 still early in their compliance periods we expect high compliance to continue, though these building owners are harder to reach and tend to have fewer resources to comply.



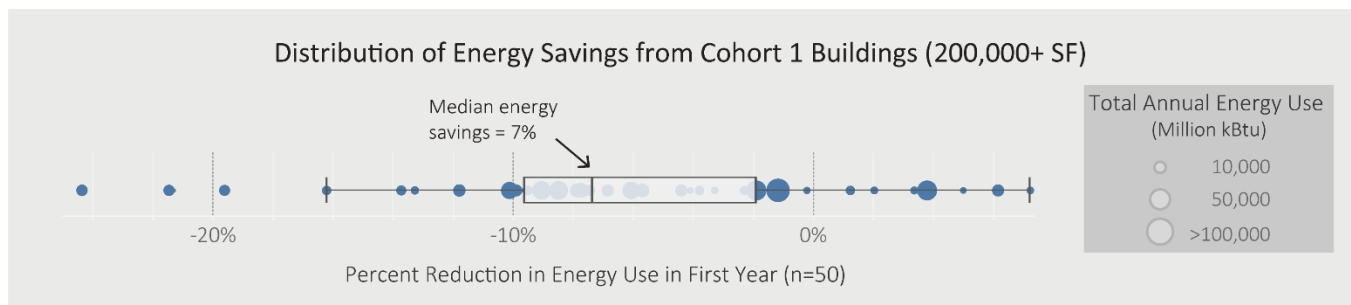
Nearly all of the first cohort’s 187 buildings complied with the ordinance, achieving 99% compliance and only a few violations. Cohort 1 buildings (200,000 SF+) accounted for 120 tune-ups (others pursued alternative compliance pathways). However, a few factors limited the number of buildings included in this initial assessment of energy and carbon savings, including:

- A Change to the Deadline – Cohort 1 buildings received an extension from October 2018 to March 2019 due to an IT delay in releasing the online portal for report submission.
- Submissions After the Deadline – Most Cohort 1 buildings used the grace period and into the first violation period to finish their tune-ups and finalize the review process.
- COVID-19 Impacts to Data – Dramatic changes in occupancy starting in March 2020 limited the number of buildings with 12 months of reliable data after the tune-up was completed.

Therefore, this early analysis is based on approximately 50 buildings with reliable data to estimate initial high-level energy and emissions savings. To do so we looked at energy use in the year prior to the tune-up compared to energy use in the year after the tune-up, controlling for weather variation.

Early Private Sector Results Show Wide Range of Outcomes, Averaging 8% Emissions Reductions

From these 50 buildings, we observed an average of about **7% energy savings in the first year after a tune-up, resulting in just over 8% savings in greenhouse gas emissions**. Across these buildings there is a wide range of outcomes from no effect (or slightly higher energy use in a few buildings) to up to 20% energy savings, as shown below. Most buildings fell in the range of 1% to 12% energy savings or 2% to 14% emissions reductions.



This high-level analysis of a limited number of buildings is not sufficient for understanding the impact of the policy. Funding for a more detailed impact assessment conducted by a third party was cut due to pandemic-related City budget reductions. Fortunately, we are working with Lawrence Berkeley National Lab (LBNL) in 2021 to conduct a more detailed analysis of the emissions and energy savings from approximately 200 buildings from the first two cohorts and the Tune-Up Accelerator program, funded by the U.S. Department of Energy (DOE). This analysis will capture a larger portion of buildings with completed tune-ups and control for other variables that drive energy use.

These results are in line with our findings from the Tune-Up Accelerator and previous detailed analysis done by the Pacific Northwest National Lab (PNNL) on which the policy was based.⁵ An evaluation estimated Tune-Up Accelerator energy savings for the 102 buildings at 12.1% in the first year (67.9 million kBtu/yr), and emissions savings of 13%. We have sufficient evidence to know tune-ups can effectively save energy and reduce emissions when implemented correctly but have much to explore on how we can achieve higher savings when scaling a mandatory, minimum standard policy.

Contextualizing These Savings

Extrapolated to the population of all buildings in the first cohort that completed a tune-up or alternative compliance of a similar rigor, an average of 8% emissions reductions for the first year after a tune-up results in a total reduction of about 7,461 metric tons (MT) CO₂e. If these savings persist for three years, total emissions reductions would be about 22,384 MT CO₂e, equal to 4,836 cars off of the road for a year.⁶

Early Municipal Building Results Demonstrated High Upside of Savings Opportunities

Results from municipal building tune-ups completed in advance of the first cohort of commercial buildings provided case studies for the public and a demonstration for the private market on how much energy and emissions savings could be attained with a full commitment to the tune-up process.⁷ For example, building managers at the Seattle Justice Center completed all tune-up actions by March 2018, including a handful of the voluntary actions. After a year's worth of tracking and adjusting for weather normalized use, the results demonstrated notable improvements in both energy and carbon savings. The Justice Center's "energy use intensity" (EUI) dropped from 73.8 kBtu/sf prior to the tune-up to 59.8 kBtu/sf a year later, a savings of 19% overall energy use.⁸ This translated to **a 25% reduction in carbon emissions** over that period, due to the focus on HVAC fixes using gas. Across all our larger municipal buildings **tune-ups emissions reductions ranged from 5%-25% in the first year**, with most on the higher end of the range.

Near Term Considerations for Driving Higher Energy Savings

In the near term, the Tune-Ups program is focused on supporting compliance for owners of smaller buildings and adjusting to the COVID-19 pandemic. In response to the pandemic, the deadline for Cohort 3 buildings (70,000-99,999 SF) was extended by six months to April 1, 2021, with hospitals getting an extra year.

In the meantime, OSE is exploring two primary ways to drive higher energy and emissions savings for the next round of tune-ups:

⁵ See the Tune-Up Accelerator [final report](#) (Chapter 10) for a summary of energy and GHG saving estimates.

⁶ As long as the corrections implemented during the tune-ups remain operational, energy savings are expected to persist into subsequent years. Tune-ups are required every five years because some fixes made during the tune-up are eventually undone or other issues arise.

⁷ See [Seattle Justice Center case study](#) and [Common Tune-Up Actions](#).

⁸ EUI is a common building energy metric that expresses the measurement of a building's annual energy consumption relative to its gross square-footage.

1. **Adjust Required Corrective Actions to Drive Higher Savings** – Since tune-ups are required only once every five years, voluntary corrective actions that are identified but not corrected represent a missed opportunity. Although owners and managers are made aware of the issue and can take action on their own, many simply do not. For example, while inefficient lighting was found in 47% of buildings, action was taken to correct it in just 13% by the time the tune-up was submitted (see Appendix B for additional findings). Some voluntary measures align well with the tune-up ethos of solid savings for relatively small fixes. Other changes to voluntary actions require a more substantial shift in scale or focus of a tune-up. OSE will consider additional measures to add for the next round of tune-ups.
2. **Explore Quality Assurance Measures to Drive More Consistency** – One primary concern is that relying on professionals outside the City as the core implementers of the policy is a potential race to the bottom. If a service provider offers a bare bones tune-up for cheap—and City staff cannot enforce standardization or quality control—building owners looking for quick compliance could potentially comply without achieving the full energy and cost-saving benefits of the program. A mandatory training program for Tune-Up Specialists might help mitigate some of this by ensuring a base understanding of building knowledge and program requirements. OSE is also considering ways to audit tune-ups and exploring other options to maximize consistency in Tune-Up Specialists’ work.

In the time since the Building Tune-Ups policy was passed, cities and states have dramatically ramped up their climate actions as increasingly dire reports on rising GHG emissions have spurred further action. Most of these policies take an outcome-based approach, setting standards for performance that allow owners flexibility and long lead times to meet targets, like those in Washington D.C. and New York City. Last year, the State of Washington passed the Clean Buildings Act, which includes a building energy performance standard for existing commercial buildings combined with prescriptive requirements for benchmarking, operations and maintenance, and equipment replacement standards (mandatory starting in 2026).⁹ As Seattle explores developing its own GHG-based building performance standards for existing buildings, we are working to align any new policy – and Seattle’s existing Benchmarking and Tune-Ups policies – with the State’s policies to ensure we’re meeting our climate goals and minimizing the regulatory burden for building owners.

SUPPORTING THE MARKET FOR THE TUNE-UPS POLICY

Below are highlights of key steps OSE took in supporting the market when rolling out this new policy, starting in late 2016, followed by a summary of other support structures and incentives across the City for meeting our commercial building climate goals.

Scaling Up the Local Workforce and Incentivizing Early Savings

As described earlier, OSE launched the three-year, \$3 million Building Tune-Up Accelerator (TUA) Program to support owners of smaller buildings and jump-start training of local energy service providers and qualified in-house facility staff. Eighty-five people attended the trainings offered by partner organizations PNNL and Smart Buildings Center, with 27 registering as Tune-Up Specialists. This effort effectively scaled up local expertise and provided a training approach for the Tune-Ups mandate to follow. The early adoption program uncovered implementation issues, such as areas of building owner or service provider confusion or compliance scenarios requiring policy interpretation that helped set precedent for the larger building market. To obtain even greater energy and GHG savings, the program was a feeder for existing utility incentives such as rebates for lighting or HVAC replacement and a testing ground for deep retrofits via a partnership with the UW Integrated Design Lab. The Accelerator program successfully enabled owners of 102 buildings to attain early compliance while offering these smaller buildings a base incentive of up to \$0.12 per square foot for the tune-up, as well as additional

⁹ See the Washington State Department of Commerce’s “Clean Buildings” page for more information on the State policy: <https://www.commerce.wa.gov/growing-the-economy/energy/buildings/>.

incentives for further action. An evaluation estimated total TUA energy savings for the 102 buildings at 12.1% annually (67.9 million kBtu/yr). Furthermore, a survey of participants found overwhelming support for offering incentives and technical support for early compliance with up-coming mandates.¹⁰

Leading with Municipal Buildings Provided a Blueprint for the Private Sector

Tuning up City-owned buildings provided another important testing ground for the policy. Council passed a companion resolution ([Resolution 31652](#)) in early 2016 requiring early tune-ups in City-owned facilities and guidelines for energy efficient asset preservation. To lead by example and generate lessons learned for the market, the largest municipal facilities were required to complete tune-ups one year in advance of the private market. Ten municipal buildings (100,000 SF or larger) completed tune-ups in advance of private sector deadlines and an additional fourteen city owned facilities less than 100,000 SF participated in the Tune-Up Accelerator program. Municipal tune-ups helped track costs and explore the feasibility of completing voluntary measures. Early savings results and commonly found corrective actions became examples to share with the public through case studies. Municipal projects demonstrated the value of tune-up actions, illuminated upfront costs and payback periods, and proved how this new policy would save the City money and help us meet our energy and carbon reduction goals. These early tune-ups also allowed City staff to attain experience ahead of time to vet compliance and review processes. As a result, additional communication materials were developed or refined, and many ordinance requirements further clarified for the public to eliminate confusion ahead of time.

Supporting Workforce Development

Scaling up the local workforce and providing pathways to well paying energy efficiency jobs is a key equity component of policy implementation. OSE partnered with the South Seattle College Sustainable Building Science Technology (SBST) program to provide ongoing workforce training opportunities. The SBST program is an applied science degree designed to create an affordable educational pathway for individuals currently working in industry to complete a bachelor's degree program without having to leave the state or resign from a job. Graduates of the SBST program earn one of seven certification options that qualify them to be a Building Tune-Up Specialist. The program serves as a career bridge to jobs in the green economy. Initially, students participated in the Accelerator program training series which included on-site Tune-Up assessment demonstrations.

To increase hands-on commercial building operations experience, a requirement to qualify as a Tune-Up Specialist, OSE has supported three internships. Using City facilities as learning laboratories, students are paired with industry professionals or work in teams to conduct energy efficiency audits. To prepare students for successful careers upon graduation, benchmarking instruction and building tune-up practices are taught through the review and analysis of approved Building Tune-Ups. Alongside up and coming Tune-Up Specialists, OSE has supported industry professionals to ensure they conduct thorough, successful Tune-Ups. Training and ongoing technical assistance clarify the prescriptive building operations and maintenance regulation.

Operationalizing Infrastructure and Engaging Stakeholders

Establishing this new regulatory program required support tools and education of a variety of building owner representatives that range in expertise and role. Communicating effectively and efficiently with stakeholders

¹⁰ Learn more about the Building Tune-Up Accelerator program at www.seattle.gov/environment/climate-change/buildings-and-energy/building-tune-ups/tune-up-accelerator

started with building awareness and a common understanding of the requirements. The following sample of activities highlight our work to ensure the market was ready for the requirement:

Build Compliance Tools for Building Ownership and Management

- [Built a data collection tool](#) – OSE built a detailed Excel workbook for ongoing use by building stakeholders to facilitate early compliance through the Accelerator program and municipal tune-ups and provide clarity on expectations in the eventual online report.
- [Built an online portal with Seattle IT](#) – OSE built an online tool with Seattle IT to provide a portal for building owners, owner representatives, and Tune-Up Specialists to submit and update tune-ups, submit alternative compliance, or register for multiple buildings in one place. And for staff to process and review compliance submittals.

Increase Awareness and Understanding of the New Regulation

- [Developed communication plan](#) – OSE drafted a communication plan that identified target audiences, key messages and known obstacles.
- [Developed a program brand and compliance support materials](#) – OSE developed a program brand and a platform of informational materials to clarify program details and help all players navigate a complex and innovative policy.
- [Built communication tools to support education](#) – OSE launched a program website, accompanied by key program communication tools such as program and alternative compliance fact sheets, a presentation slide deck, a Tune-Up Specialist e-newsletter, case studies, blog posts and press releases announcing key compliance dates.

Additional Stakeholder Engagement

- [Partnered with trade groups, local non-profits, and national climate organizations](#) – OSE program staff hosted or co-hosted nearly 50 presentations and trainings for building owners, managers, and energy efficiency service providers. Articles in local trade organization newsletters ensured program announcements reached a larger audience and drove individuals to the program website to learn more.
- [Provided multiple notifications directly to building owners and managers](#) – OSE provided a variety of direct communications to building owners and managers including early general notifications and tailored formal notifications of relevant compliance due dates and consequences for non-compliance per building size.

Throughout the ramp up period of program implementation, Seattle capitalized on the existing and well-established benchmarking program. Owners required to comply with Tune-Ups represent approximately a quarter of those that need to annually report and disclose building energy performance metrics.

Prioritizing Equity in Policy Outreach and Support

OSE led a [racial equity toolkit](#) (RET) during the development of the Tune-Ups policy, which included exploring potential cost impacts to tenants and the ability to comply for Black, Indigenous, and People of Color (BIPOC) owners and community-based organizations (CBOs). Our equity approach has four main workstreams:

1. [Prioritizing outreach to community-based organizations \(CBOs\) and priority communities](#): We strive to prioritize technical support for under resourced buildings, buildings owned by communities most-affected by environmental inequities, and community-based organizations. We use limited building ownership data and benchmarking contact data to identify possible candidates for support as well as the Office of Planning and Community Development's (OPCD) Race and Social Equity (RSE) Index to flag buildings in high priority neighborhoods. We then prioritize technical assistance and direct support for those building owners and managers.
2. [Working with Seattle City Light to offer incentives to CBOs](#): The Tune-Up Accelerator program successfully enrolled many small building owners but found that community-based organizations and small non-profits often faced capacity issues or financial constraints that prohibited them from engaging with the early adopter incentive

program. To fill this gap and respond to the financial impacts of the ongoing pandemic, City Light extended the Tune-Up incentive offering to this ownership segment of the smallest buildings required to comply (50,000 - 69,999 SF). Through proactive outreach and engagement, OSE is recruiting those eligible to participate.

3. Exploring workforce development opportunities with Seattle Colleges: OSE partnered with South Seattle College (see above) because of the opportunity to help engage a younger, more diverse workforce. Since the 2017-2018 academic year, the OSE-SBST partnership has engaged approximately 60 students with tune-up related content – and recent cohorts have been 50% non-white and about 25% women. This is particularly important in a field dominated by white men.
4. Allocating penalty revenue to improve the efficiency of affordable housing: OSE is partnering with the Office of Housing to explore ways non-compliant fine payments can be used to improve energy and water efficiency in the multifamily affordable housing sector with priority to clean energy solutions.

Since racial equity work doesn't end when a RET is completed but requires evaluation, accountability, and reporting regularly, OSE uses the [Race and Social Justice Initiative](#) (RSJI) and [Equity and Environment Initiative](#) (EEI) frameworks to include race and social equity in the implementation and evaluation of this and other building energy policies.

For more on information on the Building Tune-Ups policy:

- See [Appendix A](#) for a summary of buildings subject to the Building Tune-Ups ordinance.
- See [Appendix B](#) for a summary of KPIs for the first cohort of buildings.
- See www.seattle.gov/buildingtuneups for program basics.

ADDITIONAL ACTIONS TO SUPPORT COMMERCIAL BUILDING CLIMATE GOALS

Beyond Tune-Ups, the City of Seattle has many efforts underway to reduce energy use and carbon emissions from our commercial and multifamily buildings. Whether the program is aimed at new construction or existing buildings, the approaches are varied to encourage adoption of efficient, carbon free solutions. Support is needed at all levels of building development and ownership models to meet our aggressive carbon neutral goal. Progressive building codes, incentive programs, climate policies, building owner technical support and financing mechanisms contribute to our collective efforts to reduce carbon pollution from our built environment.

Utility Support Structures and Incentives

To encourage substantial energy and carbon emission reductions, Seattle City Light (SCL) has expanded incentive offerings to support innovative, whole building energy efficiency approaches. SCL offers a retrofit program intended to encourage small, medium, and large commercial, industrial, and multifamily customers to undertake energy retrofits of existing buildings and equipment.¹¹ Through their Deep Retrofit Pay for Performance program (P4P)¹², commercial property owners and operators can receive incentive payments over time for verified energy savings. P4P pays a set incentive amount for the total energy saved at the electric meter, rather than separate incentives for different measures. P4P supports more flexible and creative projects allowing owners and their service providers the freedom to pursue behavioral and operations and maintenance approaches in addition to traditional capital investments.

¹¹ Find [SCL's Commercial and Industrial Retrofit Program](#) and [SCL's Multifamily Energy Efficiency Program](#) at seattle.gov/light for more details.

¹² Learn about SCL's Deep Retrofit Pay for Performance incentive program at energysolutions.seattle.gov/p4p.

SCL's Existing Building Commissioning (EBCx) program¹³ provides incentives for Retro-commissioning or recommissioning of a building's mechanical systems. Full commissioning of a building takes a tune-up to the next level by reviewing and recalibrating all existing building operational equipment. In early 2021, the incentive program will be expanded to include Monitoring Based Commissioning (MBCx) of a building's existing systems. MBCx leverages energy management system technology and fault detection software to continuously commission the building automation system for persistent or ongoing savings.

Puget Sound Energy's (PSE) commercial energy management programs are similarly designed to identify low-cost and no-cost operations and maintenance upgrades, with incentives to support implementation costs. Current PSE programs include Existing Building Commissioning, Monitoring-Based Commissioning, Post-Occupancy Commissioning and a Building Tune-Up incentive program that is attracting uptake beyond mandated buildings.¹⁴

Newer Support Systems to Help Commercial Buildings Reduce Emissions

To leverage private funding for public good, the Washington State legislature recently passed the Commercial Property Assessed Clean Energy and Resilience bill, also known as C-PACER. This program will allow owners to finance up-front costs and pay back loans over time on their tax assessment, enabling utility bill savings to help cover initial costs. Seattle has begun collaborating with local stakeholders, including King County, who ultimately has the authority under the law to establish and operate this creative financing solution. With funding from the Institute for Market Transformation (IMT), OSE is exploring supportive financing mechanisms that could help less resourced building owners participate in a future King Country run C-PACER program.

In partnership with SCL, IMT and the UW Integrated Design Lab, OSE is evaluating and developing a proposal for a Retrofit Accelerator that would include a support hub for building owners and their providers to meet building performance standards such as the Washington State Clean Buildings Act.¹⁵ As Seattle explores options for deeper emissions reductions, we must understand the challenges—technical, financial, operational, or otherwise—that building owners, managers, and tenants may face in making energy upgrades.

Also, in alignment with the City's legislative agenda and priorities, OSE will advocate for progressive state-wide climate and building decarbonization legislation in the upcoming 2021 legislative session. We will continue to advocate for beneficial electrification, a 2030 net zero energy code, carbon pricing, and other financial mechanisms that provide long-term funding resources for building decarbonization.

Additional City Policy Mechanisms

Greenhouse gas emissions from Seattle's buildings continue to increase in large part due to the growth in new buildings using dirty fossil fuels such as fracked gas for heating and hot water. The City of Seattle is currently proposing updates to the Seattle Commercial Energy Code, to take effect in early 2021, as a cost-effective way for the City to prioritize building clean, fossil fuel-free buildings. The proposed code would eliminate gas from most water and space heating systems, improve building exteriors to increase efficiency and create more opportunities for solar power generation. This code update builds on an energy code that is already one of the most energy efficient in the country and on the Department of Construction and Inspections work to promote green building through priority permitting.

¹³ Learn about SCL's Existing Building Commissioning incentive program at seattle.gov/light

¹⁴ Learn about PSE's Commercial Energy Management incentive programs at www.pse.com/business-incentives/commissioning-programs

¹⁵ See the Washington State Department of Commerce's "Clean Buildings" page for more information on the State policy: <https://www.commerce.wa.gov/growing-the-economy/energy/buildings/>.

OSE is also working with a broad range of stakeholders to design an equitable policy to more proactively reduce or eliminate emissions in existing buildings. A future Seattle building performance standard may include emissions targets that existing commercial and multifamily buildings must meet over time to reduce climate impacts. In 2019, the Washington State legislature passed the Clean Buildings Act which requires commercial buildings (50,000 sq feet and above) to meet certain energy use targets and provides \$75 million in total incentives to building owners who comply early. The State building energy performance standards are a significant catalyst for action statewide, but alone, they will not be nearly sufficient to hit our emission reduction targets and make Seattle buildings carbon neutral. This is because most of Seattle's buildings are already meeting the State's targets and the standard is focused on energy efficiency improvements, not reductions in carbon emissions. While efficiency improvements in fossil fuel systems will result in some emission reductions, the only way to meet our climate pollution targets is to transition rapidly to using carbon neutral electricity whenever possible. To that end, we are currently exploring a Building Performance Standards policy to more aggressively transition Seattle's existing commercial and multifamily buildings towards greater efficiency and clean electricity.¹⁶ The approach builds on both the City's existing Energy Benchmarking and Tune-Up programs, as well as the new State energy performance standards. Washington DC, New York City and St. Louis, MO already have building performance policies in place and a host of other leading U.S. cities are considering them.

Finally, Seattle will continue to lead by example in our municipal buildings by requiring all new or substantially altered City of Seattle buildings operate without fossil fuels. At the same time, we are working with other City departments to develop a strategy to eliminate fossil fuel use in existing City buildings.¹⁷

¹⁶ See <http://www.seattle.gov/environment/climate-change/buildings-and-energy/building-performance-standards> for more information.

¹⁷ See [Executive Order 2020-01](#): "Advancing a Green New Deal for Seattle" committing the City to new actions that will support the goals of Seattle's Green New Deal.

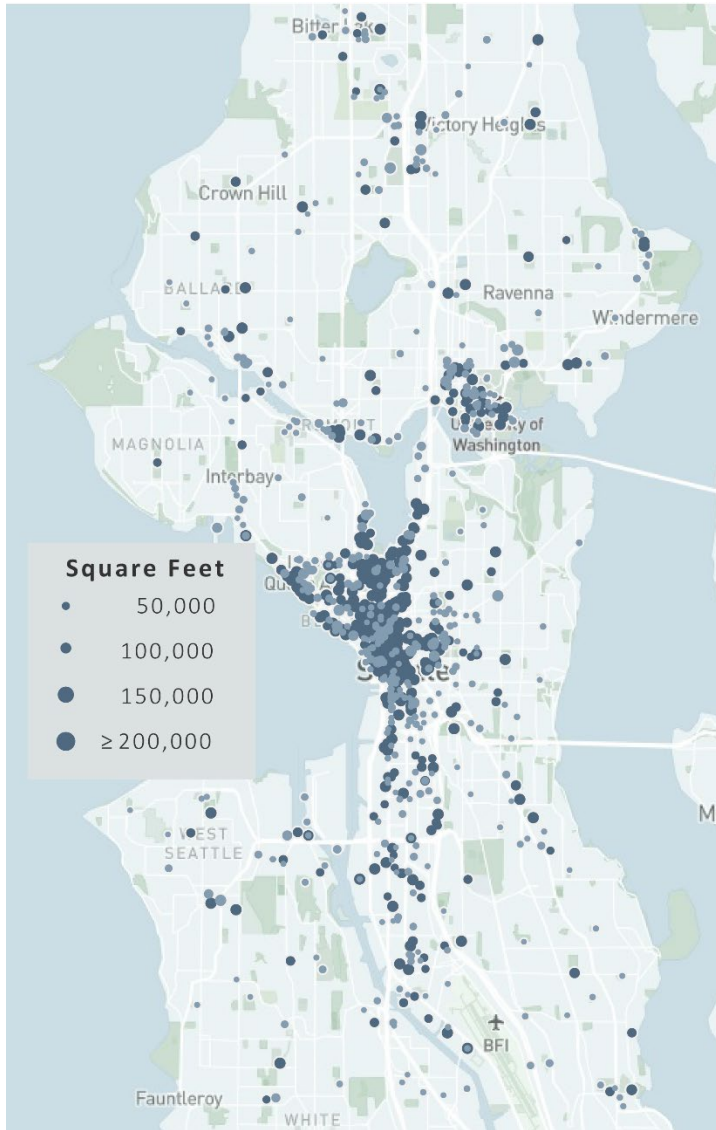
APPENDIX A – Summary of Building Types Subject to Tune-Ups Ordinance

The Tune-Ups ordinance covers just over 950 non-residential buildings in the city, though the number varies as new buildings are built, and others are demolished.¹⁸ This represents more than 194 million square feet of commercial space across the city, spread across a wide range of different building types, as shown below.

Building Type	Number of Buildings	Total Square Feet
Office	274	78,189,964
Campus	206	30,586,159
Mixed Use/Other	139	33,844,042
School/University	105	11,720,823
Warehouse or Distribution	91	9,086,684
Hotel	65	14,483,830
Hospital/Medical Office	29	9,294,676
Retail Store	24	2,893,434
Supermarket/Grocery Store	13	1,548,455
Laboratory	8	1,379,093
Senior Care Community	6	786,992
Worship Facility	3	206,022
Grand Total	963	194,020,174

These buildings are primarily located in the downtown core, SODO, surrounding neighborhoods, and the University District though many can be found throughout the city.

¹⁸ About 910 buildings were subject to the first round of tune-ups. That number has grown to over 950 with new buildings, which will be required to comply three years after completion.



APPENDIX B – Key Performance Indicators for Cohort 1

Through in-depth interviews with relevant internal stakeholders at the City of Seattle and through surveys and interviews conducted with Tune-Up Specialists, OSE co-created a set of priority key performance indicators (KPIs) to help track progress against policy outcomes, shown below. These indicators focus on easy to track processes and outputs for each cohort and fall into three main categories: corrective actions, compliance, and customer support.

Corrective action indicators provide a high-level sense of how much work is being done in each building and an understanding of potential for additional energy savings from more measures in a building. Compliance indicators are tracked to help understand how many buildings are likely to comply and how many of those buildings are doing something that has a direct energy impact. Awareness, when combined with the compliance rate, helps to understand who is missing in early outreach and gives us an upper bound of potential compliance in the near term. Customer service metrics track the number of inquiries responded to by the help desk and the average

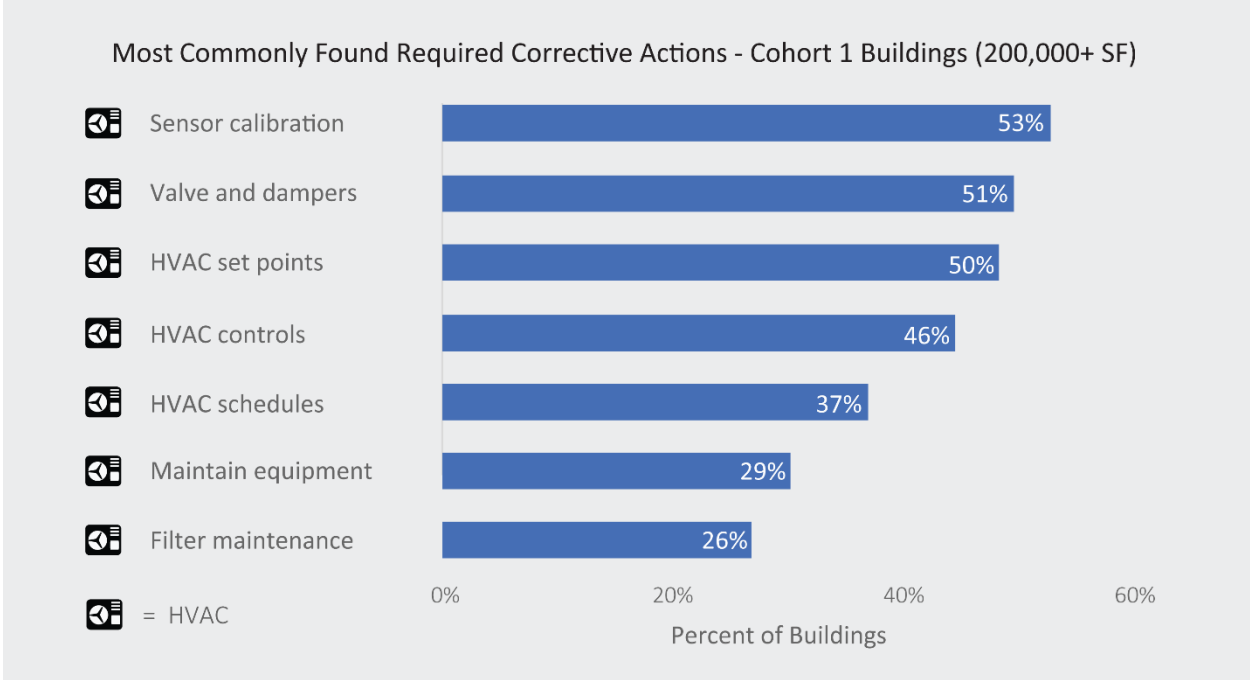
response time to measure how effectively key stakeholders are getting support as they implement the requirements in their buildings.

Category	Indicator	Definition
Corrective Action Indicators	Required Corrective Actions Implemented	The number of required corrective actions implemented per building.
	Voluntary Corrective Actions Identified and Implemented	The number of corrective actions implemented by building owners beyond the minimum requirements.
	Voluntary Corrective Actions Identified and Not Implemented	The number of voluntary actions identified but not being implemented by building ownership.
Compliance Indicators	Overall Compliance Rate	Percent of buildings that have satisfied the compliance requirements for a given Tune-Up cycle.
	Compliance Impact Rate	Percent of buildings that have conducted a Tune-Up or attained compliance through a tune-up equivalent pathway.
	Rate of Awareness	Percent of buildings that are aware of the requirement and have communicated with us in some form.
Customer Support Indicators	Total Inquiries	The total number of inquiries per year as a measure of overall volume.
	Inquiry Response Rate	The percent of inquiries responded to within a three-day target response time.

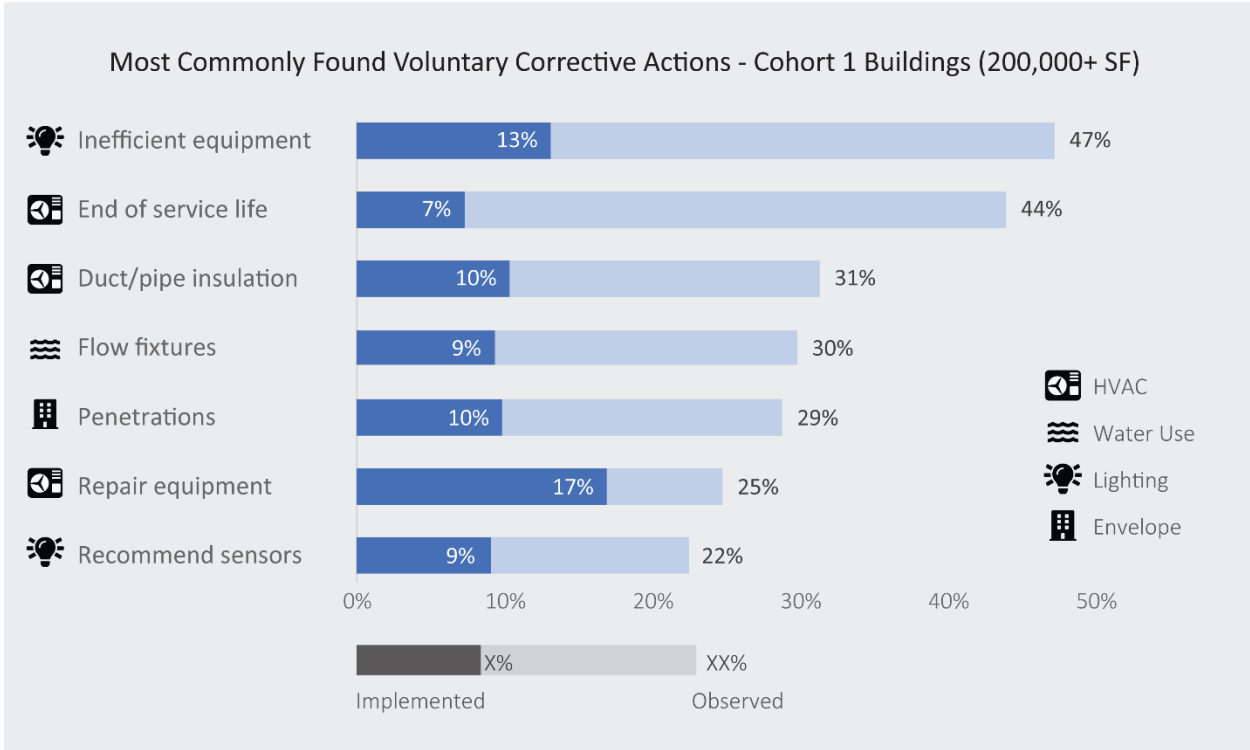
Taken together these indicators help track successes in policy implementation and provide a guide to where attention might be needed. Among other things, these metrics help to quickly report progress to leadership, prioritize outreach to non-compliant buildings, and quickly determine if certain Tune-Up Specialists might be systematically reporting fewer issues across multiple buildings.

Corrective Actions for Cohort 1 Vary Among Tune-Up Specialists, Focus Heavily on HVAC

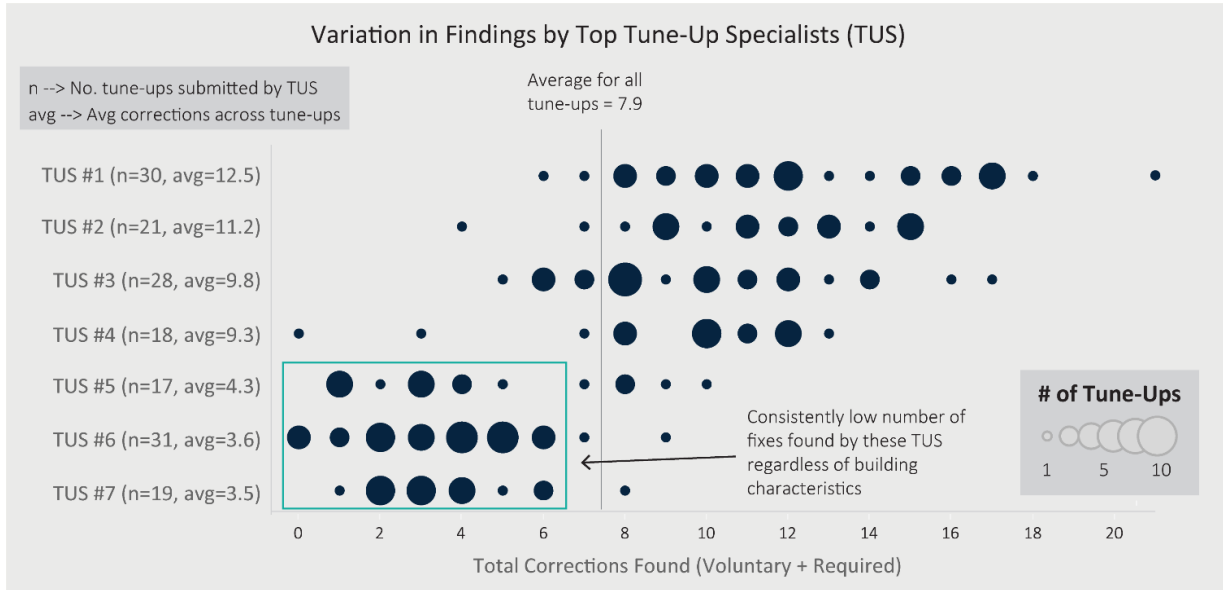
Heating, ventilation, and air conditioning (HVAC) measures dominate the most commonly found deficiencies, for both required and voluntary actions. Tune-Up Specialists identified HVAC sensors that were uncalibrated, not functioning, or located inappropriately in 53% of the buildings tuned-up. HVAC set point and valve or damper issues fixes were identified and made in half of all buildings above 200,000 SF.



Of the most commonly identified voluntary actions, inefficient lighting equipment was identified in 47% of buildings assessed, with approximately 13% of all buildings voluntarily taking action to improve the efficiency of lighting during or after the tune-up. The second most common voluntary correction identified was the presence of equipment reaching the end of its service life, found in 44% of the approved tune-ups and acted upon in 7% of buildings. These voluntary actions represent opportunities for buildings to achieve deeper energy, carbon, and cost savings.

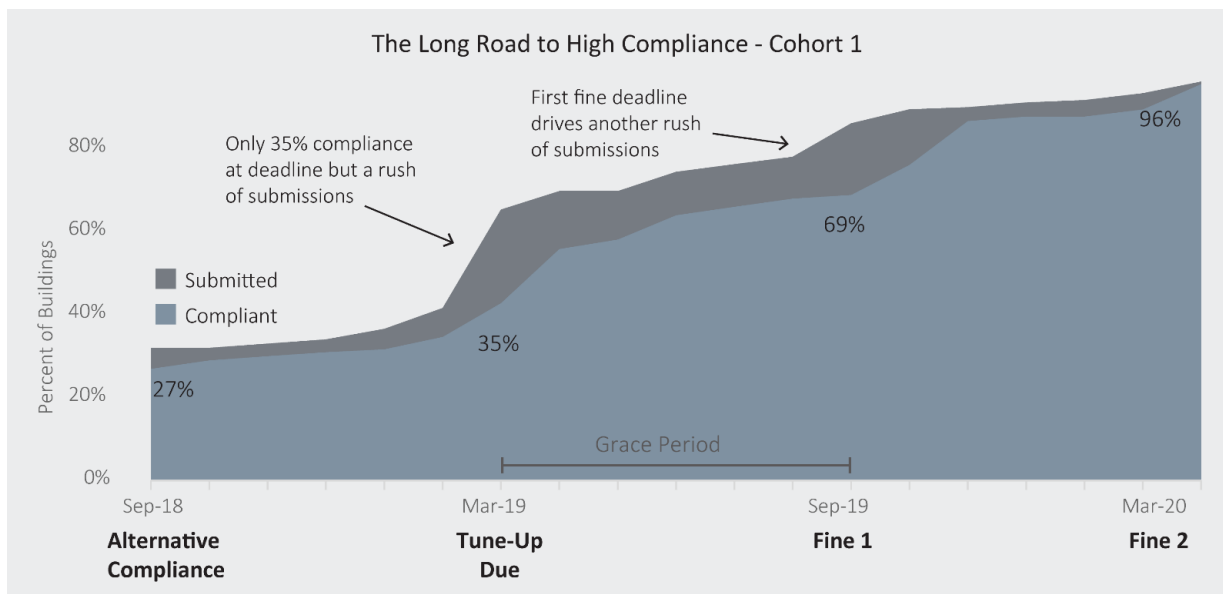


One of the more concerning findings so far is related to some high variance in the average number of findings by our main Tune-Up Specialists. Below we show the seven specialists who have together submitted about half of our tune-ups to date, showing obvious clustering within each specialist. A handful of Tune-Up Specialists consistently report low numbers of findings across many buildings, which could indicate lower quality tune-ups that could be missing opportunities to reduce utility costs, energy and GHG emissions.



Extremely High Compliance Rates for Cohort 1

By the end of the first cohort's compliance period one year after the due date, 96% of buildings were compliant. We've increased that to 99% as of early December 2020. Only a small number of buildings received the larger fine for Cohort 1. As shown below, compliance at the deadline (March 1, 2019) differs significantly from after the two grace periods, reinforcing the need for long lead times and a lot of follow up when implementing policies that require owners to improve their building. This is because the need for building owners and managers to budget for work well in advance and due to the long compliance and work processes.



The compliance impact rate for the first cohort of buildings – those buildings that took action in their buildings to save energy as a result of the policy – ended up at 77%, with 64% of buildings conducting a tune-up and 13% of buildings pursuing alternative compliance pathways that went beyond a tune-up. And the rate of policy awareness reached 100% well before violations were issued, meaning that no buildings in the first cohort could claim to be unaware of the requirements during the enforcement process.

Customer Support Has Been Responsive – And Steady

In over three years of fielding and tracking questions, the Building Tune-Up help desk has responded to more than 1,500 inquiries outside of the tune-up review process and met the target turnaround of three business days for over 97% of phone calls or emails.

Tune-Up Specialists unanimously shared how helpful technical assistance has been to understand the requirement. Despite most help desk questions focused on non-technical issues, the complexity of the program has warranted full time help desk support. Providing consistent and timely feedback has been essential to program success. The qualifications of a Tune-Up Specialist ensure that providers have the technical knowledge needed to identify issues and recommend appropriate corrective actions, yet navigating the required documentation, various alternative compliance options and meeting the intent of the regulation has required substantial interaction and regular communication.

Through the help desk we have maintained close contact with Tune-Up Specialists, who are the key implementers in the field conducting the work. A relatively small subset of professionals (Tune-Up Specialists, property manager, and facility managers) completes most of the work. Developing regular channels of communication with these market actors has helped uncover key barriers and allowed for more efficient allocation of program resources. Prior to the first compliance deadline, a survey was sent to approved Tune-Up Specialists to better understand how the market was adjusting to demand and determine if capacity issues were showing up. And to follow up, in-depth interviews during the evaluation and one-on-one feedback sessions during enforcement were conducted with service providers by firm.

Quotes from Tune-Up Specialists

“All corrections from the tune-up were fully implemented as of March 1 and our demand usage dropped on an average of 20% for this Monday morning start-up. Weekends were even more. The start-up demand reduction is amazing! **I wasn't a big fan of this tune-up program when it was first announced but I am now!**”

Tune-Up Specialist

“All required Tune-up items have been completed and verified. The required items are expected to provide **\$58,000** in savings over the next 12 months based on an estimated **drop of 3.5% in electrical usage** and a **15% drop in natural gas usage**. In this case, the first-year savings from the required items should cover the cost for implementing the required items and the Tune-Up Specialist fee.”

Tune-Up Specialist