



# City Light's Major HVAC Controls Upgrade Incentive

Presented by  
Ted Brown, Seattle City Light  
Elly Bunzendahl, AESC

April 4, 2024



# Webinar Procedures

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- All attendees are on mute
- Submit questions at any time
- The webinar is being recorded
- Please take the after-class survey!



Look for the Questions icon in the top menu bar



Chat icon

# Upcoming Events

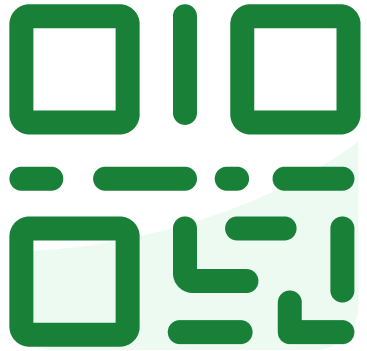
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Course	Day	Time
HVAC's Role in Electrification Roadmaps	Thu Apr 18	10:00am-11:30am
Q & A: Commercial Heat Pump Water Heaters with Evan Green	Tue Apr 30	10:00am-11:00am

Event	Date(s)
Housing Development Consortium (HDC)'s Annual Celebration	Wed Apr 17
Seattle and Bellevue 2030 Districts' 2024 Vision Awards	Thu Apr 25
AEE West Energy Conference & Expo 2024	Wed May 1 – Thu May 2

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# What We Do

**30+**

Supported/Administered  
Utility EE Programs

**120+**

Energy and Water Audits  
Performed Annually

**2,500+**

Engineering Calculation  
Reviews Annually



## Engineering

- Energy Efficiency
- Energy and Water Audits
- Retrocommissioning (RCx) Services
- Measurement & Verification (M&V)
- Water/Wastewater Optimization
- DER Grid Integration



## Technologies

- Emerging Technologies
- Electrification / Decarbonization
- Renewable Technologies
- Energy Resiliency
- Grid Intelligence
- Virtual Power Plants
- Electric Vehicle Infrastructure



## Programs

- PG&E State of CA Energy Strategy & Support
- PG&E Market Access Program (MAP)
- PG&E Wastewater Optimization Program
- Strategic Energy Management (SEM)
- SW CalNEXT Emerging Tech Program
- Self-Generation Incentive Program (SGIP)



## Software

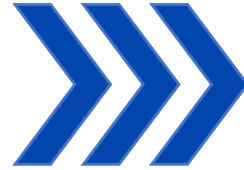
- Energy Project Management Platform (Praxis)
- Custom Software Development
- Utility Application Processing Platforms
- Online Audits and Customer Engagement

# Learning Objectives and Agenda

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By the end of this webinar, commercial and industrial customers, as well as controls contractors should:

- Understand project details from major controls upgrades City Light incentivized
- Know the steps to leverage the City Light Major HVAC Controls Upgrades Incentive
- Comprehend supplemental incentives and whole building solutions and approaches



To meet these objectives, the agenda includes:

- Live polls
- Introductions
- Two case study projects
- Controls incentives overview
- How to work with City Light
- Q&A
- Live poll + feedback

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**Tell us a little about you. Select all that apply**

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# Introductions: Ted Brown

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Within City Light's Customer Energy Solutions Division, Ted:

- Applies two decades of energy efficiency experience and facility operations optimization
- Supervises a team of Energy Management Analysts (EMAs)
- Is accredited as a Certified Energy Manager through AEE





# Controls Projects

Example case study details



# 2018 Project Details

Seattle City Light Controls Incentive Details	
Property Details	> 70,000 ft <sup>2</sup> office/retail in 100-year-old building
Project Details	<b>Existing controls adjustments included:</b> reset strategies, warmup, schedules, set-points, nighttime flush <b>New equipment included:</b> VAV controllers, zone sensors and discharge air sensors, heat pump controllers and I/O controllers
Total Project Cost / <b>Total Incentive</b>	\$122,000 / <b>\$40,000</b>
Base Incentive Payment 1	\$20,000, paid after City Light verified installation
Performance Incentive Payment 2	\$20,000, paid after City Light calculated one-year savings
Estimated Annual kWh Savings	170,000 kWh per year
Estimated Annual Avoided Costs	> \$13,600 per year

**Note:** numbers have been rounded for anonymity and ease of sharing

# 2021 Project Details

## Seattle City Light Controls Incentive Details

Property Details	> 100,000 ft <sup>2</sup> mixed-use with residential in 15-year-old building
Project Details	<b>New control system (none existed prior) installed to:</b> <ul style="list-style-type: none"><li>• Enable alarms</li><li>• Utilize trending</li><li>• Schedule set-backs</li><li>• Monitor through a graphical interface</li></ul>
Total Project Cost / <b>Total Incentive</b>	\$119,000 / <b>\$36,000</b>
Base Incentive Payment 1	\$11,000, paid after City Light verified installation
Performance Incentive Payment 2	\$25,000, <sup>^</sup> paid after City Light calculated one-year savings
Estimated Annual kWh Savings	160,000 kWh per year
Estimated Annual Avoided Costs	> \$12,800 per year

**Note:** numbers have been rounded for anonymity and ease of sharing  
<sup>^</sup>final performance payment was larger than originally estimated

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**These case study project details**

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**For future case studies, I would also like to learn about:**

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# Controls Incentive Overview

- Benefits
- Eligibility
- Payments
- Process
- People



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# Controls Incentive: **Benefits**

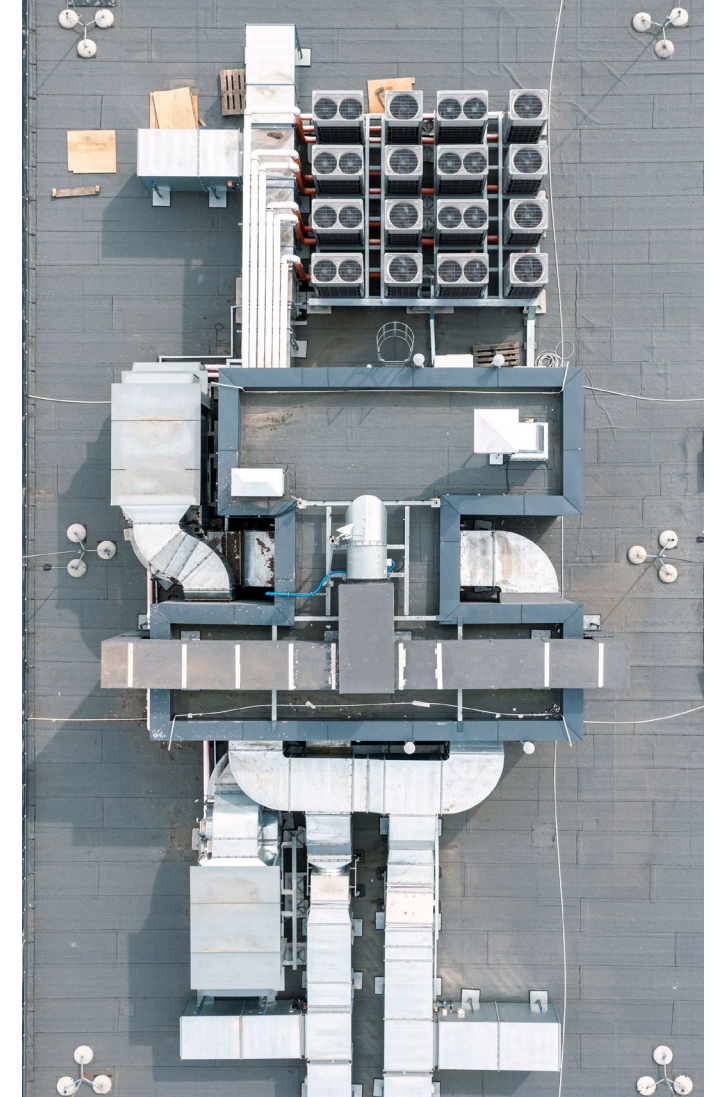
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## **Implementing controls upgrades:**

- Improves comfort and performance
- Lowers energy costs, typically 10% - 15%

## **Utilizing City Light incentives also provides:**

- Guaranteed base incentive ("Payment 1") after installation and verification
- Performance incentive ("Payment 2") after 12 months and meeting minimum savings target



# Controls Incentive: **Eligibility**

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Your building can qualify for City Light controls incentives if the building:

- Is a Seattle City Light electricity customer
- Has at least 50,000 ft<sup>2</sup> conditioned space
- Shows annual electricity consumption that correlates to outside air temperature
- Completes a major HVAC controls upgrade that includes:
  - New control equipment with a web-based interface
  - At least three major energy-efficiency HVAC control sequences (*see list at right*)

## Major Controls Upgrade Can Include

### Scheduling

- Holiday Scheduling
- Zonal Scheduling
- Override control and tenant billing
- Night setup/setback
- Optimum start and stop
- Morning warm-up/cool-down

### Ventilation Control

- Carbon dioxide sensors
- Occupancy sensors
- Supply air volume / outside air damper compensation routines
- Exhaust fans
- Air-side economizers
- Air-side approaches
- Night ventilation purge

### Lockouts

- Chiller system
- Direct expansion compressor cooling
- Resistance heat

### Energy monitoring

- Whole building or end-use
- kWh or demand

### Resets

- Supply air/discharge air temperature
- Hot deck and cold deck temperature
- Entering condenser water temperature
- Chilled water supply temperature
- Variable air volume fan duct pressure and flow rates
- Chilled water pressure

### Demand control

- Demand limiting or load shedding
- Sequential start-up of equipment
- Duty cycling

### Miscellaneous

- Simultaneous heating/cooling control
- Zone-based HVAC control
- Chiller staging
- Building space pressure
- Variable speed drive control
- Heat recovery

# Controls Incentive: **Payments**

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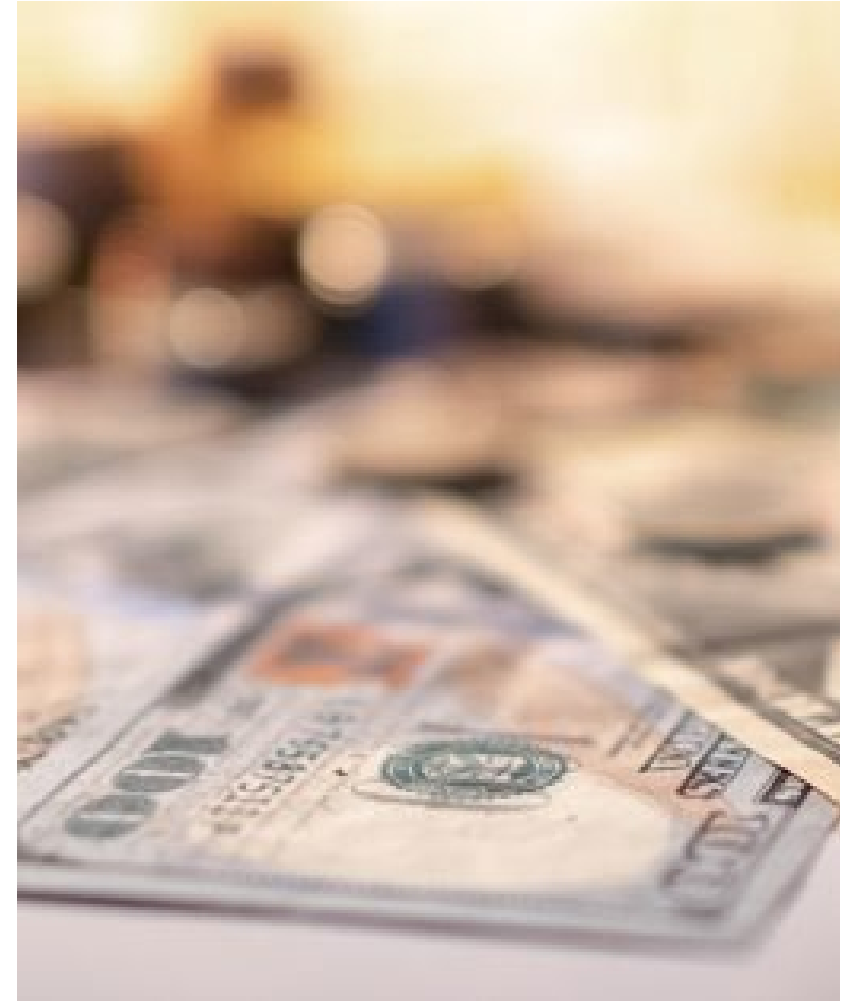
**City Light offers financial incentives of up to 70% installed costs!**

**Payment 1** Base Incentive, guaranteed:

- Once the project is commissioned, City Light will issue a payment of 50% of the contracted incentive amount upon receiving required submittals and verification of the installed measures.

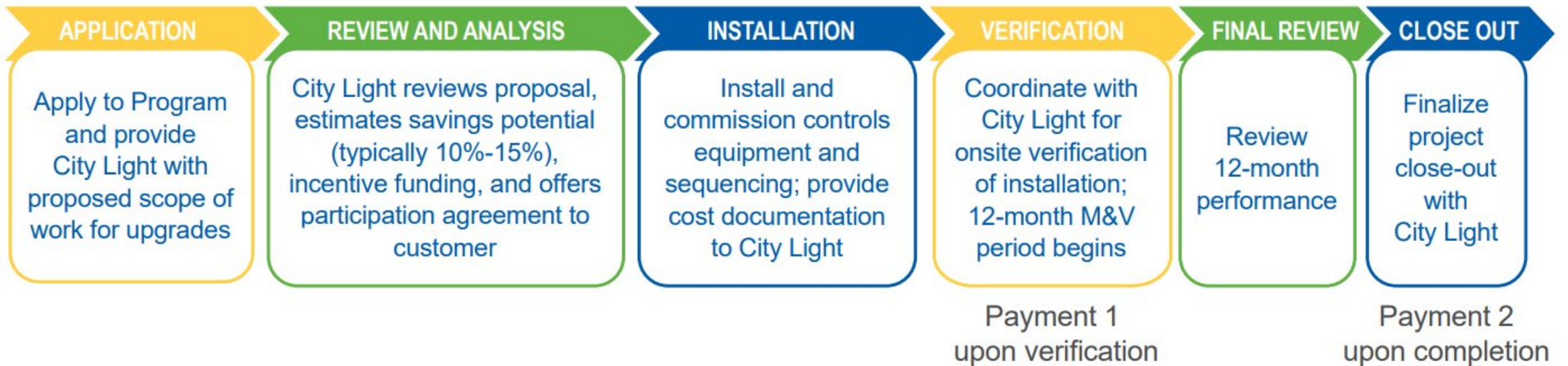
**Payment 2** Performance Incentive:

- The remaining payment will be issued upon completion of the performance period if the savings are  $\geq 5\%$  and prove to be higher than the 50% already paid.



# Controls Incentive: **Process**

Project timeline is estimated to take ~15 months



# Controls Incentive: **People**

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**Seattle City Light Energy Advisors**

**[SCLEnergyAdvisor@seattle.gov](mailto:SCLEnergyAdvisor@seattle.gov)**

**(206) 684-3800**

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**We just covered Controls Incentives benefits, eligibility, payments, process, and contact information. Before we tell you about a couple other incentives, what else do you still need to know specifically about the controls incentive to call us before your next project?**

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# Additional Incentives

- Advanced Rooftop Controls (ARC)
- Custom Incentives
- Supplemental Incentives



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# Advanced Rooftop Control Incentives

## SEATTLE CITY LIGHT 2024 ENERGY CONSERVATION INCENTIVES Effective January 2024 COMMERCIAL REBATES

CONSERVATION ACTION	REBATE (\$)	MEASURE NOTES
HEATING, VENTILATION AND AIR CONDITIONING (HVAC) — RETROFIT ONLY <i>Must be on BPA Qualified lists at <a href="https://tradeallnetworknw.com">tradeallnetworknw.com</a></i>		
Connected thermostat initial install	\$150 each	Gas or electric. Hotels and multifamily not eligible.
Connected thermostat setpoint verification	\$50 bonus	Gas or electric. Must submit schedules and setpoints for connected thermostat programming verification bonus.
Advanced rooftop control-single phase — E.g. ECM motor	\$500 per ton	Gas or electric
Advanced rooftop control - lite	\$120 per ton	Gas or electric
Advanced rooftop control - full	\$250 per ton	Gas or electric

- Packaged unitary equipment (No split systems)
- Five tons or more of cooling capacity
- Must have constant speed fan



# Custom Incentives – *When Needed*

- City Light provides incentives for upgrades to individual building systems, components, [and more!](#)
  - Examples: chiller systems, variable speed drives (VSDs), refrigeration, data center, cooling towers
  - Incentives typically based on annual kWh savings x a \$/kWh incentive.
  - Incentive determined by City Light staff.

DATA CENTER AND IT EQUIPMENT	
Computer room air conditioners (CRAC)	\$0.27
Efficient uninterruptible power supply (UPS) systems, <10kVA	\$0.12
Efficient uninterruptible power supply (UPS) systems, >=10kVA	\$0.23
Server virtualization	\$150 each
Plug load reduction	\$0.12
Data center air flow management	\$0.07
OTHER RETROFIT MEASURES	
Compressor equipment	\$0.27
Process loads	\$0.27
Generator block heaters	\$200 each <3kW \$1,500 each if >= 3 kW
Vehicle engine heater controls	\$200 each
Durable Operations & Maintenance Improvements	\$0.10
Variable speed drives	\$0.27

# Equipment Incentives and More

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- Our energy professionals can help identify additional opportunities for incentives and savings.
- HVAC+ and Lighting to Go programs provide incentives from your local distributor at the time of purchase for basic equipment replacements.
  - Examples: replace 500-ton chiller with new 500-ton chiller or 15-ton RTU with new 15-ton RTU



# Supplemental Incentives – PDI and EPM - \$0.025

Incentive opportunities to offset the administrative costs of participation in City Light's incentive programs

	<b>Project Development Incentive (PDI)</b> <i>All projects in eligible programs qualify</i>	<b>Energy Project Manager (EPM)</b> <i>Requires an energy project plan and a designated energy project manager</i>
<b>Program Eligibility</b>	Commercial & Industrial (C&I) Lighting C&I Non-Lighting Multifamily Weatherization	Pay for Performance (P4P) Existing Building Commissioning (EBCx) C&I Lighting C&I Non-Lighting Industrial SEM
<b>Project Eligibility</b>	Projects with signed Participation Agreement on or after September 1, 2023	Part of BPA-approved Comprehensive Plan  Estimated savings greater than 200,000 kWh over a two-year period with at least one non-lighting measure
<b>Date Reminder</b>	Project submittals for incentive payment received on or before <b>June 15, 2024</b> for \$0.025 / kWh After June 15, 2024 TBD (announced May 2024)	Additional \$0.025/ kWh for completed efficiency projects up to \$150,000 over a two-year period

# Immediate Value-Added Technical Assistance

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Energy Management Analysts can:

- **Conduct a BMS review** to identify low- and no-cost efficiency measures that can reduce your utility-related overhead costs
- **Analyze your energy use** to identify opportunities to improve building performance
- **Provide technical assistance** to you and your team



# Q & A and Open Discussion



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**What questions do you have about the controls  
incentive or the supplemental incentives?**

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**What other topics would you like to hear about?**

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# Please help spread the word

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## Save Money and Energy With Incentives for Major HVAC Controls Upgrade With City Light

### Financial Incentives for Commercial Buildings Owners Looking To Save on Their Energy Bills

City Light offers financial incentives of up to 70% installed cost for completing a major HVAC controls upgrade in your building. Control systems are a sound long-term investment that can lower your energy bills for years to come. Our incentives help make them more affordable by reducing your upfront costs.

#### Benefits

- Improved comfort and performance
- Guaranteed base incentive after installation and verification
- Performance incentive after 12 months and meeting minimum savings target
- Lower energy costs, typically 10% - 15%

There is a guaranteed base incentive after installation and successful verification. An additional performance incentive is given after the controls are in place for at least 10-12 months and the minimum savings target is met.

#### Eligibility Criteria

- Seattle City Light electricity customer
- The building has at least 50,000 ft<sup>2</sup> conditioned space
- Annual electricity consumption correlates to outside air temperature
- Plan to complete a major HVAC controls upgrade, that includes:
  - » Install new control equipment with a web-based interface
  - » Implement at least three major energy-efficiency HVAC control sequences (listed below)


### Process for HVAC Controls Incentive

Before starting work or purchasing equipment, you must sign a participation agreement with City Light.



#### Questions or want to initiate an application?

Contact Seattle City Light Energy Advisors: [SCLEnergyAdvisor@seattle.gov](mailto:SCLEnergyAdvisor@seattle.gov) or (206) 684-3800.  
More information available online, including full program requirements and application, at: <https://seattle.gov/city-light/business-solutions/large-commercial-and-industrial-business-solutions/commretroincentives>

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### Measurement and Verification (M&V)

The performance period of one year will start once the controls upgrade is complete and commissioned. City Light will perform whole building analysis to calculate savings. The incentive amount is dependent on verified savings  $\geq 5\%$  and based on \$0.23/kWh saved.

### Payment

- 1. Base Incentive:** Once the project is commissioned, City Light will issue a 50% payment of the contracted incentive amount upon receiving required submittals and verification of the installed measures.
- 2. Performance Incentive:** The remaining payment will be issued upon completion of the performance period if the savings are  $\geq 5\%$  and prove to be higher than the 50% already paid.

The participant shall provide the following documents for verification of savings:

- On site verification of the new control hardware,
- Invoices showing the total project cost of labor, materials, and sales tax,
- An as-built sequence of operation,
- Screen shots showing the new control system installed and operating.

### Major Controls Upgrade Can Include

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### Miscellaneous

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- Chiller staging
- Building space pressure
- Variable speed drive control
- Heat recovery

### Case Study Data From Two City Light Incentivized Controls Projects

	2018 Completed Project	2021 Completed Project
Property Details	>70,000 ft <sup>2</sup> office/retail in 100-year-old building	>100,000 ft <sup>2</sup> mixed use with residential in 15-year-old building
Project Details	Existing controls adjustments included: <ul style="list-style-type: none"><li>• reset strategies</li><li>• schedules, set-points</li></ul> New Equipment included: <ul style="list-style-type: none"><li>• VAV controllers</li><li>• Zone sensors &amp; discharge air sensors</li><li>• Heat pump controllers &amp; I/O controllers</li></ul>	New control system (none existed prior) installed to: <ul style="list-style-type: none"><li>• Enable alarms</li><li>• Utilize trending</li><li>• Schedule set-backs</li><li>• Monitor through a graphical interface</li></ul>
Total Project Cost	\$122k	\$119k
Base Incentive Payment 1	\$20k upon verification of installation	\$11k upon verification of installation
Performance Incentive Payment 2	\$20k upon one-year calculated savings	\$25k* upon one-year calculated savings
Est. Annual kWh Savings	170,000 kWh/yr	160,000 kWh/yr
Est. Annual Avoided Costs	>\$13.6k/yr	>\$12.8k/yr

\*Numbers have been rounded for anonymity and ease of sharing

\*Final performance payment was larger than originally estimated

# Wrap Up

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- Contact the Energy Advisors to get started. Your project will be assigned to an Energy Management Analyst (like Ted!), who can help you get all the incentives you qualify for.

**Seattle City Light Energy Advisors**  
**[SCLEnergyAdvisor@seattle.gov](mailto:SCLEnergyAdvisor@seattle.gov)**  
**(206) 684-3800**

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