Seattle
Office of Sustainability
& Environment

Seattle Building Energy Efficiency and Electrification Costing Analysis

Transitioning to carbon-neutral buildings

The City of Seattle is committed to supporting you in reducing emissions and transitioning your building toward cleaner, efficient energy. This study is designed to give building owners, managers, and others in the buildings industry an idea of the relative costs of energy efficiency upgrades and electric equipment options. It was completed in 2021 for the Seattle Office of Sustainability & Environment with funding provided by the American Cities Climate Challenge.

Emissions reduction strategies

- Building Tune-Ups
- Modern Building Controls
- Energy Efficiency
- Electrification
- HVAC & Distribution Efficiency

About the study

Cost estimator:
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Technical measures identification:
Solarc Consulting, University of Washington Integrated Design Lab (UW IDL)

Sources and basis of cost:
Cost data provided by Solarc, UW IDL, TBD Consulting, and OH from representative energy efficiency and electrification projects built between 2018 and 2020. The costing sources spanned several building types, including medical office, financial office, office tower, municipal building, school, and hotel.

For more information, email cleanbuildings@seattle.gov or visit seattle.gov/environment/climate-change/buildings-and-energy.

Building Tune-Ups

Simply checking and tuning equipment and systems to operate better improves a building's energy performance. It can also highlight low- and no-cost operational fixes to improve energy efficiency. For some buildings, going beyond the tune-up with a more comprehensive analysis and upgrades, called "retro commissioning," can result in even greater savings. Learn more at **seattle.gov/buildingtuneups**.

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Operations & Controls	**HVAC Controls Optimization**	Align schedules with actual building occupancy; avoid excessive warm-up and cool-down periods; set zone setpoint dead bands to at least 4 degrees Fahrenheit for occupied and 20 degrees for unoccupied spaces. Adjust HVAC supply air setpoints to match actual cooling/heating needs. For VAV systems: Adjust duct static pressure setpoints and reduce air flow minimum setpoints to code. For waterside mechanical systems: Adjust chilled water, condenser water, and heating water supply temperature setpoints.	Original setpoints and schedules.	Corrections to optimize setpoints and schedules within the HVAC control system (DDC) to improve energy efficiency.	Nonresidential	$0.13 – $0.24/sq. ft., with average cost of $0.21/sq. ft. for a tune-up. More in-depth retro commissioning is about $.50 - $2.00/ sq. ft.
	HVAC System Cleaning & Maintenance	Clean HVAC coils, fan wheels, and all miscellaneous heat transfer surfaces that are excessively soiled to increase heat transfer by at least 10%.	Dirty heat exchangers.	Maintenance of HVAC systems to improve energy efficiency.	Nonresidential	
	Lighting Schedule Optimization & Fixture Cleaning	Review lighting controls schedule/sequences and set schedules to match actual building use patterns. Clean lighting lenses/reflectors to increase light transfer by at least 10%.	Original lighting schedules and dirty light fixtures.	Optimization of lighting schedules and cleaning of fixtures to improve energy efficiency.	Nonresidential	
	Distribution System Loss Reduction (Steam, Hydronic)	For steam systems: Inspect and repair traps; repair or replace any valves with excessive leakage; add missing insulation to piping. For hydronic systems: Repair any piping leaks and add missing insulation to piping.	Steam traps blowing steam, missing pipe insulation, etc.	Repair traps and add missing insulation to reduce heat losses in the systems.	Nonresidential	

Building Tune-Ups (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Staffing	**Operations & Maintenance Continuous Improvement**	Hire internal staff to serve as a resource conservation manager (RCM) and/or provide training to facilities and maintenance staff (e.g., Building Operator Certification). Use maintenance contracts that state operational and energy efficiency objectives to reinforce relationships with key service providers (e.g., controls, airside mechanical, waterside mechanical, electrical).	No resource conservation manager (RCM) or existing staff needs training.	Hire and/or train internal staff and/ or reinforce external service provider relationships to improve operations and energy efficiency.	Nonresidential	Example: Building Operator Certification Level I and II cost is $1,895 each/person.

Energy Efficiency

On average, 30 percent of the energy used in commercial buildings is wasted. Installing low-flow water fixtures, updating lighting, and using "smart power strips" to reduce plug loads are low-cost ways to reduce a building's energy use. Adding insulation and upgrading windows are bigger investments, but can have bigger payoffs. These energy efficiency improvements increase tenants' comfort, reduce heating and cooling demands and the size of equipment needed at replacement, and cut climate-polluting emissions.

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Envelope Measures	**Wall Insulation**	Install continuous rigid insulation or blown-in cellulose insulation to increase wall assembly to at least R-10. Typically this would be completed as part of a significant re-cladding or remodeling and could also include spray foam applications or batt insulation, as applicable. Cost is increased if wall accessibility is difficult.	Poor U-value allows excess heat loss and heat gain.	Reduce heat loss or gain by installing exterior rigid wall insulation (or interior or blown-in cellulose in multifamily) to improve U-value from 0.17 to 0.06.	Multifamily and Nonresidential	$2.34 – $5.85
	Roof Insulation	Install continuous rigid insulation to increase roof assembly performance to at least R-19. Typically this would be completed when re-roofing the building. For multifamily, install blown-in cellulose insulation in existing ceiling cavities and attics, or continuous rigid insulation in flat roof conditions, to increase roof assembly performance to at least R-19.	Poor U-value allows excess heat loss and heat gain.	Reduce heat loss or gain by installing rigid roof insulation or blown-in cellulose in multifamily to improve U-value from 0.621 to 0.3.	Multifamily and Nonresidential	$0.19 – $3.86
	Secondary Glazing System	Use secondary glazing systems, which are window attachments with insulating high-performance glazing in anodized or painted aluminum frames with low-e coating on double-lite (IGU) glass. They are installed on the interior side without replacing the existing glass, window frames, or altering the exterior appearance of the building, making them an option for historic buildings. High cost assumes glass percentage of 60%.	Poor U-value allows excess heat loss and heat gain.	Reduce heat loss or gain by installing a secondary glazing system on existing windows to improve U-value from 0.621 to 0.3.	Multifamily and Nonresidential	$5.05 – $37.87

Energy Efficiency (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Envelope Measures	**New Commercial Window**	Replace existing windows with new double-pane, low-e code compliant glazing system.	Poor U-value allows excess heat loss and heat gain.	Reduce heat loss or gain by installing new windows to improve U-value from 0.621 to 0.3.	Nonresidential	$9.44 – $70.80
	New Punched Windows	Replace existing windows with new double-pane, low-e code compliant residential windows. Unit cost based on per sq. ft. of window.	Single-pane or old double-pane windows that allow excess heat loss and heat gain.	Install new double-pane, code compliant windows to reduce heat loss or gain.	Multifamily	$3.64 – $27.30
	Envelope Sealing	Seal the building enclosure to reduce unwanted air infiltration. This includes cracks and gaps in the wall assemblies and around window systems, and should address open/broken dampers or other significant openings in the building enclosure. Generally, this will be completed with a combination of caulk, spray-in foam, and where required for larger openings, structural elements.	Leaky building needs sealing.	Seal leaks and gaps around windows and walls to reduce air infiltration from 0.5 natural air changes/ hour (ACH nat) to 0.25 ACH nat.	Multifamily and Nonresidential	$0.22 – $0.54
Lighting, Plug Loads, and Domestic Hot Water	**Low Wattage LED Lamps Or De-lamping**	Relamp and de-lamp existing fixtures and replace with lower wattage, longer-life lamps. Costs listed assume commercial replacement of T8 fluorescent lamps with tubular LED (TLED) lamps specially designed for retrofit applications.	Standard wattage lamps and moderately over-lit spaces.	De-lamp and/or relamp with low wattage LED lamps or TLEDs to improve energy efficiency and reduce electric costs.	Multifamily and Nonresidential	$0.08 – $0.12
	Lighting Retrofit/ LPD Reduction	A redesign and/or point-to-point replacement of the existing commercial light fixtures with new, more energy efficient longer-life light fixtures and lamps. Ideally completed in conjunction with a comprehensive lighting controls upgrade.	Over-lit space wastes electricity.	Retrofit existing lighting to decrease lighting power density (LPD) from 1.5 W/sq. ft. to 0.6 W/sq. ft. to improve energy efficiency and lighting quality and reduce costs.	Nonresidential	$4.00 – $6.00

Energy Efficiency (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Lighting, Plug Loads, and Domestic Hot Water	**Luminaire Level Lighting Controls (LLLC) Retrofit**	Redesign and/or point-to-point replacement of the existing commercial light fixtures with new luminaire level lighting controls (LLLC)-type fixtures. Since LLLCs have on-board occupancy, daylight, and sweep control capabilities, the selection of this fixture type precludes the need for a separate comprehensive lighting control system.	Over-lit space wastes electricity and needs controls.	Retrofit existing lighting and add lighting controls to decrease lighting power density (LPD) from 1.5 W/ sq. ft. to 0.6 W/sq. ft. to improve energy efficiency and lighting quality and reduce costs.	Nonresidential	$4.00 – $6.00
	Comprehensive Lighting Controls	Provide new floor-by-floor or building-wide lighting controls that allow for comprehensive control of electric lighting for occupancy, daylight zones, and sweep controls sufficient to meet current code requirements. Cost assumes adding controls to existing fixtures.	No lighting sensors.	Add lighting occupancy sensors and controls that align with building schedules to improve energy efficiency and reduce costs.	Nonresidential	$1.25 – $2.50
	Perimeter Daylighting	Provide photo-sensing and automated dimming capability and commissioning to enable appropriate zone-based reduction in light output when daylight is present. Cost assumes existing fixtures are dimmable.	No lighting sensors.	Add daylight sensors that reduce need for lighting during daytime to improve energy efficiency and reduce costs.	Nonresidential	$0.50 – $1.00
	LED Task Lighting	Provide LED task lights at workstations as part of a "task-ambient" or "task tuning" general lighting strategy to reduce overall lighting power density, plug loads, and enable greater occupant control. Task lighting should be included as part of an occupancy/vacancy sensing plug-strip control strategy.	Plug loads defined at 1.5 W/sq. ft. or 16 W/sq. m.	Provide LED task lights at workstations to reduce room lighting power density (LPD) and enable greater control by building occupants (Assumes this reduces plug loads by 0.1 W/sq. ft. or 1 W/sq. m.).	Nonresidential	$0.15 – $0.25

Energy Efficiency (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Lighting, Plug Loads and Domestic Hot Water	**Occupancy Sensor Controls**	Provide zone-based or fixture-based occupancy/ vacancy sensing for all lighting.	No occupancy or sweep control of lighting.	Add controls to sense room occupancy or vacancy to reduce plug load energy consumption by 20%.	Nonresidential	$0.75 – $1.00
	Plug Load from Appliances	During remodel or when needing replacement, replace older appliances with ENERGY STAR models, such as clothes washers, refrigerators, and dishwashers.	Existing appliances are not ENERGY STAR.	Replace existing appliances with ENERGY STAR high-efficiency appliances.	Multifamily and Nonresidential	Not estimated. Prices vary by appliance.
	Plug Load Controls	Provide occupancy sensing plug strips to enable occupancy/vacancy-based control of non-critical workstation miscellaneous electrical loads.	Manual controls.	Install or provide automatic control or occupancy sensor-controlled plug strips at workstations to save energy and reduce costs.	Nonresidential	$0.25 – $0.50
	Reduce Domestic Hot Water Use	Cost assumes commercial replacement of existing conventional showerheads and faucets with low-flow fixtures to reduce water consumption and domestic hot water use.	Conventional fixtures.	Install low-flow fixtures that reduce hot water use and save energy.	Multifamily and Nonresidential	$0.01 – $1.00

HVAC & Distribution Efficiency

Maximizing HVAC zone, plant, and air distribution efficiency is an important part of reducing building emissions. This includes options like a very high-efficiency, dedicated outdoor air system to provide fresh air, air-to-air heat recovery systems, variable frequency drives, and water heat recovery.

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Zone-level Building HVAC	**VAV Retrofit**	Replace or retrofit existing VAV terminal units to achieve direct digital control (DDC); eliminate any air/water leak by damper or reheat valve and enable accurate air flow control with minimum and maximum air flow setpoints for both cooling and heating conditions. Remove any older inlet vane damper hardware still installed at the fans, and make sure variable frequency drives (VFDs) are fully operational and programmed to align with terminal unit minimum air flow setpoints. Replace deficient VFDs.	Constant air volume or VAV.	Upgrade HVAC to "Advanced VAV" with dual maximum setpoints.	Nonresidential	$1.00 – $5.00
	De-couple HVAC (Change to HRV/ DOAS)	De-couple ventilation from heating and cooling, providing heating and cooling hydronically using radiant panels, fan coil units, and/or chilled beams. For buildings without functional hydronic systems, consider variable refrigerant flow (VRF) as an alternative de-coupled heating/cooling system option. Incorporate with dedicated outdoor air system (DOAS) with high-efficiency, air-to-air heat recovery (HRV/ERV). Adding demand controlled ventilation should also be considered.	Constant air volume or VAV.	Upgrade to a de-coupled radiant system with a DOAS and add HRV/ERV to capture waste heat from exhaust air.	Nonresidential	$35.00 – $65.00
	Air-to-Air Heat Recovery	Provide high-efficiency, air-to-air heat recovery (HRV/ERV) for ventilation air or a very high-efficiency, dedicated outdoor air system (VHE DOAS). Specify minimum heat recovery effectiveness of 85%, which is sufficient to avoid need for supplemental tempering during design heating conditions.	No heat recovery; conventional DOAS.	Add HRV/ERV to capture waste heat or a VHE DOAS.	Multifamily and Nonresidential	$12.00 – $27.00

HVAC & Distribution Efficiency (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Zone-level Building HVAC	**Heat Pump Replacement**	Replace existing heat pump with new heat pumps, such as air-source or water-source, packaged, split system, or VRF. Target rated full load and part load efficiencies that are at least 10% better than required by code.	Older inefficient heat pump.	Install new efficient electric heat pumps.	Nonresidential	$4.00 – $50.00
	Variable Speed Motors on Fans	Retrofit existing constant air volume (CAV) fan systems, where applicable, with variable frequency drives (VFDs) or electronically commutated motors (ECMs) to implement variable speed control of fan motors. Applications include large, single-zone fan systems serving auditoriums, gymnasiums, etc. When installing new VFDs, upgrade motors to premium efficiency inverter duty type.	Constant speed fans.	Install electronically commutated (EC) motors or variable frequency drives (VFDs) on fans to reduce fan energy use in HVAC systems.	Nonresidential	$0.50 – $1.00
Water-side HVAC Distribution Efficiency	**VFD on Chilled Water Loop**	Modify chilled water hydronic system to achieve variable flow functionality. Replace three-way valves as needed and appropriate. Install VFDs and pressure controls to vary pump speed in response to changing system pressures and/or flow. When installing new VFDs, consider motor upgrade to premium efficiency inverter duty type.	Constant speed pump.	Install variable speed pump to improve efficiency of chilled water loop systems.	Nonresidential	$1.00 – $2.00
	VFD on Hot Water Loop	Modify heating water hydronic system to achieve variable flow functionality. Replace three-way valves as needed and appropriate. Install VFDs and pressure controls to vary pump speed in response to changing system pressures and/or flow. When installing new VFDs, consider motor upgrade to premium efficiency inverter duty type.	Constant speed pump.	Install variable speed pump to improve efficiency of hot water loop systems.	Nonresidential	$1.00 – $2.00

HVAC & Distribution Efficiency (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Plant-level HVAC	**Chiller Retrofit**	Retrofit existing inefficient chiller to achieve improved efficiency and extend equipment service life. Retrofit scope may include compressor change-out to variable speed compressors, upgraded heat exchanger bundles, refrigerant change-out, and controls upgrades. A VAV retrofit may also be needed and is not included in this cost.	Inefficient chiller of COP: 4 ; Min. PLR: 0.2.	Retrofit existing chiller to achieve COP: 5.2 ; Min. PLR: 0.2.	Nonresidential	$1.50 – $3.00
	Chiller New	Replace existing inefficient chiller with new efficient chiller. New chiller should target improved full load and part-load efficiencies, and fit within the existing chilled water infrastructure. Consider variable speed compressors for markedly improved part-load performance. A VAV retrofit may also be needed and is not included in this cost.	Inefficient chiller of COP: 4 ; Min. PLR: 0.3.	Upgrade to new efficient chiller to achieve COP: 5.8 ; Min. PLR: 0.1.	Nonresidential	$4.00 – $6.00
	New Cooling Tower	Replace existing cooling towers with new cooling tower. If physically compatible with the tower location, select oversized tower for closer approach temperatures. Specify variable frequency drive fan control. Select towers that accommodate variable condenser water flow.	No VFD on cooling tower and deteriorated approach temperature.	Upgrade to new cooling tower with fan control via VFD and 7 deg. F approach (max).	Nonresidential	$1.00 – $1.50
	Domestic Hot Water Heat Recovery	As applicable, use waste heat to pre-heat (or provide all of) potable hot water. Available waste heat sources include zones with constant cooling loads (i.e., server rooms), return condenser water, steam system condensate, excessively warm mechanical rooms or tunnels, etc. Use heat pump (refrigeration cycle)-based heat recovery technology.	No heat recovery.	Recover waste heat and use it to pre-heat domestic hot water.	Nonresidential	$0.20

Modern Building Controls

Building controls can be programmed to sync with tenants' needs, like turning on lights, heat, air-conditioning, or ventilation only when needed for best comfort, fresh air, and energy efficiency.

Modernizing means upgrading outdated pneumatic or digital systems or installing new controls, if none already exist.

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
HVAC Controls Upgrade	**Comprehensive Direct Digital Controls (DDC) Upgrade**	Provide centralized direct digital control (DDC) for all central and distributed HVAC equipment. Upgrade should involve comprehensive hardware and software installation. Review and revisit all sequences of operation to implement best practice controls for improved efficiency. Provide commissioning and set up to ensure occupant comfort and optimal configuration.	No controls or pneumatic controls.	Upgrade HVAC system to be fully DDC, and remove original controls entirely.	Nonresidential	$5.00 – $10.00
	Controls Modernization	Install hardware and software upgrades to provide centralized direct digital control of all building HVAC equipment. Review and revisit all sequences of operation to implement best practice controls for improved efficiency. Provide commissioning and set up to ensure occupant comfort and optimal configuration.	Early generation/ outdated DDC.	Upgrade existing DDC hardware and software for both the building and plant HVAC.	Nonresidential	$3.00 – $6.00

Electrification

Efficient electrification options are available for most equipment, and the technologies continue to improve. Heat pumps are a game-changing technology to replace fossil fuel-powered space and water heating systems with all-electric systems. These upfront costs pay dividends over time, cutting energy use and climate emissions. And, with most water and heating equipment having a lifespan of 30+ years, going electric now when replacing equipment that's near or at the "end of life" is a smart way to futureproof your building. Estimated costs do not include electric service capacity increases or other upgrades that some buildings may need to enable electric equipment retrofits. An asset management plan that aligns energy efficiency projects with a goal of right-sizing electric equipment can reduce or eliminate the need to increase the electric service capacity.

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Heating Plant Electrification	**Heat Recovery Chiller**	Install new heat recovery chiller to replace or augment existing chiller and boiler plant equipment. As needed, modify distributed heat exchange component in heating water system to work with low temperature heating water. Add new boilers and/or reconfigure existing boilers to provide supplemental heating. Consider adding chilled water coils in large exhaust air streams to recover additional heat during winter when there may not be a significant building cooling load. HRV/VHE DOAS may be required and is not included in this cost.	Gas boiler and existing chiller.	Replace gas boiler and chiller with a heat recovery chiller.	Nonresidential	$5.00 – $7.50
	Air-to-Air Heat Pump	Replace existing chiller and gas-fired boiler systems (and associated building HVAC systems) with new distributed air-to-air heat pumps. Target heat pump efficiency (full load and part load) to at least 10% better than code.	Gas boiler and existing chiller.	Replace gas boiler and chiller with an air-to-air heat pump.	Nonresidential	$5.00 – $15.00
	VRF System	Replace existing chiller and gas-fired boiler systems (and associated building HVAC systems) with variable refrigerant flow (VRF) heat pumping system. When VRF is serving zones that have significant simultaneous heating and cooling needs, consider specifying the integral heat recovery option within the new VRF system.	Gas boiler and existing chiller.	Replace gas boiler and chiller with a VRF system.	Nonresidential	$35.00 – $65.00

Electrification (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Heating Plant Electrification	**Air-to-Air Water Pump**	Replace existing chiller and gas-fired boiler systems (and upgrade associated building HVAC systems as applicable) to work with chilled and heating water primarily provided by a new air-to-water heat pump (AWHP). Ensure all distributed heat exchange components in the heating water system can provide design day heating with water temperatures that are compatible with the new AWHP system.	Gas boiler and existing chiller.	Replace gas boiler and chiller with air-to-water heat pump for heating and cooling.	Nonresidential	$5.00 – $15.00
	Air-to-Air Water Pump (Heat Only)	Replace existing gas-fired boiler systems (and upgrade associated building HVAC systems as applicable) to work with heating water primarily provided by a new air-to-water heat pump (AWHP). Ensure all distributed heat exchange components in the heating water system can provide design day heating with water temperatures that are compatible with the new AWHP system.	Gas boiler.	Replace gas boiler with electric air-to-water heat pump for heating only.	Nonresidential	$5.00 – $15.00
	Heat Pump RTU with VHE DOAS/ HRV	Replace existing gas-fired roof-top units (RTUs) with new packaged heat pumps. Install very high-efficiency, dedicated outside air system (VHE DOAS), and integrate with existing or new ductwork for ventilation of occupied zones. Provide auxiliary electric heat as needed.	Gas-fired RTU.	Replace gas-fired RTU with heat pump RTU with high-efficiency DOAS/HRV.	Nonresidential	$15.00 – $18.00
	VHE DOAS and VRF	Replace existing gas-fired roof-top units (RTUs) with a very high-efficiency, dedicated outside air system (VHE DOAS) and variable refrigerant flow zonal heating and cooling. Preheat with heat recovery (e.g., from a server room) could also be incorporated.	Gas-fired RTU.	Replace gas-fired RTU with high-efficiency DOAS/HRV.	Nonresidential	$35.00 – $65.00

Electrification (con't.)

Type	Measures	Description	Baseline Condition	Upgrade	Building Type	Estimated Cost/Sq. ft. (Low to High)
Heating Plant Electrification	**Electric Steam Generation**	Replace existing gas-fired steam generators with new electric steam generators. Consider point-of-use steam generators to eliminate piping and condensate return losses.	Process steam (gas-fired steam generator).	Replace gas-fired steam with electric steam generation.	Nonresidential	$1.00 – $1.50
	Heat Pump Domestic Hot Water	Replace and/or integrate existing gas-fired domestic water heater (DWH) with new AWHP. Provide indirect-fired storage tank and back-up electric heat as applicable.	Gas-fired DWH.	Replace gas-fired DHW system with heat pump water heater, either integral with tank or split system air-to-water heat pump.	Multifamily and Nonresidential	$0.60 – $2.00
	On-Demand Electric Resistance Domestic Hot Water	Replace existing gas-fired domestic water heater (DWH) with new on-demand electric resistance water heater. Consider peak flow requirements and need to upgrade electric service (not included in cost) when evaluating replacement.	Gas-fired DWH.	Replace gas-fired DHW system with on-demand electric resistance.	Multifamily	$7.00 – $9.00