



2023 PATHWAY TO NET ZERO



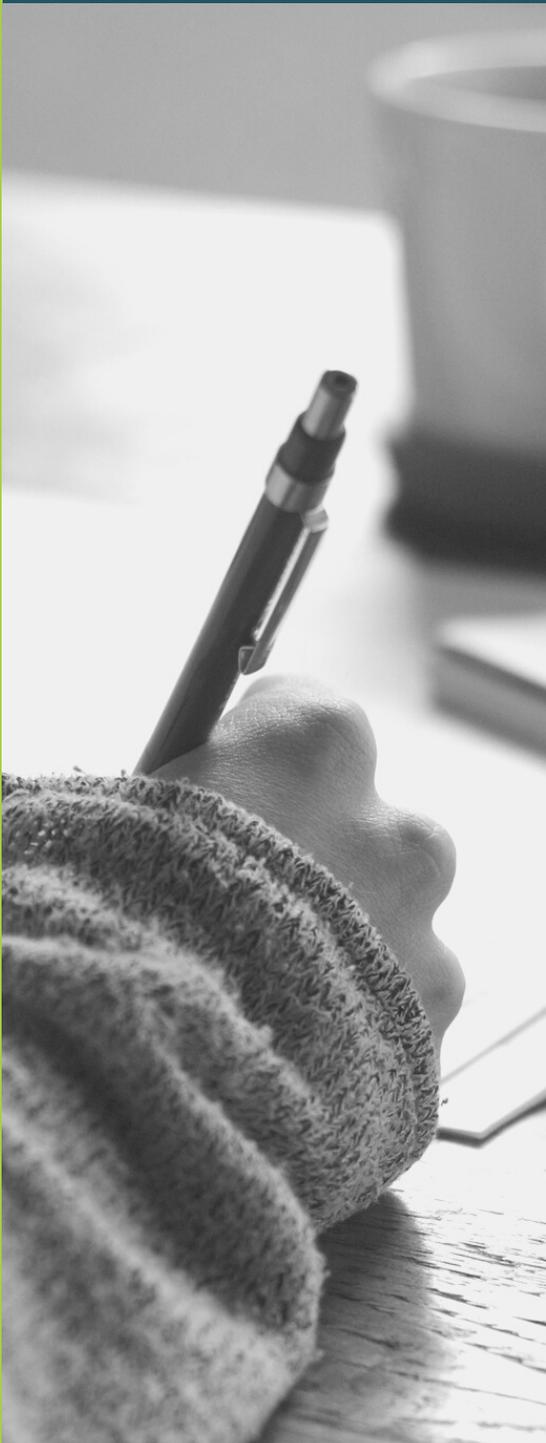
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South Hadley Electric Light Department

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THE PATHWAY TO NET ZERO

South Hadley Electric Light Department

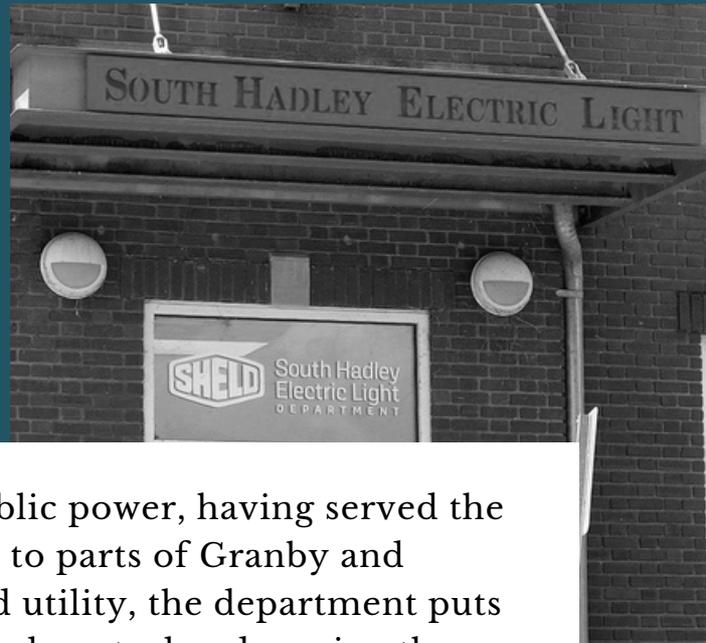


The town of South Hadley's journey to becoming a municipal light plant (MLP) began in 1913 when a group of residents proposed that the town purchase South Hadley's electric generating and transmission facilities from a private company to gain local control. The town formed a committee to learn more about municipal-owned utilities. After visiting other municipal utilities and learning more about MLP operations, the committee recommended the purchase at a town meeting on May 12, 1913. Voters approved the recommendation at the May meeting and then again at the second required vote on June 13, 1913 and South Hadley Electric Light Department (SHELD) was officially formed.

Today, SHELD has over a 90% residential customer base. The department is dedicated to providing their customers safe and reliable electricity at a low cost while paving the way to a carbon-free future.

REPORTING PROGRESS

Management Letter



SHELD is proud of its strong roots in public power, having served the community of South Hadley, in addition to parts of Granby and Hadley, since 1913. As a consumer-owned utility, the department puts its customers first and prides itself on local control and serving the needs of its community.

We are equally proud of our near 100% carbon-free power portfolio, due to our nuclear and hydropower contracts, but we remain committed to playing our part in helping our customers make responsible, energy-conscious decisions in their homes and businesses and the vehicles they drive.

In 2023, SHELD began offering the NextZero Residential Battery program which provides rebates for residential battery storage systems. Residential batteries can be paired with solar panels to store excess energy generated by the panels during the day for later use and provide back up for critical loads in the home in the event of a power outage. When enrolled in the Connected Homes demand-response program, customers can earn an additional monthly incentive while helping SHELD better manage its demand during peak energy periods.

SHELD is a leader in energy efficiency and decarbonization and will continue to explore new technologies and programming to support the Commonwealth's climate future.

IN THIS REPORT

This report highlights SHELD's focus on sustainability along three dimensions: environmental, social, and governance/community engagement. These facets are central to SHELD's mission of providing affordable, reliable, and clean energy in a transparent and accountable way.



Environmental

SHELD is committed to the protection of the environment and the welfare of its community. This is done by complying with environmental laws implemented in procedures and programs to ensure compliance. SHELD communicates goals and policies and provides education and training for employees, suppliers, customers, and the community.



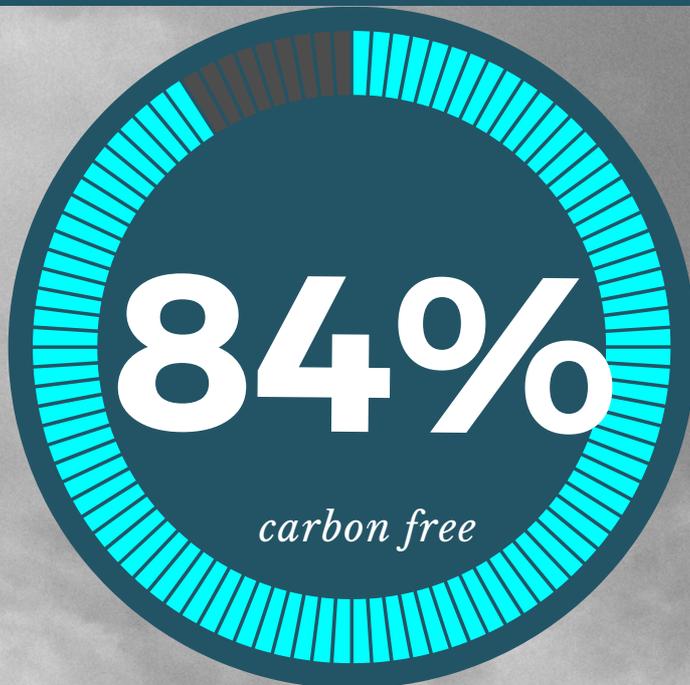
Social Responsibility

SHELD has made it a mission to provide customers and the community with reliable and safe electricity while still offering a competitive price. The energy delivered will be provided in a responsible manner.



Governance and Community Engagement

As a consumer-owned, municipal utility, SHELD is committed to transparency and accountability. SHELD is governed by a Light Commission whose members are elected by the town's citizens. The commissioners are sworn to uphold and operate in the best interest of the town and its citizens. The Commission holds monthly meetings and posts the minutes of these public sessions on its website. This engagement is important to SHELD in keeping the South Hadley community involved in their municipal light department.



2022

carbon-free power portfolio

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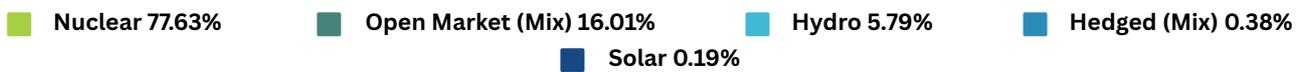


POWER SUPPLY

South Hadley Electric Light Department

| MWh/RECs | Percentage of Total Sales | Name | REC Type |
|----------|---|-----------------------|-------------------------|
| 6,653 | 5.79% | NYPA Hydro | VT Tier II |
| 89,265 | 77.63% | Nuclear | EFEC / CES-E |
| 139 | 0.12% | MLP/DOER Solar Rebate | MA Class I |
| 438 | 0.38% | Hydro Québec | Hydro Québec System Mix |
| 96,495 | 84% | TOTAL | |
| 114,984 | Total South Hadley Electrical Sales | | |
| 84% | South Hadley Carbon-Free Electrical Sales | | |

2022 kWh PURCHASES BY FUEL SOURCE





NextZero is the leading residential electrification, demand response, and energy conservation service for Massachusetts municipal utility customers. Managed by MMWEC, NextZero provides energy education, no-cost home energy audits, and incentives on home energy improvements. It also offers rebates on electric assets like heat pumps and mini-splits.

The total value of audits, rebates, and incentives awarded to SHELD residential customers through the NextZero energy efficiency program in 2022 amounted to **\$58,415**. The rebates provided by the program helped increase efficiency and reduce energy costs.

HOME ENERGY AUDITS

South Hadley Electric Light Department



Home energy audits are the best first step for homeowners and renters to get advice on measures they can take to reduce their energy use. By providing no-cost energy audits through NextZero, SHELD is committed to helping customers identify energy savings potential and helping educate customers about the rebates and incentives available to help them implement efficiency measures.

As part of the process, customers receive a Home Energy Assessment Report that highlights the results of the audit and lists the rebates and incentives available through the NextZero program.

As part of the audit, if warranted, the auditor provides up to three LED light bulbs as an instant savings measure. SHELD also provides inspections of customer installations to confirm that measures, for which incentives are sought, have been installed.

| 2022 Home Energy Audits | Quantity |
|-------------------------|----------|
| Audits | 78 |
| LED Bulbs | 234 |
| PII Verification Visits | 12 |

ENERGY STAR®

South Hadley Electric Light Department



ENERGY STAR is the program developed by the US Environmental Protection Agency to identify and promote the most energy efficient products.

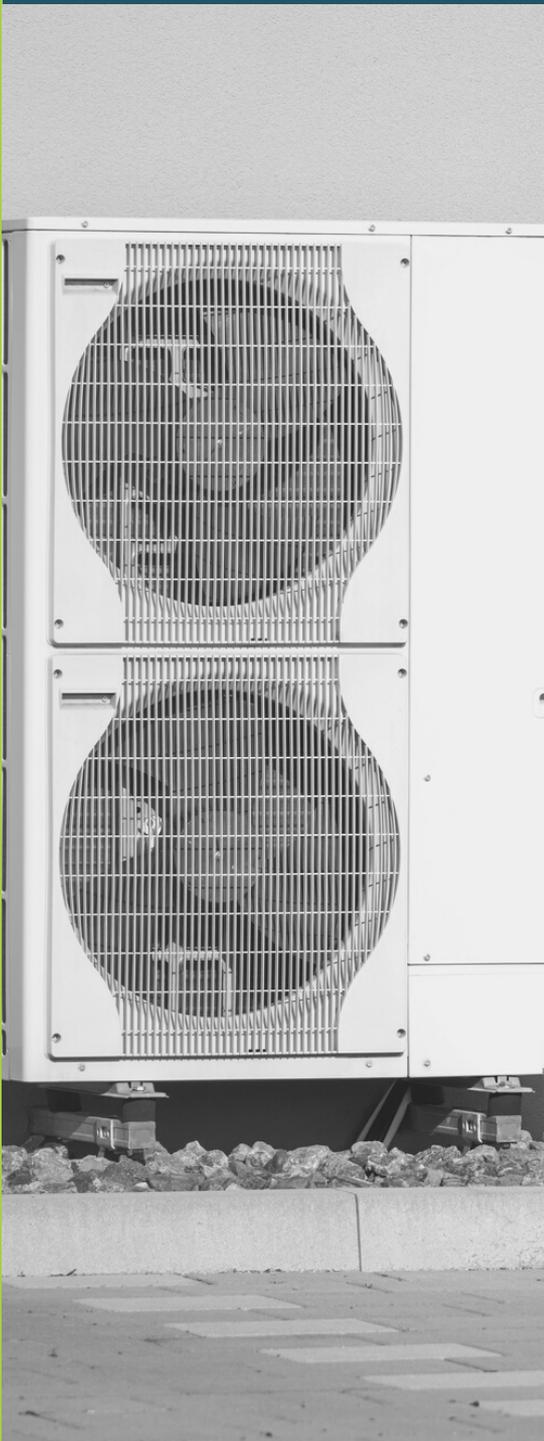
SHELD pays rebates to customers that purchase specific efficient ENERGY STAR appliances for their homes.

These rebates help offset the higher cost of energy efficient appliances, while reducing the amount of energy SHELD needs to purchase. This makes the program not only good for the customer receiving the rebate, but for all SHELD customers.

| ENERGY STAR Appliance Rebates | ENERGY STAR Standard Rebate | ENERGY STAR Most Efficient Rebate |
|--|-----------------------------|-----------------------------------|
| Air Purifiers | \$25 | \$N/A |
| Clothes Washers | \$25 | \$100 |
| Clothes Dryers | \$25 | \$100 |
| Dehumidifiers | \$25 | N/A |
| Dishwashers | \$25 | \$100 |
| Freezers | \$25 | \$100 |
| Refrigerators (≥12 cu.ft) | \$25 | \$100 |
| Room Air Conditioners | \$25 | N/A |
| Wi-Fi Thermostats | \$100 | N/A |
| Variable Speed Pool Pumps | \$200 | N/A |
| Heat Pump Clothes Dryers | \$500 | N/A |
| Heat Pump Water Heaters (≤55 Gallon, Electric) | \$500 | N/A |

HEATING AND COOLING

South Hadley Electric Light Department



SHELD is doing more than just decarbonizing its own power portfolio. Through NextZero, SHELD is also helping South Hadley customers switch to clean heating and cooling systems.

In order to reach state decarbonization goals by 2050, homeowners will need help converting their fossil fuel heating systems to electric heating systems.

The most efficient way to heat with electricity is with a heat pump. SHELD is helping customers evaluate the conversion of their heating system to electric heat pumps through the NextZero heat pump assessment program.

As part of this program, a building science expert is available to answer any questions customers have about the application of heat pumps in their home.

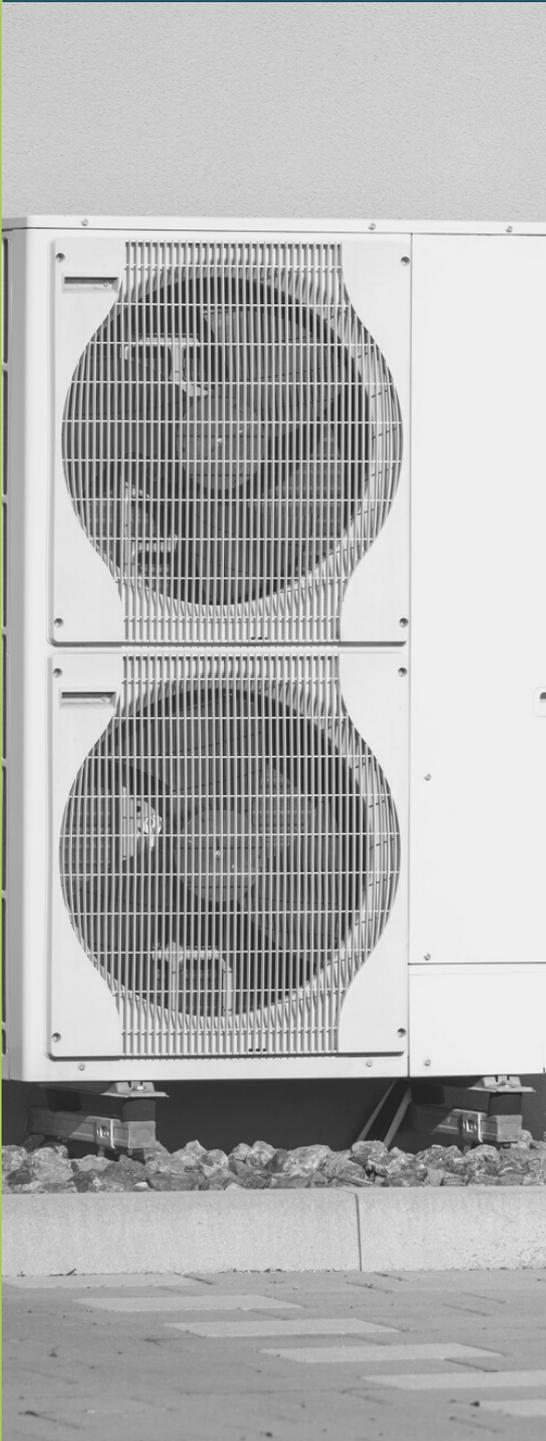
NextZero will also review equipment sizing for the space and ensure the heat pump is the correct size for the conditioned space, reducing the chance for any problems with implementation.

The NextZero heat pump assessment program helps customers get comfortable with the technology and decreases risk, ensuring good outcomes for the program and for customers.

Additionally, SHELD has partnered with UMassFive to offer 0% interest loans of up to \$10,000 to its customers for updating fossil fuel heating systems with energy efficient heat pump systems.

HEATING AND COOLING REBATES

South Hadley Electric Light Department



Seventy four percent of the NextZero Heating and Cooling rebates SHELd issued in 2022 were for ductless mini-splits.

| 2022 Heating and Cooling Rebates | Quantity | Value |
|------------------------------------|-----------|-----------------|
| Central Air Conditioning | 8 | \$2,000 |
| Ductless Mini-Splits (Single Zone) | 11 | \$3,300 |
| Ductless Mini-Splits (Multi Zone) | 12 | \$6,000 |
| Total | 31 | \$11,300 |

Ensuring heating and cooling systems are efficient is only part of the solution to reducing energy use. The building envelope is key to keeping living spaces cooler in the summer and warmer in the winter. Sealing drafts and increasing ceiling and wall insulation are also important to keeping people comfortable while using less energy. That’s why SHELd, through NextZero, is providing rebates and incentives on insulation and air sealing.

| 2022 Home Efficiency Rebates | Quantity | Value |
|------------------------------|-----------|----------------|
| Blower Door/Air Sealing | 4 | \$1,953 |
| Insulation | 11 | \$5,500 |
| Total | 15 | \$7,453 |

| 2022 Heat Pump Assessments | Quantity |
|----------------------------|----------|
| Heat Pump Assessments | 57 |

CONNECTED HOMES

South Hadley Electric Light Department



There are a wide variety of internet-connected devices that control energy consuming equipment in homes. SHELD customers can get rewarded for enrolling their smart devices in the NextZero Connected Homes Program.

Wi-Fi thermostats, electric vehicle chargers, electric hot water heaters, mini-split controllers, and home battery systems all have the ability to control significant home electric loads and therefore can be used to help shift home energy use away from peak periods when the less efficient resources must be dispatched to meet demand.

The NextZero Connected Homes program enrolls smart devices to be controlled and provides incentives to residential customers who enroll their devices in the program. By dispatching these devices during peak periods, SHELD and customers work together to put South Hadley on the path to net zero carbon emissions.

| Total Participating Customers | Total Devices Enrolled | 2022 Incentives |
|-------------------------------|------------------------|-----------------|
| 41 | 44 | \$1,775 |

GREENHOUSE GAS REDUCTION REBATES

South Hadley Electric Light Department



The Greenhouse Gas Reduction Rebates are offered directly through SHEL D to promote the reduction of burning fossil fuels (heating oil, gasoline, diesel, etc.) locally within the town of South Hadley. Not only does the reduction in greenhouse gases help fight climate change, it also improves local air quality. This program includes rebates for electric vehicle chargers, electric bicycles, electric yard equipment, and electric service upgrades. Rebate amounts range from \$25 to \$200.

Electric vehicles, bicycles, and yard equipment have their benefits, but now, with a greener future in mind, they can be a part of the changes SHEL D customers make to electrify their homes.

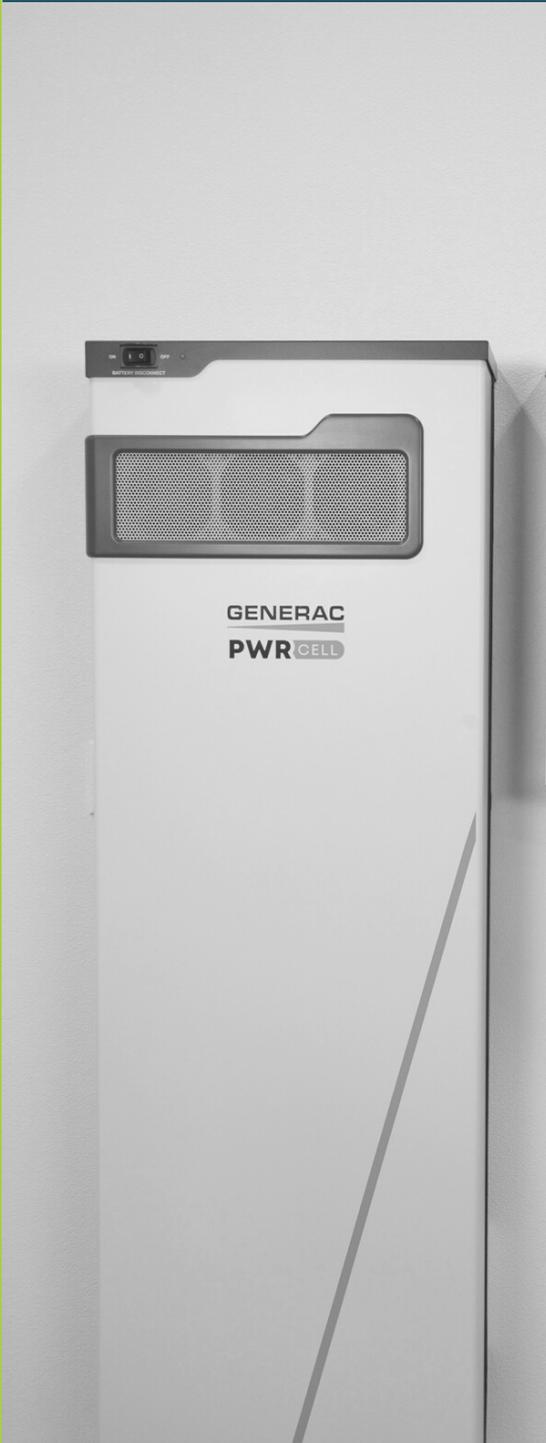
These rebates are available to all residential SHEL D customers through their website at SHEL D.org.

| Appliance/Service | Value |
|--------------------------|-------|
| Electric Lawn Mower | \$100 |
| Electric Leaf Blower | \$25 |
| Electric Trimmer | \$25 |
| Electric Bicycle | \$200 |
| Electric Service Upgrade | \$200 |
| Electric Vehicle Charger | \$300 |

NEW IN 2023



South Hadley Electric Light Department



In 2023, SHEL D began offering rebates on residential lithium-ion battery systems. To qualify, batteries must be Duracell, Emporia, Sonnen, or Generac PWRCell brands and have a storage capacity of 7.5 to 20 kilowatt-hours (kWh). Eligibility for the rebate requires enrollment in the Connected Homes program where additional incentives of \$30/month for participation in peak events are available.

The rebates and incentives for the program are intended to make the purchase of battery systems easier for residents in exchange for sharing the battery capacity to help keep electric costs lower for all SHEL D customers.

Residential batteries can be paired with solar panels to store excess energy generated by the panels during the day for later use after sunset. Residential batteries can also provide back up for critical loads in the home, like refrigerators and Wi-Fi, in case of a power outage. Residents should consult with their installer to get the most out of their battery installation.

| Residential Behind-the-Meter Battery System Brands | Rebate Amount |
|--|---------------|
| Duracell, Emporia, Generac PWRcell, Sonnen | \$100/kWh |

COMMERCIAL OFFERINGS

South Hadley Electric Light Department



Prescriptive Lighting

The NextZero Prescriptive Lighting program is a fast track process for reviewing and implementing lighting projects.

Prescriptive HVAC

The NextZero Prescriptive HVAC program is a fast track process for reviewing and implementing HVAC projects.

Custom Retrofit

The NextZero Custom Retrofit Program is ideal for customers who are interested in energy savings, but do not have a specific project in mind. Once the application is received, the NextZero team works with the customers and contractors to fully define work scopes for the recommended projects including a cost-effectiveness evaluation based on estimated annual energy savings.

New Construction and Major Renovation

SHELD's New Construction and Major Renovation program offers a customized plan that may consist of co-funded technical services, custom prescriptive rebates, or both.

| 2022 Total Projects | Total Rebates |
|---------------------|---------------|
| 1 | \$3,777 |

ADVANCED METERING INFRASTRUCTURE

South Hadley Electric Light Department



SHELD is in the midst of replacing its metering system, which is near its end of life and based upon technology more than 40 years old. The new advanced metering infrastructure (AMI) system will allow SHELD to meet the challenges of an ever changing power grid, and improve customer satisfaction.

The method used to bill customers for energy usage has remained virtually unchanged for 100 years. The meters are read once every month, and then the bills are produced based upon the total amount of energy used for the month. As the power system evolves with widespread adoption of electric vehicles, solar, batteries, heat pumps, etc., it is necessary to have a better understanding of when and where the energy is used. The AMI system will record the usage during each day and that information will help SHELD develop programs to help manage the system. In the near future, customers will have the ability to view this detailed usage data to help them conserve energy and save costs.

The AMI system will also allow SHELD to provide quicker restoration for any power outages. The current method to alert SHELD of an outage is the same as it was in the early 1900's; the customer has to notify the department. The new metering system will automatically inform SHELD of the lost of power at a meter, even before a customer calls. This leads to more efficient outage management and faster service restoration. The new system will further reduce SHELD's carbon footprint due to reduced truck rolls and fewer vehicle miles resulting in reduced carbon emissions and fossil fuel consumption.

MOVING FORWARD

South Hadley Electric Light Department



While SHELD has made many strides in decarbonizing its power portfolio and offering new ways for its customers to increase energy efficiency in their homes, vehicles, and businesses, we recognize the path to electrification and decarbonization will be a challenging one. We all must work together to see real results.

SHELD will continue to charge forward and set the standard for meeting, if not exceeding, the Commonwealth's greenhouse gas emissions targets. Together, SHELD and its customers can pave the way to a cleaner, greener tomorrow.