



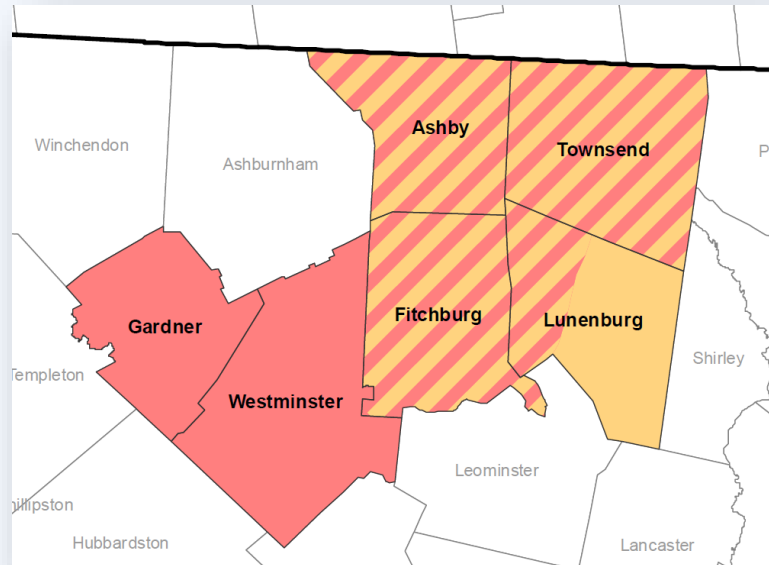
MA Electric Sector Modernization Plan

2025-2050

March 5, 2023

Who is Unitil

Local electric and gas company working to make our community better

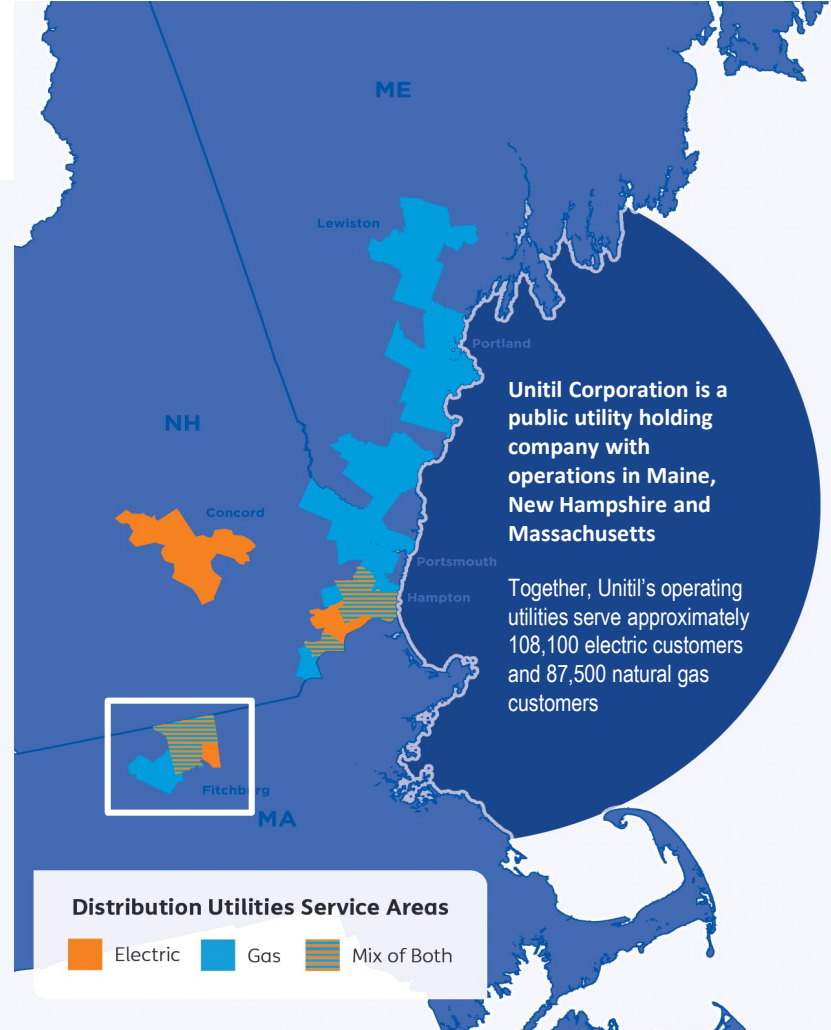


Providing electric service to approximately 30,500 customers

- Fitchburg, Townsend, Ashby and Lunenburg

Providing gas service to approximately 16,200 customers

- Fitchburg, Townsend, Ashby and Lunenburg, Gardner and Ashby



What is an Electric Sector Modernization Plan?

Why is an ESMP important to the company, customers and the Commonwealth?

What is an Electric Sector Modernization Plan (ESMP)?

- An ESMP is a comprehensive plan designed to ensure the electric system is capable of supporting the state's climate goals
- Massachusetts General Law Ch. 164 Section 92B

Objectives

- improve grid **reliability, communications** and **resiliency**;
- enable **increased, timely adoption of renewable energy** and **distributed energy resources**;
- promote **energy storage** and **electrification technologies** necessary to decarbonize the environment and economy;
- prepare for future **climate-driven impacts** on the transmission and distribution systems;
- accommodate increased **transportation electrification**, increased **building electrification** and other potential future demands on distribution and, where applicable, transmission systems; and
- **minimize or mitigate impacts on the ratepayers of the commonwealth**

Transition to a Cleaner Energy Future

The goal of the ESMP is to begin the transition to a cleaner energy future. The electric system as it is designed today is not prepared for the level of electrification and interconnection of distributed energy resources identified in the State's pathway to decarbonization. Investment in the electric system will focus on the overall capacity as well as technological improvements to facilitate an optimized electric system. The long range forecast focuses the investments where they provide the most benefit.

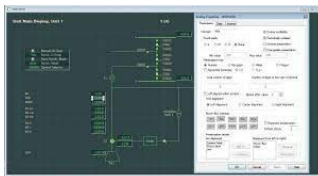
A goal of the Ensuring the benefits of the plan are distributed in an equitable manner. Special attention to mitigating the impacts to historically disadvantaged communities is required for a just transition.

Technology

What technology does the company currently have in place or in development designed to benefit customers?

Automated Metering Infrastructure

Metering infrastructure and communications network to facilitate the collection and sharing of data



Advanced Distribution Management System

Advanced monitoring and control of the electric system

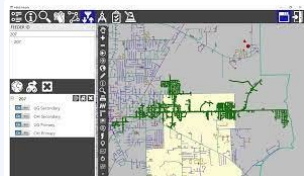


Automation

Automatically sense the location of the fault, sectionalize and restore the affected customers from a different source

Mobile Damage Assessment

Mobile system used for gathering damage information following a weather event to accelerate restoration



Field Area Network

Communications system designed to connect field devices with the central office



Customer Engagement and Experience

Mobile app, AI and chat features, and a robust notification engine to proactively alert customers



Data Sharing

Sharing of customer usage data with customers or approved third parties. Data sharing through Green Button Alliance.



Stakeholder Engagement

A transparent and open process that is easy to follow, understand and easy to provide comment and consideration to future plans.



**Customer
Outreach**



**Environment Justice
Community Outreach**



**Municipal
Outreach**



**Community Engagement
Stakeholder Advisory
Committee**

Stakeholder Engagement

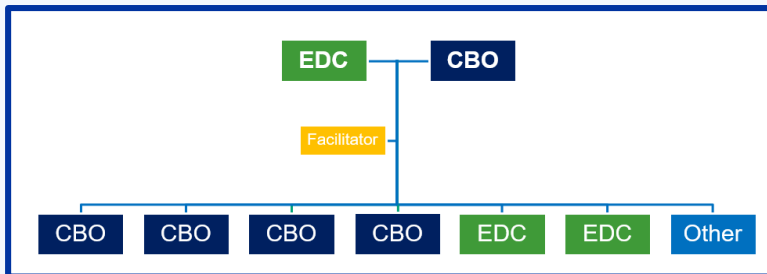
An effective stakeholder engagement process ensures that customers, municipalities, and other stakeholders understand the ESMP and its role in ensuring the transition to a cleaner energy future. Stakeholder groups will need a foundational understanding of the electric system, the need for electric sector modernization plans and the Commonwealth's net zero goals. A significant portion of Until's service territory is designated as an environmental justice community. It is critical that these customers understand and receive the benefits available through the ESMP, as well as have the opportunity to provide feedback on significant distribution infrastructure projects located within the community. Until will work collaboratively with the Community Engagement Stakeholder Advisory Committee to develop a consistent and effective framework for community outreach.

Community Engagement Framework

Working collaboratively to understand and mitigate impacts on communities

Community Engagement Stakeholder Advisory Group

- Co-chaired by an EDC and a community-based organization
- Develop CESAG charter and by-laws with input from the equity representative.
- Develop a statewide Community Engagement Framework
- Periodic review of these frameworks would be conducted as the EDCs implement them.
- Frequency of future meetings would be determined by the CESAG as applicable
- Meetings to be professionally facilitated.

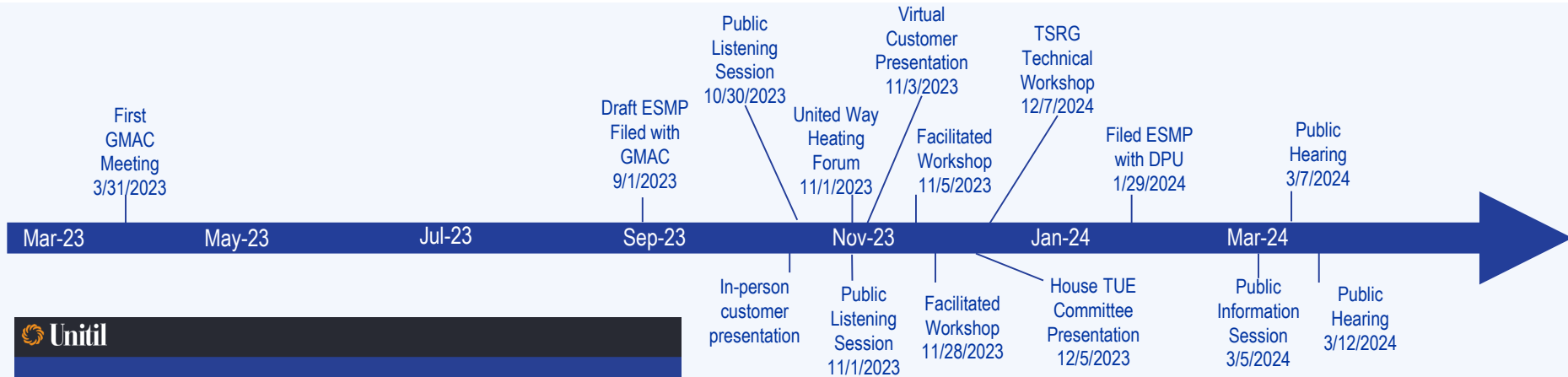


Community Engagement Framework

- Principles for EDC outreach and equitable engagement
- Ensure historical obstacles are addressed
- Guide EDCs on best ways to educate communities
- Identify opportunities to support organizations to cultivate community engagement and participation
- Improve process to better understand and respond to customer needs
- Define key stakeholders in specific regions
- Enable increased transparency and stakeholder engagement
- Ensure stakeholders feel respected and understood
- Community benefits for hosting large clean energy infrastructure.

Stakeholder Engagement

Stakeholder feedback has been received in many different forms



The screenshot shows the top portion of a document titled "Electric Sector Modernization Plan" with the Unitil logo. Below the title, it states: "The Massachusetts Electric Sector Modernization Plan (ESMP) outlines proactive distribution system upgrades to meet future needs and Commonwealth climate goals." At the bottom, there are links for "Leer en español" and "Leia em português".

What is Electric Sector Modernization?

The electric system as it is designed today is not prepared for the level of electrification and interconnection of distributed energy resources identified in the MA Commonwealth's pathway to decarbonization. Investment in the electric system will focus on the overall capacity as well as technological improvements to facilitate an optimized electric system. The long-range forecast focuses investments where they provide the most benefit.

A small thumbnail image showing the Unitil logo and the text "Unitil's Electric Sector Modernization Plan" with a play button icon and "For more information visit Unitil.com".

To Learn More About the ESMP:

<https://unitil.com/ma-esmp/en> - English

<https://unitil.com/ma-esmp/es> - Spanish

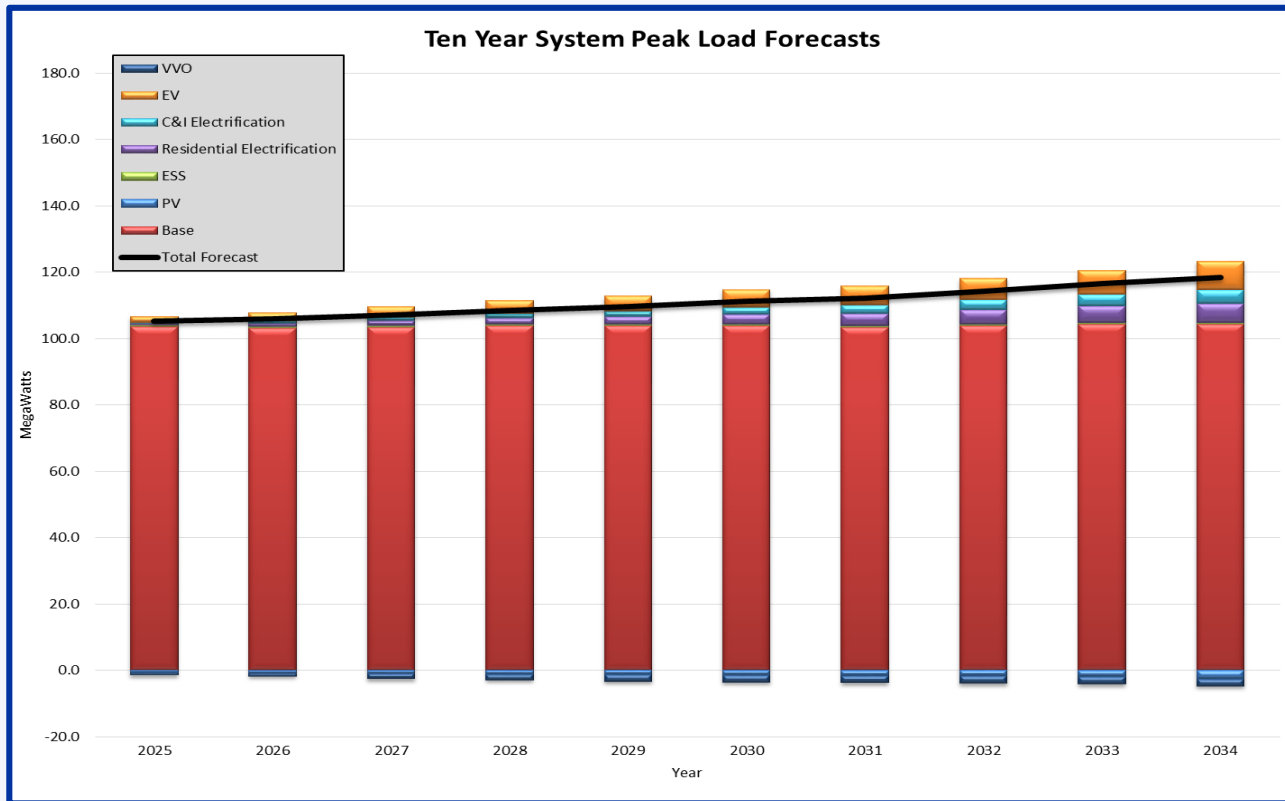
<https://unitil.com/ma-esmp/pt> - Portuguese

To Provide Feedback to the Plan:

ESMP-Feedback@unitil.com

Load Forecast Assumptions

12.5% forecasted load increase over 10 years



ESMP Proposed Projects

What are the proposed projects and how will they benefit our customers?



Customer-Facing Projects

- Enable Grid Services
- FERC Order 2222 Implementation
- EV Charging and Make Ready

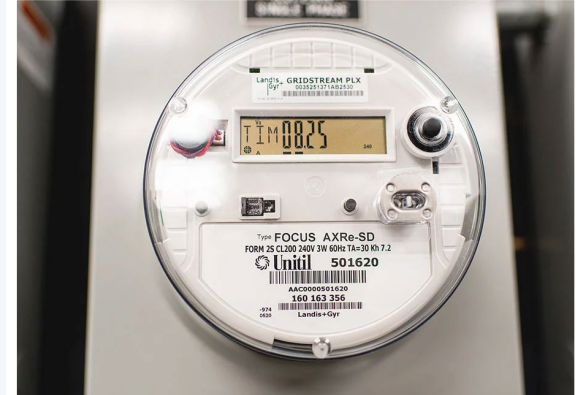
Projects and initiatives that include technologies that help support the adoption of distributed energy resources and customer access to third-party service providers and markets



Grid-Facing Projects

- Advanced Distribution Management System / Distributed Energy Resource Management System
- Volt-Var Optimization
- Supervisory Control and Data Automation
- Cyber Security
- Lunenburg Substation
- South Lunenburg Substation
- Targeted Reliability and Resiliency

Projects designed to increase capacity, improve efficiency, improve monitoring and control, increase DER hosting capacity, and improve the reliability and resiliency of the electric system.



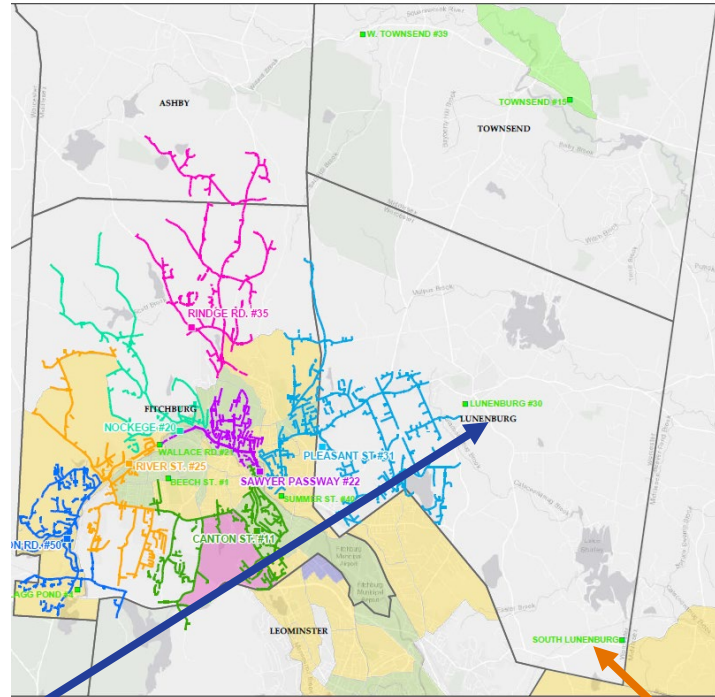
Minimizing Impact on EJ Communities

No major infrastructure projects identified in EJ communities in first 10 years

Minimizing The Impact

The location and placement of infrastructure may have unintended impacts on communities where the infrastructure is located and even greater impact on EJ communities. The ESMP has been designed to minimize infrastructure projects where possible within EJ communities over the first 10 years while prioritizing projects that will provide direct savings to customers within EJ communities.

Lunenburg Substation Expansion - 2026



2020 Environmental Justice Block Groups

EJ Criteria

Minority

Income

English isolation

Minority and Income

Minority and English isolation

Income and English isolation

Minority, Income and English isolation

Volt-Var Optimization (VVO)

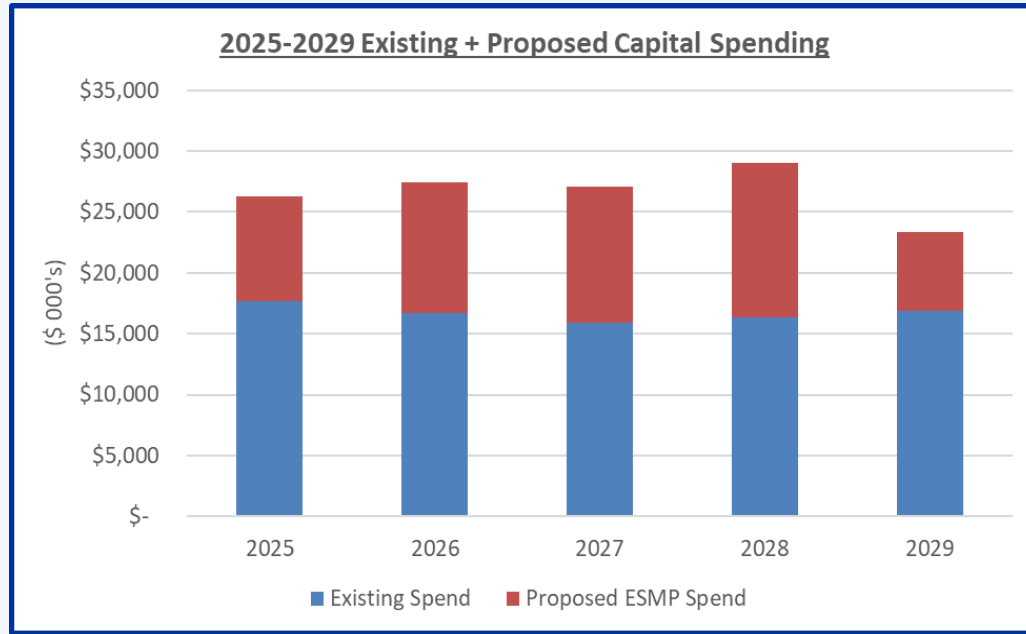
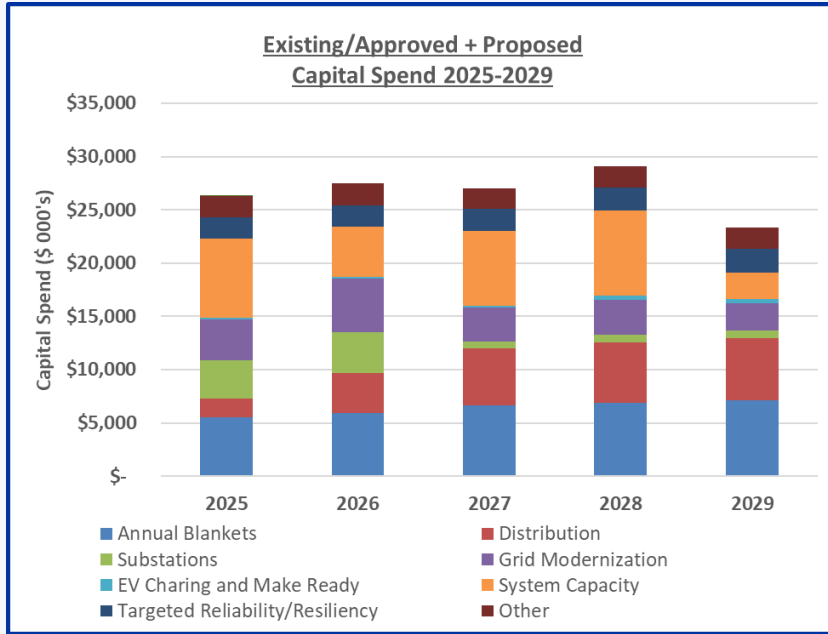
Assumptions:

- Designed to optimize voltage and reduce system losses
- Overall load reduction when VVO is fully deployed of approximately ~1.75%
- Deployment plan focused on EJ communities
- Savings accrue directly to customers without customer interaction or inconvenience
- Minimal impact on existing infrastructure

New South Lunenburg Substation - 2030

2025-2029 Proposed Capital Spending Plan

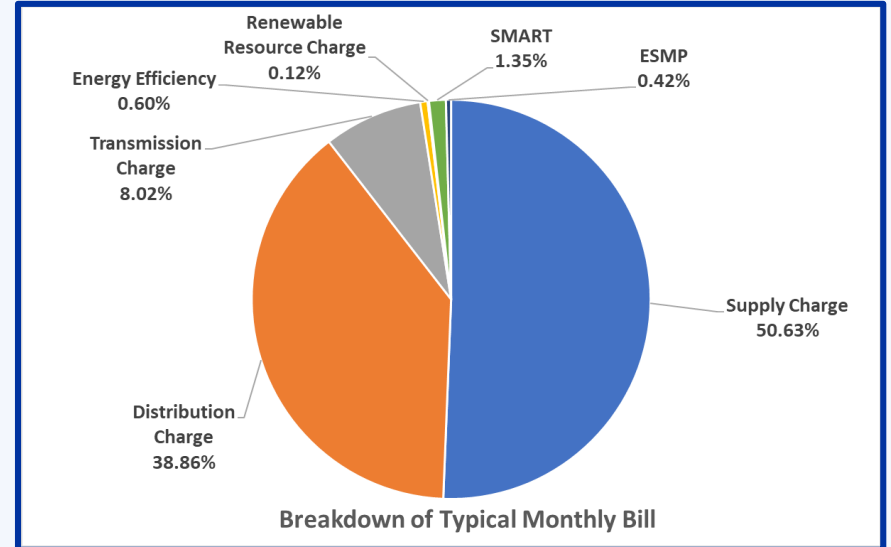
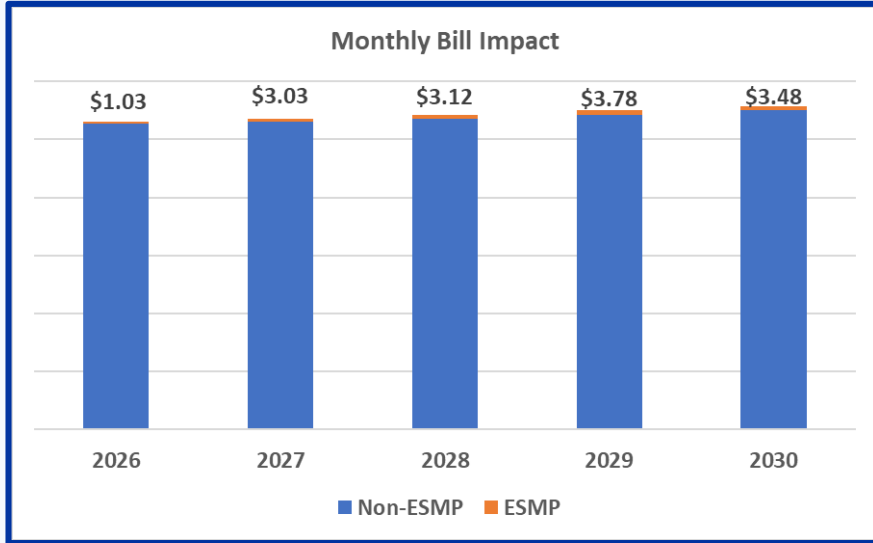
Overall view of the 5-year view of existing/approved spending and proposed spending



Existing spending recovered through a combination of base rates and previously approved grid modernization and EV programs. Proposal is to recover proposed spending through a modified grid modernization factor.

Customer Bill Impact

Overall view of the 5-year view of existing/approved spending and proposed spending.



Rate Impact - ESMP will add approximately \$1.03 to a typical 587 kWh monthly bill in 2026 increasing to \$3.48 in 2030.

The proposed spending plan ensures safe and reliable service to our customers while supporting the State's decarbonization goals.

Integrated Energy Planning

Phased approach to integrated energy planning

2024

CASE STUDY PHASE

Focus within Unitil Gas-Electric overlap service areas to identify one potential candidate for neighborhood electrification. The Company will complete an integrated electric and gas system planning case study to develop the design, costs, benefits, and challenges associated with neighborhood electrification.

2025

PILOT PROJECT PHASE

Company will propose and conduct a pilot project to verify the case study findings. Unitil's pilot project proposal would be submitted to the Department for approval in line with Order D.P.U. 20-80 (March 2026).

2026

Beyond 2026





IMPLEMENT PILOT PROJECT

Company will implement pilot project following Department approval. Pilot project is used to verify assumptions from the case study and determine scalability of the plan within the Company's electric service territory.

EDCs and LDCs collaborate to develop and continue to improve upon cross-utility coordination approach to integrated planning

Alignment with Commonwealth Goals

Unitil's plan meets our portion of the 2050 Clean Energy Climate Plan goals.

	State Goal	Scaled Goal	Unitil Plan	
 Electric Vehicles	~5.4 M	~50,000	~53,000	✓
 Heat Pumps	~2.2 M	~20,000	~21,000	✓
 Solar	23 GW	216 MW	~250 MW	✓
 Energy Storage	5.8 GW	54 MW	~60 MW	✓

Net Benefits Analysis

Unitil's plan provides net benefits to our customers

PROPOSED ESMP COSTS AND BENEFITS

	NOMINAL (\$M)	PV (\$M)
TOTAL COSTS	\$53.3	\$42.1
Total Capital Costs	\$49.7	\$39.8
Total O&M Costs	\$2.5	\$2.0
Total Ongoing O&M Costs	\$1.1	\$0.3
TOTAL BENEFITS	\$139.4	\$43.3
Reduced GHG Emissions & Air Pollutants	\$114.9	\$29.5
Grid Reliability and Resiliency	\$2.5	\$0.9
Minimization or mitigation on ratepayers	\$10.0	\$3.2
Economic Benefits	\$12.0	\$9.7
NET BENEFITS	\$86.1	\$1.2

KEY OUTCOMES

- Facilitate adoption of ~4.1k EVs and ~ 2.6k heat pumps
- Reduce ~404k MT Tons of GHG and air pollutants
- Reduce ~379,500 customer interruption minutes per year
- Enables ~30MW solar capacity
- Creates ~ 100 jobs

QUANTITATIVE BENEFITS

- ~ \$1M Savings due to avoided customer interruptions
- ~\$29.5M Value of reduced GHGs and air pollutants
- ~ \$10M of economic benefits generated
- ~\$0.8M in avoided customer outage costs

QUALITATIVE BENEFITS

- Improved grid reliability
- Minimization of capacity constraints
- Increased accessibility to vehicle electrification
- Alleviated capacity constraints and improved interconnection and enables increase in renewable energy



Thank you for your time and interest!

<https://unitil.com/ma-esmp/en> - English Feedback at: ESMP-Feedback@Unitil.com

<https://unitil.com/ma-esmp/es> - Spanish

<https://unitil.com/ma-esmp/pt> - Portuguese