Bright Ideas for a Stormy Future: Southern Maine's Energy Resilience Plan

Photo: Tina Radel

SMPDC
SOUTHERN MAINE PLANNING & DEVELOPMENT COMMISSION

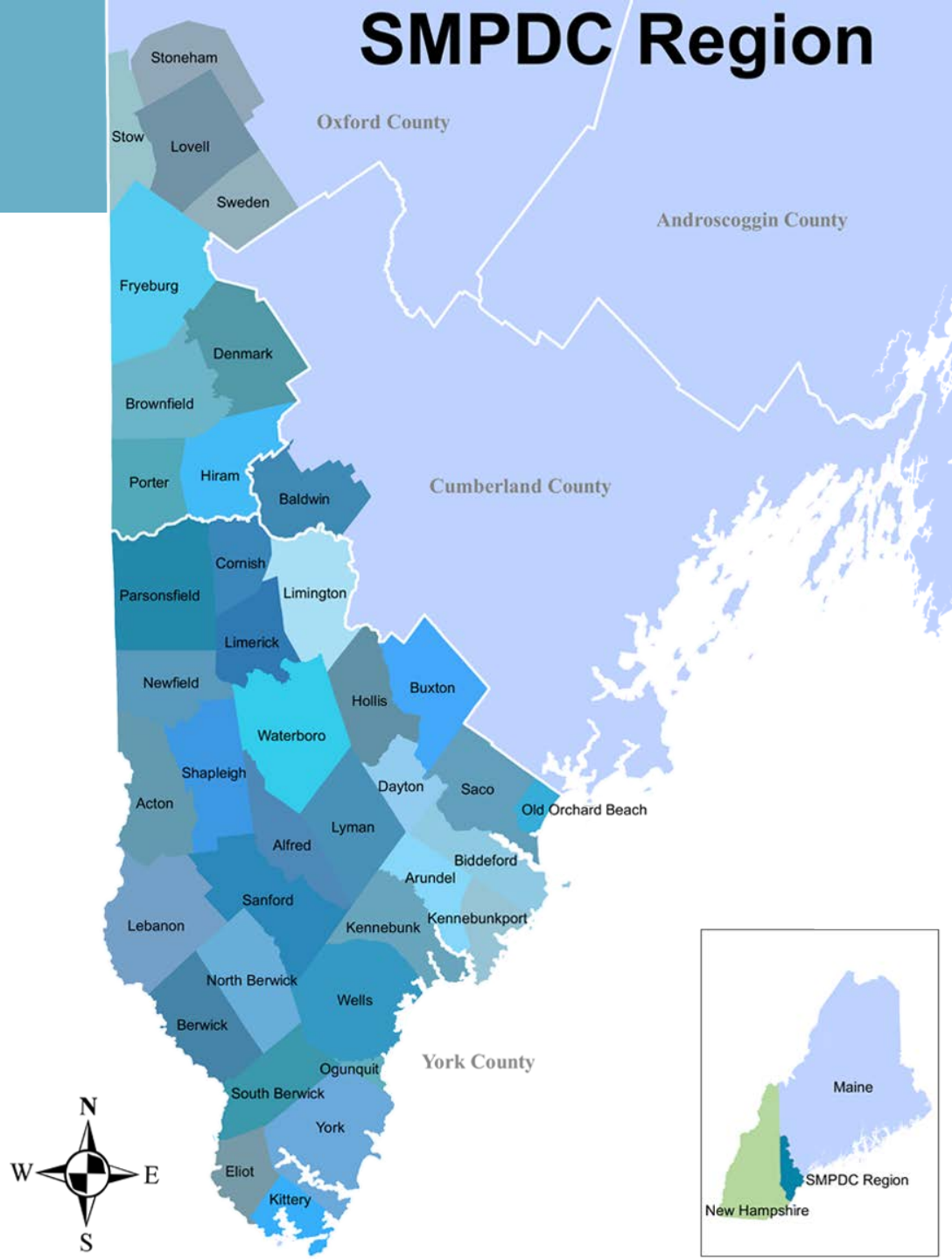
Who is SMPDC?

Transportation

Economic Development

Land Use

Sustainability & Resilience



Agenda

- Overview: Motivation & Background
- Technical Analysis Findings
  - Outage patterns
  - Economic impacts
- Engagement Findings
- The Plan
- Next Steps

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Energy Resilience Plan - Overview

Motivation

Increasingly frequent and intense power outages are negatively impacting southern Maine's communities and economy.

Photo: City of Saco

Photo: Anna Henderson

“'Grinch Storm' of 2023, why it was one of Maine's worst” *News Center Maine*

December 18th, 2023

Photo Credit: CMP

“Thousands without power as hurricane-force winds hit parts of Maine”
Bangor Daily News
December 23rd, 2022

Photo Credit: CMP

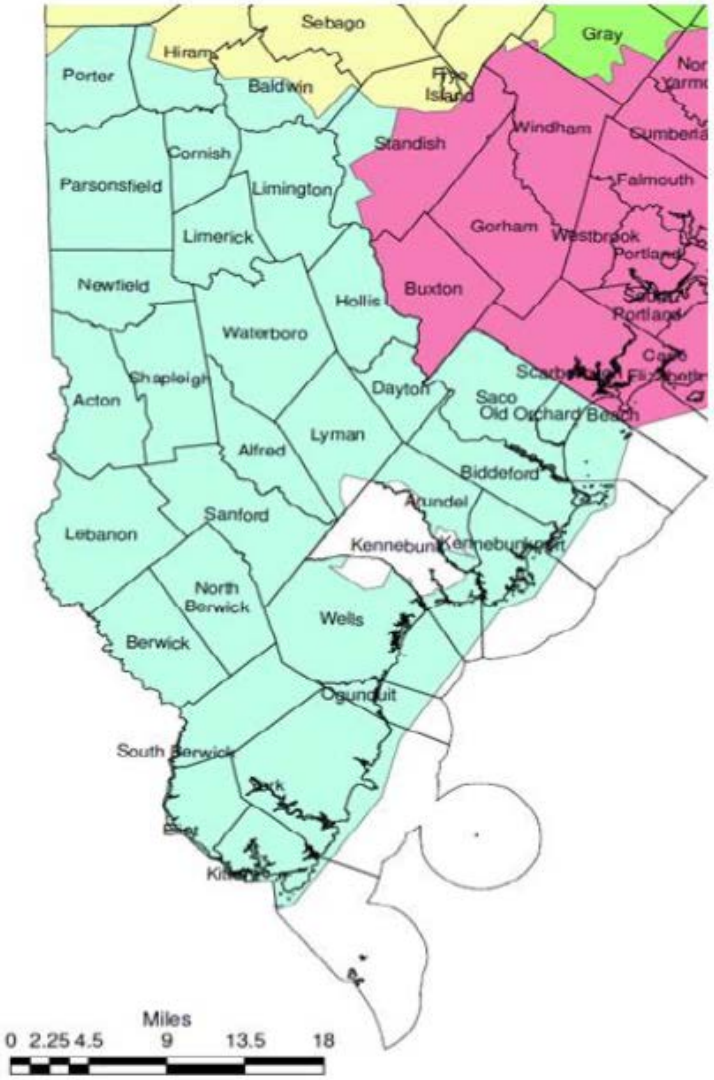
Southern Maine Key Economic Sectors

- Regional GDP of $13b
- Well established sectors:
  - Defense & Aerospace
  - Outdoor Recreation
  - Tourism & Hospitality
- New & emerging sectors:
  - Blue Economy
  - Information Technology
  - Life Science

The need for reliable & high-quality power availability intersects with all these sectors in some way

Scoping the Project

- Take a cross-disciplinary approach from Day 1
- What were we solving for? What's realistically achievable?
- Geography of the study area
- The role of the electric utility providers
- Creating an effective public engagement strategy & who to bring to the table
- Domain knowledge – what we had in-house vs what we needed to go procure

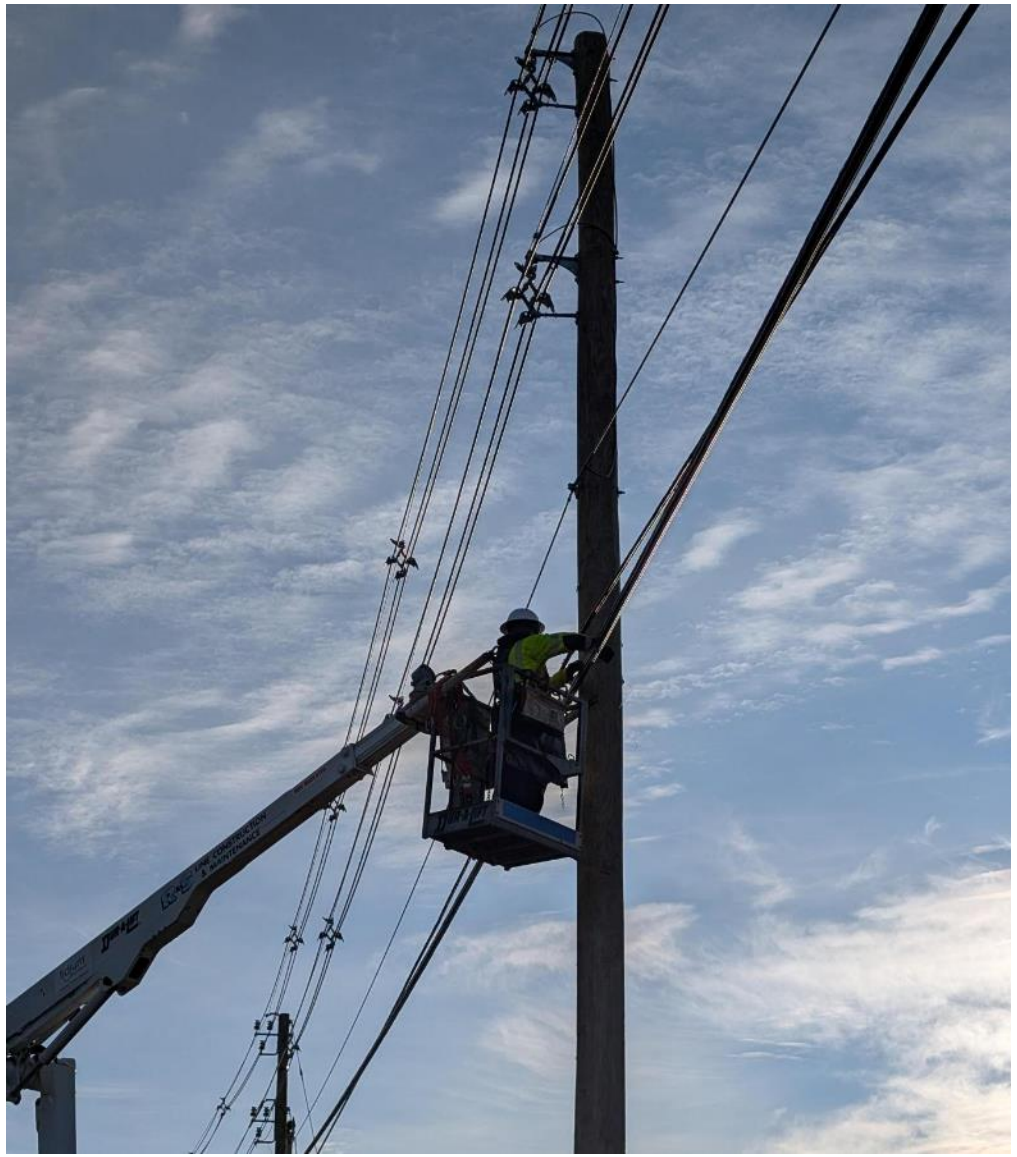


Project Funding: EDA Disaster Supplemental Program

- **US Economic Development Administration** funding to support local recovery and economic development in areas with a *declared disaster event*
- Eligible uses include both construction and non-construction projects
- We framed our electrical grid as an impediment to **regional economic growth and vitality** from both a business attraction and retention perspective
- Grant award from EDA totaled **$400k** (including a 20% local match)

EDA Investment Priorities

- **Critical Infrastructure** – including telecom & transportation
- Workforce Development – scaling training & partnerships to meet employer needs
- **Innovation & Entrepreneurship** – unlocking growth in high value-added sectors
- **Economic Recovery & Resilience** – disaster recovery & long-term stability
- **Manufacturing** – supply chain, industrial capacity, supporting advanced manufacturing



Project Timeline: Fall 2024 – Winter 2026

Technical Analysis:

- State & Utility Planning & Decision-Points
- Grid Reliability Analysis
- Local Costs of Power Outages
- Microgrid Feasibility Analysis

Stakeholder and Community Engagement:

- Stakeholder Group
- Focus groups: low-income residents & local businesses
- SMPDC Annual Meeting and Climate Action Workshop
- SMPDC Webinars
- Dialogue with state agency partners

Stakeholder & Community Engagement

Stakeholder Committee Meeting – February 2025

SMPDC Annual Meeting – June 2025

Stakeholder & Community Engagement

Southern Maine Climate Action Workshop @ UNE – November 2025

York County Emergency Management Agency Workshop – June 2025

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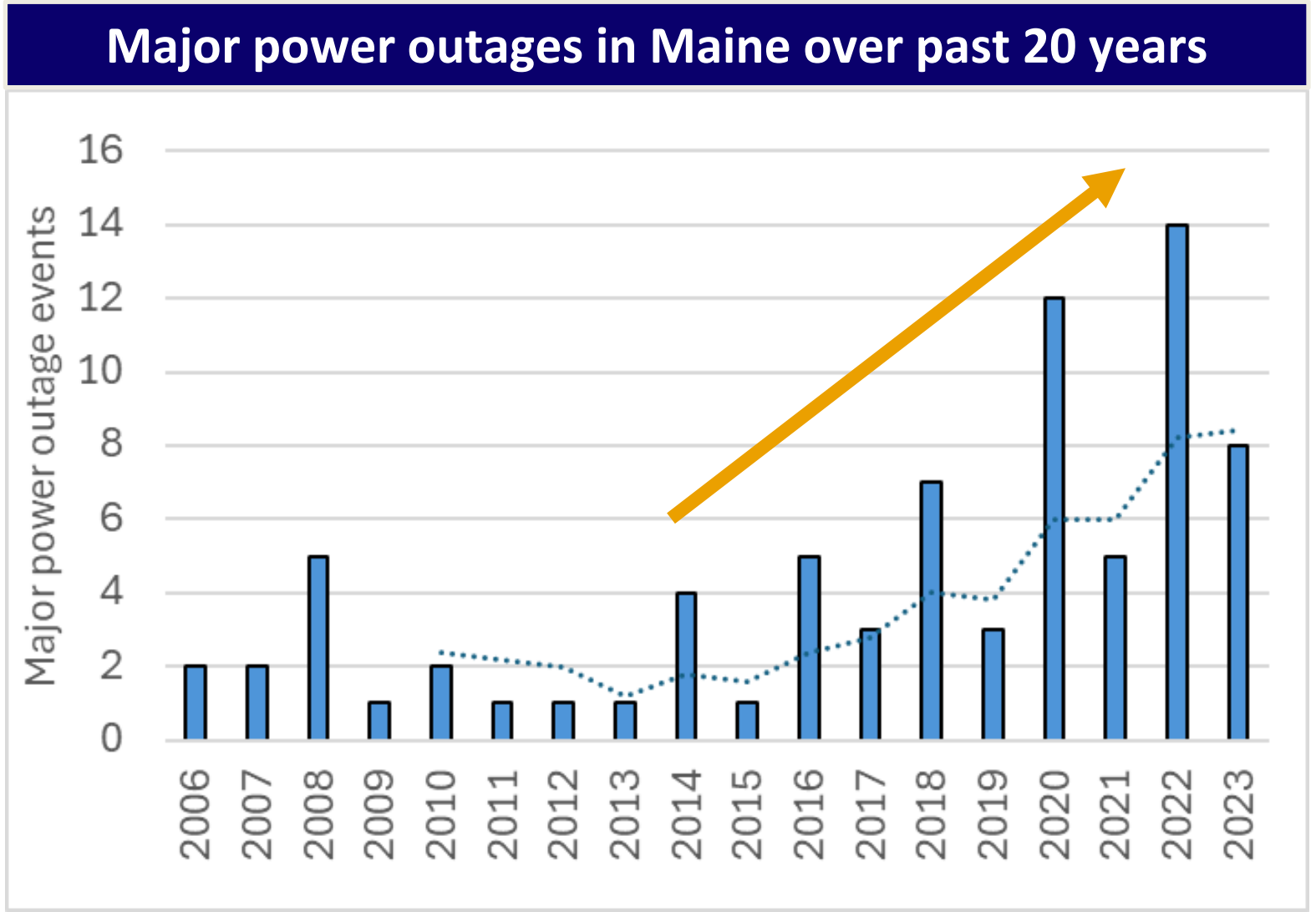
Technical Analysis – Outage Patterns

Outage frequency has more than **quadrupled** over the past 20 years



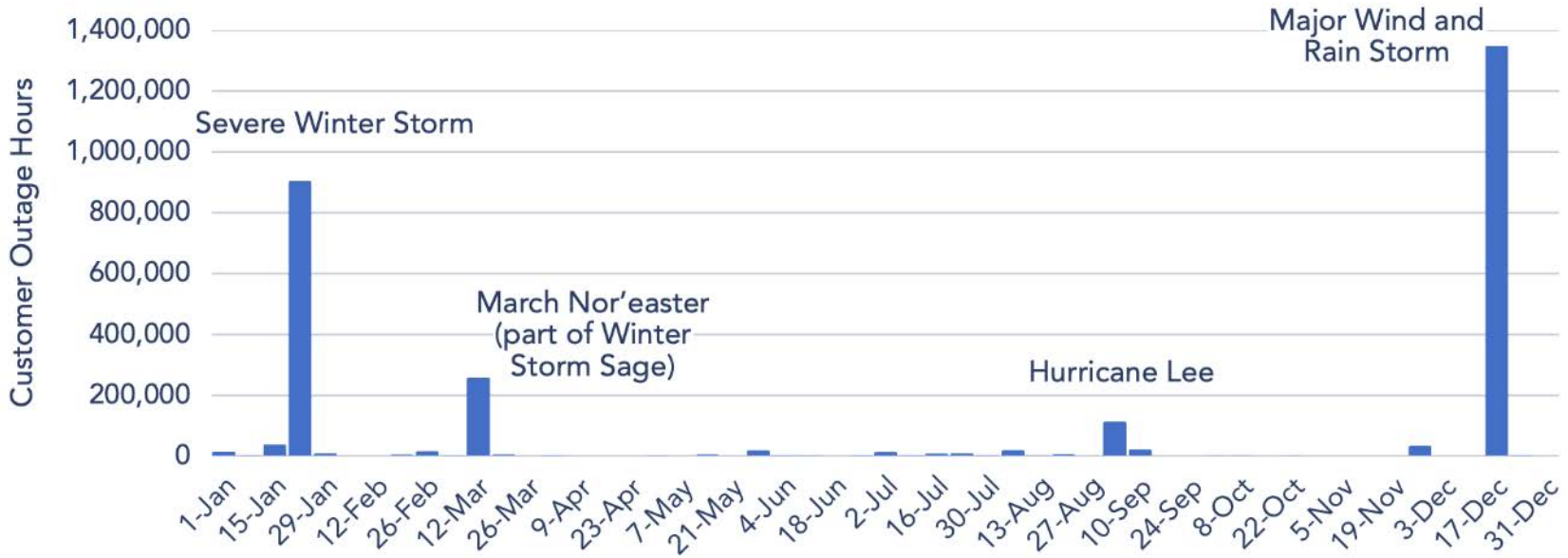
Sources: Climate Central, DOE Weather-related major US power outages, and CMP

Technical Analysis – Outage Patterns

Outage Trends:

- Most outage hours are **weather related**
- Outages often affect large portions of our region at the same time
- Climate change is contributing and introducing new challenges, such as **extreme heat**

2023 was a particularly difficult year…

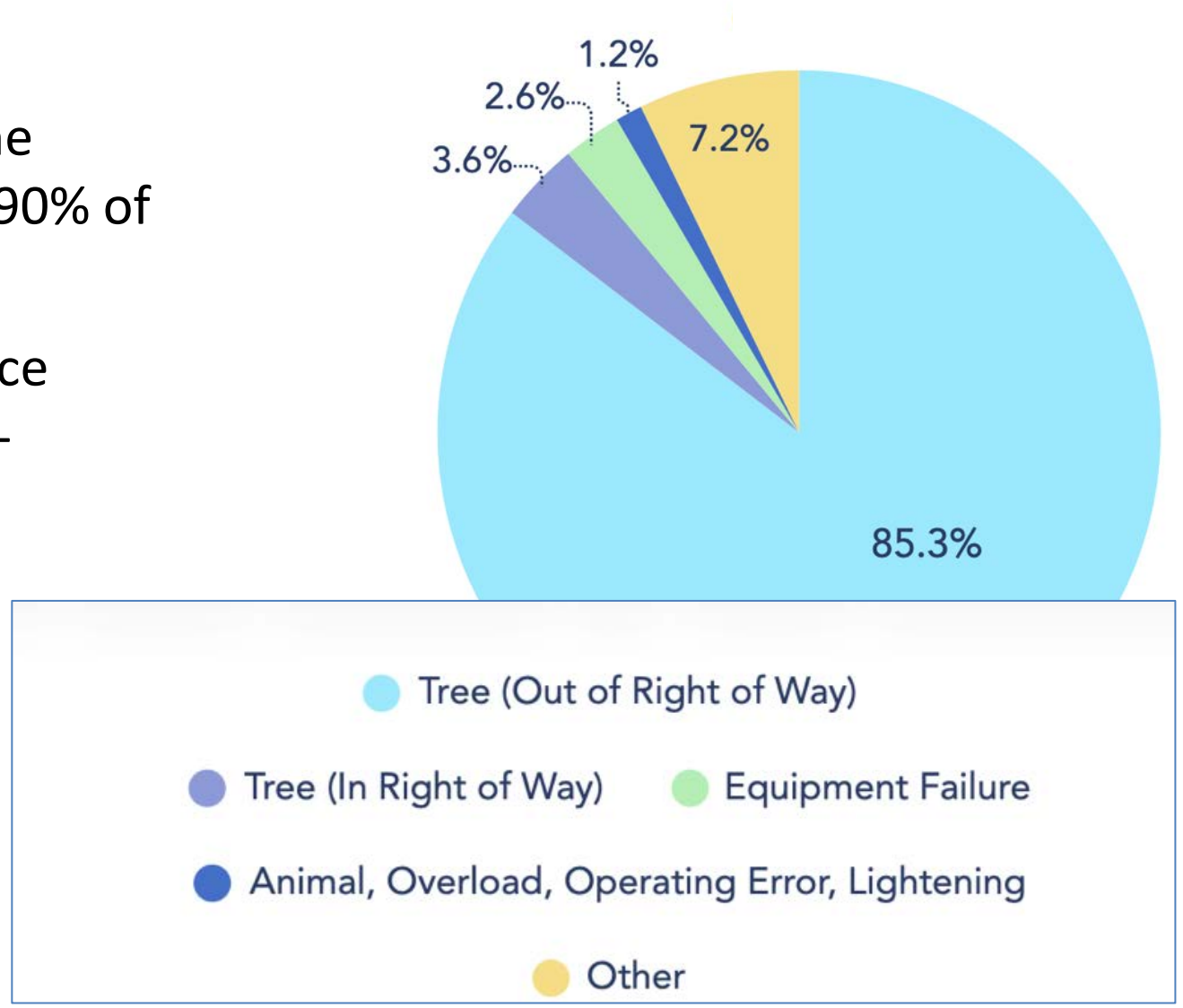


Total Customer Outage Hours per Week, 2023

Technical Analysis – Outage Patterns

Outage Trends:

- **Trees** (outside of the right of way) are the leading cause of service interruptions (~90% of outages)
- More densely developed areas experience shorter outages, but more frequent non-weather outages (i.e. animal contact)
- Inland areas experience longer duration outages
- Rural areas with **high social vulnerability** overlap with significant outage impacts



Technical Analysis – Economic Impacts

- Goal: Determine the **aggregate cost** of regular electrical service disruptions to our region's business ecosystem
- Used the ICE (Interruption Cost Estimator) Calculator to quantify **impacts to the bottom line** of businesses
- The ICE Calculator quantified outage impacts to **Small Commercial & Industrial (C&I)** businesses and **Medium to Large C&I** businesses
  - Small C&I: <50,000 kilowatt-hours of electricity used annually
  - Medium and Large C&I: >50,000 used annually

Technical Analysis – Economic Impacts

- Outages have a **direct impact** on the regional economy
- **Business interruption losses** from power outages estimated at **$28 million** 2022 to 2024
- Medium and Large businesses hit **hardest**

Total service interruption costs in Maine, 2022–2024 Increasing annual costs were driven by more frequent storm events from 2022 to 2024.

Sources: CMP and ICE Calculator

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Findings: Stakeholder Engagement

Local Businesses – Key Concerns

- Small businesses: plans are rarely in place for **effective communication** during power outages
- Food & beverage producers: **Outdoor air temperature** influences outage impacts

We have **17,000 pounds of meat** in freezers

Southern Maine slaughterhouse

On-demand back-up feels **very cost prohibitive**… would be 3 tractor trailers

Commercial property manager

Findings: Stakeholder Engagement

Local Businesses – Key Concerns

- Manufacturing businesses: more frequent, non-weather-related outages and **power quality** issues are costlier challenges
- Remote workers: **Lack of internet or cellphone services** can make it difficult or impossible to get their work done

*One manufacturing business estimated **losing $4,000 per hour** of service interruption… multiple outage hours can quickly become financially untenable.*

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The Plan: Goal and Objectives

The Goal

To **strengthen southern Maine's resilience to power outages** through coordinated efforts that **minimize disruption to businesses and households, enhance community resilience** to climate and energy challenges, and **support economic growth**.

Priority Objective 1

Reduce the frequency and duration of outages in the face of existing hazards and emerging threats such as extreme heat and flooding.

Priority Objective 2

Improve communication between municipalities, the utilities, and emergency managers, especially during recovery from outages

Priority Objective 3

Provide greater assistance to communities, local businesses, and households to manage outages.

Priority Objective 4

Ensure grid resilience is incorporated into regional and state economic development efforts.

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Priority Objective 4

Ensure grid resilience is incorporated into regional and state economic development efforts.

The Plan: Detail - Provide Assistance

Objective 3: Provide greater assistance to communities, local businesses and households to manage outages

a

Provide municipalities support through SMPDC's CRP Regional Coordinator work for municipal energy resilience efforts

b

Offer guidance on outages for local businesses, **targeted by size and owner vs. leased properties**

c

Coordinate grid recovery efforts with broadband and cellular networks to limit communication and online work disruptions

d

Work with municipalities and community partner organizations to help community members manage outages

The Plan: Detail - Incorporate into broader economic development work

Objective 4: Ensure grid resilience is incorporated into regional and state economic development efforts.

a	b	c
Incorporate energy resilience into SMPDC's next Comprehensive Economic Development Strategy (CEDS)	Coordinate with other key actors to advance these issues including MCA, DECD, and Economic Development Council of Maine	Share learning and information with other regional councils, consider multi-region resilience strategies and collaborative funding applications

Next Steps: Implementation

- Coordinate with utilities on vulnerable substation upgrades
- Microgrids & battery backups for commercial and industrial businesses
- Business resilience revolving loan fund
- Programs for business power outage preparedness
- CEDS Strategy Development to help direct investment toward energy resilience

Photo Credit: McDougal Orchards, Springvale, ME

In closing: Electricity & Economic Development – an evolving relationship

- "Ability to Serve" no longer enough on its own
- Electricity as supply chain for emerging high-power draw uses (ex. Data Centers)
- Cybersecurity & grid vulnerabilities
- It's all evolving so rapidly!

Cross Town Energy Storage in Gorham, ME

Thank You!

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Check out the plan at smpdc.org/energyresilience

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