



PLAN NH
Visioning *for* Sustainable Communities

APA: Course ID #9288231

Planning for Electric Vehicles in New Hampshire

April 30, 2024

Thank you to our Lead Sponsors:

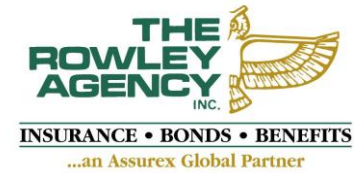


Thank you to our event sponsors!



Thank you to our members, including:

PLATINUM MEMBERS



GOLD MEMBERS



Plan NH



- 501(c)3 Organization
- Founded in 1989 “to foster excellence in planning, design, and development of New Hampshire’s built environment.”
- Our programs include membership, scholarships, workshops, conferences, Merit Awards, networking opportunities, and community design charrettes.
- Plan NH shares information and inspiration for how community design and the built environment can contribute positively to where we live, work, and play.

UPCOMING

Plan NH Program Calendar

MAY

BUILDING HOMES, CREATING VALUE

May 16
Downtown Manchester



MERIT AWARDS NOMINATIONS DUE

May 10

JUNE

NHGIVES DAY

June 11-12
virtual campaign



AWARDS EVENING

June 26
Hotel Concord, Concord, NH

JULY

IT STARTED WITH A CHARRETTE

TBD



AUGUST

SUMMER NETWORKING

August TBD
Samyn-D'Elia Architects, Holderness

SEPTEMBER

FALL CONFERENCE

September 24
Hotel Concord, Concord, NH

More details coming soon!

OCTOBER

35TH ANNUAL GOLF TOURNAMENT

October 2
Beaver Meadow, Concord, NH

COMMUNITY DESIGN CHARRETTE

October 18-19
Newmarket, NH

NOVEMBER

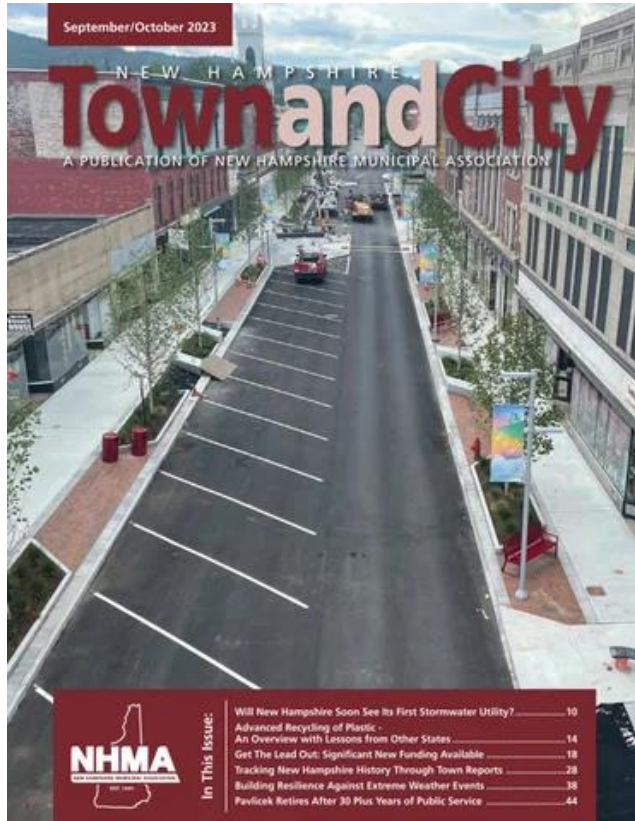
FALL NETWORKING

November 14
TFMoran, Bedford, NH



UPCOMING

Plan NH Merit Awards of Excellence



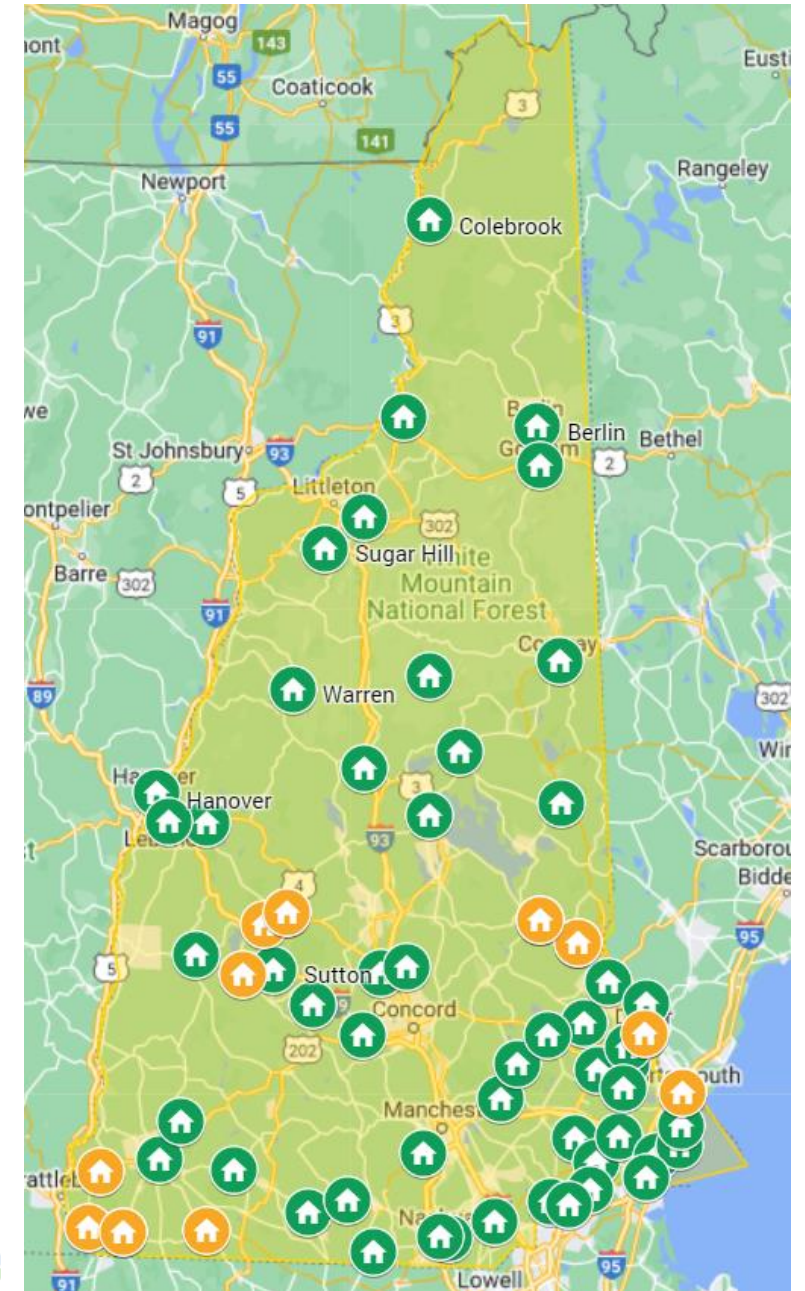
*Rethinking Pleasant Street
Merit Award of Excellence with Honor*

- Awards recognize and showcase outstanding projects that reflect the mission and values of Plan NH and demonstrate how the built environment can make a positive contribution to people and places
- Nominations – Deadline May 10, 2024
- Awards Evening – June 26, 2024
- www.plannh.org/programs/merit-awards

UPCOMING

InvestNH HOP Grants

- Housing Opportunity Planning Grants administered by Plan NH
- Grants to help municipalities increase housing opportunities through regulatory change
- Over \$4.3 million awarded to 58+ communities across the state
- More funding to be announced this summer via nhhopgrants.org



Back to our regularly scheduled program...



Back to our regularly scheduled program...



Back to our regularly scheduled program...



Mark Smith
@mark_bril

I'm gunna tell my kids this is the tesla #Cybertruck



Back to our regularly scheduled program...

**“Electric cars don’t work
in cold weather,”
Norway:**



Planning for Electric Vehicles in New Hampshire



Angela Cleveland, AICP
Project Coordinator
North Country Council



Chris Skoglund
Director of Energy
Transition
Clean Energy NH



Jackson Kaspari, PhD
Resilience Manager
City of Dover



Jesse Lore
Founder
Green Wave EVs

THE SITUATION

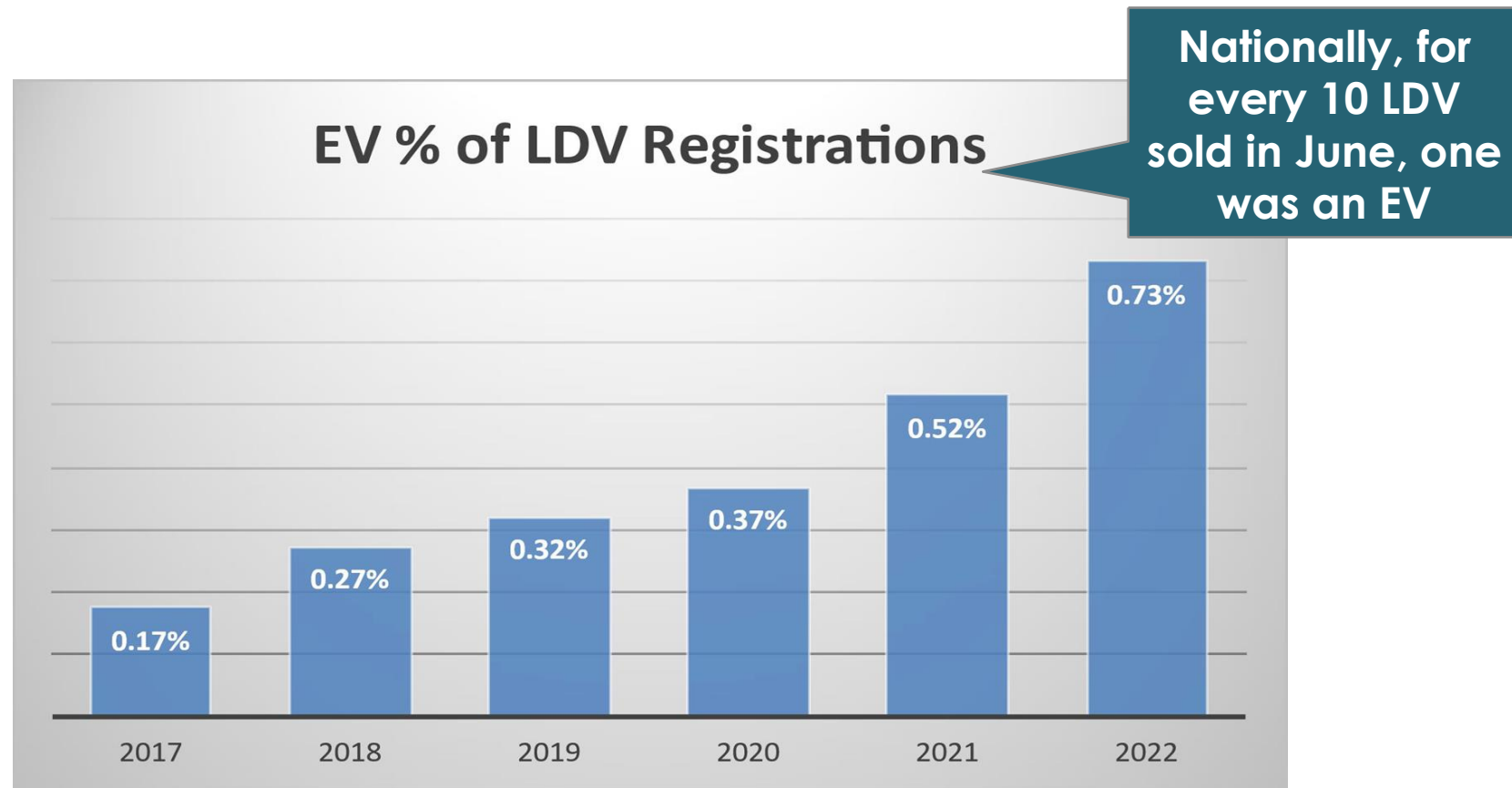
THE CURRENT STATE OF THINGS

Overview

- EVs offer significant economic, social, and environment benefits
- Next several years will be transformative for auto industry and US transportation system
- NH is behind in EV charging station installation and is at an economic competitive disadvantage to VT and ME
- Decisions made now will influence NH's economy, communities, and environment for decades to come
- Local governments can take the lead in deployment of EV Charging Stations.

THE CURRENT STATE OF THINGS

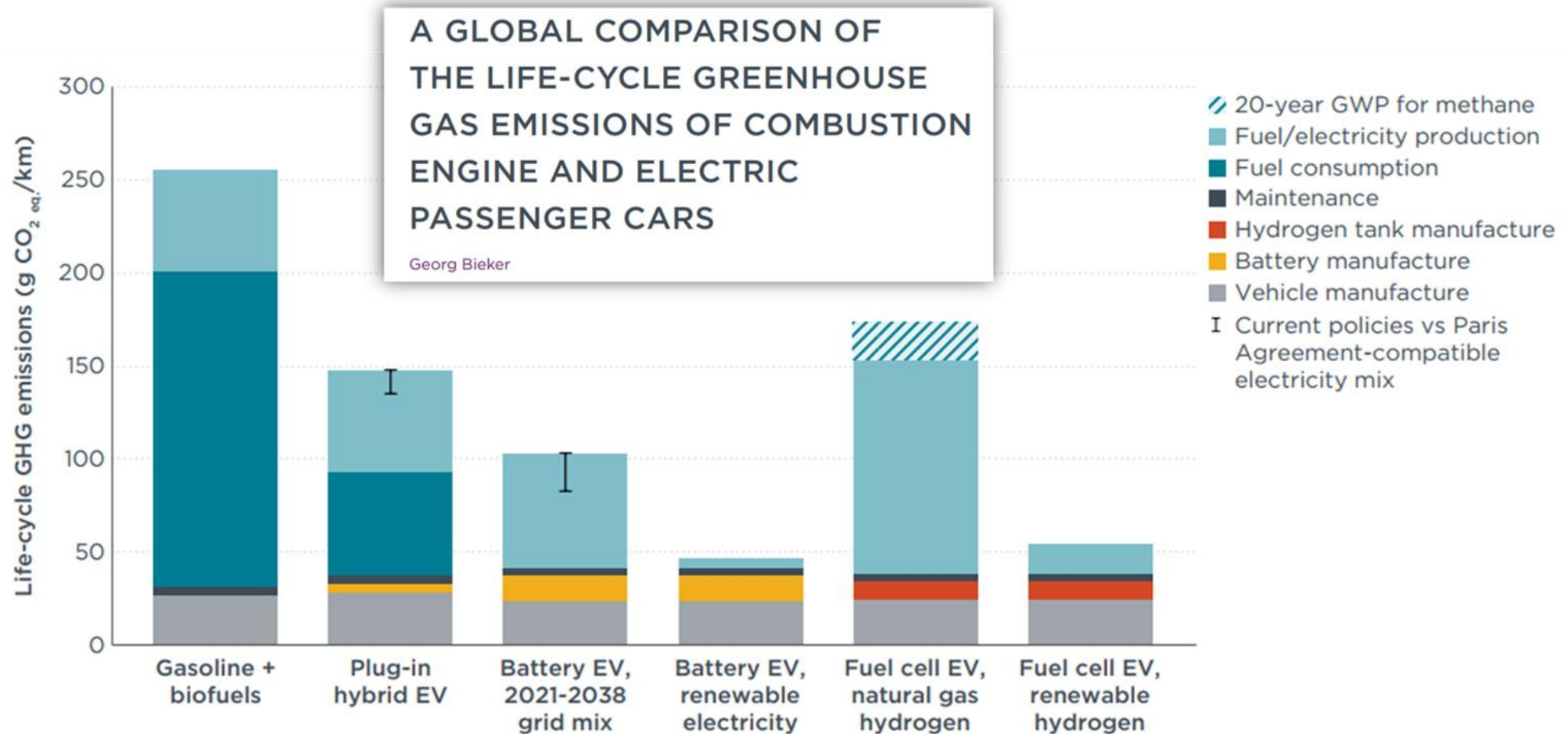
Registration Trend



Source: NH DMV light-duty vehicle (LDV) registration data

THE CURRENT STATE OF THINGS

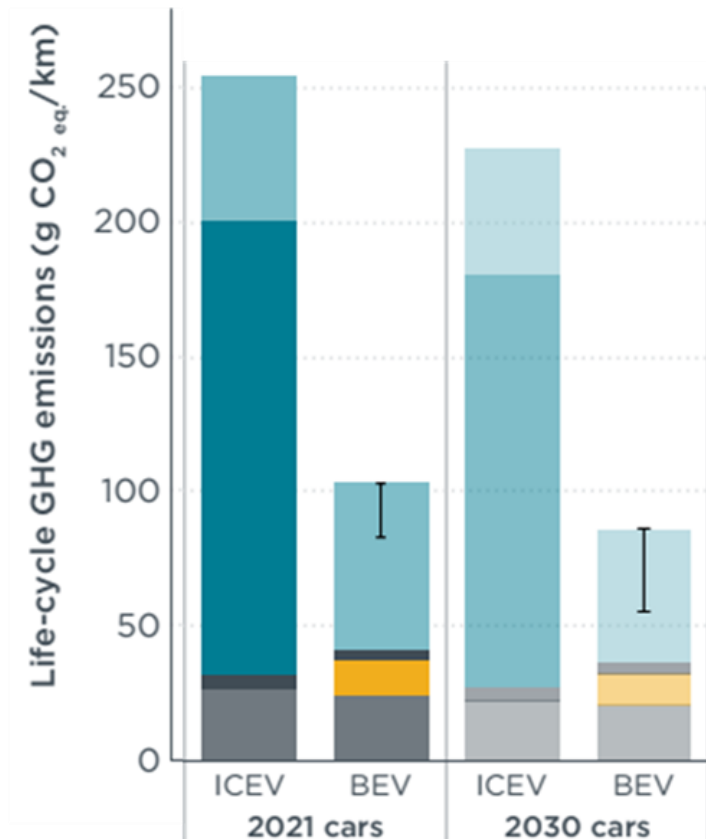
Life-cycle Greenhouse Gas Emission Comparison



THE CURRENT STATE OF THINGS

2030 Outlook

Fuel/electricity production Maintenance Vehicle manufacture
Fuel consumption Battery manufacture
I Current policies vs Paris Agreement-compatible electricity mix



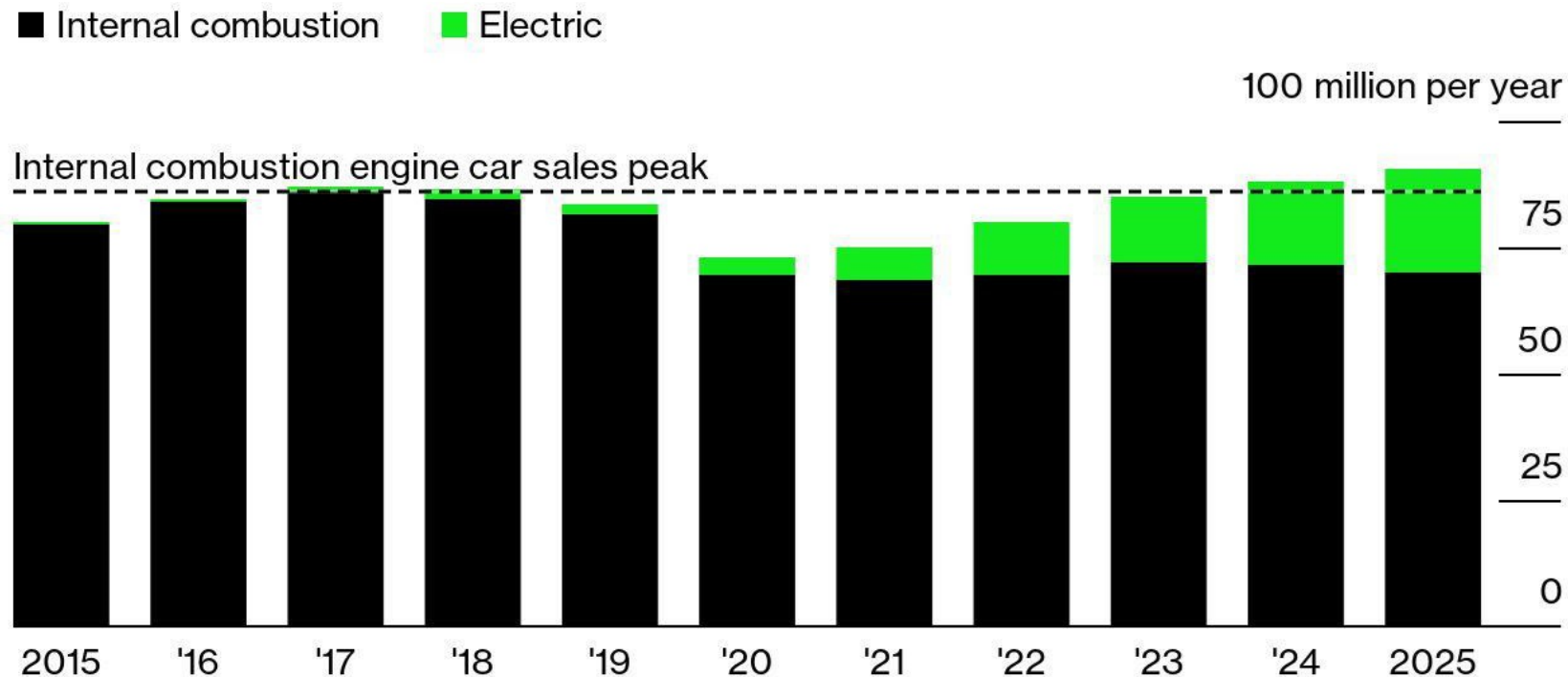
- BEVs correspond to 57% - 68% lower life-cycle GHG-E in 2021
- The reduction is projected to increase to 61% - 76% in 2030
- BEV uncertainty range is a result of grid matrix projections
- Under 100% renewable grid scenario life-cycle GHG-E = 80% reduction

THE CURRENT STATE OF THINGS

Decline in Internal Combustion Engine Vehicle Sales

Peak ICE Is Behind Us

Global passenger vehicle sales by powertrain

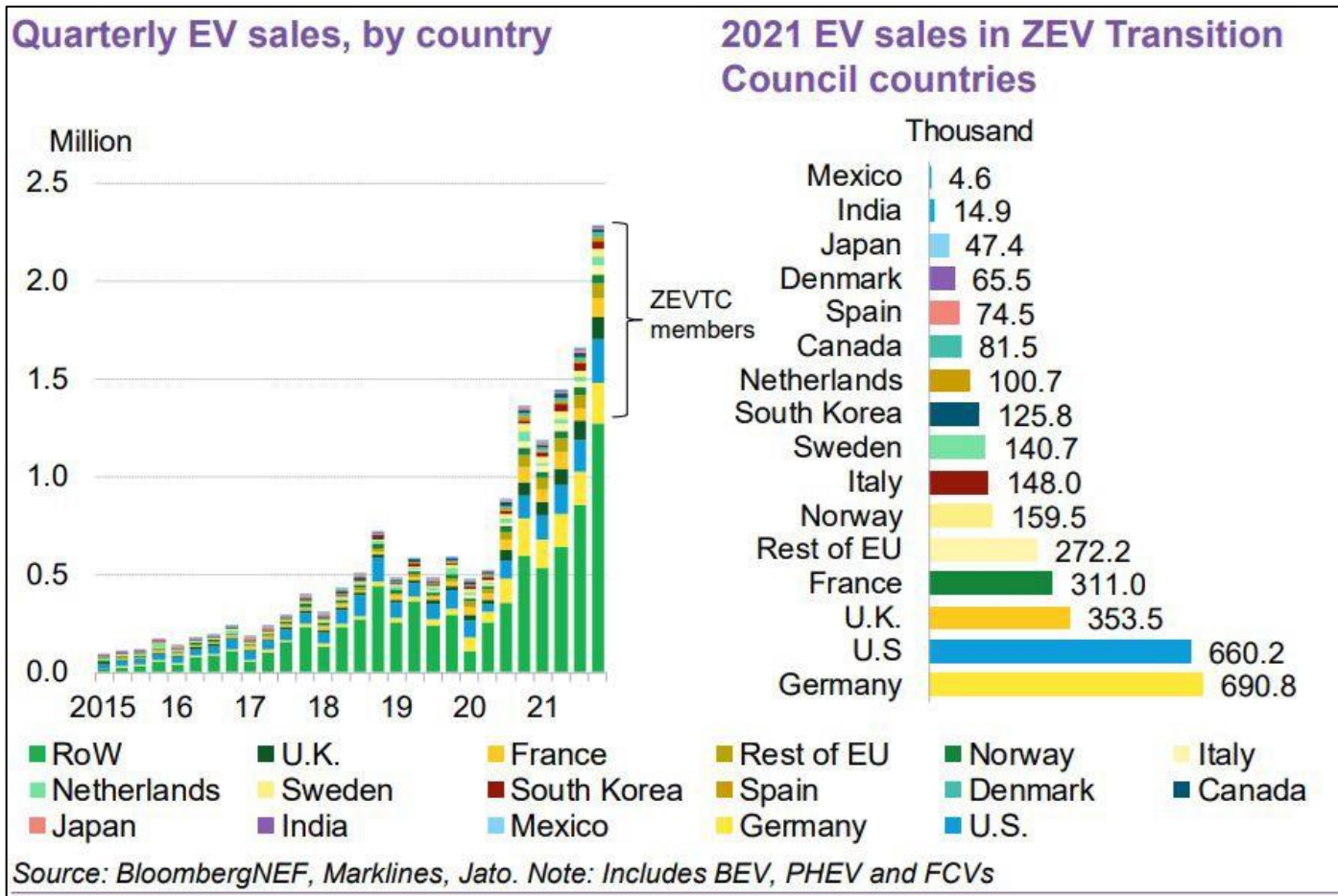


Source: BloombergNEF Long-Term Electric Vehicle Outlook 2022

Note: Electric vehicles include plug-in hybrid vehicles

THE CURRENT STATE OF THINGS

Growth in Global Electric Vehicle Sales

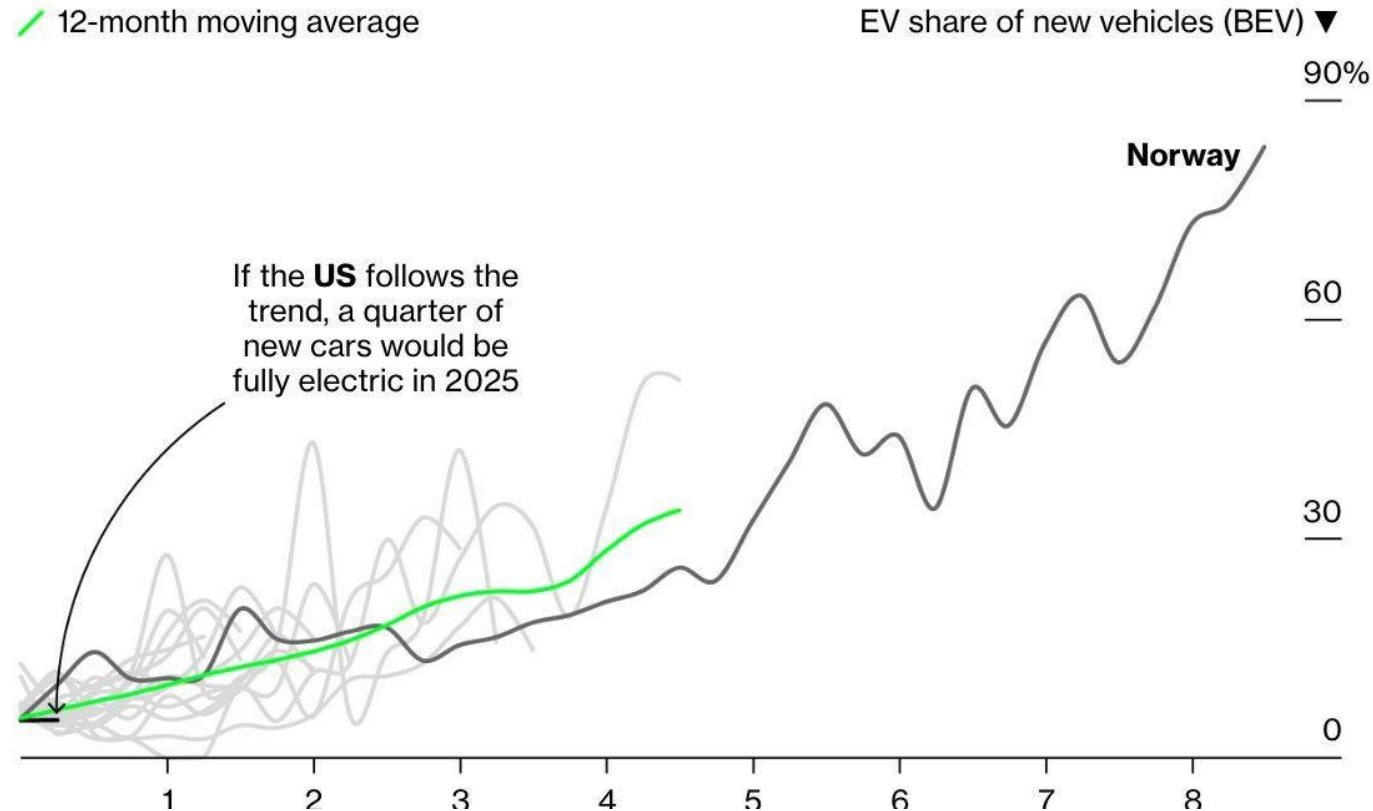


THE CURRENT STATE OF THINGS

Growth in Global Electric Vehicle Sales

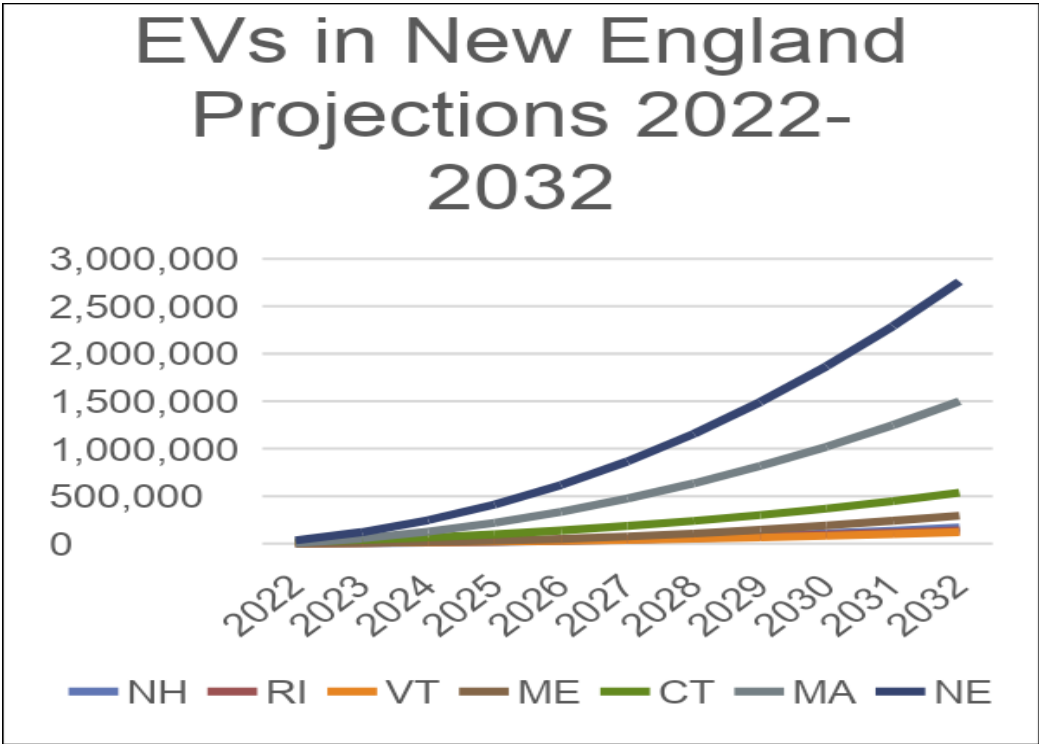
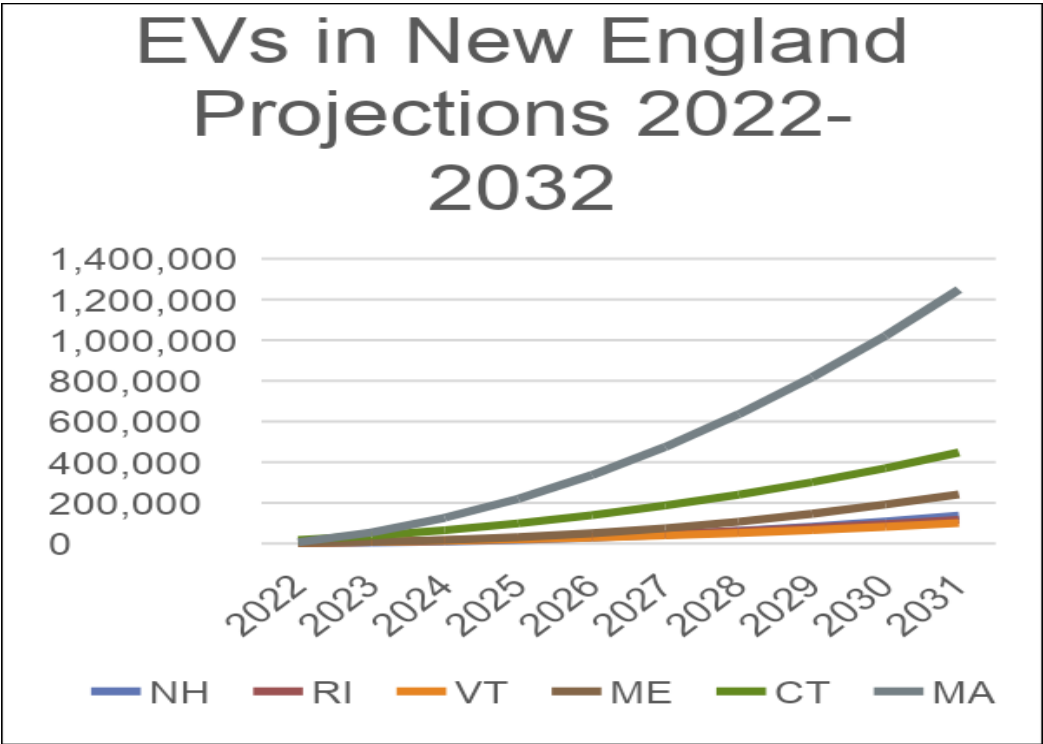
How Fast Is the Switch to Electric Cars?

19 countries have reached the 5% tipping point—then everything changes



THE CURRENT STATE OF THINGS

April 2023 Forecast of New England EV Adoption



NH 5K □ 50K+ in a decade.
NE 50K □ 2.2 M in 10 Years; 2.7M in 11 years.

THE CURRENT STATE OF THINGS

Transformation of this Scale in Not Without Precedent



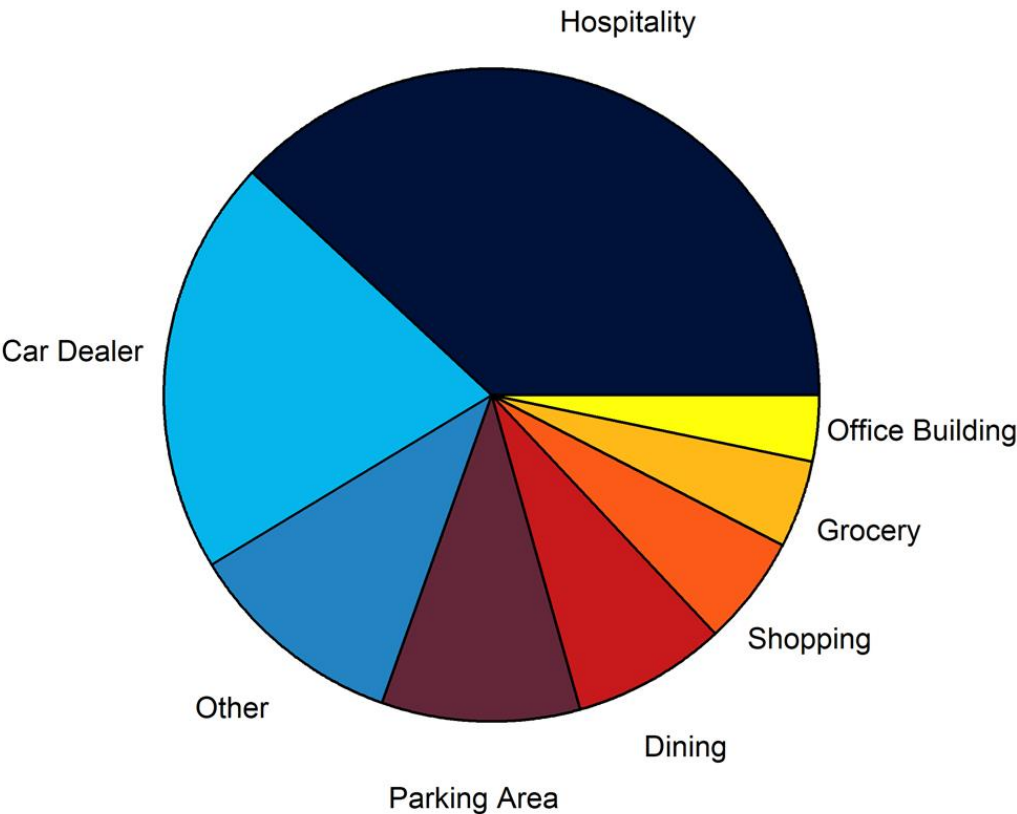
4/10/24

22

Accommodating Change is Critical

THE CURRENT STATE OF THINGS

Where are EVSE located in New Hampshire?



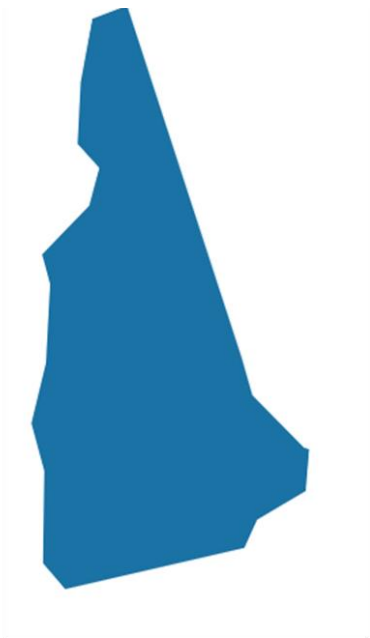
Use Type	Percentage of Total (%)
Hospitality	38
Car Dealer	21
Other	11
Parking Area	10
Dining	8
Shopping	5
Grocery	4
Office Building	3

THE CURRENT STATE OF THINGS

Scenario Projections



Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite

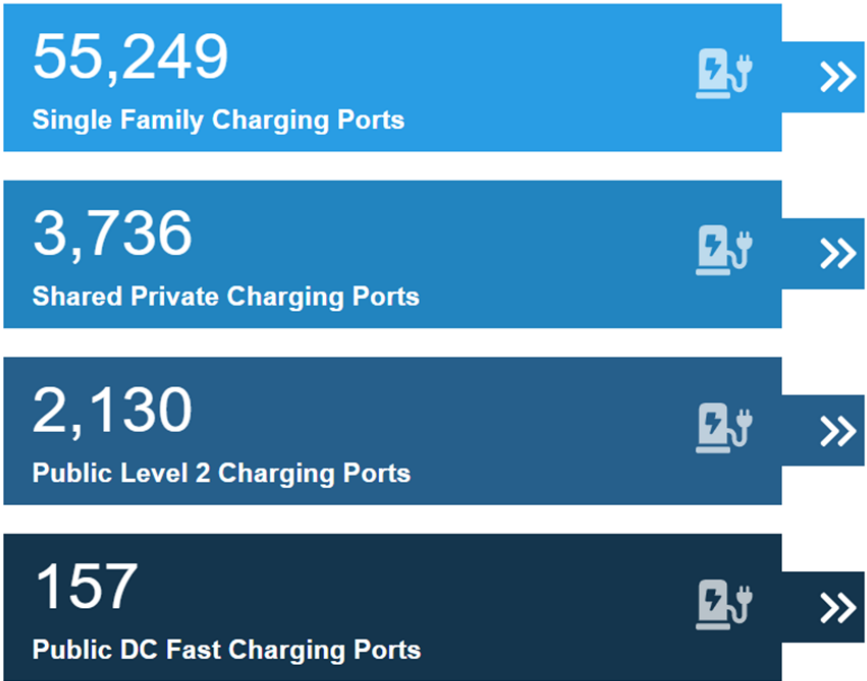


Statewide Public Charging
Level 2: 315 Charging Ports
DCFC: 165 Charging Ports

What's required if 5% of vehicles in NH go electric?

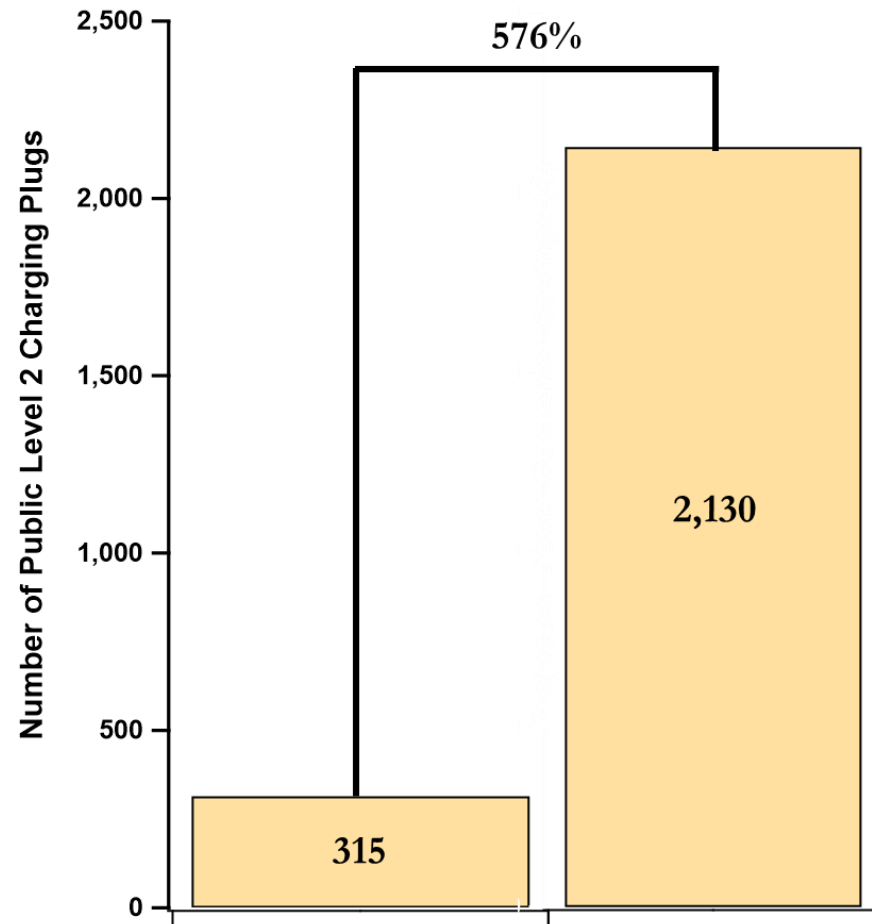
What kinds of charging ports are needed?

Click on the categories to see how they break down by location

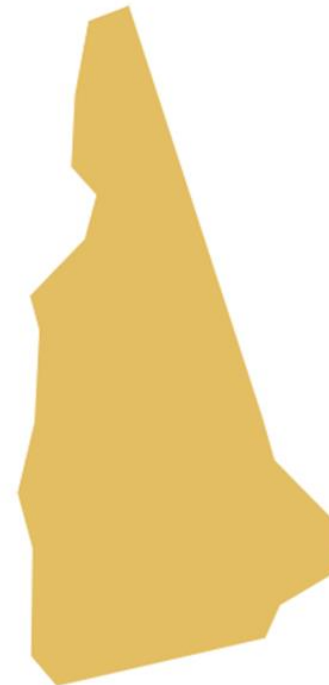


THE CURRENT STATE OF THINGS

Level 2 EVSE Projected Need Example



What's required if 5% of vehicles in NH go electric?





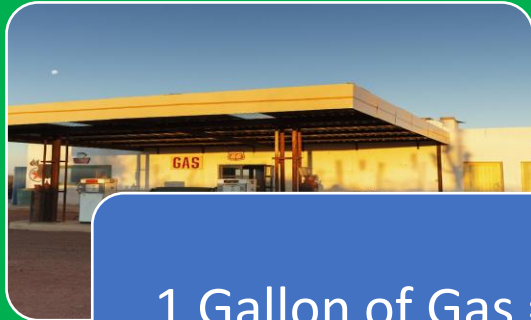
New Hampshire's First Electric Vehicle Dealership

Making more EVs More Affordable for More People

Who is buying EVs?
What are they buying?

25 Lafayette Road
North Hampton, NH
www.GreenWaveEV.com

The impact of a switch to electric...



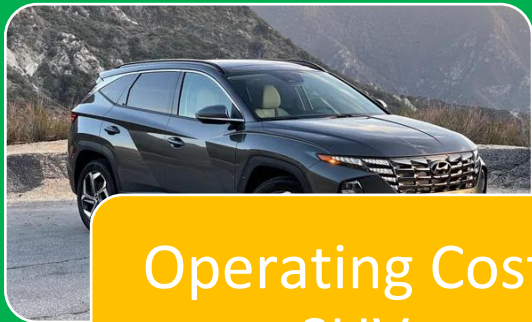
1 Gallon of Gas =
~9 kg of CO₂



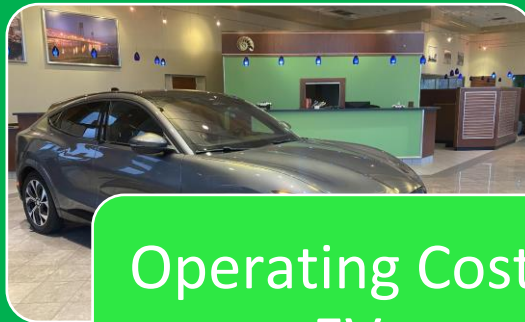
20 MPG, 15,000
mi.= ~12,000 kg
CO₂



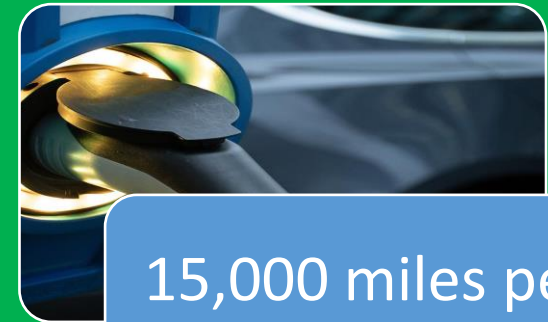
Switch to EV,
reduce Carbon
Footprint up to
20%



Operating Cost:
SUV
\$.29/Mile



Operating Cost –
EV:
\$.11/mile



15,000 miles per
year= \$2,700
savings with EV



GREEN WAVE

— ELECTRIC VEHICLES —

Who is buying Evs?





GREEN WAVE

— ELECTRIC VEHICLES —

Most Purchasers:

- Travel 100 miles per day or fewer.
- Can/do charge their car at home.
- Save \$150-\$250 per month on fuel and maintenance.
- Purchase a car and get a \$200-\$350/month payment.
- Use the IRS Tax Credit to reduce their purchase price.





Types of EVs

Generation 1:

- 2012-2016
- <100 mile range
- \$5k-\$10k



Generation 2:

- 2017-2022
- 200+ mile range
- \$15K-\$25k



Generation 3:

- 2021+
- 200-350 mile range
- \$25k-\$50k





In stock at Green Wave now:

Type:

- 42 BEV
- 5 PHEV

Price:

- 24 under \$25k
- 21 between \$25k and \$40k
- 2 over \$40k

15 different Makes

22 different Models

Vehicles by Make and Model	Average Price	# In stock now	Average Odometer
Chevy Bolt EV	\$18,237	8	34,712
Tesla Model Y	\$33,775	4	45,317
Tesla Model 3	\$24,500	3	76,172
Ford Mustang Mach-E	\$30,894	3	31,736
Kia Niro EV	\$21,283	3	28,062
Polestar 2	\$31,333	3	15,441
Hyundai KONA Electric	\$19,285	3	44,928
Tesla Model S	\$39,150	2	59,465
Nissan LEAF	\$13,247	2	48,174
Kia EV6	\$31,132	2	31,735
Volkswagen ID.4	\$31,325	2	15,413
Tesla Model X	\$35,550	2	55,832
Chrysler Pacifica Hybrid	\$24,500	1	62,511
Ford F-150 Lightning	\$64,800	1	14,001
Toyota RAV4 Prime	\$33,700	1	43,309
Volvo C40 Recharge	\$36,123	1	13,537
Mitsubishi Outlander PHEV	\$24,500	1	50,001
Mini Cooper Hardtop 2 Door	\$22,300	1	5,077
Toyota Prius Prime	\$24,500	1	33,703
Mercedes EQB	\$38,794	1	7,892
Honda Clarity Plug-In Hybrid	\$15,707	1	102,604
Hyundai IONIQ 5	\$34,349	1	8,233



Inflation Reduction Act of 2022 Used Clean Vehicle Tax Credit

Who qualifies

To qualify, you must:

- Be an individual who bought the vehicle for use and not for resale
- Not be the original owner
- Not be claimed as a dependent on another person's tax return
- Not have claimed another used clean vehicle credit in the 3 years before the purchase date

In addition, your modified adjusted gross income (AGI) may not exceed:

- \$150,000 for married filing jointly or a surviving spouse
- \$112,500 for heads of households
- \$75,000 for all other filers

What qualifies:

- Have a sale price of \$25,000 or less.
- Have a model year at least 2 years earlier than the calendar year when you buy it.
- Not have already been transferred after August 16, 2022 to a qualified buyer.
- Have a gross vehicle weight rating of less than 14,000 pounds
- Be an eligible FCV or plug-in EV with a battery capacity of least 7 kilowatt hours



GREEN WAVE

— ELECTRIC VEHICLES —

How it works:

Own a small SUV.

Drive 15k miles per year.

Buy a Chevy Bolt for \$17k, trade in the SUV, and get a \$4,000 tax credit at point of sale.

Save \$250/month on fuel & maintenance, and get a payment that is as low as \$222/month.



GREEN WAVE ELECTRIC VEHICLES

25 Lafayette Road | North Hampton
03862

603-379-9420

www.GreenWaveEV.com



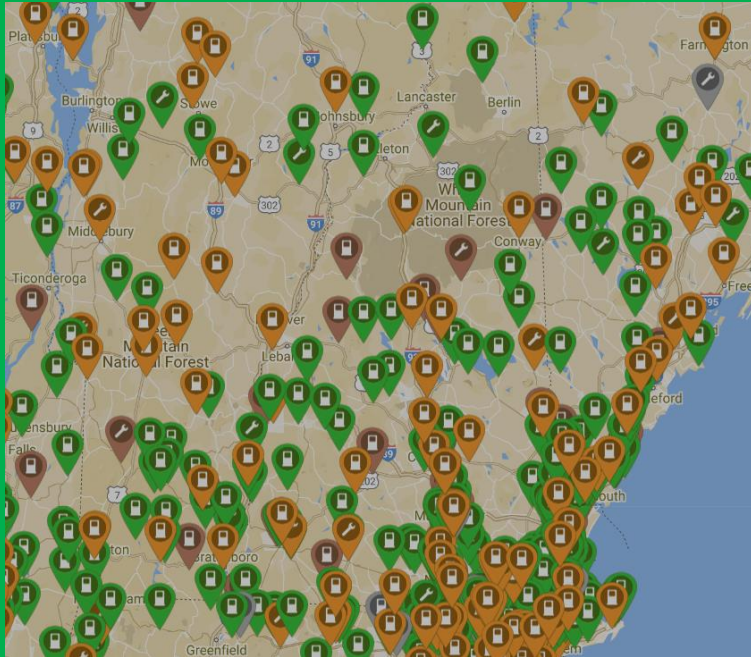
GREEN WAVE
— ELECTRIC VEHICLES —

All makes and models of EV and
Plug - In Hybrids

Great financing available!
We accept all trades



Public Charging Infrastructure



Charging Strategies

Home charging requirements:

1. Dedicated parking spot (driveway?).
2. 200A electric service preferred

Cost of a home charger: \$300-\$500

Cost of Installation = \$1000-\$2000

Additional factors:

- Panel/Service Upgrade = \$3000+
- Trenching - \$1000+
- Stanchions - \$500+



Clearing Up Common Misconceptions

Clean Power

- EVs can be powered by 100% clean and renewable energy.

End of Life

- EV batteries are recycled at close to 100% rates for automobiles.
- Autos are one of the most recycled consumer products in the US.
- Second life – power storage for renewable energy.

Mining

- Irresponsible social practices around mining exist for all interrelated supply chains in our economy, not just EVs. (We call for an end to all socially irresponsible practices in the supply chain).

Gas Hybrids

- Hybrids are not more climate friendly than EVs.

Technology

- Most people don't need better range technology than currently exists.

Lifespan

- EV Batteries are demonstrating a loss of about 1% per year and are end of life at 70%
- Less than 2% of all EV batteries have been replaced.



GREEN WAVE

— *ELECTRIC VEHICLES* —

EV Adoption is **Growing!**



GREEN WAVE
— *ELECTRIC VEHICLES* —

2023

Impact Report

- Reduced client operating costs: \$171,649 annually
- Reduced Client Carbon Footprint: by 445,444 kg CO2 annually
- Planted 14,100 Trees!

www.GreenWaveEV.com



www.GreenWaveEV.com

• Planted 14,100 Trees!



GREEN WAVE

— *ELECTRIC VEHICLES* —

EV Adoption is
Growing!



GREEN WAVE

— *ELECTRIC VEHICLES* —

2024 YTD

Impact Report

- Reduced client operating costs: \$122,026 annually
- Reduced Client Carbon Footprint: by 270,005 kg CO2 annually
- Planted 10,200 Trees!

www.GreenWaveEV.com



www.GreenWaveEV.com

• Planted 10,200 Trees!

CORE MESSAGE

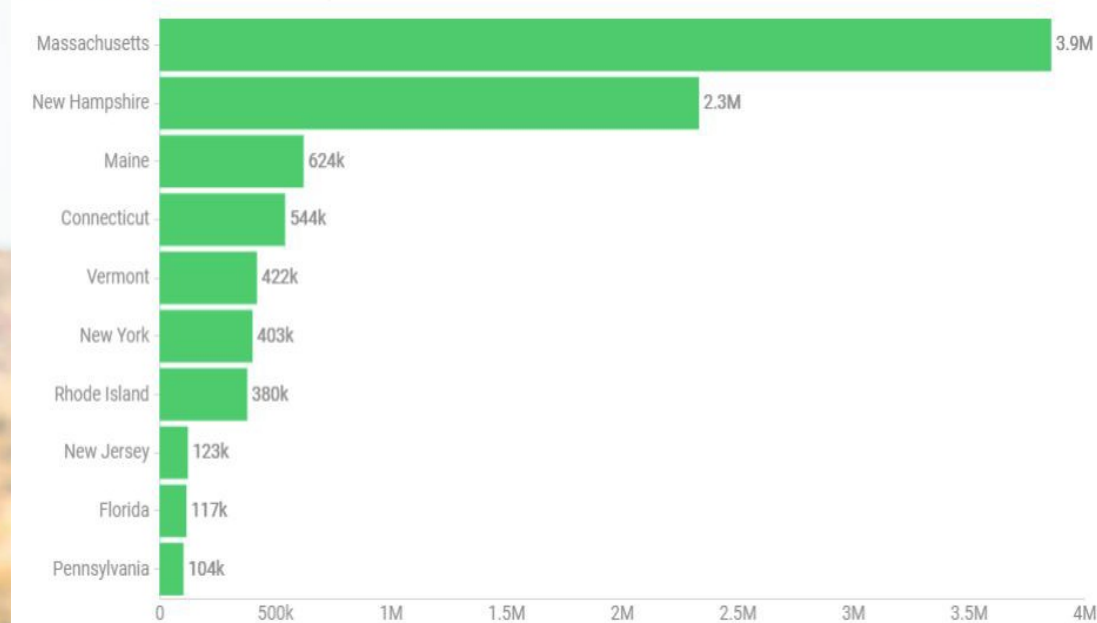
TRAVEL AND TOURISM IMPACT on NH

**Travel & Tourism is
the
#2 Industry
in NH**

**In 2023: Visitor spending was
\$1.7 billion, >7.3% from FY22.**

**Total visitation for Fall 2023
was 3.6 million, >1.9% from
FY22.**

Trip Volume by Top 10 Origin States



TRAVEL AND TOURISM IMPACT on NH

**Travel & Tourism is
the
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**In 2023: Visitor spending was
\$1.7 billion, >7.3% from FY22.
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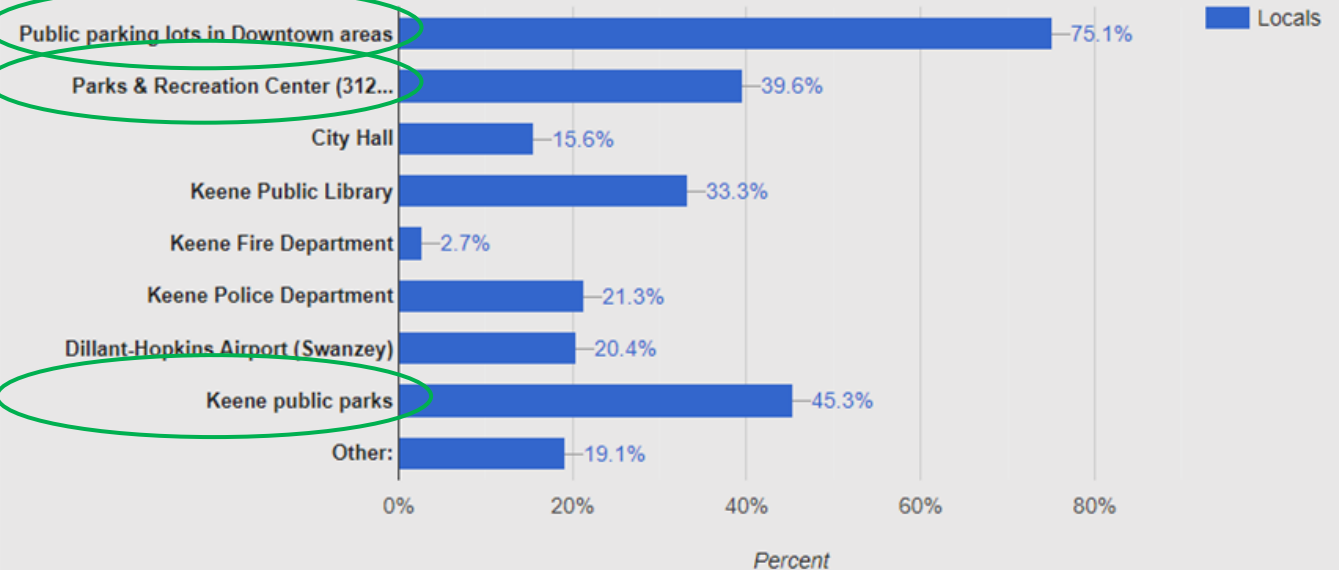
Q4

If the City were to install publicly accessible EV charging stations on City property, which of the following possible EV charging locations would provide the most benefit for EV drivers in Keene? (You can choose up to FOUR, if any)

(225 responses by locals)

[Touch or click chart bars for details]

Show table view





EV CHARGING IS AN ECONOMIC IMPERATIVE FOR NH

- EV Adoption is much higher in neighboring states
- >70% of EV drivers reported patronizing local businesses while using public EV charging stations
- Municipalities play vital role in community and economic development planning
- On April 8th – lines for EV Stations in St. Johnsbury was 4 hours long with upwards of 189 people waiting at one point

GUIDES

For Municipal Implementation





Introduction

Charging Levels

How Many?

Funding

Where to Install?

Charging Fees

Signage

Policy Enforcement

Station Maintenance



Introduction

Municipal Guide to EV Charging Stations

Strafford Regional Planning Commission (SRPC)

TOP TIPS

- Assign a Champion
- Understand your market/need
- Know your site (*more on this!*)
- Include relevant department heads/stakeholders early and often
- Ensure accessibility and equity
- Think about fee structure
- Determine who is going to enforce parking restrictions
- Are there new or existing projects that you can piggyback on to install chargers or make the site EV-Ready?





KNOW YOUR SITE

- Currently available electrical service
- Distance between the electrical panel and the charging station
- Location of charging station(s) on the property
- Location of existing infrastructure
- Availability of networks and communications
- General parking lot management practices
- Incorporate accessibility
- Foresee obstacles
- Where will signage be? Leading to and at station(s)

PREPARING FOR THE FUTURE

- Over-build for tomorrow
- Consider EV-Ready Sites
- Review your regulations to reduce barriers
- Charge Levels: They don't all have to be Fast Chargers
- Consider Electric Bicycles
- Understand our grid capacity
- Work with municipal departments/businesses/Chambers of Commerce/neighbors



ON THE GROUND

In Dover NH

ON THE GROUND IN DOVER

Chapter 153 – Site Review Regulations

Site Plan Review

- Projects must provide **Electric Vehicle Charging Readiness** based on the following standards:
 - [1] **Multi-family residential projects: 5% of the total number of new parking spaces.**
 - [2] **Non-residential projects: 2% of the total number of new parking spaces.**
 - [3] The number would be rounded up in all cases with a minimum of one space of electric vehicle charging readiness per project requiring Site Plan Review



5% of Total Spaces

**1 EVSE Readiness Space
at Minimum**



2% of Total Spaces

ON THE GROUND IN DOVER

Chapter 153 – Site Review Regulations

ELECTRIC VEHICLE READINESS

A parking space meets electric vehicle readiness requirements if the following requirements are met:

[Added 7-27-2021]

1. The project has provided one or more dedicated circuits on the electrical panel(s) such that the panel(s) has the service capacity to accommodate the required number of Level 2 EVSE; and
2. Conduit has been installed to allow the addition of all necessary wiring to electrify installed EVSE at the parking space(s) without having to excavate to do so.

Link to Dover's Site Review Regulations: <https://ecode360.com/33400413>

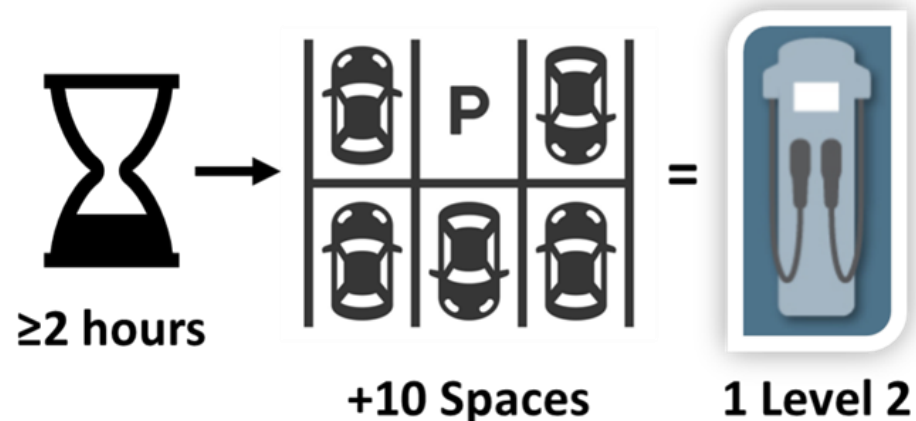
ON THE GROUND IN DOVER

Chapter 153 – Site Review Regulations

Conditional Use Permit

➤ The applicant shall contribute to improving electric vehicle infrastructure by using one of the following methods:

[a] For uses that typically **result in at least two hours or longer of parking** the applicant shall **provide one Level 2 commercial electric vehicle charging station** for every 10 spaces requested over the parking maximum.



Chapter 153 – Site Review Regulations

Conditional Use Permit

➤ The applicant shall contribute to improving electric vehicle infrastructure by using one of the following methods:

[b] For uses that **do not typically result in at least two hours or longer of activity**, the applicant shall **provide two additional parking spaces that meet electric vehicle readiness requirements** for every 10 parking spaces requested over the parking maximum.



≤2 hours



+10 Spaces

=



2 Readiness
Spaces

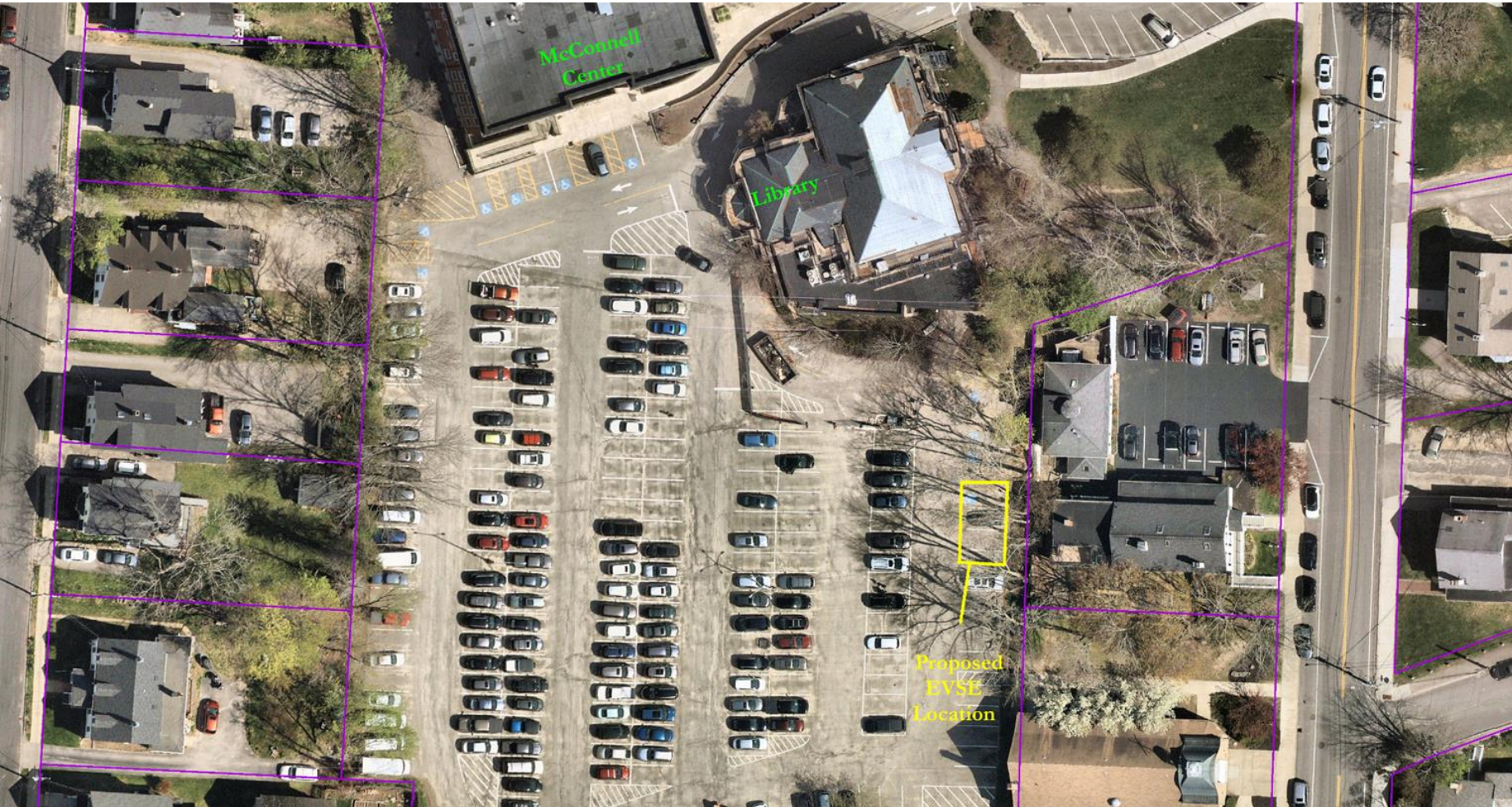
ON THE GROUND IN DOVER

Citywide Resilience Plan

Category	Site Characteristics
Location	Map 9 Lot 57 61 – 73 Locust Street
Availability of Parking + Utilization	Enough spaces and high utilization by public and municipal employees.
Onsite Restrooms	Public restrooms available in McConnell Center and Library.
Utility Infrastructure	There is electricity nearby but capacity is likely low and may require upgrades to current infrastructure.
Proximity to Major Travel Corridor	Site is located within 1 mile of NH Route 16.
Proximity to Businesses	Is located within walking distance however the lot is only designated for visitors to the McConnell Center and Library as well as City employees.
Proximity to Recreation	Recreation activities within McConnell Center.

ON THE GROUND IN DOVER

Citywide Resilience Plan



PRIMARY TAKEAWAY

In Dover NH



PLAN NH
Visioning *for* Sustainable Communities



Thank you!



Angela Cleveland, AICP
Project Coordinator



Chris Skoglund
Director of Energy
Transition



Jackson Kaspari, PhD
Resilience Manager



Jesse Lore
Founder