



# Developing a Nantucket Climate Action Plan

*We need*

**MIRACLES**

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Presentation on 6/12/23 at the Nantucket Coastal Conference



Why are Greenhouse gasses  
a problem?

# Climate Change



## Source Problem

Increased Green House Gasses, mainly increased carbon

## Associated problems

## CRP related issues

Increasing air temperatures

Ocean acidification

Melting glaciers

Increased storm frequency and intensity

Less oxygen in oceans

Less snow pack

Desertification

Increased heatwaves

Rising sea levels

Increased wildfire

Droughts

Agricultural losses

Population displacement

Increased coastal erosion

Reduced air quality

Hazardous algal blooms

Coral bleaching

Changing ocean currents

Increased coastal flooding

Less productive fisheries

Property loss

Habitat loss

Increased water density

Rising ground water levels

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## Climate issues for Nantucket

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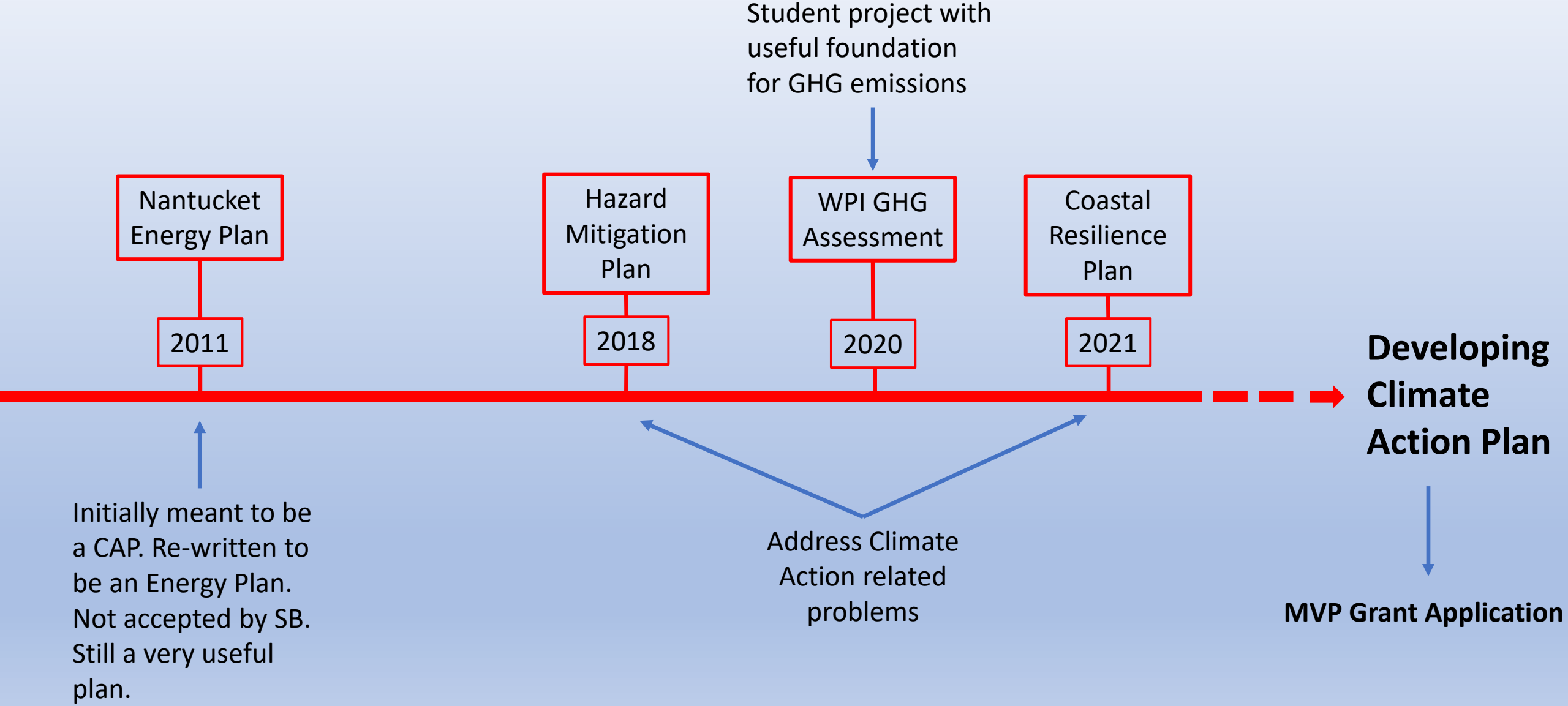
Rising ground water levels

**And probably lots more!**

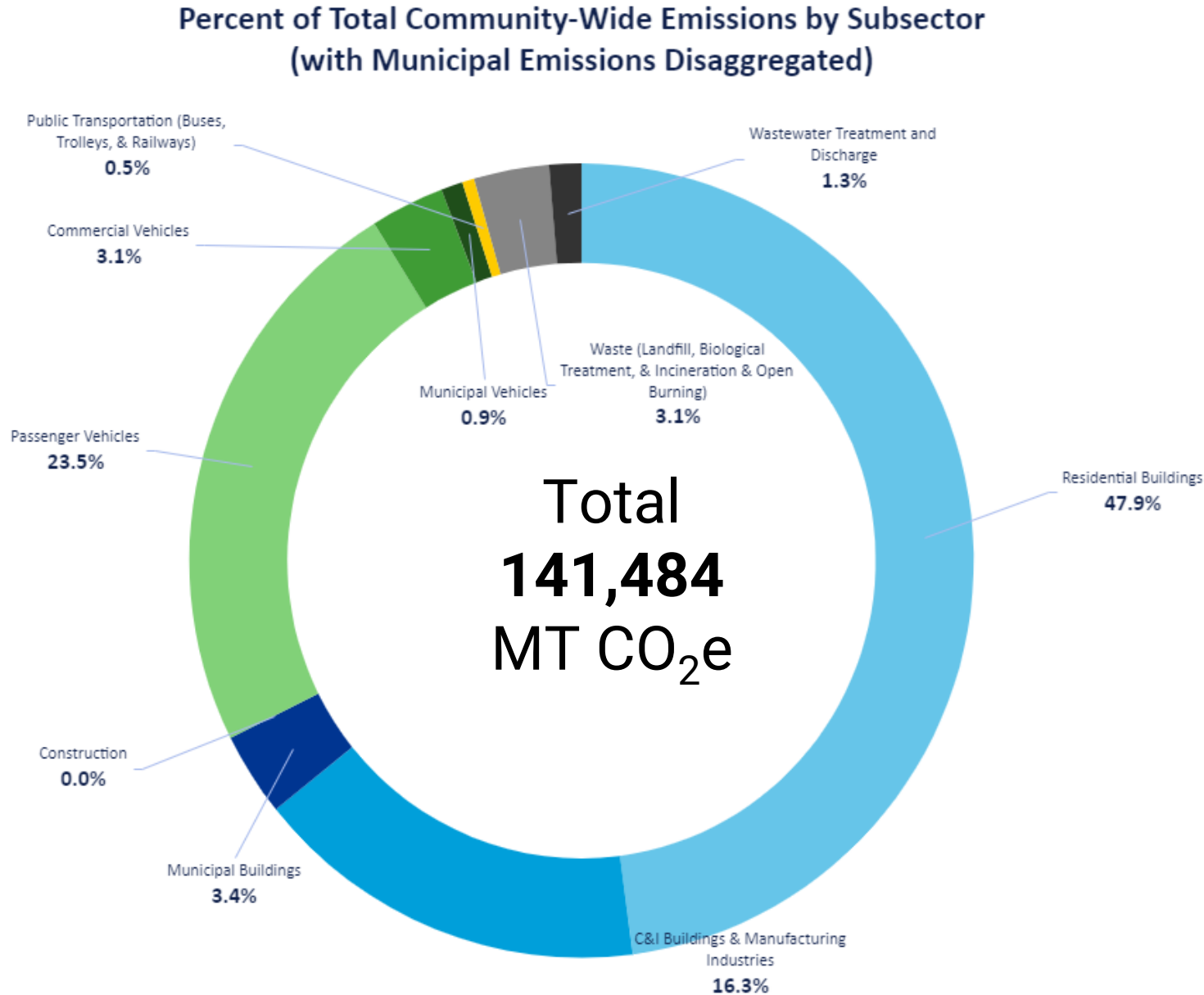


Understanding the  
background and problems

# Climate Action Planning history



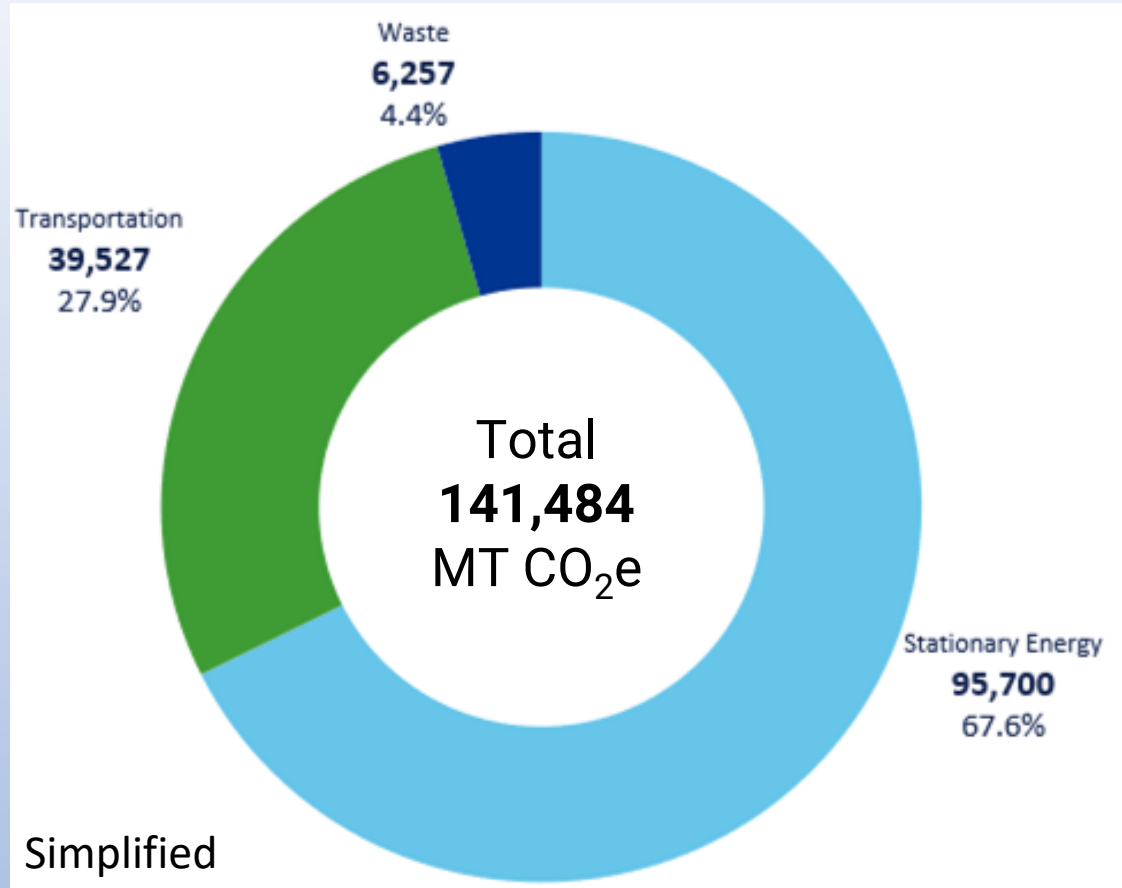
## GHG's by the numbers



### 3 biggest GHG sources

- 48% Residential buildings
- 23.5% Passenger vehicles
- 16% Building & manufacturing (restaurants)

## GHG's by the numbers



Town	Carbon tonnage	Population	Tonnage per capita
Nantucket	141,484	14,255*	9.925
Arlington, MA	284,078	36,308	7.824
Natick, MA	328,088	37,006	8.865

\*Census population is 14,255 and the summer population brings up our per capita usage

Location	Tonnage per capita	Note
USA	13.8	Avg
Wyoming	96.4	Worst
District of Columbia	3.5	Best
Maine	9.9	NE
Connecticut	9.4	NE
Rhode Island	9.0	NE
Massachusetts	7.4	NE



## GHG's by the numbers

**Nantucket produces about 141,484 metric tonnes of Carbon Dioxide equivalent (2020) from all energy sources. What does this mean? Equivalent to about;**

### **Gasoline only equivalents**

- About 16m gallons of gasoline
  - That's about 24 Olympic swimming pools of gasoline
  - Enough to drive 363 million miles

### **Electricity only equivalents**

- 27,500 homes powered for a year (electric only)
- Enough to charge 17.2 Billion smartphones
  - Only 6.8 Billion smartphones in the world so could power each smart phone 2.5 times.

### **Other equivalents**

- 17,800 homes powered for a year (all energy needs such as propane, electric, home heating oil etc.)
- 6.5m cylinders of propane for home grill
- 0.35 natural gas fired power stations for one year.

**The numbers are mindboggling to the point of being abstract and useless. Hard to keep the numbers meaningful.**

**This essentially means we use a lot of energy & produce too much carbon.**

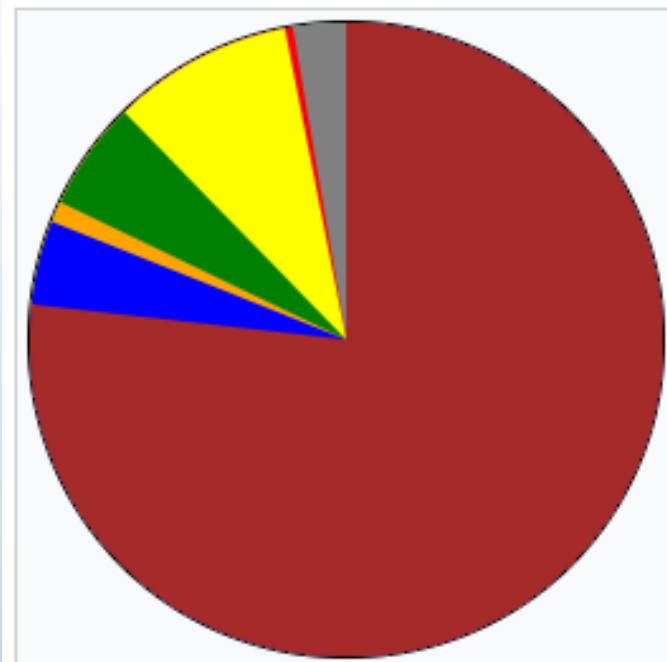


About our energy sources

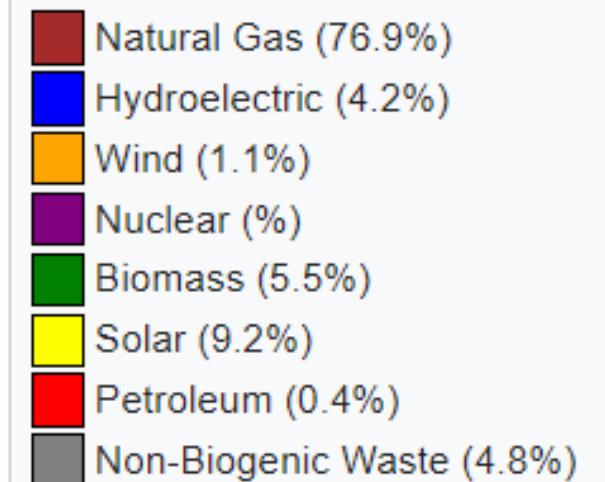
## Electricity generation in Massachusetts

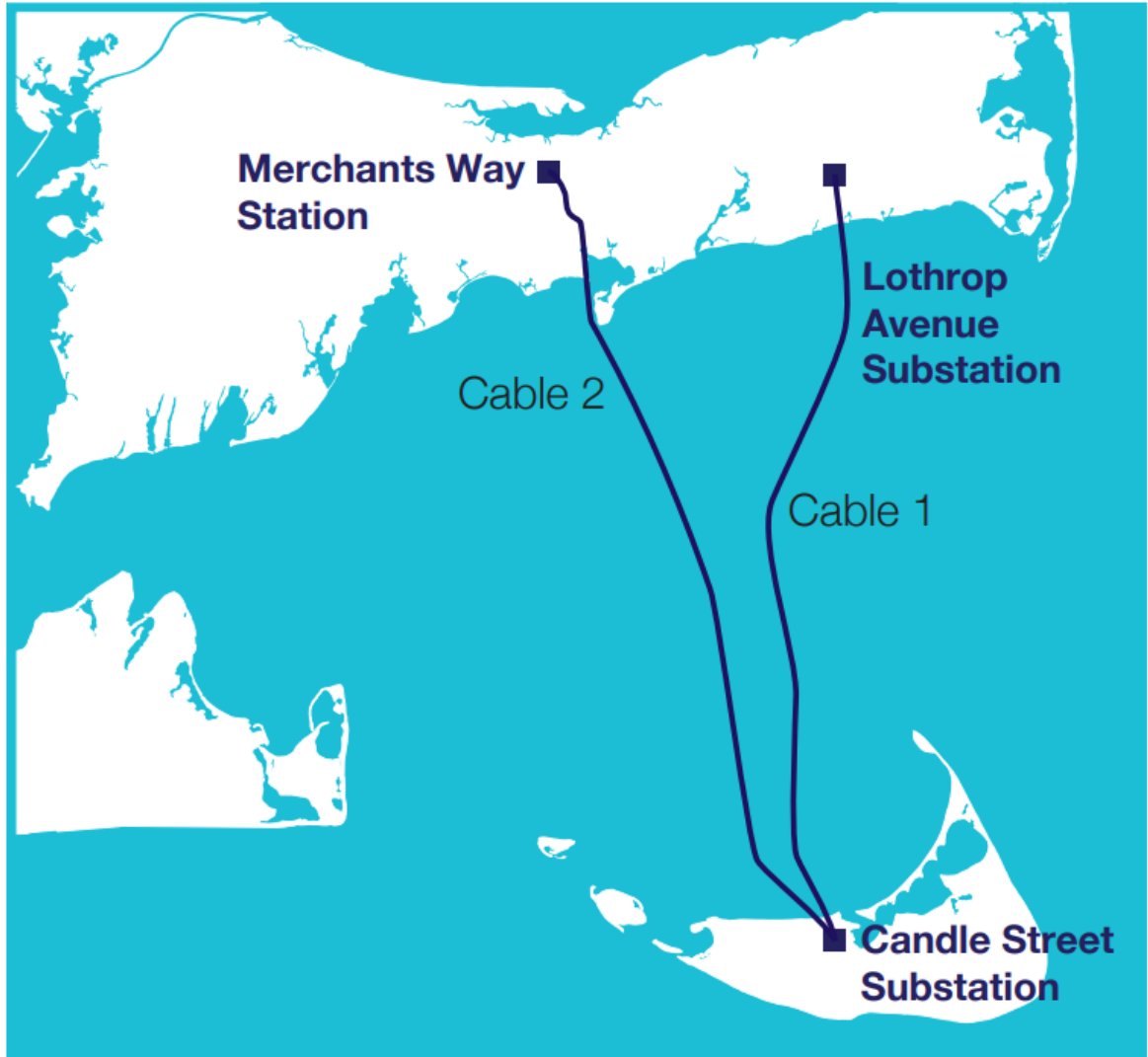
- In 2021 there were 192 power stations in Massachusetts
- Massachusetts consumes about twice as much electricity as it generates
- Produced about 18,200 GWh of electricity in 2021 (or 18,200,000,000 Kwh)
- 76.9% of electricity in the state is produced by Natural Gas power plants.
  - Solar is 9.2%, Biomass is 5.5%, Hydroelectric is 4.2%, Wind is 1.1%, Non-biogenic is 4.8%, Petroleum is 0.4% (102.1%, thanks state data!)

**How much electricity does Nantucket use?**



Sources of Massachusetts utility-scale electricity generation: full-year 2021<sup>[1]</sup>





## Main Electric source are the undersea cables

- Solar is developing
- battery storage on island
- And wind at the high school

Cable 1 – 36 MW

Cable 2 – 38 MW

- Not necessarily what we use, rather the capacity of the cables.
- We are more limited than other communities

Normal demand is about 20 MW (20,000 KWh)

Peak in 2015 was 45MW

## Liquid fuels

Gasoline, diesel, propane & aviation fuel are all brought to Nantucket by barges and/or ferry without other passengers

- About 39,527 metric tones of carbon equivalent
- If it were all gasoline, it would be 4.447 million gallons



# Path to a Climate Action Plan

# Carbon emission reduction at each scale - global, federal, state and local scale.



## Global

International Panel on Climate Change (IPCC) several reports including

- Climate Change 2022: Impacts, Adaptation and Vulnerability
- Climate Change 2022: Mitigation of Climate Change

More on the way



## Federal

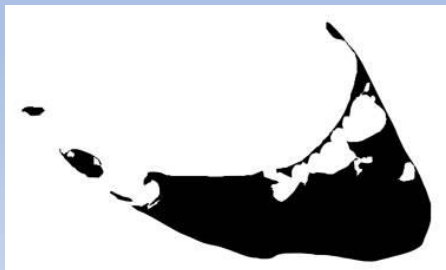
- EPA 2021 Climate Adaptation Plan
- "The Federal Sustainability Plan"
  - President Biden's Executive Order 14057 on catalyzing American clean energy industries and jobs through Federal sustainability and accompanying Federal Sustainability Plan



## State

Massachusetts has some leading plans including

- Massachusetts Clean Energy and Climate Plan for 2025 and 2030
- Massachusetts Clean Energy and Climate Plan for 2050
- Massachusetts State Hazard Mitigation & Climate Adaptation Plan (SHMCAP)
- 2022 Massachusetts Climate Change Assessment



## Local

Beginning a new Nantucket Climate Action Plan. Catching up.

# What will the Nantucket Climate Action Plan look like?

- Task 1 – Background Research
- Task 2 – Public Involvement & Community Engagement
- Task 3 – GHG inventory and assessment
- Task 4 – Best Practice Toolkit
- Task 5 – Decarbonization Roadmap
- Task 6 – Final Report

- Simplistic overview of how we have structured a grant application to MVP for a Climate Action Plan grant
- There are sub-tasks within each of these tasks.
- The grant application was submitted in early May
- We find out in August if it was acceptable



From City of Woodland, Ca. Climate Action Plan & prescriptive for Nantucket CAP

## Cautionary questions

Can Nantucket work towards decarbonizing?

Our community enjoys a luxurious lifestyle with high carbon usage. Will the community accept a decarbonized Nantucket?

Most places that set targets and timelines for decarbonizing fail or miss deadlines. So, what is realistic?

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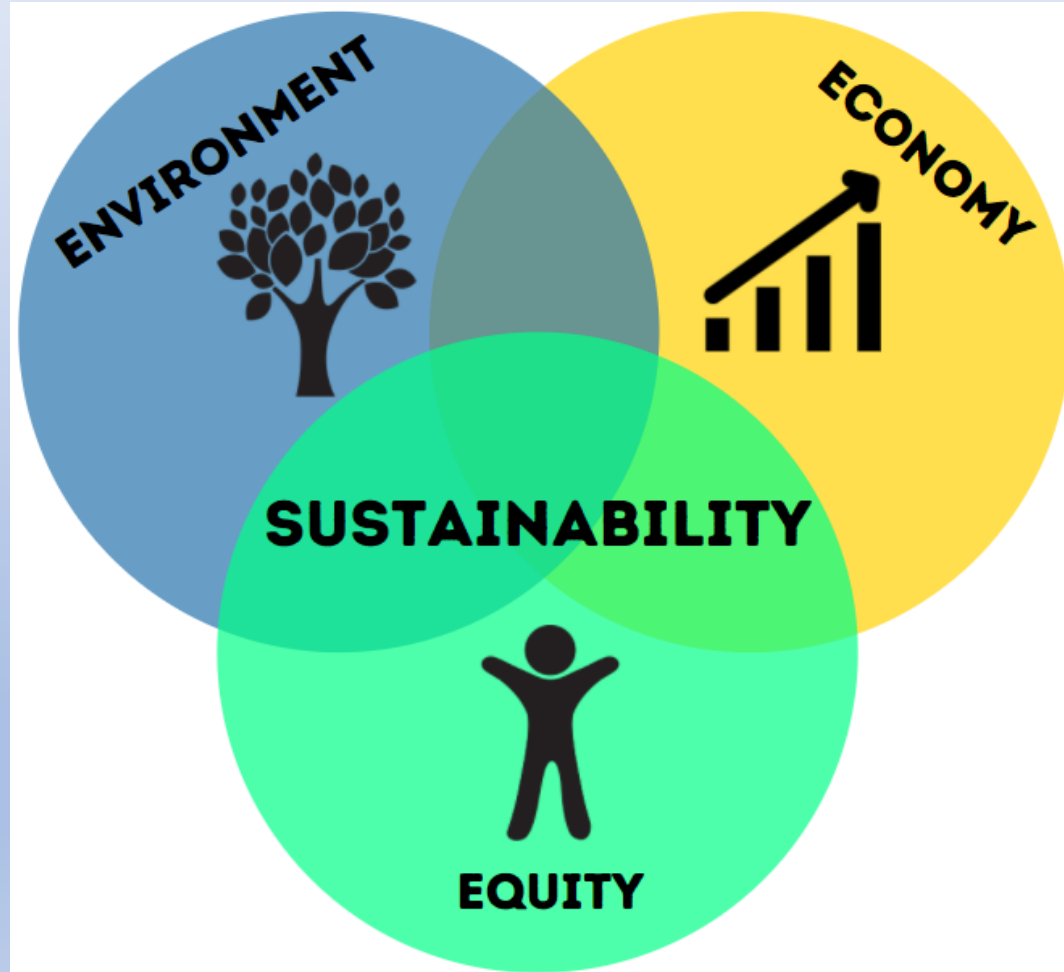


**M**aking  
**I**sland  
**R**esources  
**A**  
**C**ollaborative  
**L**ocal  
**E**ffort for  
**S**ustainability





# MIRACLES





Thank you  
&  
Questions?