GWSA IAC Meeting

June 26, 2018

Massachusetts Global Warming Solutions

Meeting Agenda

- Updates
- Presentation & discussion on new land-use/land-cover data product
- Report out by Land Use and Nature-Based Solutions WG
- Process and Protocol for future IAC and working group meetings
- Discussion on scope and content for GWSA 10-Year Progress Report

Land Cover / Land Use 2016

Project Overview

Neil MacGaffey

Director, MassGIS

LAND COVER/USE MAPPING OVERVIEW

Outline

1. What is the land cover/use mapping product?
2. What is the project schedule?
3. How land cover/use mapping can be used?
4. What is needed to keep land cover/use current?

LAND COVER/USE MAPPING OVERVIEW

1. What is the product?

Product is a combined land cover/use map

1. Cover mapping based on existing six-category land cover mapping from NOAA's Office for Coastal Management (OCM)

2. Funded by EOEEA, OCM expanding land cover categories from 6 to 20

3. MassGIS creating statewide land use mapping from use codes in statewide parcel mapping

4. MassGIS merging land cover and land use to create combined land cover/use classification

LAND COVER/USE MAPPING OVERVIEW

Expanded Land Cover Categories

Unclassified	Evergreen Forest
Impervious	Scrub/Shrub
Open Space Developed	Bare Land
Cultivated Crops	Palustrine Wetland (4 categories)
Pasture/Hay	Estuarine Wetland (4 categories)
Grassland	Unconsolidated Shore
Deciduous Forest	Water

LAND COVER/USE MAPPING OVERVIEW

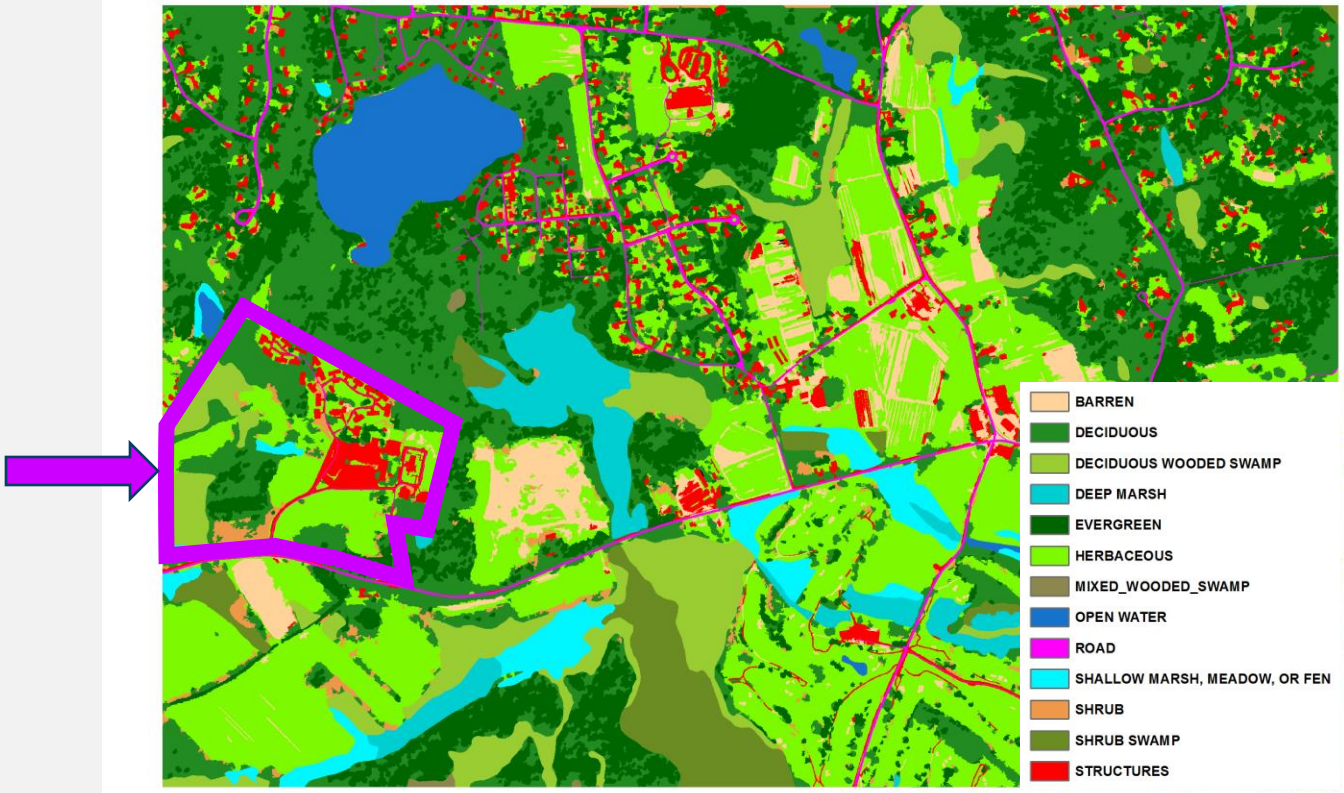
Parcel Mapping Land Use Categories

- Mixed Use *
- Residential *
- Open Space
- Commercial
- Industrial
- Forest
- Agricultural *
- Recreational
- Exempt *

*** Will subdivide these categories further. For example "mixed use, primarily residential" and "commercial mixed use, primarily commercial"**

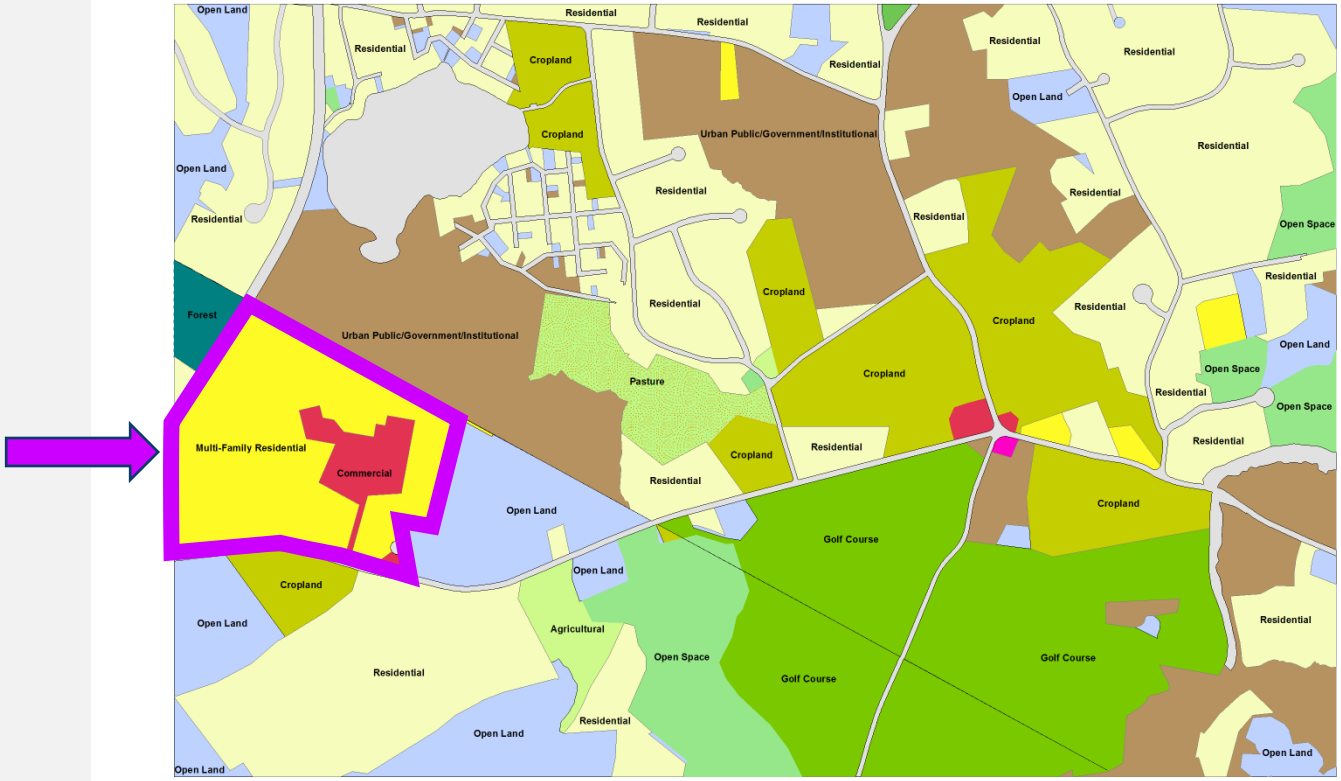
LAND COVER/USE MAPPING OVERVIEW

Land Cover Mapping



LAND COVER/USE MAPPING OVERVIEW

Generalized Land Use



LAND COVER/USE MAPPING OVERVIEW

Combined Land Cover/Use Mapping

LAND COVER/USE MAPPING OVERVIEW

2. What is the project schedule?

- June 2018 – land cover mapping delivered
- July 2018 – OCM responds to any QC issues from MassGIS
- July – August - MassGIS adds land use information and develops LC/LU classification
- September 2018 - projected date for data release

LAND COVER/USE MAPPING OVERVIEW

3. How can land cover/use mapping be used?

- Current project provides baseline conditions in 2016
- Supports analysis of transportation, land cover/use, and smart growth in the context of the GWSA
- If updated, then version-over-version comparison enables quantitative assessment of land cover/use change information to evaluate:
  - carbon storage
  - Impact of smart growth policies and programs

LAND COVER/USE MAPPING OVERVIEW

4. What is needed to keep land cover/use current?

1. Updated aerial imagery
   - This may be available for free in late 2019 (but possibly not again)
   - If not free, then $150K
2. Funding for land cover update - $25K - $35K
3. Funding to produce combined cover/use product - $5K - $10K

Thank You

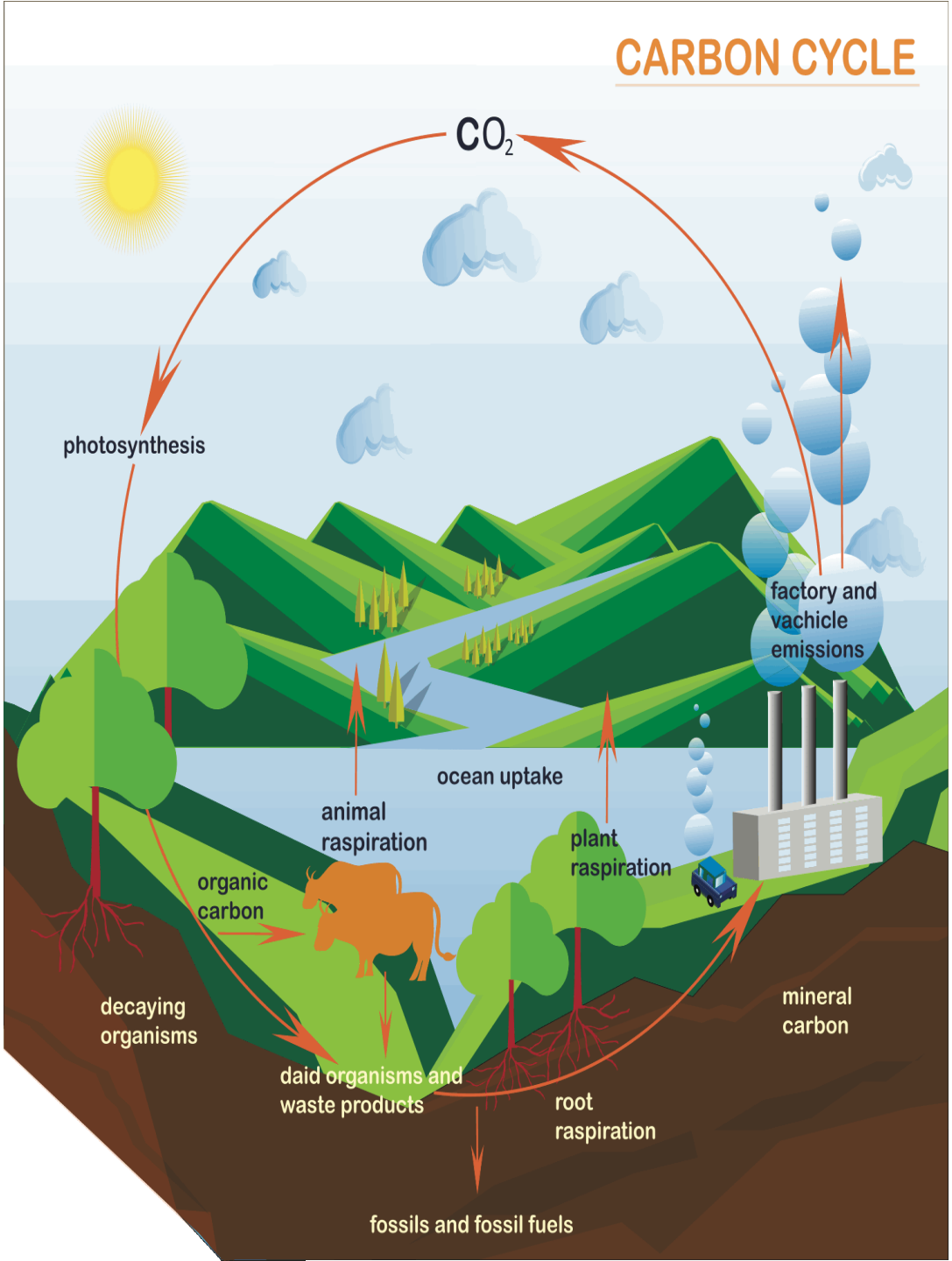

Envision Livable Communities

ECONOMIC:
SUSTAINABLE COMMODITIES

ENVIRONMENTAL:
WATER, CARBON & BIODIVERSITY

SOCIAL:
JOBS & LIVELIHOODS




CARBON CYCLE
CO_2
photosynthesis
factory and
vachicle
emissions
ocean uptake
animal
raspiration
plant
raspiration
organic
carbon
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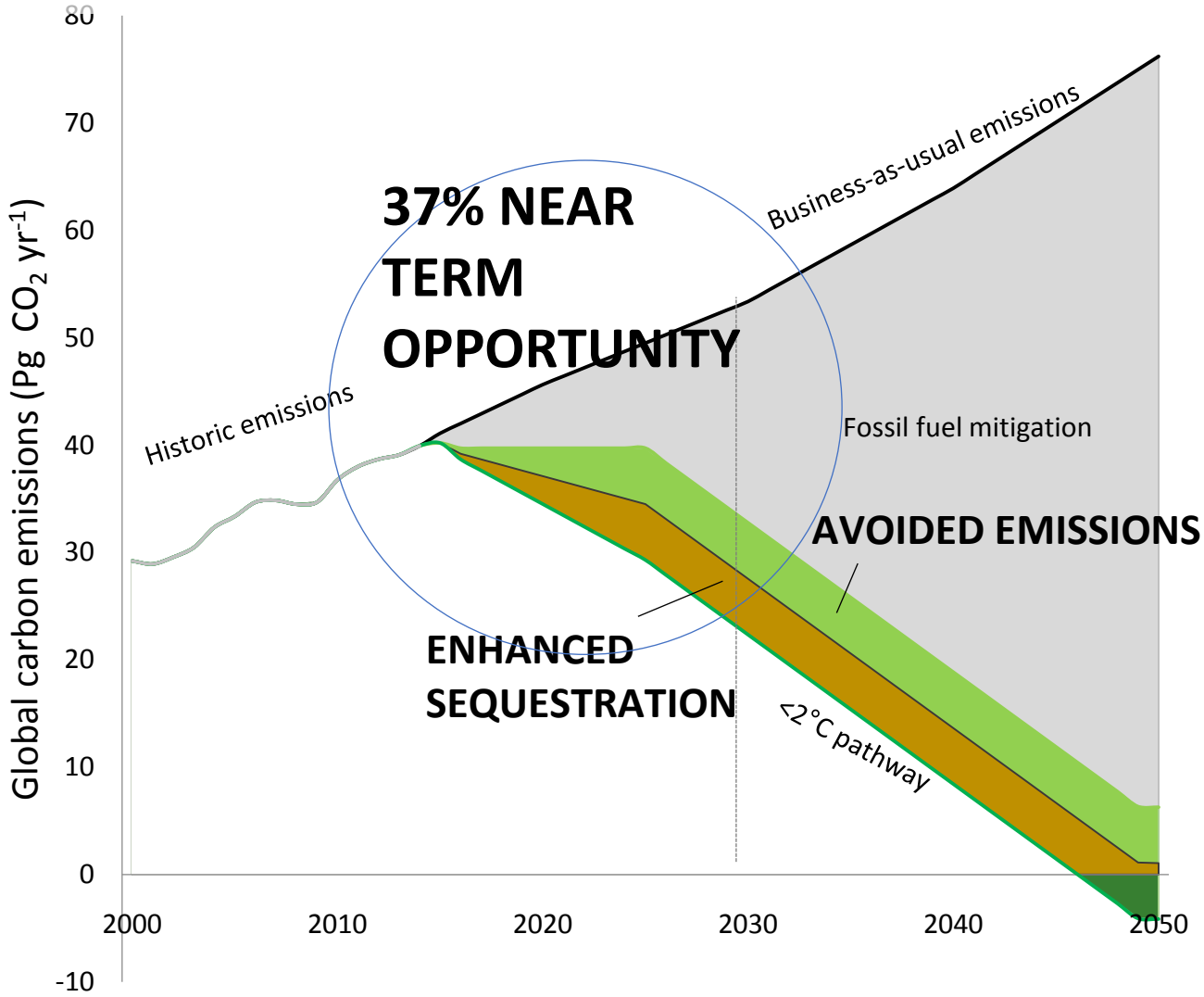
GHG Collectors:
Natural – Built Environment

Land Use and Nature-Based Solutions

Near term, low cost & low regret options



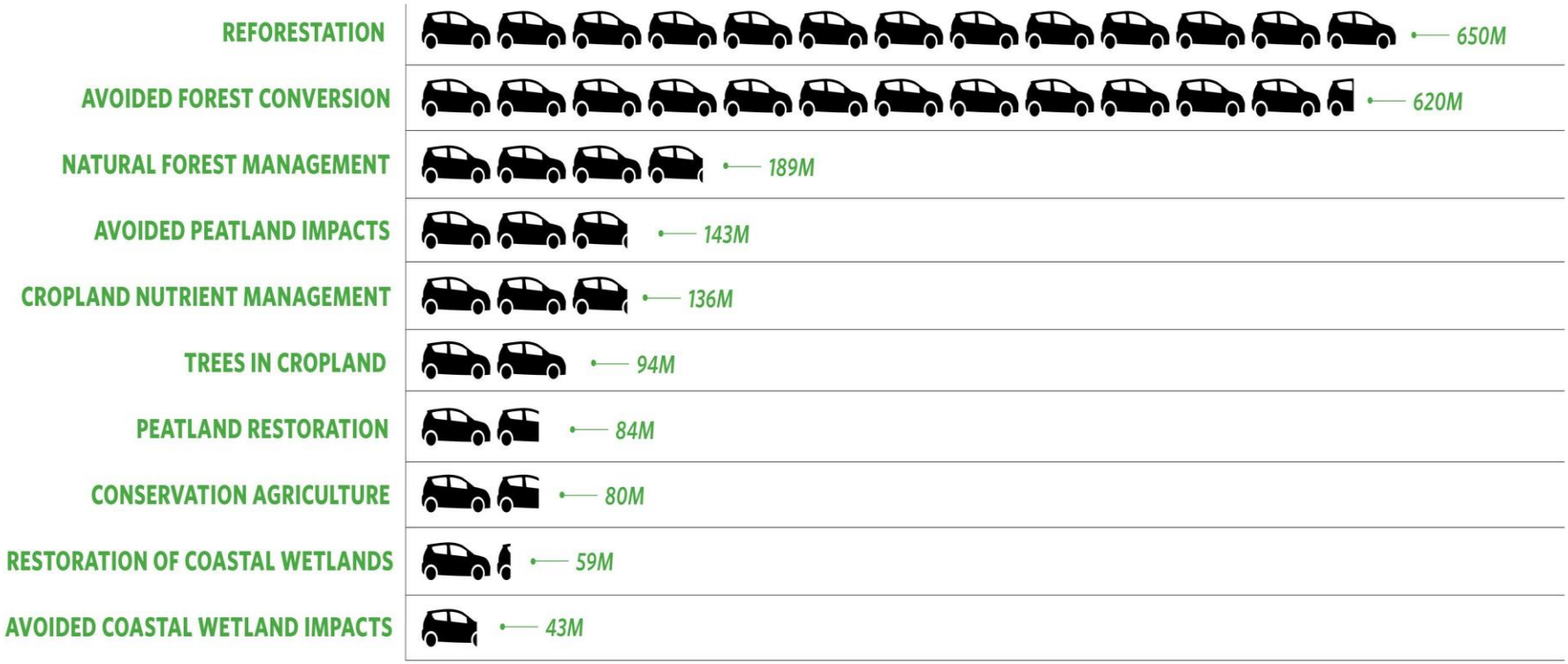
Source: Griscom et al., PNAS (2017)

The Nature Conservancy

NATURAL CLIMATE SOLUTIONS

TOP 10 MITIGATION PATHWAYS[1] WITH CO-BENEFITS

Natural Climate Solutions have the same impact on emissions as taking millions of cars off the road

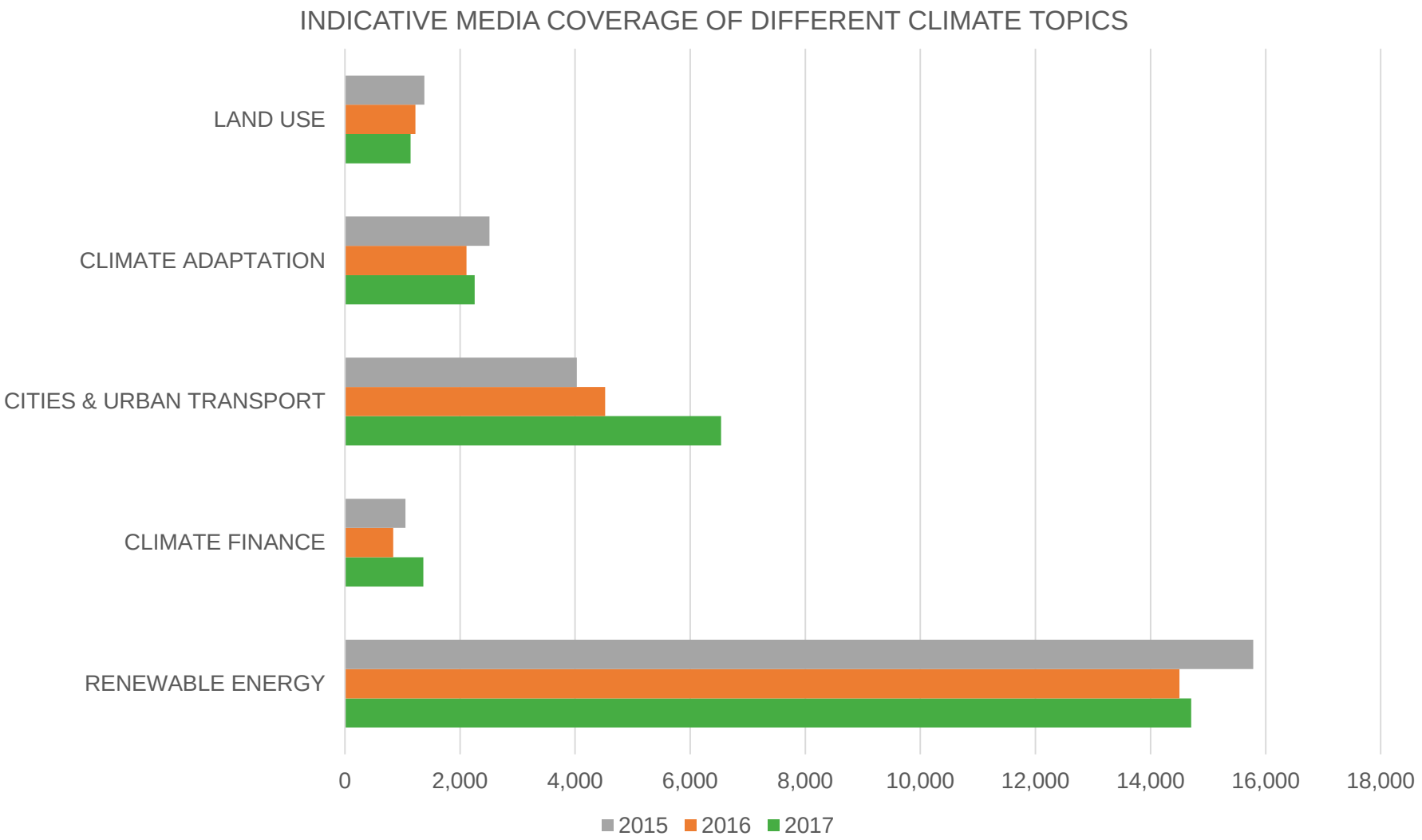


Global Mitigation Potential: *Approximate Number of Cars Removed Each Year in Millions*

= 50M cars

[1]Cost-Effective

Challenge: Awareness is Low



Source: *Browning Environmental*

Report to IAC

- Definitions/Examples/Opportunities
- Quantify Outcomes
- Suggest Approaches

Definitions

- **Land Use**: the total of arrangements, activities, and inputs that people undertake in a certain land cover type. Categories of land-use types (cropland, forest land, wetlands, and peri-urban land) inform the potential for carbon sequestration from system management, conversion, and enhancement.
- **Nature-based solutions**: strategies that conserve, create, restore and employ natural resources to enhance climate resilience. Nature-based solutions mimic natural processes or work in tandem with man-made engineering approaches to address natural hazards and to sequester and store greenhouse gases.

Massachusetts Potential

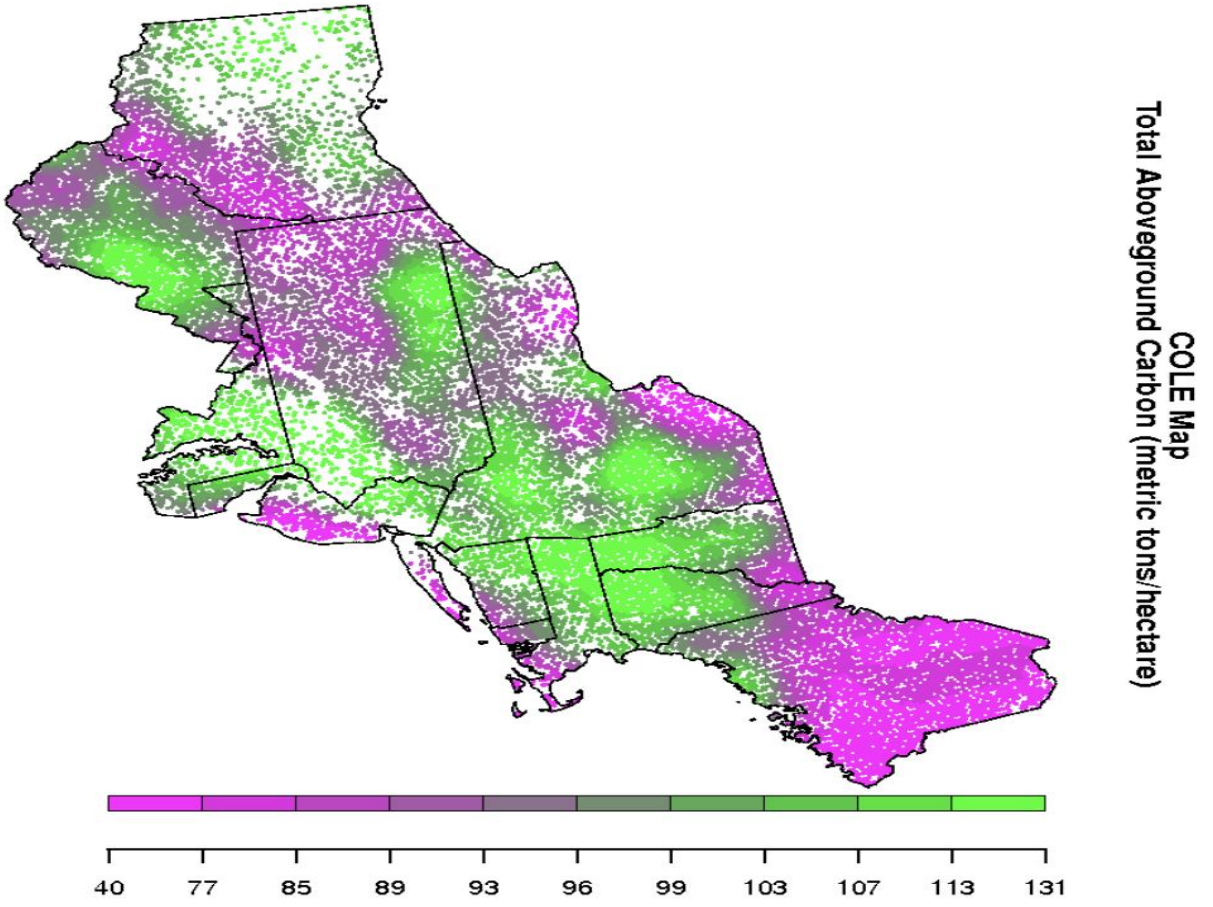
Green carbon (forests)

Blue carbon (eelgrass/saltmarsh)

Teal carbon (inland wetlands)

Brown carbon (ag soils)

Total Above Ground Carbon



Two Examples: Land Use and Nature-Based Solutions

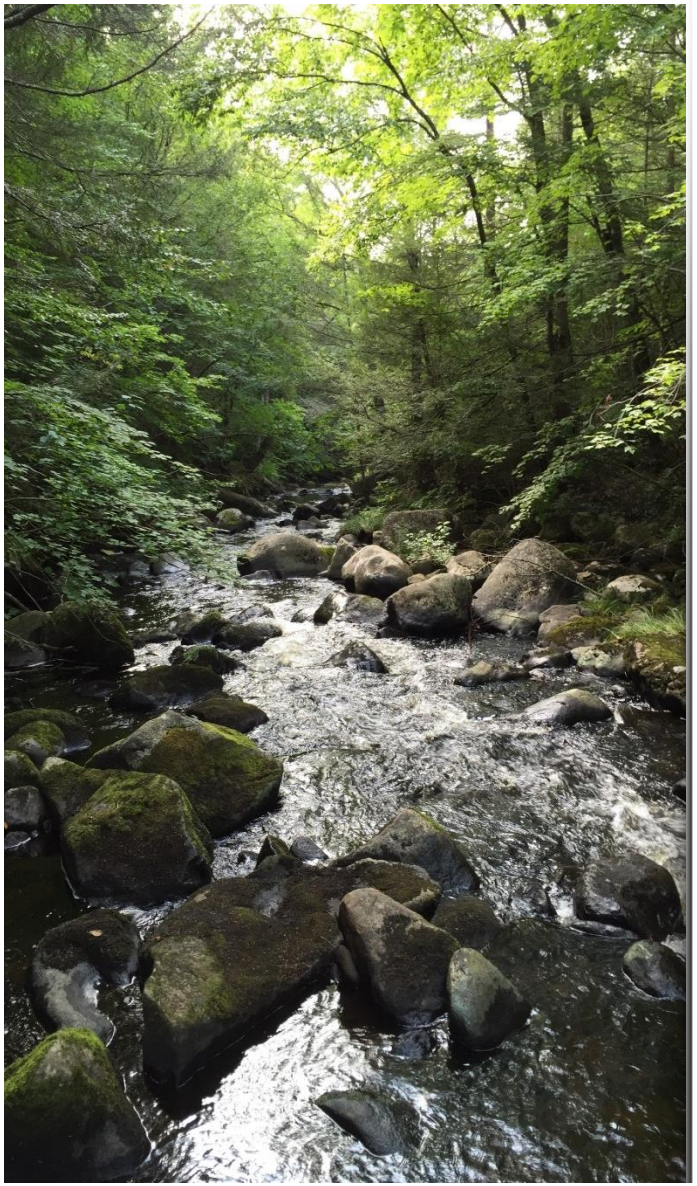
Protect Forests

Protecting forest land to provide carbon and other benefits

Greening Gateway Cities

Planting city trees to provide environmental and economic benefits

Protect Forests – absorbs 15% of MA carbon



Stores significant amounts of carbon, and provides many other co-benefits

- Carbon benefits
- Wildlife habitat
- Drinking water
- Public recreation
- 4X ROI
- Increasing benefits
- Permanent benefits

Example: Greening the Gateway Cities

The opportunity to provide significant benefits while strengthening and beautifying communities

- Carbon benefits
- Economic boost
- Cleaner water
- Employment opportunities
- Lower Energy Costs
- Healthier families
- Quality of life

MA Policy Opportunities

Natural Systems:

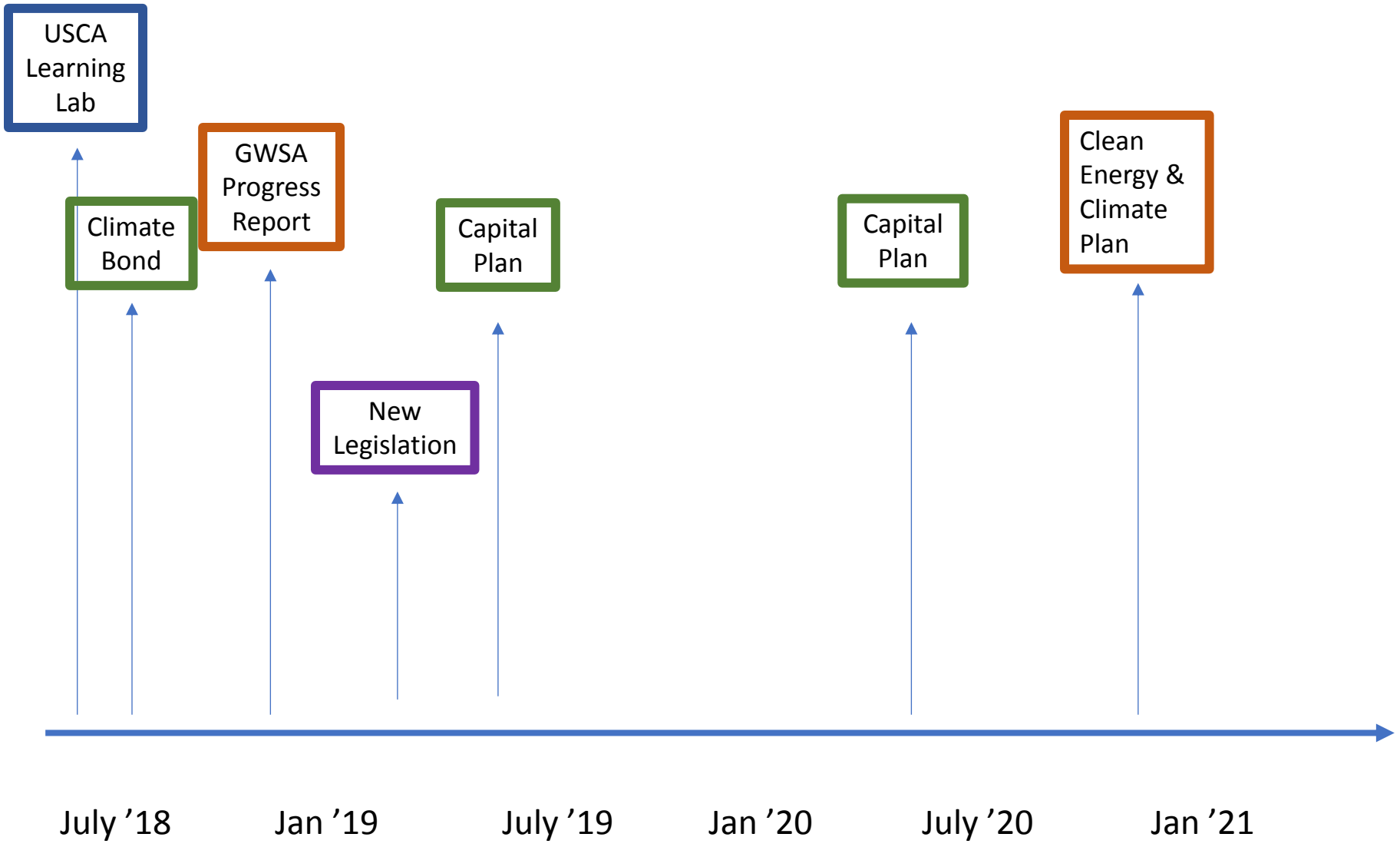
- No Net Loss of Carbon Stores
- Natural Forest Management

Built Environment:

- Urban Forest Management (street trees)
- Storm/Wastewater Management

Complementary Suite of Policies

WHAT'S NEXT? POLICY TIMELINE



"*Natural climate solutions are vital* to ensuring we achieve our ultimate objective of full decarbonization and can simultaneously boost jobs and protect communities in developed and developing countries."

-- Christiana Figueres, Convener of Mission 2020 and former head of the UN Framework Convention on Climate Change

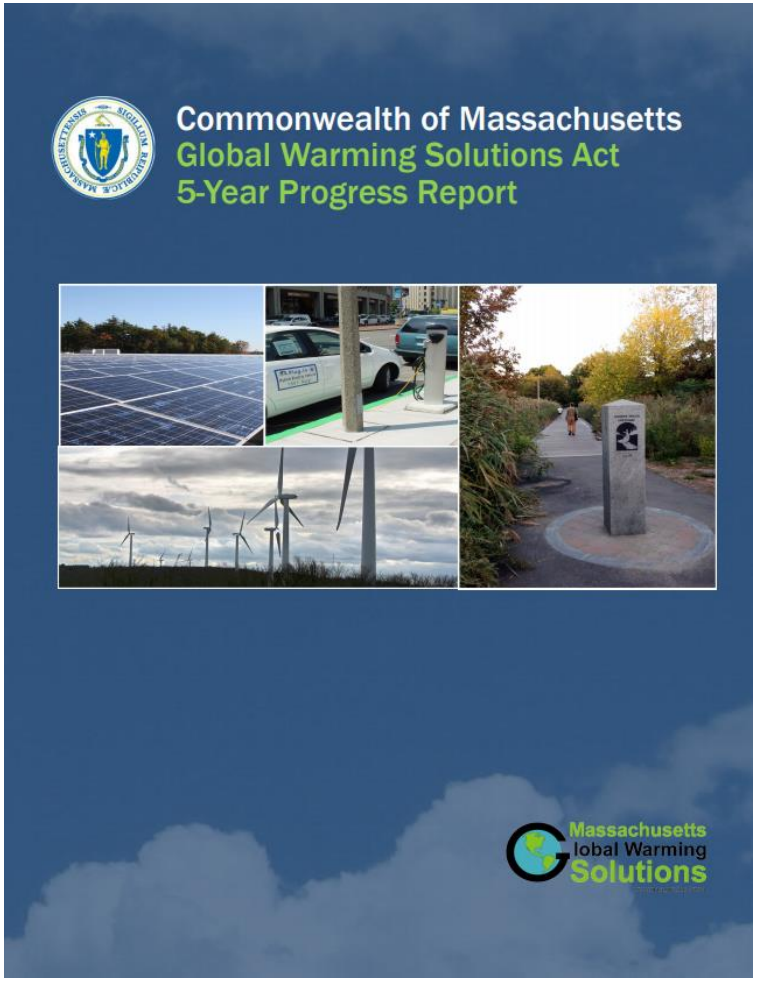
GWSA 10-Year Progress Report: Discussion on scope & content

GWSA Section 5 requirements

- Report on GWSA implementation progress and recommendations every 5 years.
- The report shall include, without limitation:
  - Equity, cost benefits
  - Potential impacts on low-income communities
  - Treatment of early emission reductions
  - Interaction with federal and state air quality standards
  - Other societal benefits
  - Potential administrative burden
  - Leakage outside state borders
  - Relative contribution to statewide GHG emissions
  - Whether GHG reductions are "real, permanent, quantifiable, verifiable and enforceable"
  - Recommendations for future policy action

GWSA 5-Year Progress Report

- Discussed:
  - Progress on GHG emissions and reductions in each major sector and across sectors;
  - Collaboration and coordination between state agencies and with IAC;
  - Capacity building to support and manage effective GWSA implementation;
  - Recommendations to increase pace of GWSA implementation;
  - Massachusetts Climate Change Adaptation Report in 2011, its findings, and next steps.



GWSA 10-Year Progress Report

- IAC feedback on scope and content?