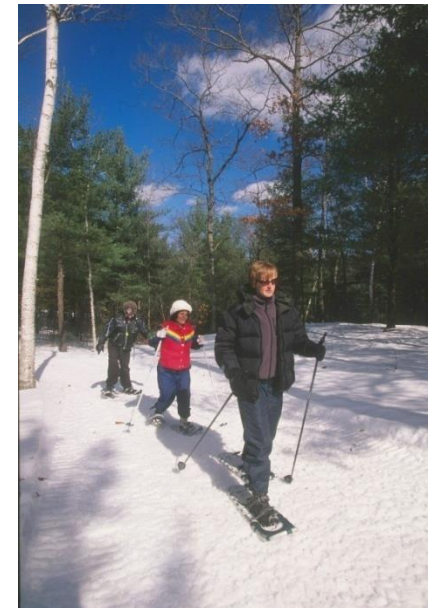


Department of Conservation and Recreation

dcr
Massachusetts



Water Conservation Strategy and Initiatives
Presented by Stephen Brown, Project Manager
September 13, 2018

DCR Mission



To protect, promote and enhance our common wealth of natural, cultural and recreational resources for all.

dcr
Massachusetts



DCR is...

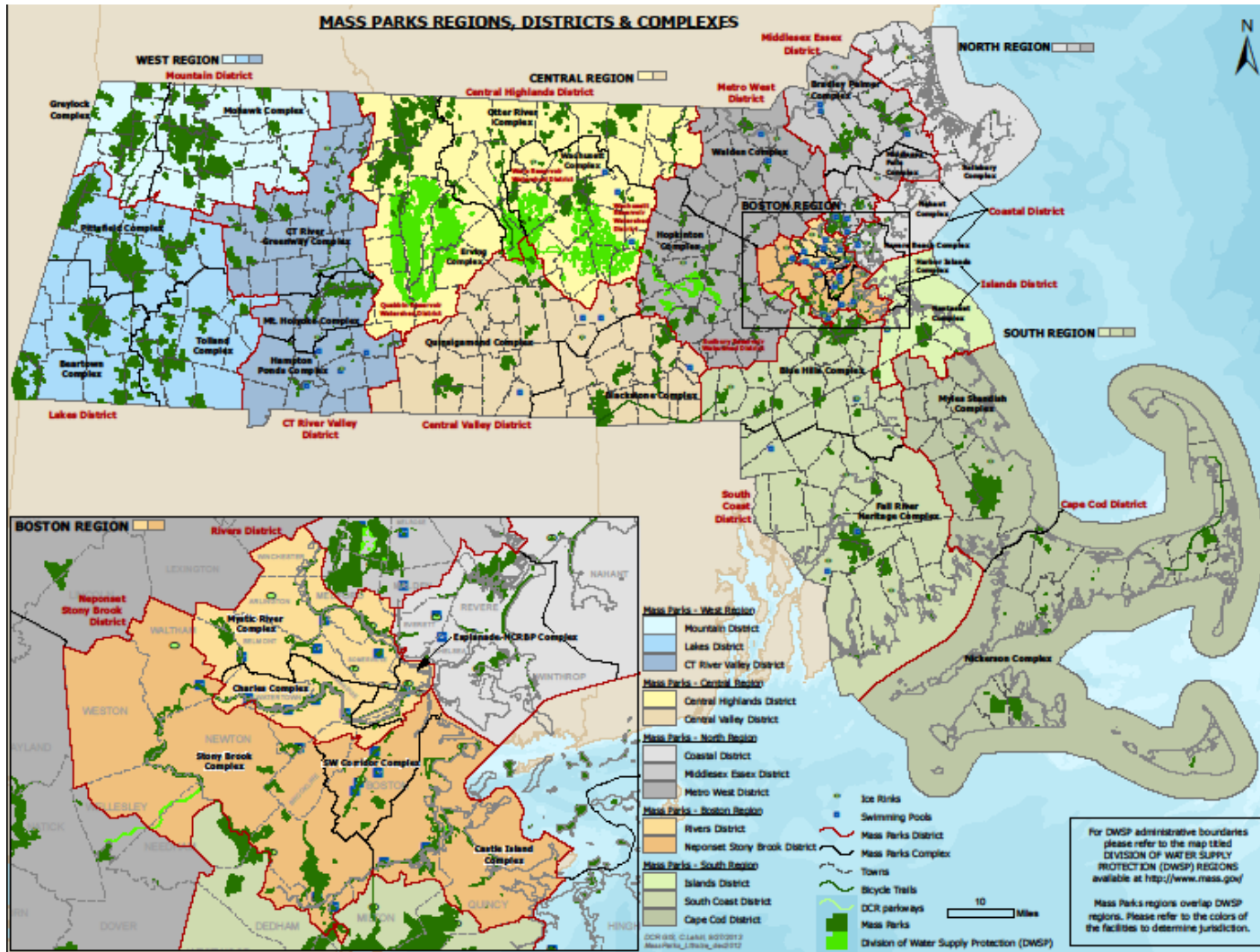
- 449,000 acres, including forests, beaches, campgrounds, & mountains
- 129,000-acre watershed supplying drinking water for 2.5 million residents
- 200+ staffed park facilities
- 2,000 miles of trails
- 3,525 campsites



dcr
Massachusetts



DCR is...Massachusetts





EO 484 & 515



Leading By Example

Clean Energy & Efficient Buildings

Environmental Purchasing Policy

Environmental Preferable Products

What you do
has far greater
impact than
what you say.

- Stephen Covey

DCR Plugged In



- Leading By Example Program
- Department of Energy Resources
- Div. of Capital Asset Management and Maintenance
- Operational Services Division



Driven by Targets and Collaboration



- **Targets:** Greenhouse Gas Emissions, Energy Consumption, Electrical Consumption, Green Building and Potable Water Use
- **Collaboration:** Among Leading By Example Council members

Massachusetts Leading by Example State Government Progress – as of June 2018



Greenhouse Gas (GHG) Emissions



↓ **28%**

2004 -2017

Energy Use Intensity per Square Foot



↓ **15%**

2004-2017

Electricity via Renewable or Onsite Generation



20%

In 2017

Heating Oil Consumption at State Facilities



↓ **84%**

2006-2017

23.3 MW Installed Solar PV at State Sites



15.2 MW

Since 2015

76 LEED Certified State Buildings



38

Since 2015

116 Electric Vehicle Charging Stations at State Sites



54

Since 2015

Leading by Example Grants Awarded

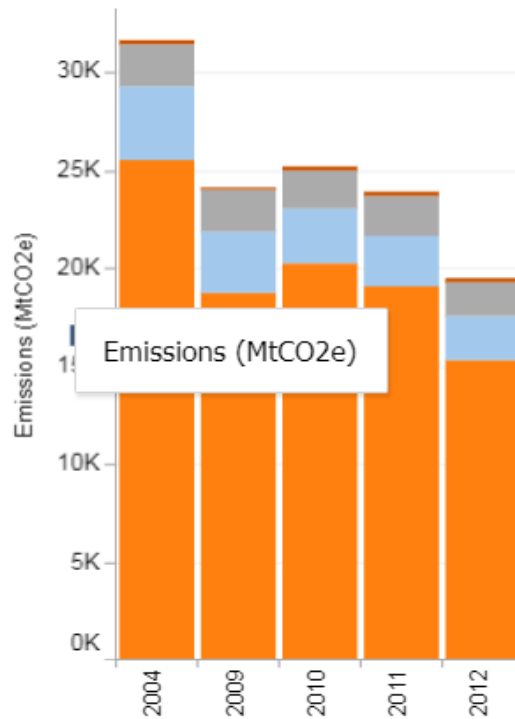


\$10.5 M

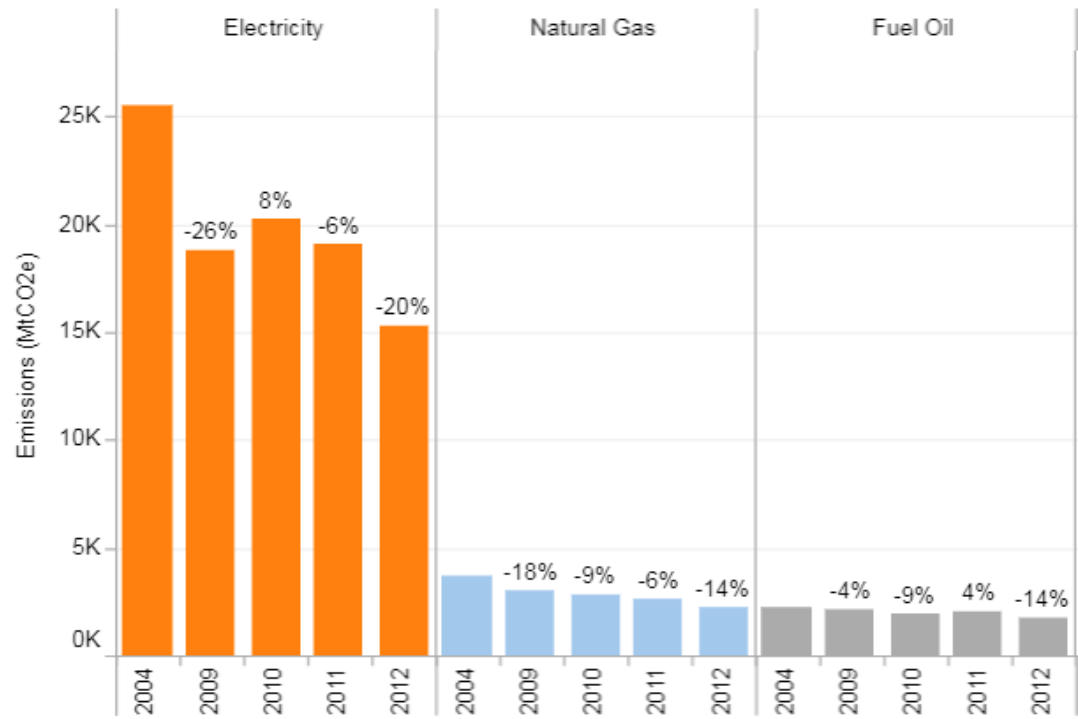
Since 2015

DCR By the Numbers

LBE - Overall



LBE - Overall by Fuel



LBE - Overall Table

			2004	2009	2010	2011	2012
Electricity	Emissions (MtCO2e)	% of total for year	81%	78%	81%	80%	79%
		Value	25,504	18,767	20,249	19,050	15,277
Natural Gas	Emissions (MtCO2e)	% of total for year	12%	13%	11%	11%	11%
		Value	3,711	3,050	2,782	2,610	2,237
Fuel Oil	Emissions (MtCO2e)	% of total for year	7%	9%	8%	8%	9%
		Value	2,235	2,140	1,946	2,019	1,732
Others	Emissions (MtCO2e)	% of total for year	1%	1%	1%	1%	1%
		Value	210	183	151	209	213



Water Conservation Standards

- EO 484 Target: “reduce potable water use, as compared to 2006, by 10% by 2012 and 15% by 2020.”

➔ Challenge: Without data and metrics, progress is difficult to measure.

Initiatives:

- Boston & Water Sewer.
\$912k/year, 100 accounts
- Post-project evaluation of upgrade:
Scusset Beach State Reservation



DCAMM

Accelerated Energy Program/ Utility Vendor Program

- 186 “Quick Fix Sites” (<\$100k/site) and 1 comprehensive energy site.
- Statewide, 700 sites, DCR 26% of sites
- For each site/facility the utility vendor:
 1. Conducts and write up an audit of the site
 2. Identifies ‘feasible’ Energy Conservation Measures (ECMs)
 3. Draft Audit and ECMs reviewed and signed off by DCR
 4. Vendor contacts vendor and ECMs installed



Office of Water Resources Input

1. Advocated for inclusion of “water use and conservation” within AEP.
2. Developed water conservation guidelines for AEP via interviews with plumbers, operation staff and various industry standards.
3. Provided guidelines on how to read water bills, conduct audits and gather information. Based on walk-throughs at pilot sites.
4. Identified appropriate products to use, mainly WaterSense-labeled products.
5. Conducted field inspections.



Preferred Performance Standards

- Tank toilets: 1.28 gpf
- Flushometer toilets: 1.28 gpf
- Urinals: 0.5 gpf
- Lavatory Faucets: metering
- Shower valves: metering





EPA WaterSense: 2006

High-efficiency toilet (HET)



High-efficiency urinal (HEU)



Update on Initiative

- 130 sites completed to date.
- ECMs installed driven by the ‘value of the water’ (data) and payback. If <10 years, a go.
- If upgrade triggers change in building and plumbing code, the ECM is by-passed: i.e., Bradley Palmer.
- ECM install driven by how “easy” it is to do the install. Cost of plumber plus travel is high.
- DCR now has \$ to supplement program

Example Upgrades



Low-flow showerhead with shut-off button

Shut-off button (convenient for shutting off water temporarily while soaping or shampooing).



- Faucet Aerators
- High-efficiency Toilets
- High-efficiency Urinals
- Low-Flow Showerheads

New Facilities and Upgrades

LEED BD+C: New Construction v3 - LEED 2009

Walden Pond Visitor Center



Potable water use reduced by 36.2%

WATER EFFICIENCY

7 OF 10



WEc1	Water efficient landscaping	4 / 4
WEc2	Innovative wastewater technologies	0 / 2
WEc3	Water use reduction	3 / 4

Pilgrim Memorial Park, Plymouth

Collaborated with Planning to refine scope of work to minimize irrigation:

- Purchased aerator & overseeder to improve soil health
- Engaged a WaterSense-certified designer
- Replaced proposed turf with drought-tolerant plants
- Reduced irrigated area



Operations Input

- Guidance on water efficiency best practices for DCR



Water Conservation Strategy and Initiatives

