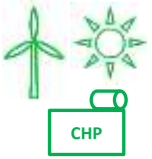
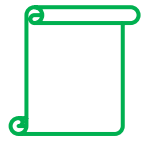
MA Leading by Example Council Meeting

DOER Massachusetts Department of Energy Resources

May 8, 2018

MASSACHUSETTS LEADING BY EXAMPLE PROGRAM

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

Greenhouse Gas (GHG) Emissions	**Energy Use Intensity per Square Foot**	**Electricity via Renewable & Onsite Generation**	**Heating Oil Consumption at State Facilities**
			
↓ 28% 2004 -2017	**↓ 15%** 2004-2017	**20%** In 2017	**↓ 84%** 2006-2017
23.3 MW Installed Solar PV at State Sites	**76 LEED Certified State Buildings**	**111 Electric Vehicle Charging Stations at State Sites**	**Leading by Example Grants Awarded**
			
15.2 MW Since 2015	**38** Since 2015	**53** Since 2015	**$10.5 M** Since 2015

DCR Mission

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

dcr

Massachusetts

DCR plays an important role in the lives of the people that live, visit and work in MA…..

- In the parks in your hometown…
- On the roads you take to work…
- At the beaches you visit…
- The playgrounds you bring your family to…
- In the water we drink….
- In the places your community treasures…

dcr
Massachusetts

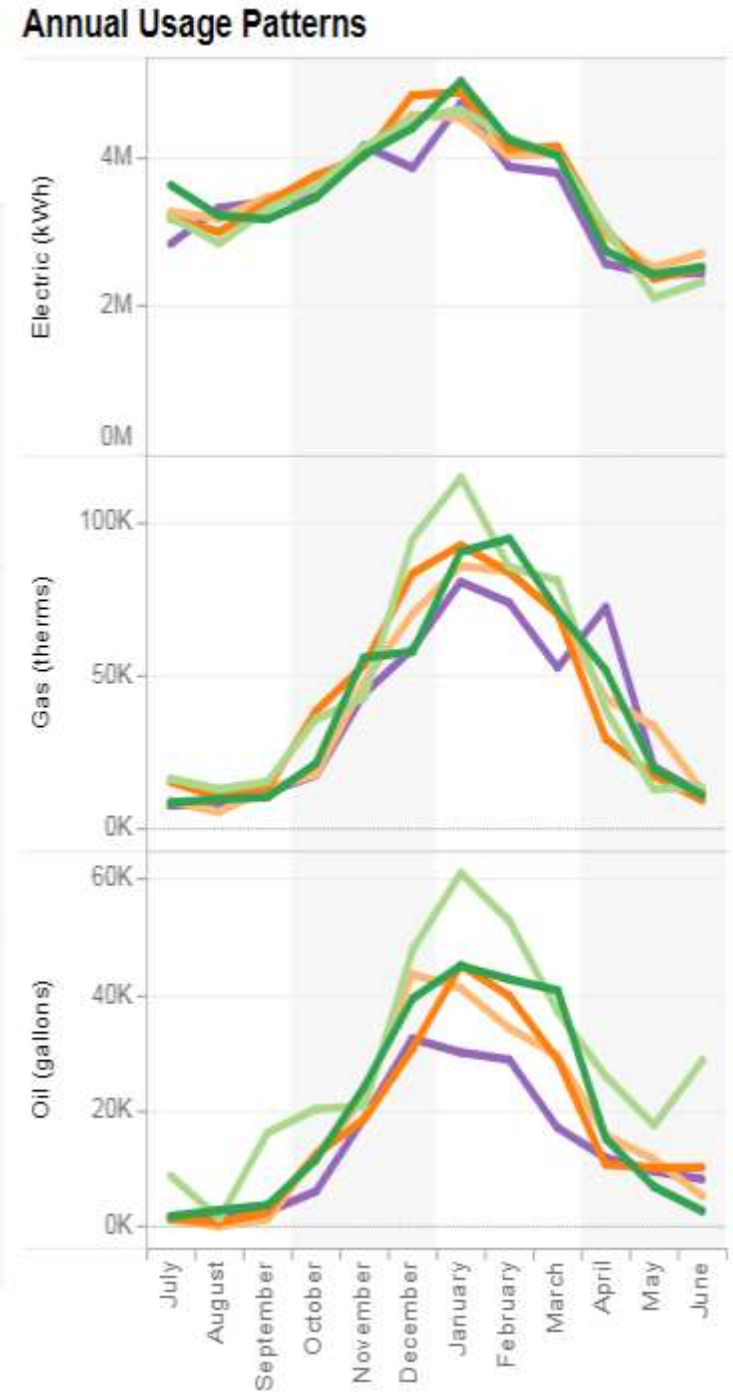
DCR is…

- 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
- Metro-Boston Historic Parkways
- 87 beaches
- 60 playgrounds
- 55 ballfields
- 37 swimming pools
- 39 ice skating rinks
- 145 miles of paved bikeways/trails
- 16 harbor islands
- 2 golf courses
- 1 Recreational Center
- 1 Schooner

DCR numbers:

Buildings: 2,379
Square Footage: 5,423,715
Street Lights: 13,000+

FUEL	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
Grid Electricity	40,766,741	39,958,719	39,224,463	38,523,360	37,019,939	35,426,519
Natural Gas	463,676	541,078	522,314	533,185	488,361	524,578
Oil 2	169,759	170,395	180,223	167,157	151,228	TBD



Camp Nihan

Gem of a campground nestled in the city! Ideal for groups to bunk in cabins or at a group site or on four campsites. $17/day. The location is great for day trips.

Purchased 1929 by BSA
Named after George Nihan

Sprague Lodge 1930

Part of MDC in 1996

Smallest campground

Evolving 1 → 3 Season

65 acres

Pellet biomass system

Commonwealth Updates

Residential Energy Scorecard Legislation

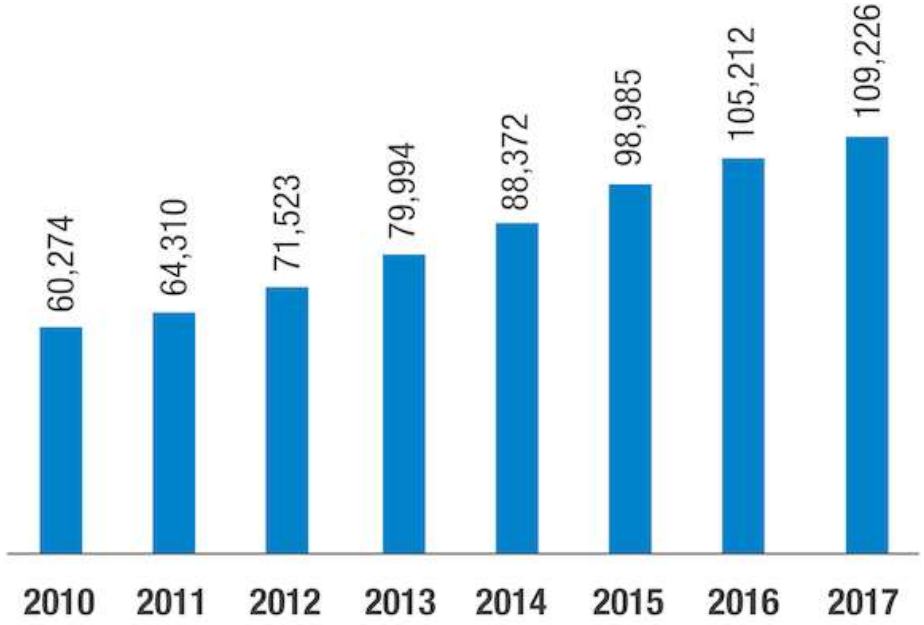
- Gov. Baker filed legislation in April
- Would require:
  - A home energy scorecard and energy rating be provided to homeowners as part of free residential energy efficiency assessments
    - Would be coupled with recommendations for cost-effective efficiency improvements
  - After January 1, 2021, home energy performance ratings be made available to potential homebuyers when 1-4 unit family homes publicly listed for sale

Scorecard would include an estimate of annual energy consumption and associated cost based on the home's physical features, such as lighting, insulation and heating equipment

Press Release, 2018

MA Clean Energy Industry Report

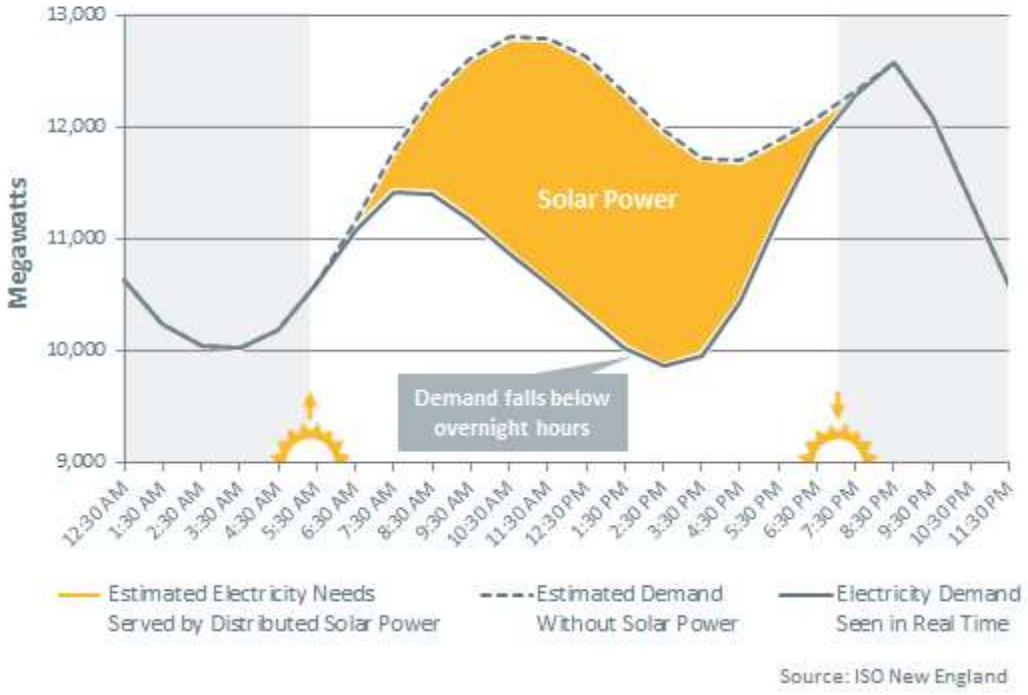
- **MassCEC 2017 Clean Energy Industry Report**
- **109,226 clean energy jobs** across Massachusetts



- **81% clean energy job growth** since 2010
  - 49,000 more workers since 2010
- Represents **2.3% of MA Gross State Product**

MA Solar 'Duck Curve'

Historic Dip in Midday Demand Follows Record-High Solar Power Output on April 21, 2018
A sunny spring day pushed distributed solar output to an estimated record high of 2,309 MW at 1:30 p.m. and drove down electricity demand on the regional power system. In effect, New England consumers were using more grid electricity while they slept than in the middle of the day. (Data subject to adjustments.)



Source: ISO New England

- On Saturday, April 21, the right combination of sunshine and mild weather led to light consumer demand on the high-voltage electric power system, coupled with record-high output from the more than 130,000 solar power installations in the region.
- **Midday grid demand dipped below overnight demand for the first time ever in New England.**

More information here from US DOE on addressing the duck curve

Battery-Powered Landscape Equipment

- Battery powered landscaping equipment:
  - eliminates on-site emissions and health impacts
  - Reduces GHG emissions
  - Eliminates need to transport gasoline and risk of spills
  - Lower noise levels for workers and neighbors
  - Less maintenance
  - Available for commercial uses
- Vendors added to statewide contract FAC88

Name of Bidder	Mowers	Blowers	Other Handhelds
Mean Green	x	x	
Ultra Auto dba Orlando	x	x	x
Casons		x	
Boston Lawnmower	x	x	

- Updated contract user guide coming soon
- Trainings TBD
  - Technical assistance available

LBE Solar Grant Program

LBE Solar Grant

- Program accepting applications very soon
  - All types of solar projects are supported
  - Per-watt incentive levels increased

State-owned Solar Canopies (>200kW)	$1.65/watt, up to $1 million per project
Third-party owned Solar Canopies (>200kW)	$1.10/watt, up to $750,000 per project
Innovative Solar	$0.65/watt, up to $350,000 per project
Conventional Roof/ground solar	$0.50/watt, up to $250,000 per project

  - Energy storage system adder – varies based on ownership structure and resiliency benefits

State-owned	$200/kWh, up to$250,000 per project
State-owned with islanding capabilities	$400/kWh, up to $400,000 per project
Third-party owned	$100/kWh, up to $125,000 per project
Third-party owned with islanding capabilities	$200/kWh, up to $200,000 per project

BMP Stakeholder Meeting

Corporate/Institutional Office Furniture and Equipment Reuse Best Management Practices

RecyclingWorks in Massachusetts

Free Assistance for Businesses and Institutions

- Online Resources
- Email and Phone Hotline
- Technical Assistance
- Events and Workshops

Funded by MassDEP,
delivered under contract by the Center for EcoTechnology

Furniture and Office Equipment Reuse

Stakeholder Engagement Process

- Three stakeholder meetings
- Distribute draft guidance for feedback
- Post to RecyclingWorks website
- Living resource

Benefits of Reuse

Benefits:

- Financial
- Environmental
- Community
- Customer & Employee satisfaction

Surplus Furniture Options

Inventory : know what you have

Reuse Options:

- Internal reuse
- Resale / Refurbish
- Local donation
- National donation
- International donation

State Facilities

- State Procurement Contracts
- State Surplus Property Program

https://www.mass.gov/surplus-property-program

Reuse Considerations

- Type(s) of furniture
- Quantity/Inventory
- Quality/Condition
- Where and how stored
- Labor and support
- Transportation
- Budget

TERC and GRRO

End of Life Recycling

- Repair or reuse parts
- Complete recycling of item

Sustainably Procure New Furniture

- Purchase quality furniture
- Purchase from stores that have take back programs
- Re-evaluate furniture supplier

Upcoming Events

Furniture and Office Equipment Reuse Stakeholder Meetings:

- **Western MA:** EcoBuilding Bargains, Springfield, May 17
- **Eastern MA:** Boston Children's' Museum, Boston, May 24

WasteWise Spring Forum: College of The Holy Cross, Worcester, May 10

RecyclingWorks Hotline

(888) 254-5525

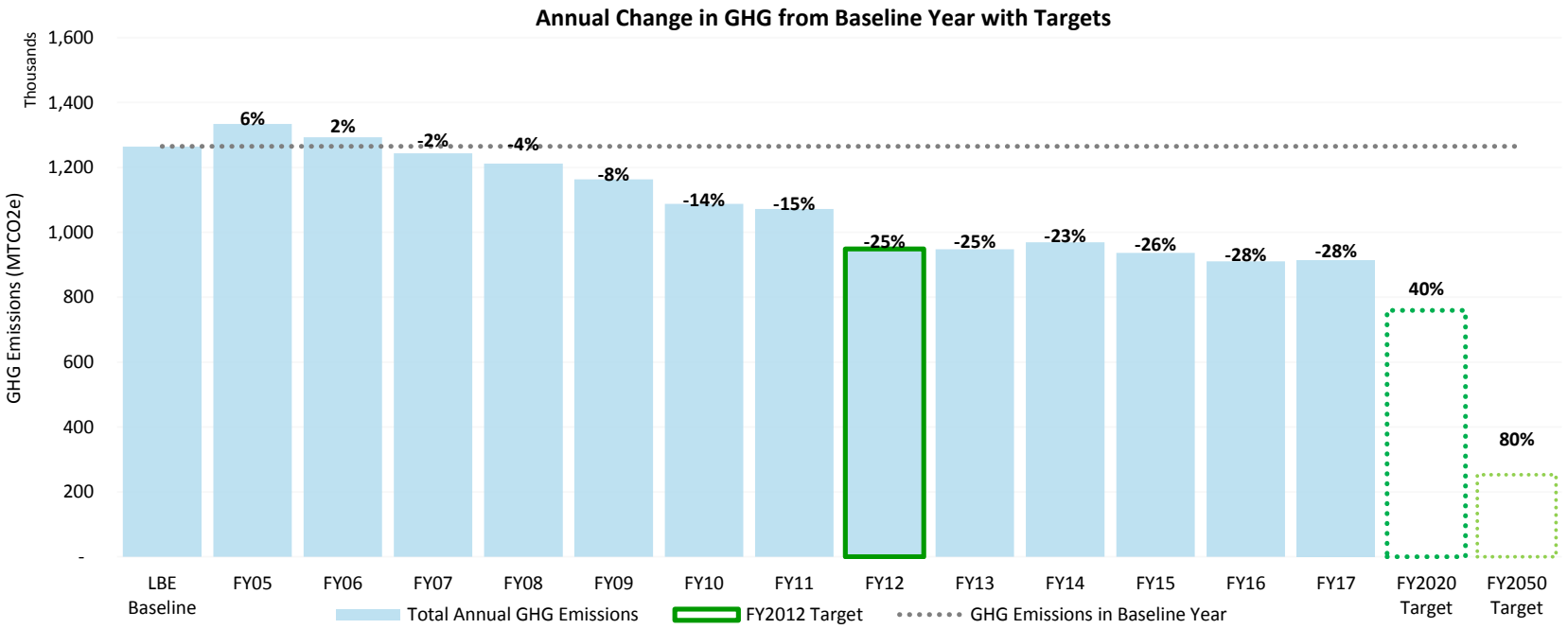
info@recyclingworksma.com

www.RecyclingWorksMA.com

Post 2020 LBE Targets Brainstorm

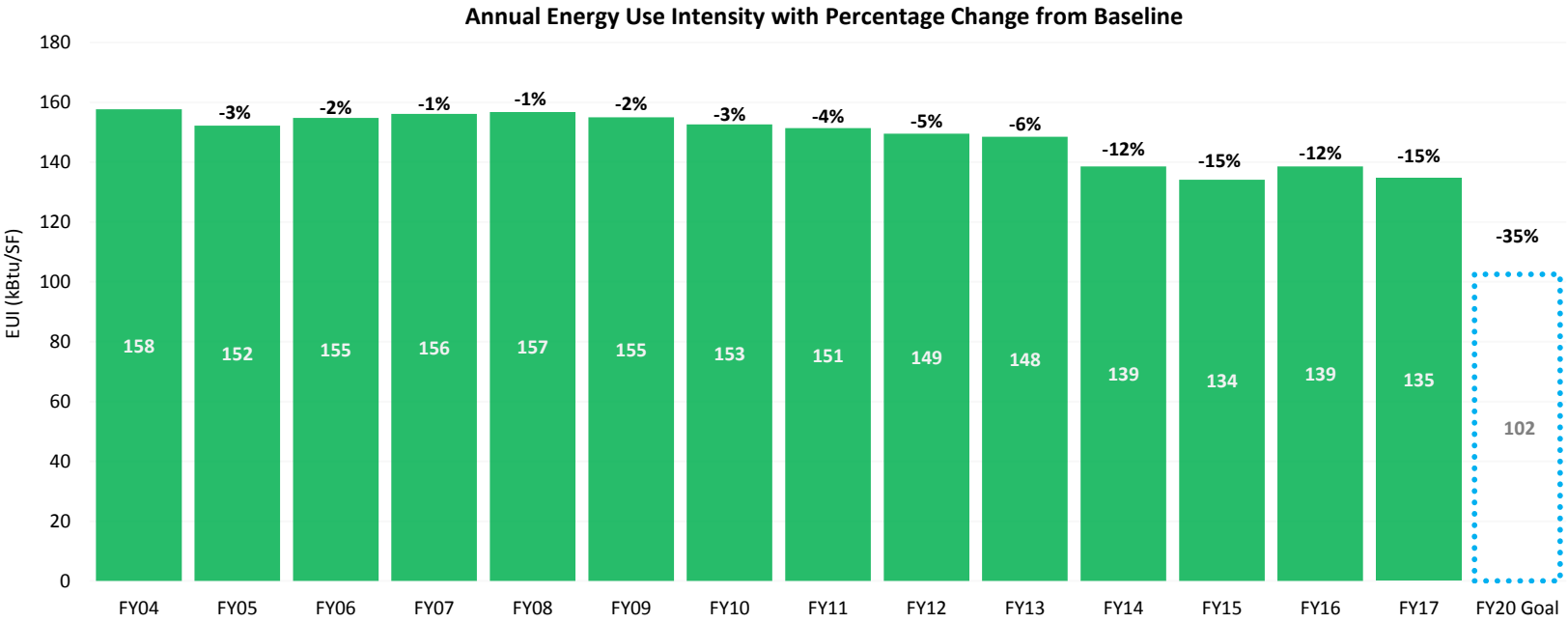
LBE Progress Review: GHG Emissions

- Overall GHG emissions have decreased 28 percent from the LBE Baseline through FY17 reducing overall annual emissions by some 349,398 metric tons.



LBE Progress Review: Energy Use Intensity

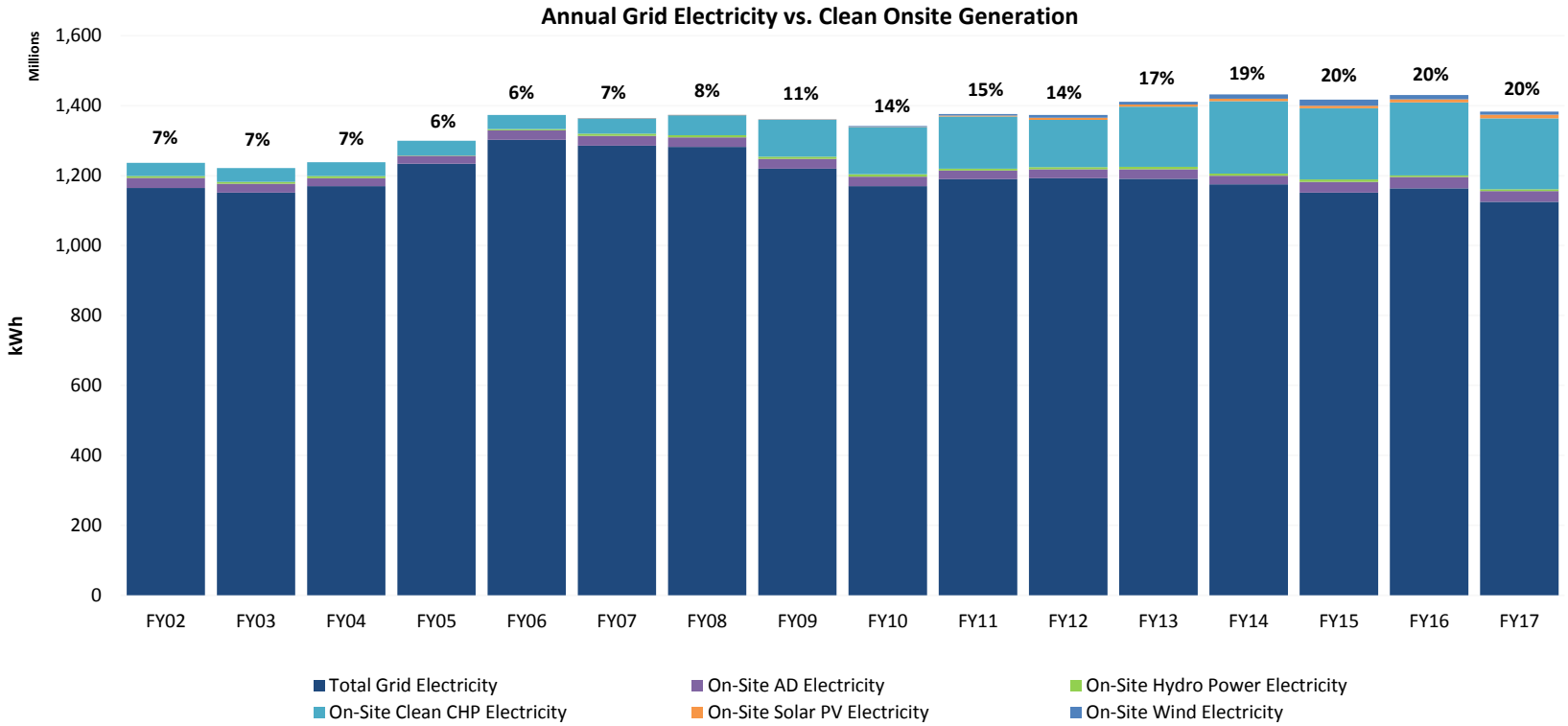
- Overall energy use intensity (kBtu/per square foot) decreased 15% from the Leading by Example baseline (Fiscal Year 2004) through Fiscal Year 2017 for the 44 Leading by Example partners whose energy use is tracked using this metric.



*LBE does not track square footage or EUI for 5 of the 49 state agencies/campuses, due to the unconventional nature of energy use at their facilities.

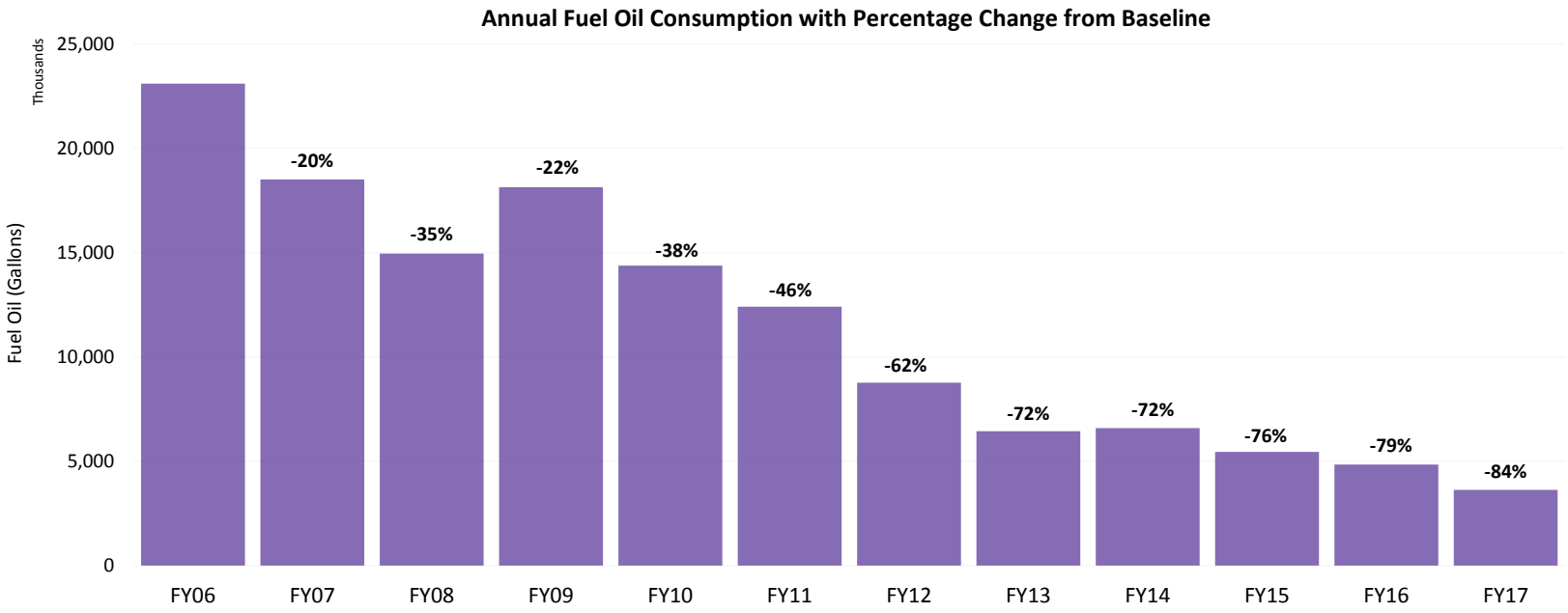
LBE Progress Review: Clean Onsite Generation

- In Fiscal Year 2017, 20% of state government's electricity consumption came from on-site clean generation, an increase from 7% in Fiscal Year 2002. Renewable and on-site generation includes anaerobic digestion, hydro power, clean combined heat and power (CHP), solar photovoltaic, & wind power.



LBE Progress Review: Oil Reduction

- Overall fuel oil consumption for buildings has decreased 84% from FY06 through FY17, a reduction of more than 19 million gallons.



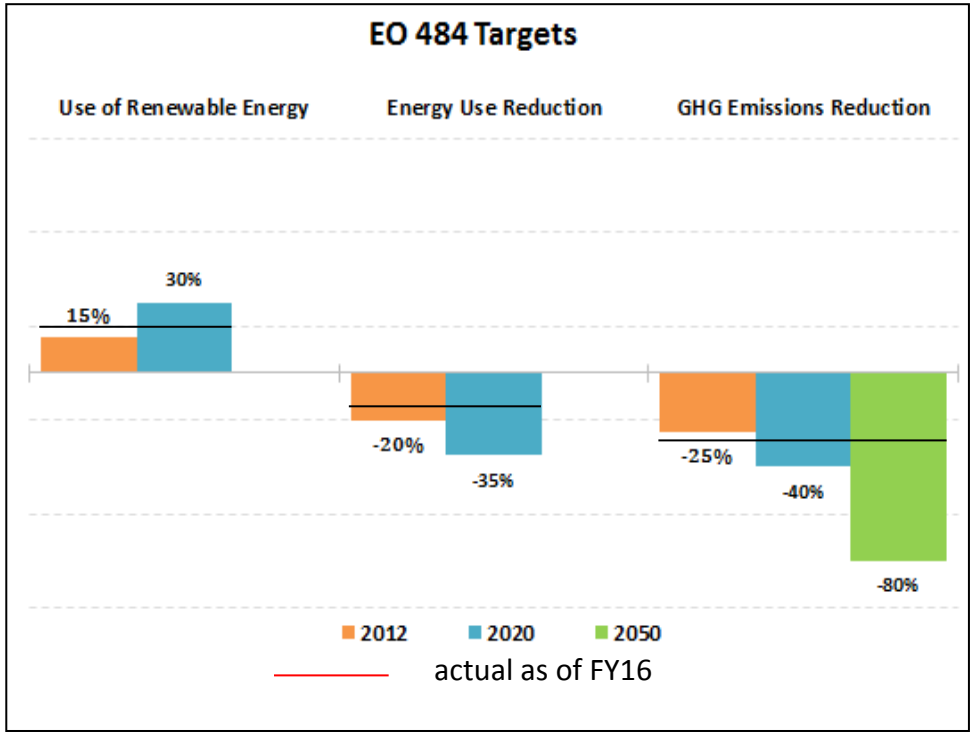
*Oil consumption for non-building use not included (e.g. vehicles, maritime vessels, flood control dams, etc.)

LBE Post-2020 Brainstorm: Overview

- Some EO 484 LBE targets end in 2020, GHG emissions target has 2050 goal
- Priorities, strategies, technologies, may have changed
- MA EO 569 directs MA to **"expand upon existing strategies for the Commonwealth to lead by example in making new, additional reductions in greenhouse gas emissions from Government operations"**
- Be prepared for possible requests to establish interim targets
- *LBE seeking to develop simple, straightforward framework*

Breakout #1: Metrics & Targets

A. Current EO



- Reduce potable water use: 10% by 2012 and 15% by 2020
- Biofuel: minimum blend of 3% bio-based materials for all heating applications that use #2 fuel starting with the winter of 2007-2008, and 10% bio heat blend by 2012

Breakout #1: Metrics & Targets

B. New Ideas/Possible Options (1)

- Use of Renewable (and Onsite) Energy
  - Set goals for 80/100% renewable by 2040/2050 with interim goals prorated accordingly?
  - Keep goals the same, but add on-site clean energy as option as long as is xx% cleaner than the grid
  - Establish installed MW goal instead of use goal (helps with REC issue)?
  - Add new goals for renewable thermal?
  - Allow for RPS to be included in target?

Breakout #1: Metrics & Targets

B. New Ideas/Possible Options (2)

- Energy Use Reduction
  - Toughest goal so far to achieve
  - What is realistic yet aggressive long-term EUI reduction target? 50%? 75%? By When?

- GHG Emissions Reduction
  - Set targets for 2030 and 2040 that bridges the gap between 40% (2020) and 80% (2050) – 13.33% average per decade?
  - Set other targets for every 5 years?
  - How to incorporate RECs into calculations? Allow for purchase of RECs/offsets? to meet goals?
  - Emissions targets remain for state as whole, apply to each secretariat or apply to each agency/campus?

Breakout #1: Metrics & Targets

B. New Ideas/Possible Options (3)

- Eliminate numerical target for biofuels due to statewide policy issues that make this goal moot?

- Tracking water consumption has proved very difficult and in some cases impossible – should a water reduction target remain or should it be moved into a more targeted program?

Breakout #1: Metrics & Targets

C. Breakout session/questions

- Are the targets the right ones/right categories?
  - Should GHG, EUI, and renewables continue to be primary metrics to track?
    - If yes, should specifics of targets be changed in any way (e.g. should renewables include onsite CHP or installed capacity)?
      - Should additional targets be established (e.g. EV acquisitions/ charging stations, other)?
- Timing?
  - Should targets be tracked every 5, 10, (or other) years?
    - How far in future should targets be set to (e.g. 2050)?
- Should targets be set for state government as a whole or agency/ campus-specific?

Breakout #2: Other Key Initiatives/Programs/Plans

A. Current EO

- Comprehensive, large-scale energy efficiency projects at all appropriate facilities over 100,000 square feet
- Mass. LEED Plus standard requires all new construction to perform 20% better than code

Breakout #2: Other Key Initiatives/Programs/Plans

B. New Ideas/Possible Options

- New construction standards:
  - Low, Zero, or Energy Positive Buildings
  - Passive design
  - Meeting energy metrics
  - LEED Gold
- Incorporate resiliency into all capital projects
- Consider energy storage for all applicable renewable projects
- Target no-net GHG emissions for all projects
- Standards for efficient building operations
- Data centers consolidation & efficiency efforts
- Plug load management strategy

Breakout #2: Other Key Initiatives/Programs/Plans

C. Breakout session/questions

Do we keep the existing broad program areas?	If yes, should they be more specific?
Should some or all of the new ideas/possible options be included?	If yes, which ones?
Are there other program areas to consider?	If yes, which ones?

Breakout #3: Roles, Responsibilities, Structure

A. Current EO

LBE Responsibilities (Include)

- LBE collects annual energy and sustainability state data

Oversight Agency Coordination with LBE

- DCAMM: coordinate major energy projects
- OSD: continue to make environmentally preferable products available on statewide contract

Agency/Campus Responsibilities (Include)

- LBE contact at each agency/campus
  - Disseminate all applicable information from the Committee (Council) to agency staff
- Required data reporting

Breakout #3: Roles, Responsibilities, Structure

B. New Ideas/Possible Options

LBE

- Enhanced public-facing energy and sustainability data transparency
- LBE Council to include members of Exec. Offices, policy/oversight agencies, agencies with "large" building portfolios and encourage participation from all public higher-education campuses

Oversight Agency Coordination with LBE

- Expanded role for agencies with topical expertise and authority
  - MassDEP oversee waste reduction and recycling (data provided by LBE)
  - EEA oversee water conservation (data provided by LBE)

Agency/campus given additional responsibilities or roles broadened

- Agencies/campuses strive to meet statewide metrics
- LBE coordinator and LBE Teams (or equivalent) at agencies with more than 75 FTE staff (change from all)
- Establish or enhance data communication to staff and public
- LBE Teams regular reporting to senior staff

Breakout #3: Roles, Responsibilities, Structure

C. Breakout session/questions

Are there any existing roles/responsibilities that should be eliminated?	If yes, which ones?
Should some or all of the new ideas/possible options be included?	If yes, which ones?

Next Steps

- *LBE to review ideas and information provided today*
- *Feel free to send additional input to LBE Team*

Optional Tour of Pellet Biomass System