

**Boston Climate Action Plan Leadership Advisory Committee:  
Mitigation Measures**

**July 21, 2009**

**Buildings Program Details**

State: Utility Energy Efficiency Programs

- Covers efficiency in new construction and retrofits
- In lieu of new generation, utilities must first try to meet demand through all cost-effective energy efficiency
  - Expect 2-3X current SBC funding levels
  - Total 2010-2012 spending will equal around \$1.1 billion
- EEAC consultants suggest 3% savings per year over 10-year period for electricity (including 0.5% CHP) and 2% savings per year for natural gas
- Funded through System Benefit Charge, RGGI, FCM, and other minor sources

State: Building Codes

- Must adopt the most recent IECC codes for commercial and residential, within one year of code update
- IECC codes updated every three years

Federal and State: Appliance Standards

- The State has adopted efficiency standards for several types of appliances, some of which have been preempted by recent Federal standards
- Federal standards now cover or are planned to cover 30 product classes, primarily via the ENERGY STAR program
  - Residential standards include most major appliances, e.g. refrigerators, dishwashers, room AC units, etc.
  - Commercial standards include multiple types of commercial refrigeration, multiple types of commercial AC, boilers, warm air furnaces, and water heaters
- MA original standards still in effect are:
  - Medium-voltage dry-type transformers (2008)
  - Metal halide lamp fixtures (2009)
  - Residential furnaces and boilers (TBD)
    - States must seek and be granted waivers from federal preemption to implement state furnace and boiler standards. MA is developing its application
  - Residential furnace fans (TBD)
    - Also preempted; DOE to set a standard by January 2014, which might be effective three years later
  - State-regulated incandescent reflector lamps (2008)
  - Single voltage external power supplies (2008)

## Appendix: Existing Program/Policy Details and Reduction Calculation Assumptions

### State: Lead-by-Example in State Buildings

- Goal to reduce consumption 20% by 2012 and 35% by 2020 (from 2004 levels)
- New buildings and major retrofits must meet MA LEED Plus
  - energy performance of 20% better than the Massachusetts Energy Code
  - reducing outdoor water consumption by 50% and indoor water consumption by 20%
- Minimize building life-cycle cost through use of EE and RE

### State: Renewable System Benefit Charge

- MTC Renewable Energy Trust administers funding for state renewable energy projects
- Incentive program to construct renewables in MA
- Examples include Commonwealth Solar, etc.

### City: RENEW Boston

- Being created to assist with Mayor's goals
  - 200 megawatt electricity demand response and avoided demand growth through energy efficiency and alternative energy installations by 2017
  - 25 megawatts of solar power installations by 2015
    - Potential GHG savings of around 17,000 tons CO2

### City: Federal Stimulus \$ (EECBG)

- Energy Efficiency Conservation Strategy
  - City to receive \$6.5 million to spend next 36 months
  - Reduce Boston GHG emissions 40K metric tons per year and create 100 green-collar jobs
    - Energy retrofit for existing homes
    - EE for multi-family homes
    - Residential retrofit and solar pilot
    - Rental property energy audit ordinance R&D
    - Community based outreach
    - Small business EE
    - Energy performance contract for municipal buildings
    - Solar on Archives
    - Municipal Energy Office
    - LED street lights pilot

### City: Green Building (Article 37)

- Ensure large new buildings are LEED certifiable
- Applicable to any Proposed Project which is subject to Large Project Review (Section 80B) by the BRA
- Achievable via Boston Green Building Credits and LEED Certification

City: LEED Silver for Municipal Buildings

- For all municipal buildings
  - New construction
  - Major renovations
- Must achieve LEED Silver certification

City: Green Affordable Housing Program

- All affordable housing supported by the Boston Department of Neighborhood Development must achieve LEED Silver and/or ENERGY STAR qualification
  - Project size determines which standard
  - Requirement for all new construction

**Transportation Program Details**

Federal and State: Obama/CAFÉ

- Increase fleet averages for new car sales to 35.5 mpg by 2016
  - 5% per year between 2012 and 2016
- Designed to be consistent with Pavley, but will preempt
  - New CAFÉ rules are for 2012 - 2016
  - Waiver provides precedent for CA to petition for stricter standards for after 2016
  - CAFÉ addresses efficiency (mpg) rather than emissions, but impact is essentially the same

State: Pavley

- Massachusetts adopted California's Low-Emission Vehicle Program in 2006, committing to a 30% reduction in average new vehicle greenhouse gas emissions from 2002 levels by 2016.
- EPA granted waiver to CA, allowing CA and other states to implement (June 2009)
- CAFÉ will preempt Pavley beginning in 2012

Federal and State: Renewable Fuel Standard

- The Renewable Fuel Standard program will increase the volume of renewable fuel required to be blended nation-wide into gasoline from 9 billion gallons in 2008 to 36 billion gallons by 2022.
  - New 2008 goal up from 5.4 billion gallons in RFS1
    - Fuel type breakdown is not available for 2008
- RFS2 is open for public comment
  - Slightly more aggressive than original RFS in EPA 2005
  - 2020 target is 30 billion gallons blended
  - Fuel type breakdown for 2020 will be:
    - Cellulosic: 10.5
    - Biomass-based diesel: TBD, but not less than 1.0
    - Advanced biofuels: 15.0

## Appendix: Existing Program/Policy Details and Reduction Calculation Assumptions

### State: Smart Growth Zoning

- Provides financial incentives for municipalities to increase density and build affordable housing in areas with good access to transit
  - Municipalities must provide as-of-right higher density residential development zoning to be eligible for incentives
  - Proximity and access to existing and/or planned transit is an important component

### State: Anti-idling

- Vehicles prohibited from idling longer than 5 minutes
- Punishable by \$100 fine for 1st offense; \$500 for subsequent offenses

### City: Parking

- Parking Freezes
  - Cap the total number of off-street parking spaces in three areas of Boston
- Meter fees
- Zoning rules
  - parking requirements
- TAPA requirements for parking for shared car services, van pool and carpool vehicles
- Infrastructure for plug-in hybrids

### City: Hybrid Taxis

- Mandate for all 1,800+ cabs by 2015 to be 35 mph+/hybrid technology
  - Phased in for replacement vehicles
  - Commercial rule rather than human health rule (distinction from NYC attempt)

### City: Alt-fuel Municipal Cars

- In September 2005, Mayor Menino announced that all new vehicles purchased by the City of Boston will be alternative fuel vehicles or the most fuel-efficient vehicles available
- Requirement in 2007 to use 5% biodiesel blend in all City diesel vehicles

### City: Smart Growth Overlay

- Article 87 works in accordance with MA 40R
  - Promote compact design and preserve open space
  - Mixed land uses
  - Provide a variety of transportation options
- Article 37 (Green Building) allows developers to obtain Boston Green Building Credits for Transportation Demand Management (TDM) measures

### City: Access Boston

- Long range plan for reducing Vehicle Miles Traveled (VMTs) in Boston
  - Promote trip reduction
  - Promote use of public transit
  - Improve flow of remaining vehicle traffic
- A physical planning program, e.g. bicycle and pedestrian infrastructure development

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### City: Anti-idling

- Anti-idling enforcement and education for city generally and City (municipal) vehicles
  - Enforce State law
  - Dashboard “reminder” stickers and other information targeting municipal employees

### City: Bicycle Programs

- Boston Bikes launched in 2007
  - Hired a Bicycle Coordinator
- City Will:
  - Install more bike racks (100’s per year)
  - Conduct a mapping project for planning bike routes
    - Line 10 miles of new on-road bike lanes per year
- City Hall has a bike pool/bike sharing program for employees
- Boston considering a public bike sharing program, e.g. Paris
- TAPA requirements for bicycle facilities

## Appendix: Reduction Target Calculation Assumptions

These preliminary assumptions are based on real data, but they are rough. These assumptions are intended to provide context to the goal/target setting activities of the Climate Leadership Advisory Committee and should not be interpreted as firm projections by the City of Boston.

### RPS Calculation

- Electricity is 40% of emissions
- RPS target in 2010 = 5%
- RPS target in 2020 = 15%
- Assume all new RPS eligible resources are incremental = 10% incremental

**RPS overall reduction = 4% by 2020** (10% of 40%)

### Electric Efficiency Calculation

- Electricity emissions = 40%
- All cost-effective EE = 3% per year for 10 years (includes 0.5% CHP)
- Existing EE = 0.8% per year
- Assume 2/3 CHP is incremental = 0.3
- Assume realistically achieve 2x efficiency
- Incremental EE = 1.1% per year or 11% of electricity over 10 years (0.8 + 0.3)

**EE overall reduction = 4.4% by 2020** (11% of 40%)

### Natural Gas Efficiency Calculation

- Natural gas = 21% of emissions
- EEAC assumption = 2% per year for 10 years
- Assume incremental = about 1/3, or 0.7%
- Realistic achievable minus existing
- Incremental = 0.7% per year or 7%

**NG overall reduction = 1.47% by 2020** (7% of 21%)

### Pavley/CAFÉ Calculation

- Transportation = 28% of Boston emissions
- Pavley = 30% reduction for MA new car emissions by 2016
- Assume 30% constant through 2020
- Fleet turnover = 10 years
- 2016 through 2020 = 5 years
- Assume impact on entire fleet is 1/2 of 30% or 15%
- Pavley overall reduction = 4.2% (15% of 28%)
- Minus Rebound/Income effect of driving more with more efficient car of 10%

**Pavley/CAFÉ overall reduction = 3.8% by 2020**