

Urban Emissions: Stakeholders

Katharine Lusk

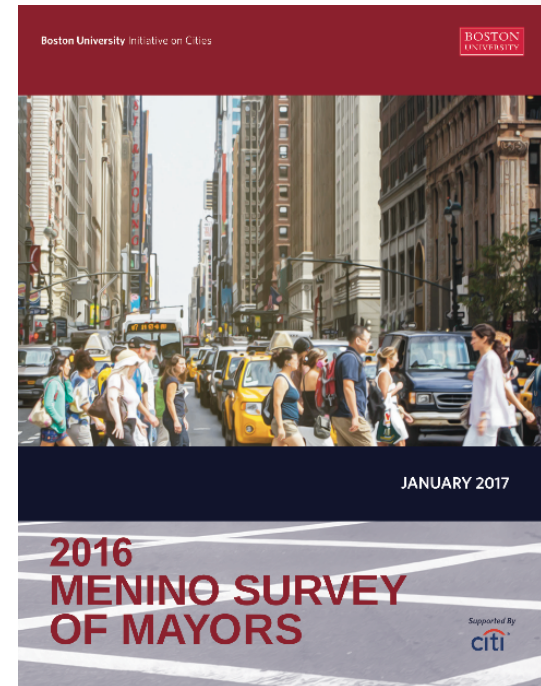
Tim Ogino

BOSTON UNIVERSITY INITIATIVE ON CITIES

Urban leadership and research initiative co-founded in 2014 by the late Boston Mayor Tom Menino and Professor of Political Science Graham Wilson

- Enable city/university collaboration via research, student fellowships and applied learning
- Study mayoral priorities via the Menino Survey of Mayors
- Catalyze early stage urban research
- Create new forums to disseminate knowledge

Work with the full breadth of the BU research community – all disciplines interested in contemporary urban challenges and urban populations. *Political, social, environmental & data scientists plus engineering, public health, law, etc.*



Today

1. Cities & Climate Change: New Momentum
2. Demand for Data: Drivers
3. Forging Partnerships: Evaluating your Audience
4. Defining the Value Proposition: Theories

Why Cities Matter: New Momentum

1988: [IPCC](#) – Intergovernmental Panel on Climate Change established by the World Meteorological Organization (WMO) and the United Nations Environment Program

1990: [ICLEI](#) - Global network of more than 1,500 cities, towns and regions committed to building a sustainable future

2005: [C40](#) – C40 Cities Climate Leadership Group. Network of the world's megacities (et al – 90 total) committed to addressing climate change

2013: [100 Resilient Cities](#) –100 cities committed to becoming more resilient to physical, social, and economic challenges

2013-2014: IPCC releases Fifth Assessment

2014: [GPC](#) - Final version of the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) published by WRI, C40 and ICLEI

2014: [Carbon Neutral Cities Alliance](#) – Collaboration of twenty leading global cities focused on deep decarbonization; Working to cut greenhouse gas emissions by 80% or more by 2050

2014: [Climate Mayors](#) – U.S. mayor to mayor network committed to reducing GHG emissions and supporting binding federal and global-level policymaking

2014: [Compact of Mayors](#) (merged with **Global Covenant of Mayors in 2016) - Global coalition of mayors and city officials committed to reduce local GHG emissions, enhancing resilience to climate change and tracking progress publicly. 142 cities in the U.S.; over 6,000 globally**

2017: [We're Still In, America's Pledge on Climate](#) created, underwritten by Michael Bloomberg, in response to Trump administration decision to withdraw from Paris Agreement

Demand for Data: Global Covenant of Mayors

Boston, Baltimore, Washington DC, San Francisco, Los Angeles, Salt Lake have all signed on to the Covenant of Mayors

To commit to the Compact, a city must:



REGISTER COMMITMENT. A mayor may register on either of the Compact's standard reporting platforms—carbon_n Climate Registry or CDP—or email a letter of intent to info@compactofmayors.org. Following its submission, a city will be contacted by the Compact support team.



TAKE INVENTORY. Within one year, a mayor must assess the current impacts of climate change in his/her city. To do so, the city must 1) Build and complete a community-wide GHG inventory with a breakdown of emissions for buildings and transport sectors, using the GPC standard; (2) Identify climate hazards; and (3) Report on both via the CDP or carbon_n Climate Registry questionnaires.

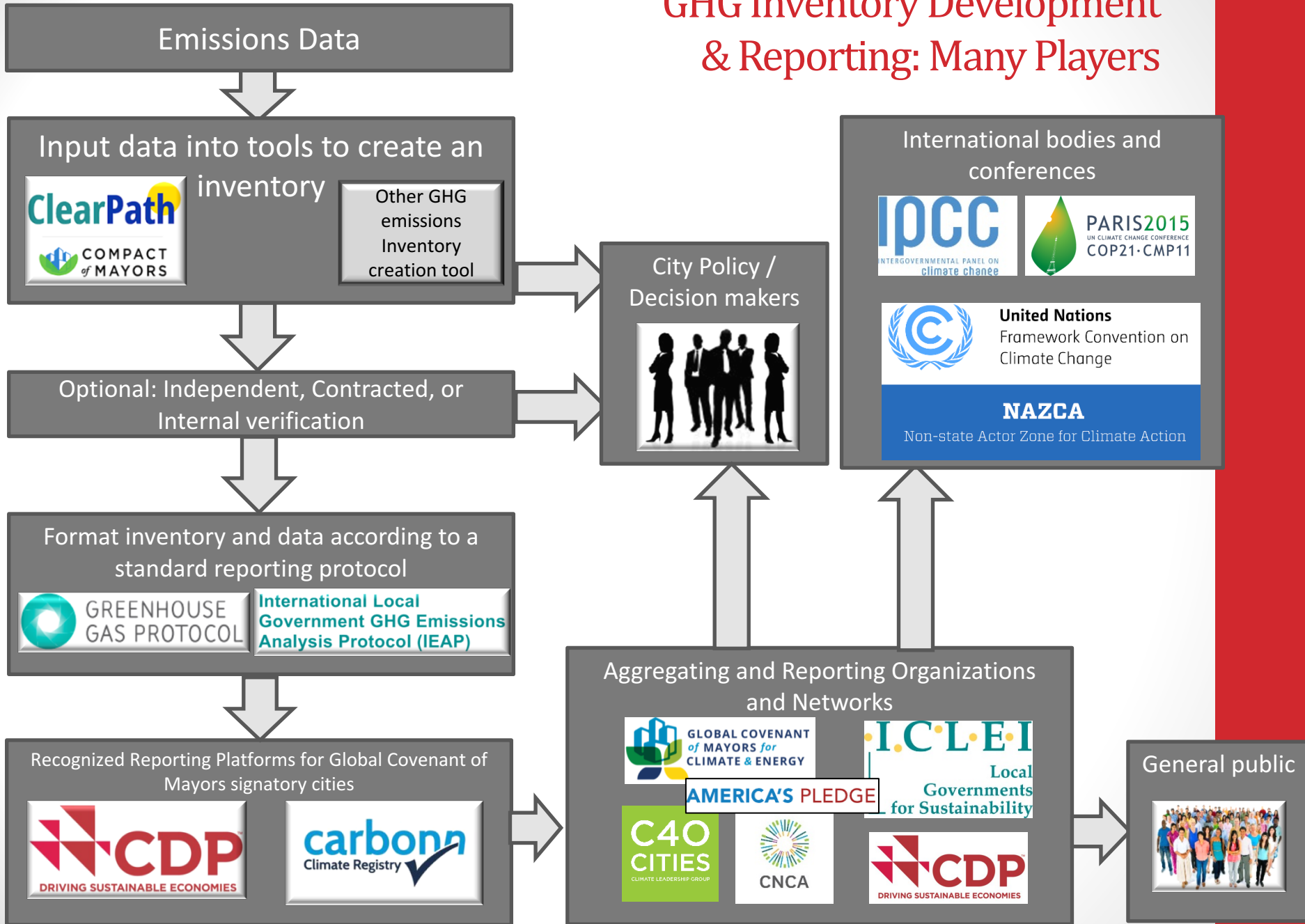


CREATE REDUCTION TARGETS AND ESTABLISH A SYSTEM OF MEASUREMENT. Within two years, the registered city must update its GHG inventory to also include a breakdown of emissions from waste sector; set a target to reduce its GHG emissions; conduct a climate change vulnerability assessment consistent with Compact guidance; and report in its chosen platform.



ESTABLISH AN ACTION PLAN. Within three years, a city's strategic action plan must show how it will deliver on its commitment to reduce greenhouse gas emissions and adapt to climate change.

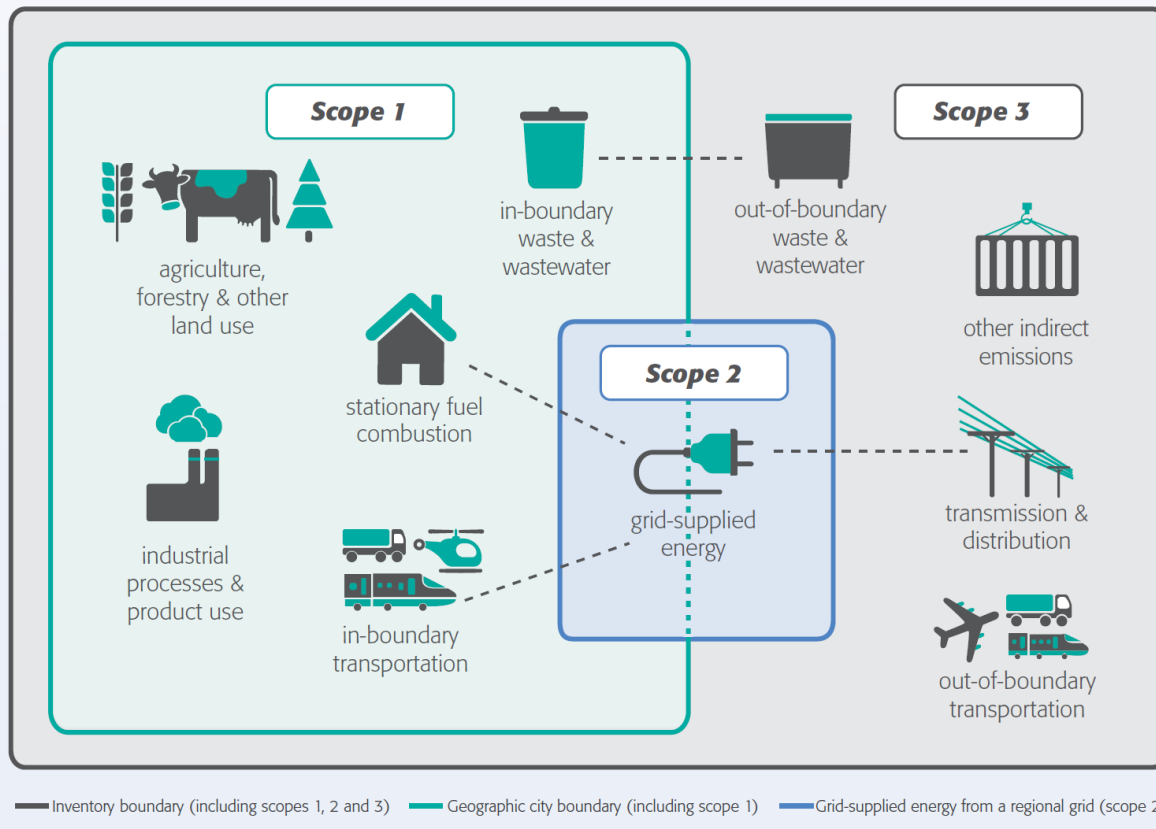
GHG Inventory Development & Reporting: Many Players



Demand for Data: Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (2014)

A standardized set of rules that frame how many cities are thinking about their data needs

Figure 1 Sources and boundaries of city GHG emissions



Sample high-level city GHG Emissions Inventory data sources*

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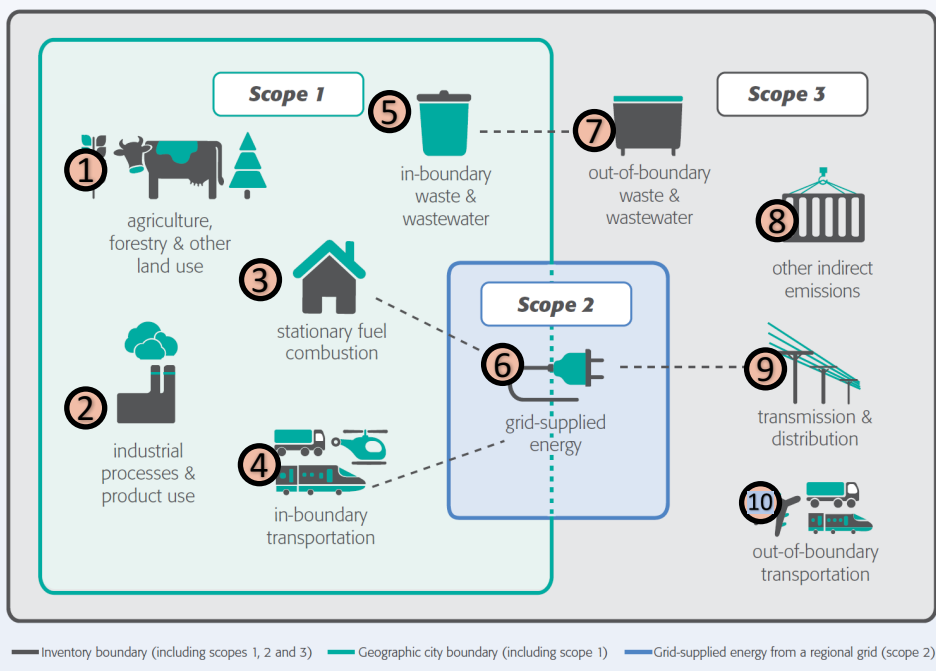


Table 2.1 Use of notation keys⁵

Notation key	Definition	Explanation
IE	Included Elsewhere	GHG emissions for this activity are estimated and presented in another category of the inventory. That category shall be noted in the explanation.
NE	Not Estimated	Emissions occur but have not been estimated or reported; justification for exclusion shall be noted in the explanation.
NO	Not Occurring	An activity or process does not occur or exist within the city.
C	Confidential	GHG emissions which could lead to the disclosure of confidential information and can therefore not be reported.

*Loosely based on a leading city's GHG inventory process

	Name	Data Source / Methodology
1	Agriculture, forestry & other land use	NO – not occurring in city boundaries
2	Industrial processes & produce use	NE – negligible, not reported
3	Stationary fuel combustion	NE – negligible, not reported
4	In-boundary transport	Internal traffic survey data input into model. Trains and trams are IE
5	In-boundary waste & wastewater	GPC wastewater calculator. Solid-waste (NE), negligible as most waste is treated out-of-boundary
6	Grid-supplied energy	Electric utility consumption data
7	Out-of-boundary waste & wastewater	City owned waste disposal contract data & commercial waste model
8	Other indirect emissions	NE – not reported
9	Transmission & distribution	Electric utility consumption data
10	Out-of-boundary transport	Sea port mass of cargo data, extrapolated NE - Air travel emissions not included.

Forging City/Scientist Collaborations

1. Who do you want/need to work with?
2. What are you offering that they need?
3. What do you need from them?
4. On what timeline?
5. With what resources?

City Climate Action Profile – At a Glance

Consider: What is the maturity level of cities progressing towards climate action? How committed have they been? How committed are they now?

	Boston	Baltimore	Indianapolis	Los Angeles	Salt Lake City	San Francisco	Washington D.C.
Mayor	Walsh (2014)	Pugh (2016)	Hogsett (2016)	Garcetti (2013)	Biskupski (2016)	Lee (2011)	Bowser (2015)
Reported Emissions mtCO2e (Yr reported)	6.07 million (2014)*	7.58 million (2010)*	2.16 million (2013)*	29 million (2013)*	4.75 million (2009)**	4.4 million (2015)**	7.34 million (2013)*
Emissions Reduction Target (baseline year)	Carbon Neutral by 2050 <i>as of Jan '17</i>	15% ↓ by 2020 (2010)	Carbon Neutral by 2050 <i>as of Sept '17</i>	80% ↓ by 2050 (1990)	80% ↓ by 2050 (2005)	80% ↓ by 2050 (1990)	80% ↓ by 2050 (2006)
GHG Inventory protocol	GPC	US Community Protocol	Hestia	GPC	IEAP	GPC	GPC
Climate Action Plans	2007, 2011, 2014, 2017 (coming soon)	2009, 2012, 2017 (coming soon)	None published	2015	2015	2013	2011
Networks	C40, CNCA, CoM, ICLEI	CoM, ICLEI	Great Lakes Climate Adaptation Network	C40, CoM, ICLEI	Mountain Accord, ICLEI, CoM	C40, CNCA, CoM, ICLEI	C40, CNCA, CoM, ICLEI

Source: *CDP Open Data Portal ** City Official Website

Individual Cities: Varying “Maturity”

Boston

2007

2011

2014

2017

GHG Goals:

- ↓ 25% by 2020 from city operations (vs. 2005)
- ↓ 80% by 2050 from city operations (vs. 2005)

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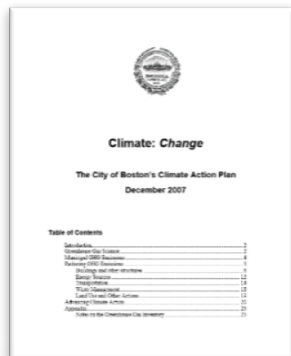
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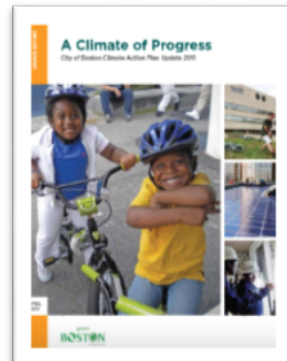
GHG Goals:

- Carbon neutral by 2050

2007 Climate Action Plan



2011 Climate Action Plan



2014 Climate Action Plan



2017 State of the City Address



Boston: Background Research

- **Name:** Boston, Massachusetts, USA
- **Mayor:** Martin J. Walsh, since January 2014
- **Most Recently Reported Emissions:**
 - 6,066,182 mtCO₂e (2014)
- **Published Emissions Target(s):**
 - 2014 Plan: 80% ↓ by 2050
 - SotC: Carbon Neutral by 2050
- **Progress towards targets:**
 - Reduced 17% from 2005-13
 - Increased by 1% from 2013-14
 - 2050 goal requires transformation of energy and transportation infrastructure
- **Climate Action Plans:**
 - 2007, 2011, 2014, 2017 (coming soon)
 - Relevant actions:
 - 4.1 Transportation: Data and Tracking systems: “Implement technology and data systems that enhance our understanding of traffic and vehicle travel in the city
 - Boston Green Ribbon Commission, formed in 2011, is a network of leaders across the business, institutional, and civic organizations committed to fighting climate change
- **Reporting Protocol:**
 - GPC
- **Collaboration:**
 - C40, CNCA, ICLEI, Global Covenant of Mayors, New England Municipal Sustainability Network, Mayors National Climate Action Agenda, US Mayors Climate Protection Agreement
- **Recent Relevant Regulations:**
 - [2008](#) – Massachusetts Global Warming Solutions Act
 - [Jun 2017](#)- Massachusetts AG Healey sues US EPA over stay to nationwide standards to cut methane emissions from new oil and natural gas facilities
 - [310 CMR 7.00: Air Pollution Control Regulations](#) (sec. 7.71 GHG reporting)
 - **Etc....**
- **Other notes and questions:**
 - Emissions reductions since 2005 might be largely attributable to a shift in the stationary energy fuel from coal to natural gas. Consider diving deeper into the city’s progress reducing Scope 1 emissions only (see Figure 2)
 - What barriers have prevented a more recent release of the city’s emissions inventory? (most recent is 2014)
 - Why did emissions increase from 2013 to 2014? (Consider investigating change in per capita emissions)

FIGURE 4: GHG Emissions by Sector, 2013

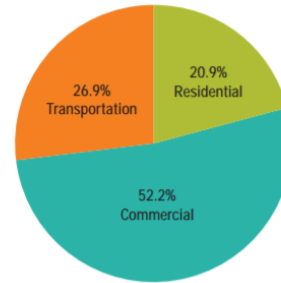


FIGURE 1: GHG Progress and Goals by Sector, 2005–2013

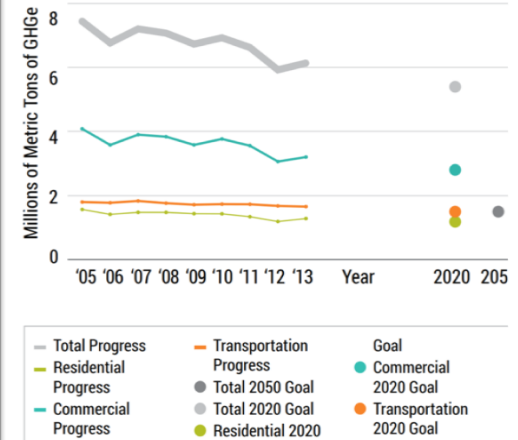
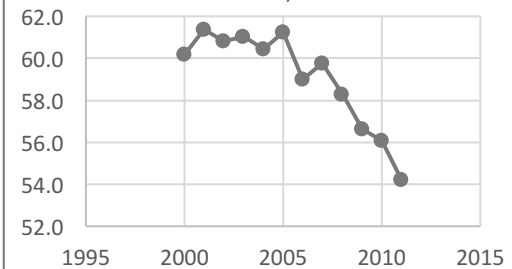
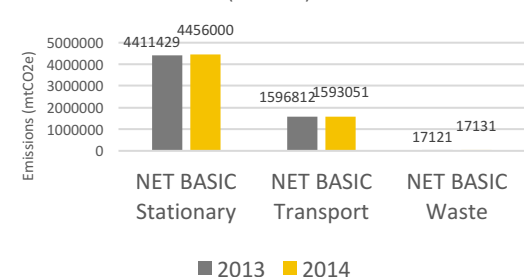


Figure 2: Carbon Intensity of Energy Supply in MA since 2000 (kg CO₂ / million BTU)



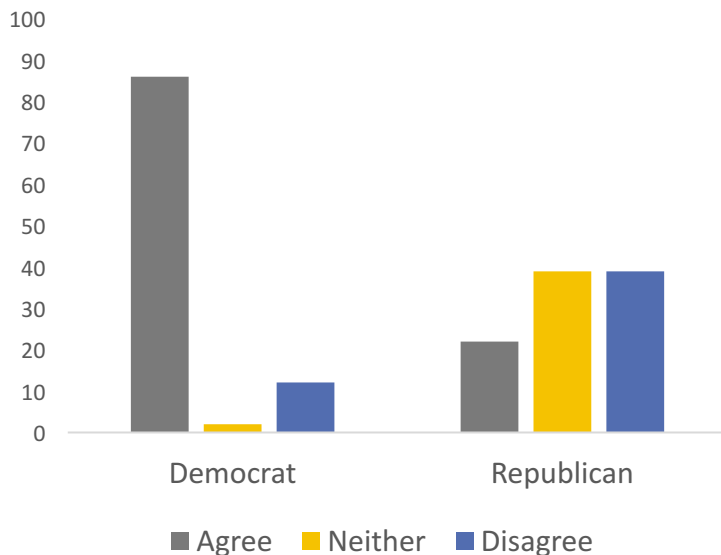
Boston GHG emissions by source 2013-14 (mtCO₂e)



Politics: Menino Survey of Mayors

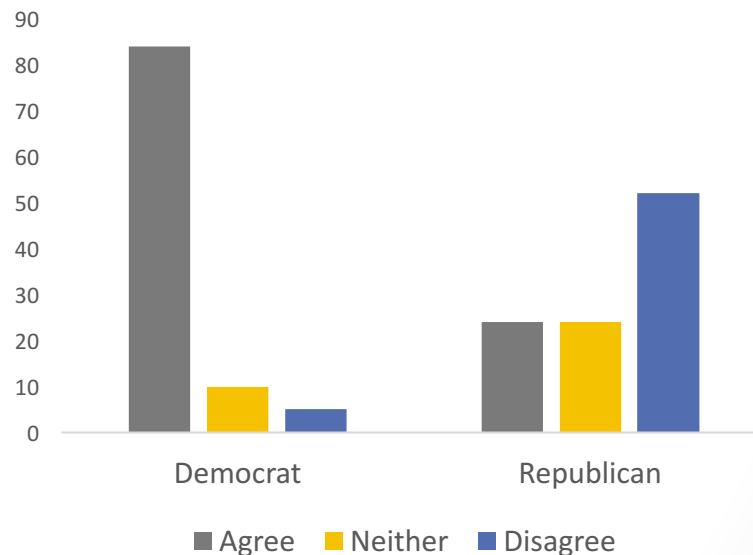
“Cities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources.”

2014



2014: Menino Survey. N = 69

2017



2017: Menino Survey. N = 117

Value to Cities: Hypotheses

Value of harmonized, standardized, publically available data sets, including hourly nationalized CO2 emissions at the 1KM scale, as well as role of biological fluxes?

1. Trend Detection
2. Verification of Scope 1 Inventory
3. Hot spots/attribution
4. Value of Carbon Sinks
5. Real Time

Guest Speakers

Abhinav Guha

Air Quality Engineer

Bay Area Air Quality Management district (regional)

Brian Reyes

Climate & Sustainability Analyst,

San Francisco Department of the Environment

Brian Swett

Director of Cities & Sustainable Real Estate, Arup

Former Chief of Environment, Energy & Open Space, City of Boston