

Blame or Praise? Cities are home to much of the world's GHG emissions -- can they also be part of the solution?

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CENTER FOR ENERGY,
MARINE TRANSPORTATION
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“Cities are responsible for over three quarters of greenhouse gas emissions, so the battle to prevent climate change will be won or lost in cities”

Ken Livingstone, (former) Mayor of London
December 2007

Global Urbanization Trends

	1950	2007	2050
Total world population	2.54 billion	6.67 billion	9.19 billion
World Urban population	0.74 billion	3.29 billion	6.40 billion
“More developed” regions urban population	0.43 billion	0.91 billion	1.07 billion
“Less developed” regions urban population	.031 billion	2.38 billion	5.33 billion



Source: http://www.un.org/esa/population/publications/wup2007/2007WUP_ExecSum_web.pdf (page 3)

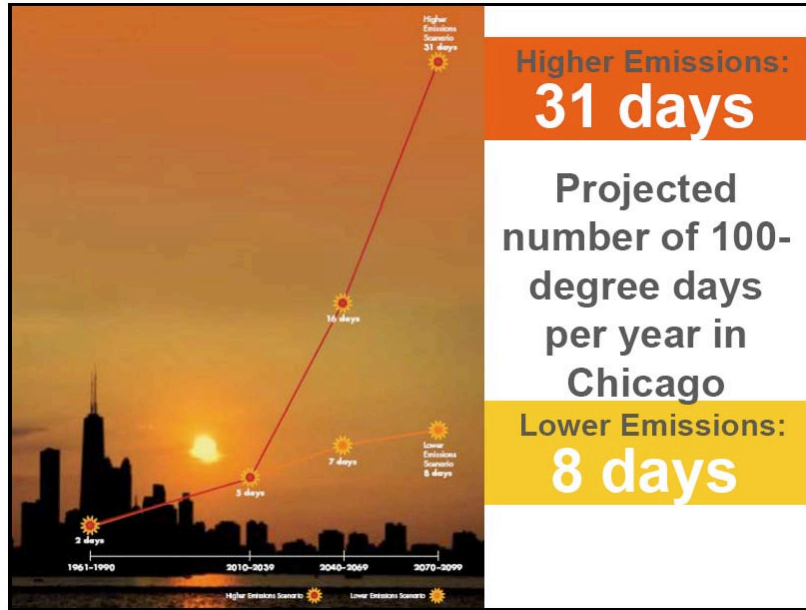


	Size of urban area	Population (millions)		
		1975	2007	2025
World	Total	1,519	3,294	4,584
	10 million +	53	286	447
	5-10 million	117	214	337
	1-5 million	317	760	1,058
	500k-1 million	167	322	390
	<500k	864	1,712	2,354
More developed regions	Total	702	910	995
	10 million +	42	89	103
	5-10 million	50	49	69
	1-5 million	137	202	203
	500k-1 million	71	83	90
	<500k	401	487	531
Less developed regions	Total	817	2,384	3,590
	10 million +	11	197	344
	5-10 million	68	165	268
	1-5 million	180	558	855
	500k-1 million	96	239	300
	<500k	463	1,225	1,822

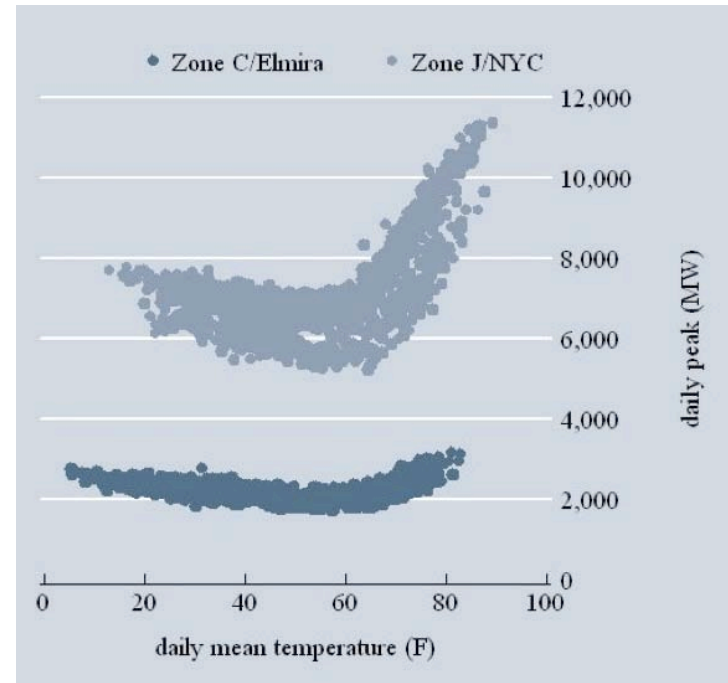
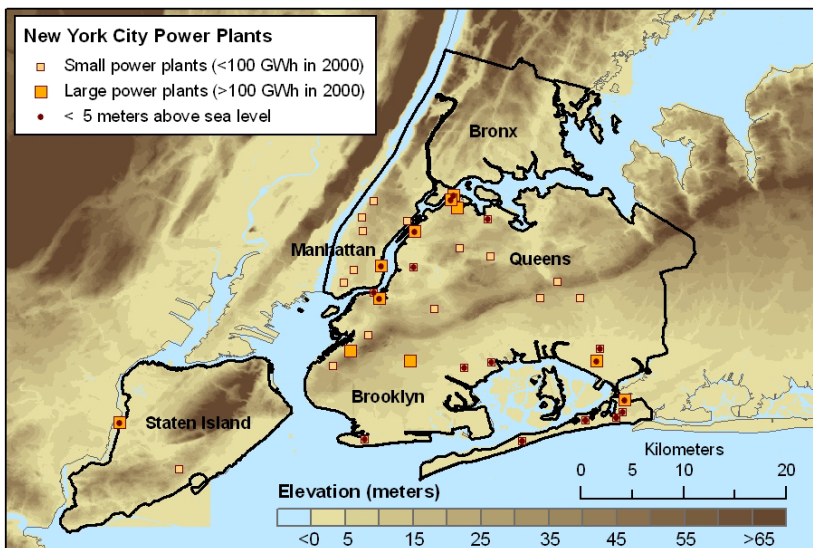
Cities use large quantities of energy and are responsible for a significant level of global carbon emissions.

Region	% of city primary energy demand in region	Ratio of city per-capita primary energy demand to regional average
US	80%	0.99
European Union	69%	0.94
Australia and New Zealand	78%	0.88
China	75%	1.82

Source: IEA World Energy Outlook (2008)



Cities are highly vulnerable to the impacts of climate change



In response, cities are taking action

- Historical precedence (1850s, 1880s, 1970s)
- Policy drivers have shifted over time
 - Environmental quality
 - Economic development
 - Fuel poverty
- Today, climate change dominates the debate



全国市长培训中心
National Training Center
For Mayors of China



JUCCE 聚思
China Urban Climate Change Expert Group
中美清洁能源合作组织



Where local government has ‘Capacity to Act’

Regulator

- Land use/zoning rules
- Building codes/building permits
- Environmental quality standards
- Municipal utility operating policies

Investor/Incentivizer

- Direct investment in energy/carbon projects
- Subsidies/tax breaks/fees to foster behavioral change
- Lead by example
 - Purchasing practices
 - Land owner/developer/building operator
 - Municipal utility operating policies

Educator/Advocate

- Facilitate access to other government programs
- Bully pulpit/education role
- Statutory responsibilities
 - Represent the public/local interest in regulatory proceedings

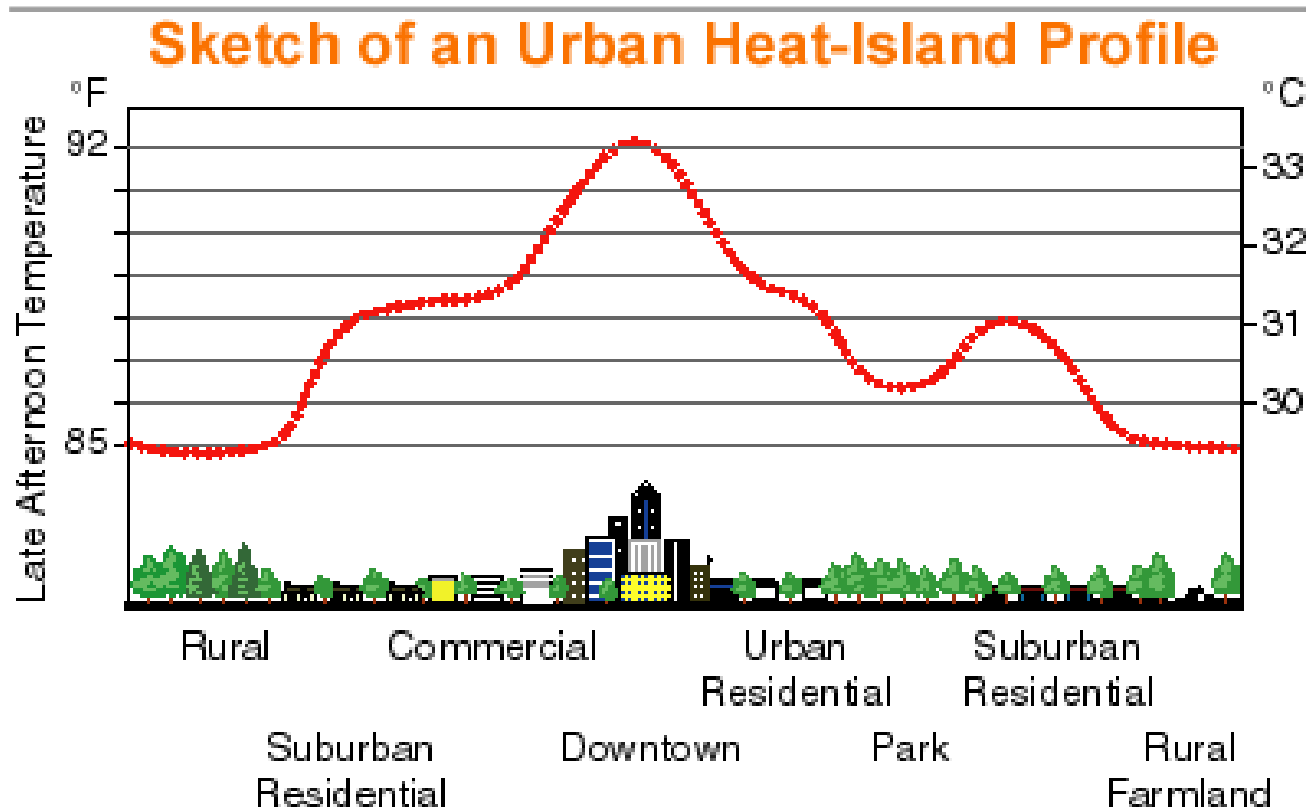
But skeptics ask, “Where’s the Beef?”

- Much planning and many grand proclamations – Do we actually know what’s working?
 - Policy networks and training programs focus on policy development and technical assistance, not follow-up analysis
- Serious indicators of performance and progress lacking
 - Some good baseline inventories in place, but no protocols to understand what effects specific initiatives are having
- Are we being too impatient, or are we settling for flash over substance?



Challenges/impediments to local progress

Urban Heat Island amplifies local energy use, and may only get worse over time due to climate change

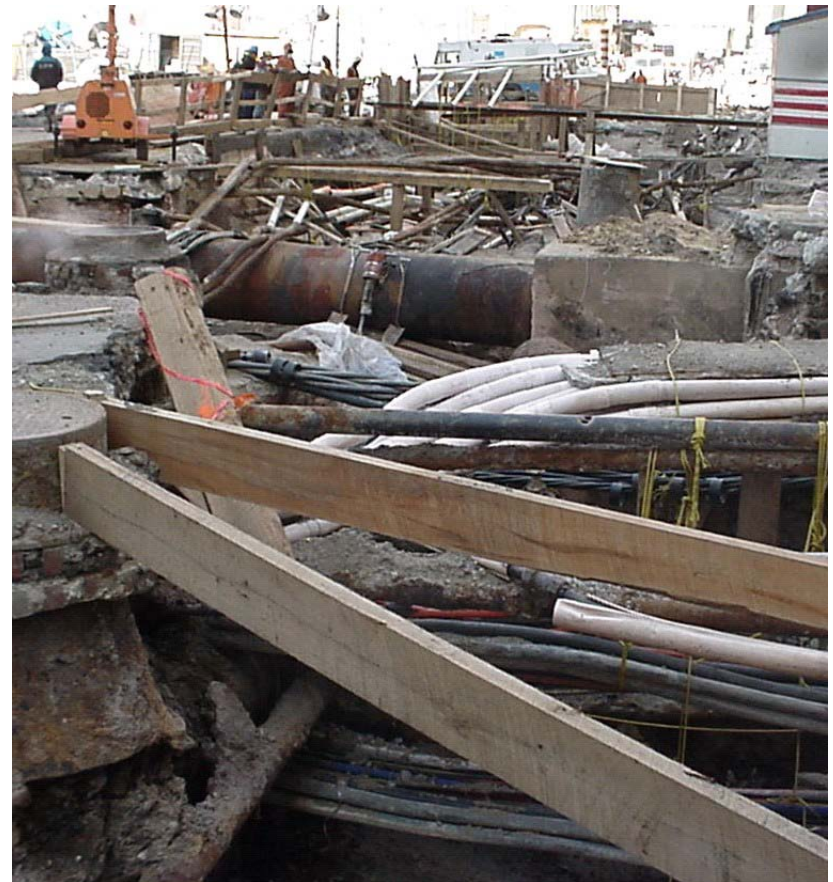


Cities suffer from serious energy system “lock-in”

- Demand requirements -- urban lifestyles and economic activity require 24/7 power availability
- Maintaining/siting energy systems = difficult
- Energy conservation and renewable power generation opportunities affected by density
- Land use and energy systems are largely fixed; changes are difficult to achieve



NYC
1913



NYC
2001

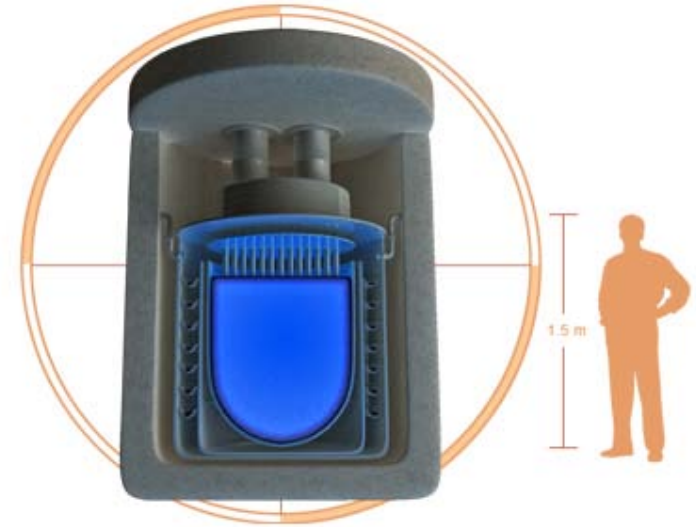
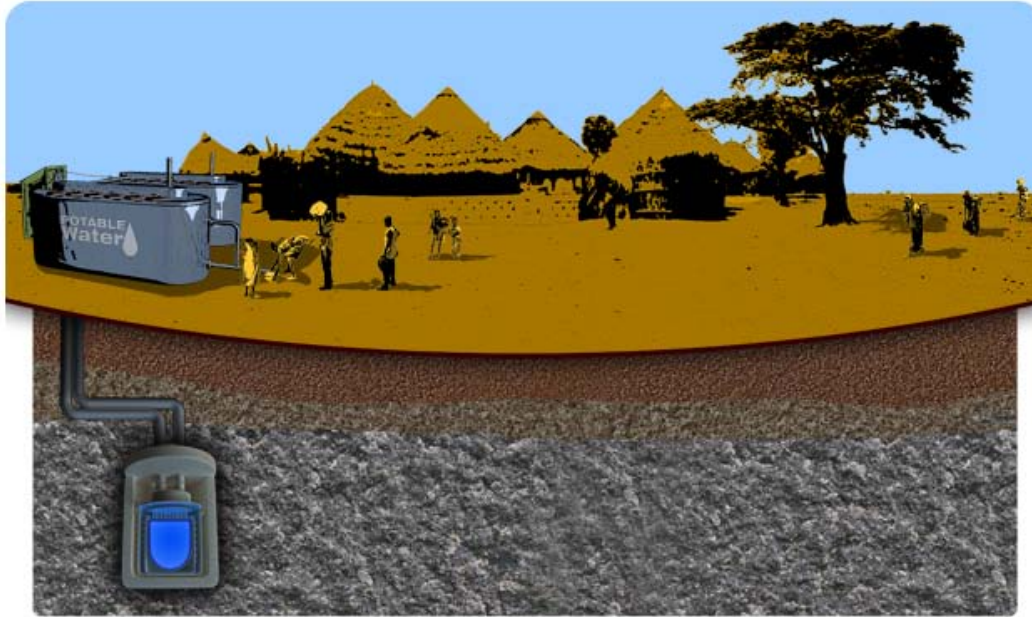


Overcoming lock-in: what are the “game changing” technologies and ideas?



Phill
FuelMaker

Fuel Your Car At Home



Small scale (25 MWp) nuclear power plants -- capable of serving 20,000 homes @ 10¢/kWh?

(www.hyperionpowergeneration.com)



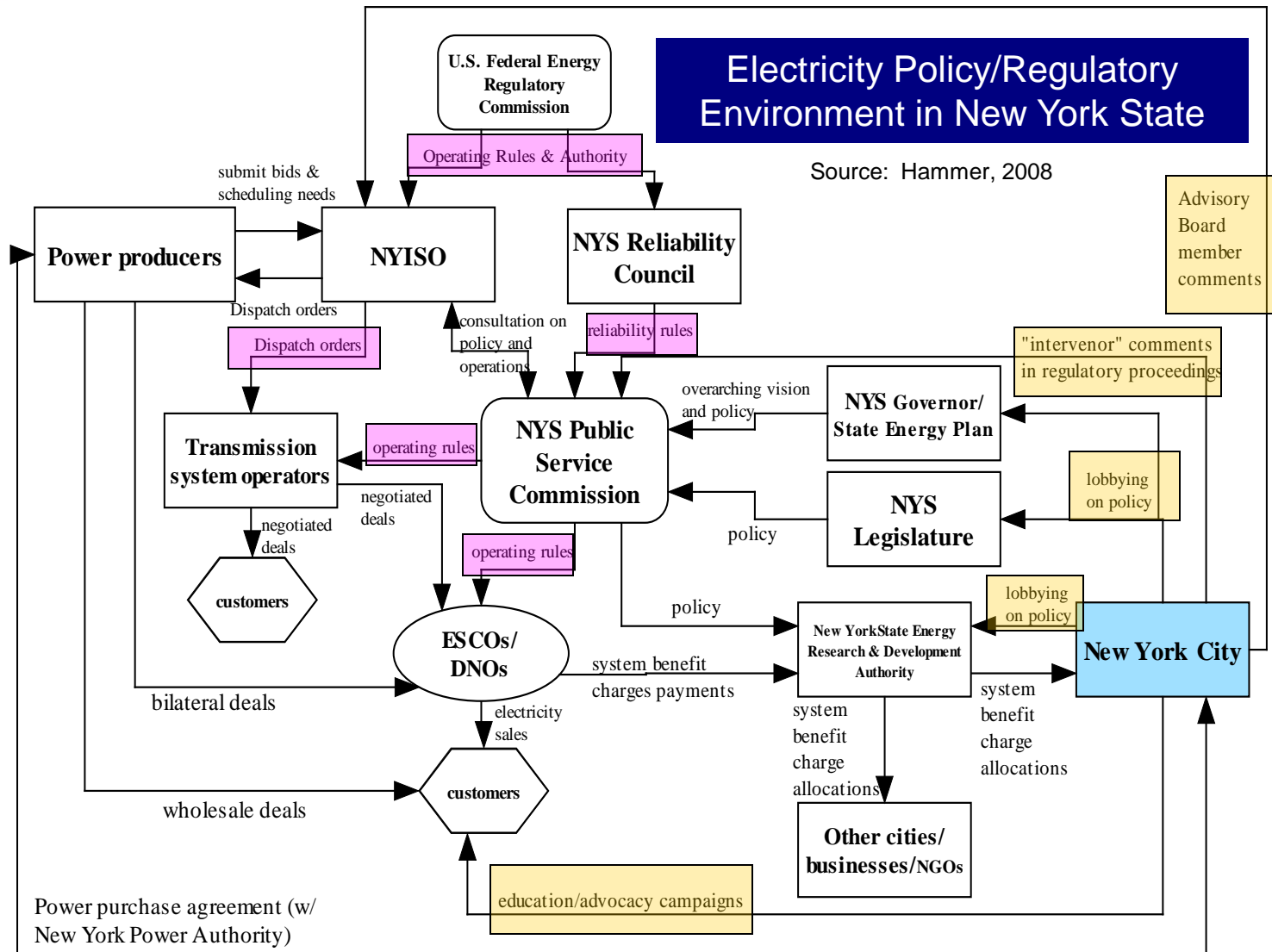
Local capacity to act is critical, and potentially problematic

- Local competency (i.e., policy levers under local control) is relatively weak
- Political and market boundaries vs. urban areas/scope of problem
- Broad nature of energy policy means capacity to act varies across policy silos
 - Land use planning, electricity systems, buildings, waste, transport, etc.
 - Significant variation across cities



Electricity Policy/Regulatory Environment in New York State

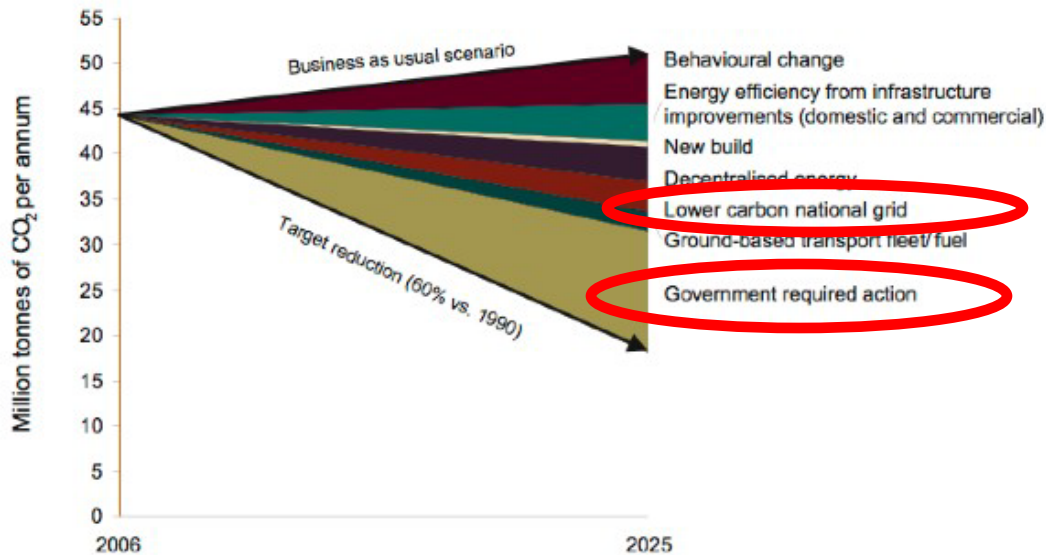
Source: Hammer, 2008





At the end of the day, how much influence does a mayor actually have?

Figure xiii 2025 scenario without required government action



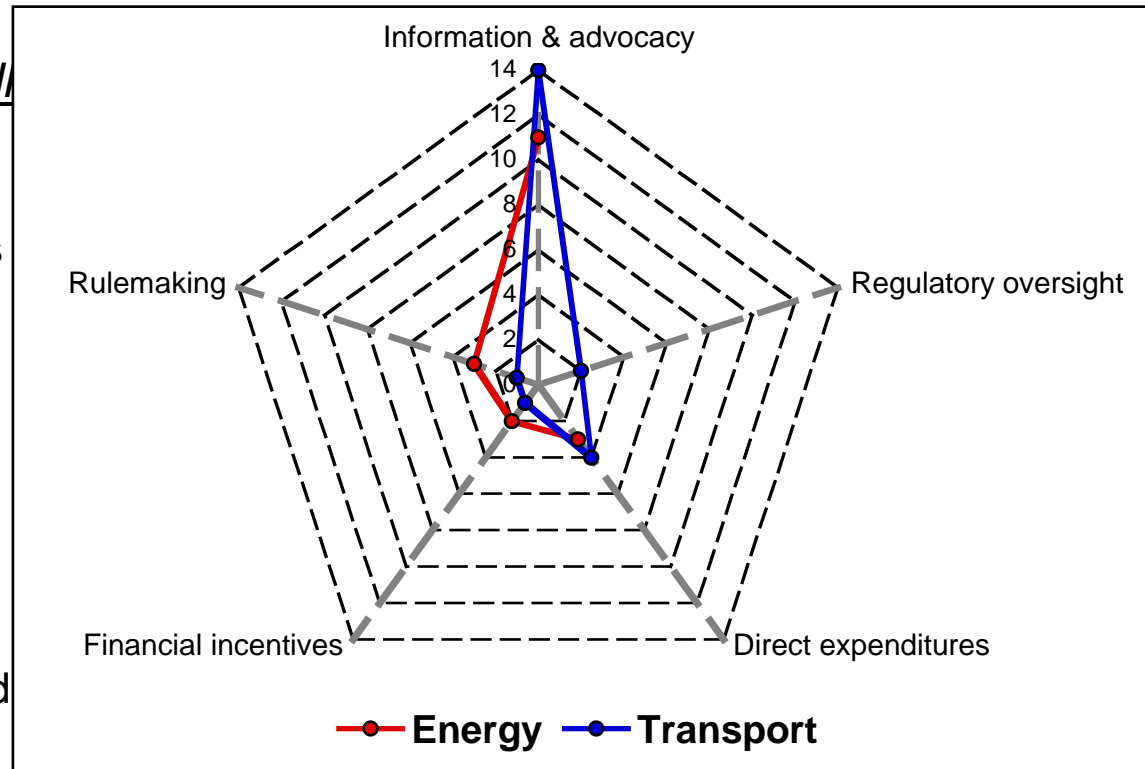
“Under all scenarios considered in this action plan, the Mayor and the [Greater London Authority] alone cannot deliver more than 15% of the necessary reductions. Responsibility for tackling climate change must be shared between the mayor, the London boroughs (5-10 per cent of requirement), London’s companies and public sector organizations (35-40 per cent), Londoners (5-10 per cent) and national government (30 per cent).”

Source London Energy and CO₂ Emissions Inventory; GLA

*London Climate Change Action Plan
GLA, 2007*

Capacity to act \neq willingness to act

- What *needs* to be done may be very different than what *will* be done
 - City “competition”
 - Policy instrument preferences
 - Local politics
- Result = imbalance of cities taking action; difficult to determine appropriate policy coherence between central and local government
 - Big vs. small cities
 - Developed vs. less-developed cities
 - Science/economic vs. political decisions



PlaNYC policy instruments

Where do we go from here? No choice but to help cities do ‘better’

- Assume some market transition will naturally occur? But at what pace?
 - Greener power and cars already have toehold
 - Early stages of Smart Grid
 - Climate bill: Cap & Trade = fundamental market transformation
- Direct support for city-scale initiatives
 - “joined up” thinking
 - Standardization of approach for baseline consumption/emissions and on-going evaluation
 - Emphasis on ‘future-proofing’
 - Focus on fast-growing cities so they ‘get it right’
- Rethink some fundamentals
 - Devolution of power to cities? Or simply more joined-up thinking?
 - Restructure markets so they are more attentive to needs and interests of cities?



Thank you.
Questions?
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