Green Cities: Why Environmentalists Should Live in the Concrete Jungle

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The Greenest Metropolis

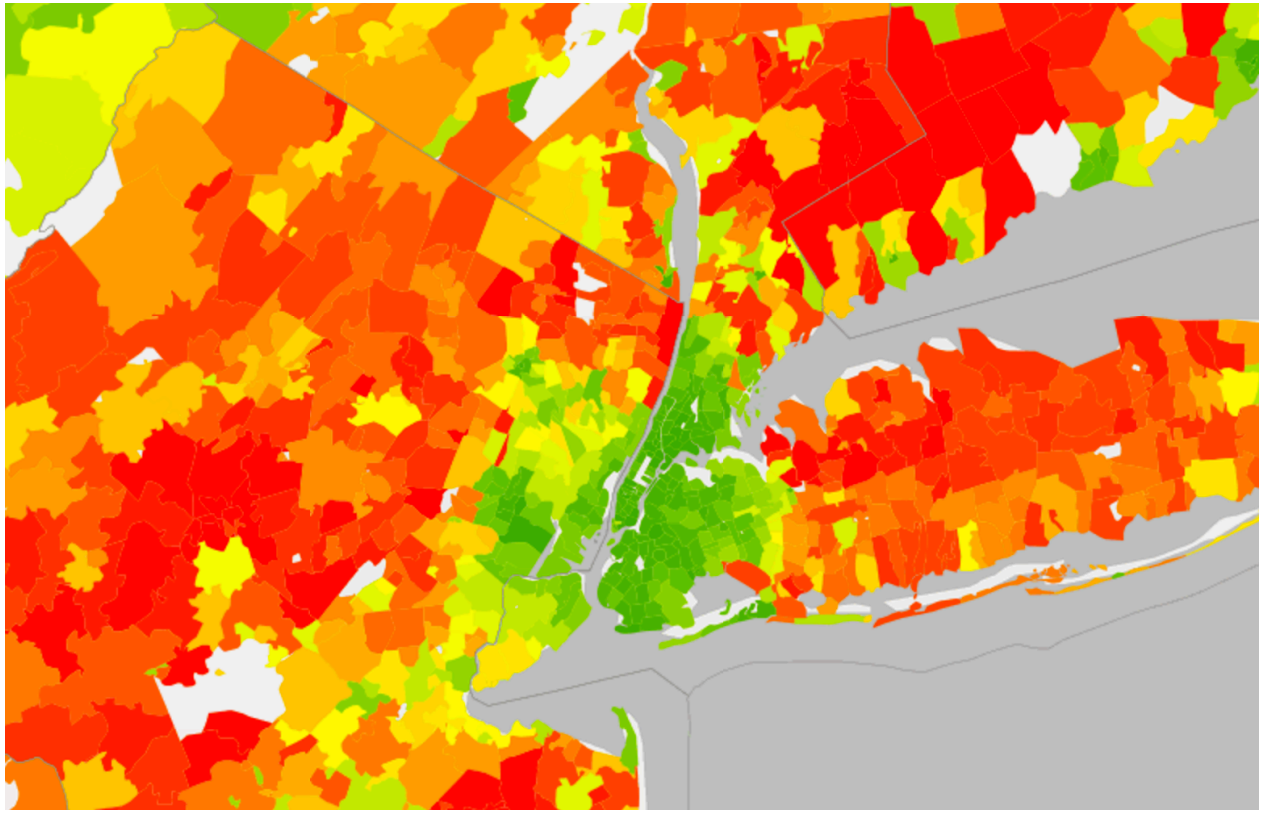
"New York City's per capita GHG emissions in 2014 was an average of 5.8 tCO2 e (metric tons of carbon dioxide equivalent) emissions per capita, significantly lower than the American average of 17 tCO2 e per capita."

—*Inventory of New York City Greenhouse Gas Emissions in 2014*

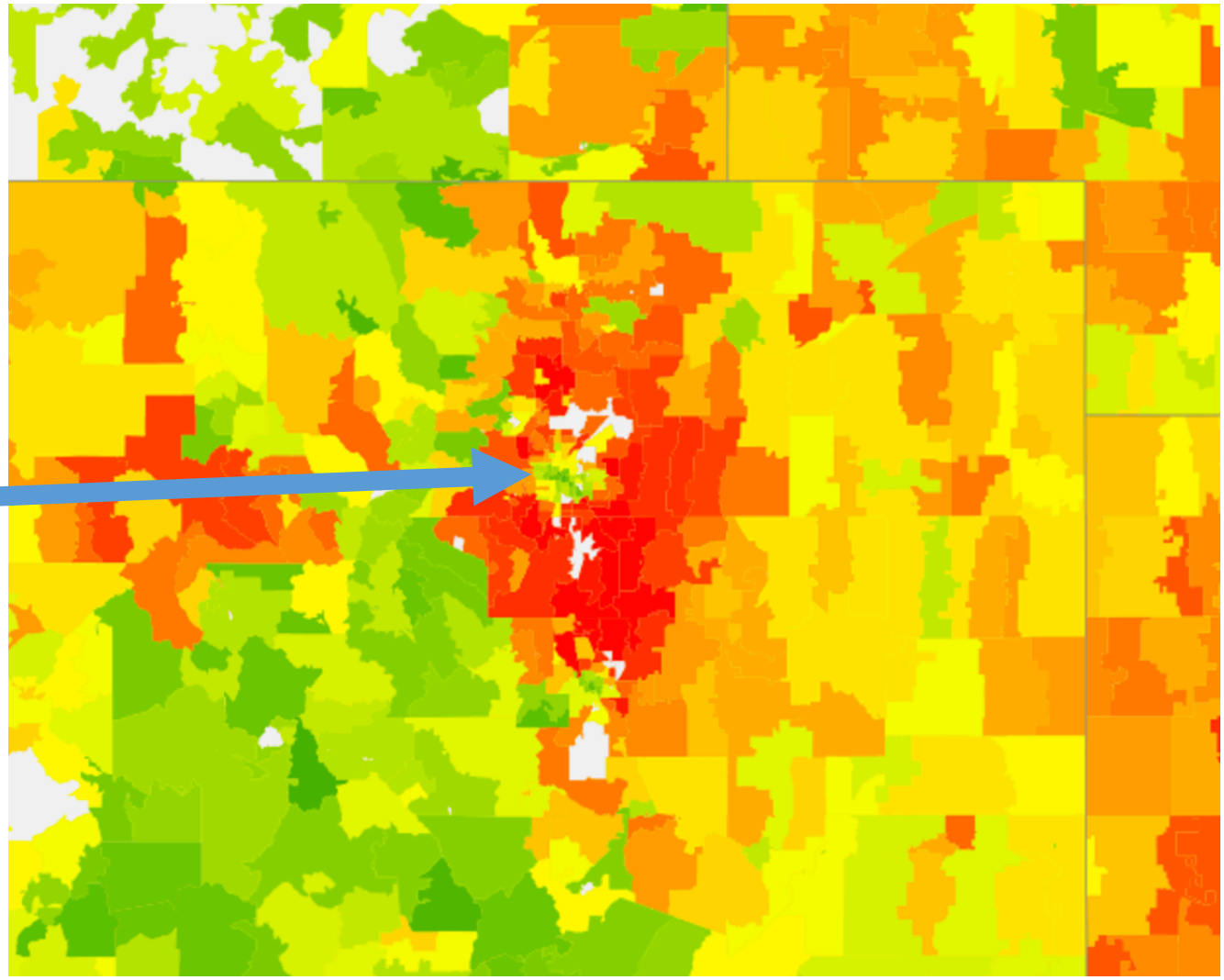
Emissions from Cities vs. Suburbs

Map showing household carbon emissions, green indicating lower, red indicating higher.

Source: Christopher M. Jones and Daniel M. Kammen, http://coolclimate.berkeley.edu/maps



Denver, surrounded by its suburbs.



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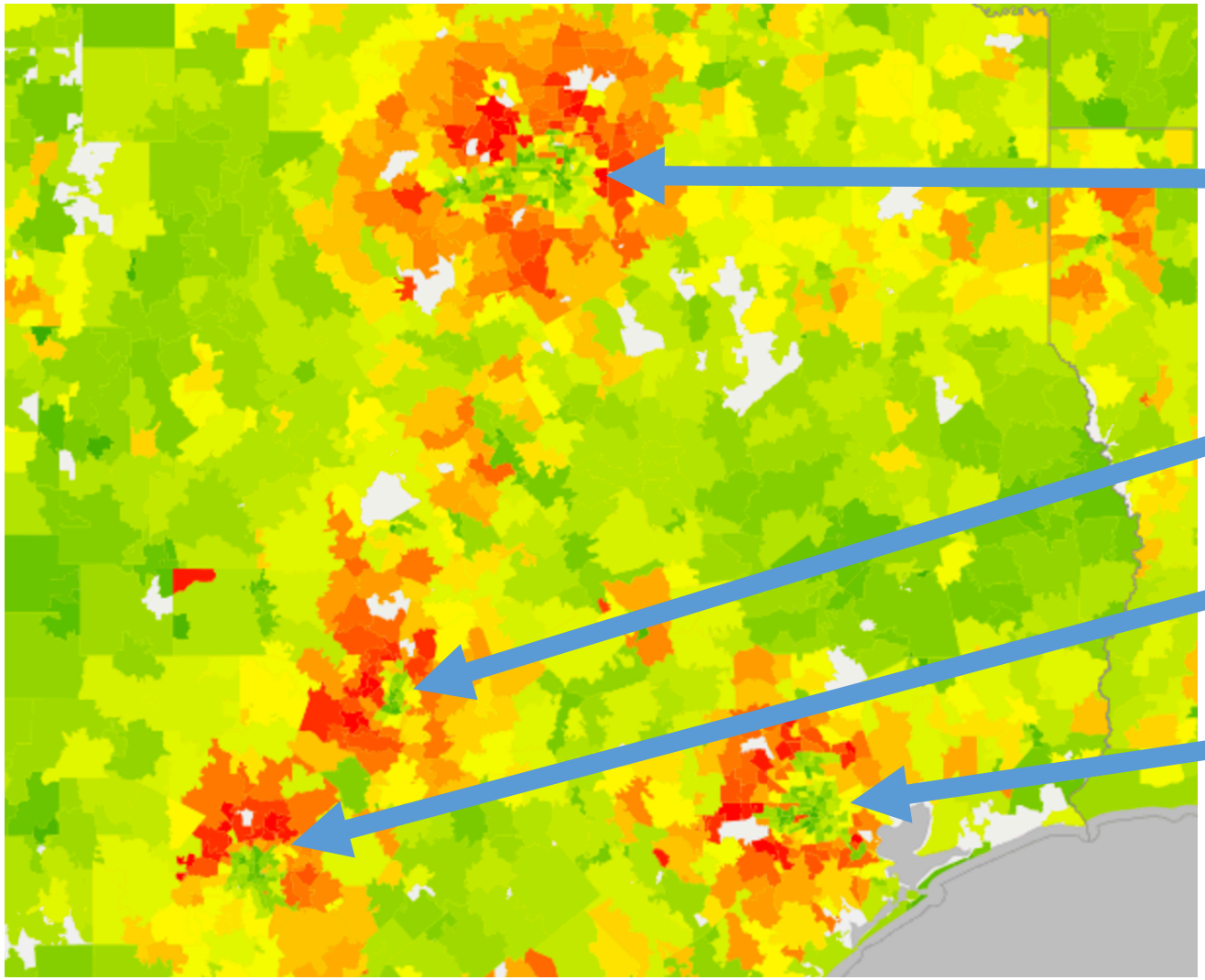
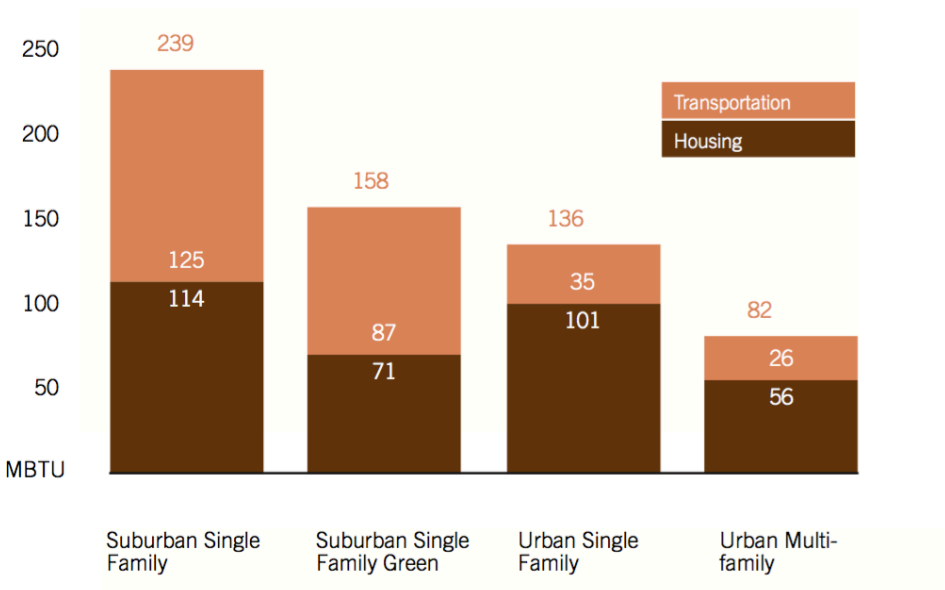


Source: Christopher M. Jones and Daniel M. Kammen, http://coolclimate.berkeley.edu/maps

Energy Usage in Cities vs. Suburbs

Figure 17: Household Energy Use in Compact versus Sprawling Neighborhoods: Average In-Town House Outperforms Even a "Green" Sprawl House (with Hybrid Cars)

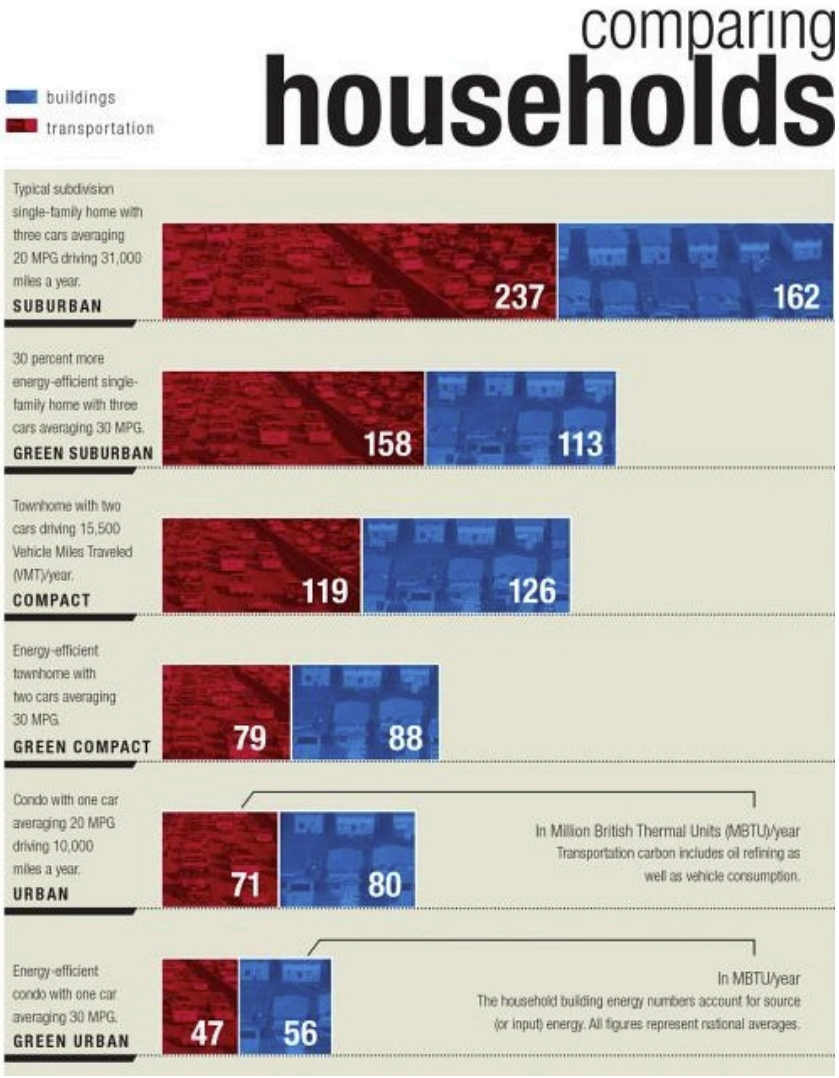


Source: Jonathan Rose Companies, LLC (cited in Blue Ribbon Commission on Sustainability, "Greening Mass Transit and the Metro Regions, the Final Report of the Blue Ribbon Commission on Sustainability and the MTA", New York Metropolitan Transit Authority, January, 2009.)

Source: Chuck Kooshian & Steve Winkelman (Center for Clean Air Policy), *Growing Wealthier* p. 63 (2011).

Energy Usage in Cities vs. Suburbs

Source: Peter Calthorpe, *Urbanism in the Age of Climate Change* (2011).



Where Population Growth Is Occurring

"[C]urrent land use restrictions may be doing exactly the opposite of what a climate change activist may have hoped. Those restrictions, often implemented for local environmental reasons (such as to preserve open space or reduce neighborhood traffic), seem to push new development towards the least environmentally friendly urban areas."

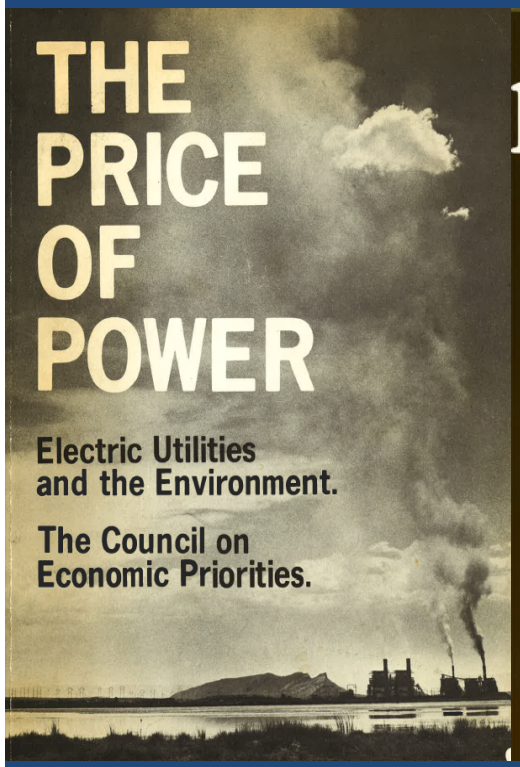
—Ed Glaeser & Matthew Kahn, *The Greenness of Cities: Carbon Dioxide Emissions and Urban Development,* NBER Working Paper No. 14238 (2008).

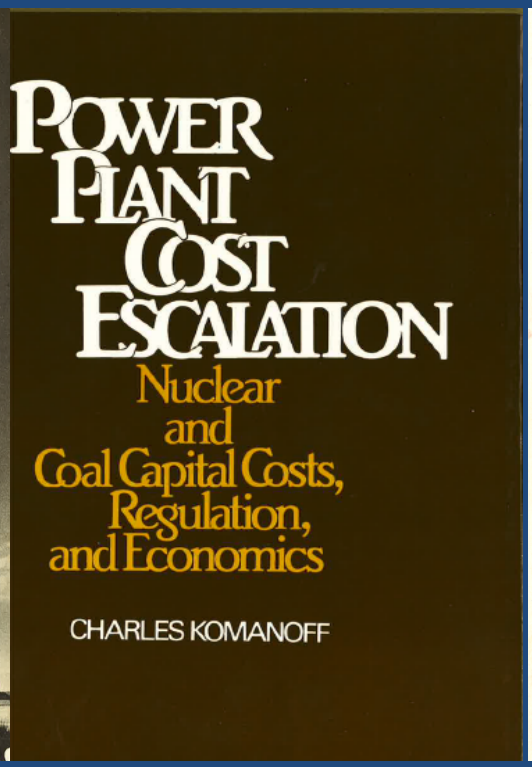
Are Environmental Laws Contributing to Sprawl?

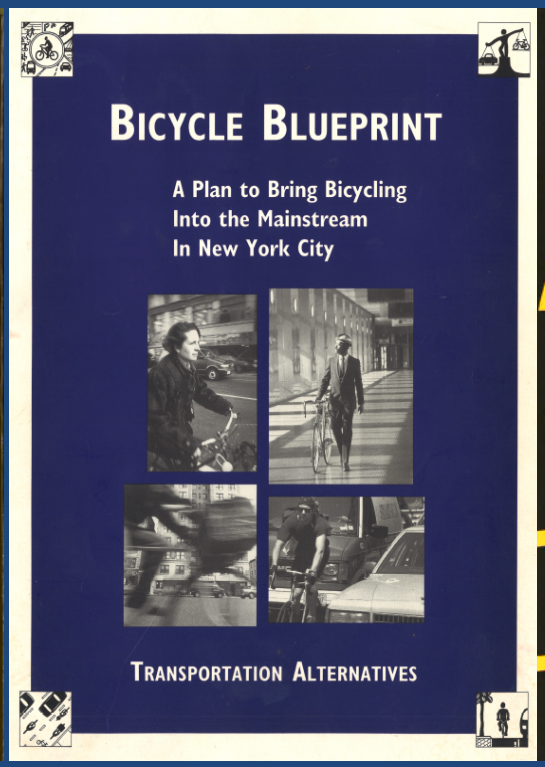
"[T]he most frequent targets of CEQA lawsuits are projects designed to advance California's environmental policy objectives. Specifically, for CEQA lawsuits targeting construction projects, 80% of CEQA lawsuits target 'infill' projects in established communities rather than 'greenfield' projects on undeveloped or agricultural lands outside established communities. The most commonly targeted type of public infrastructure project was transit systems, . . . and the most commonly targeted type of private sector project was infill housing (primarily higher-density, multifamily urban housing)""

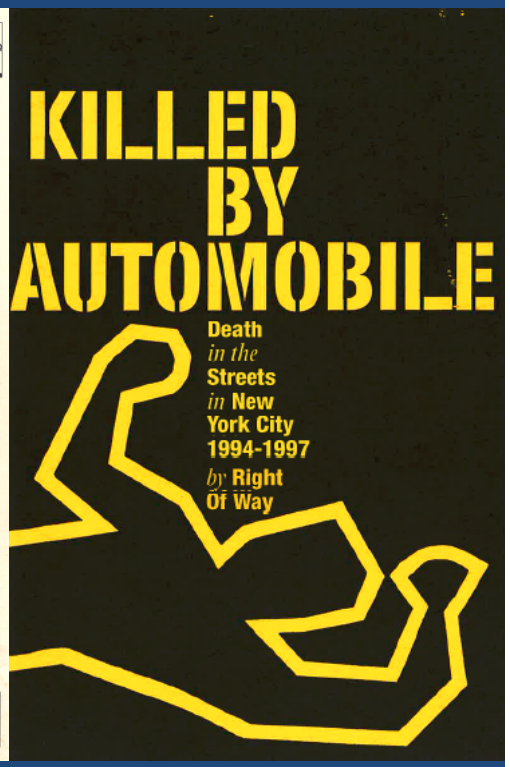
—Holland & Knight, *In the Name of the Environment* (2015)

A little about my background …









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The view to the south from the Empire State Building on Nov. 24, 1966, one of New York's worst smog days. Neal Boenzi/The New York Times

New York City's air went from two packs a day in 1966 …

to somewhere between habitable and sparkling (in most neighbor-hoods) in 2016.

How?

Q: What cleaned up NYC's air?

A: The policies

- Lowering 7-fold sulfur content of fuel oil for heat and power
- Lead out of gasoline (vital in itself and enabled next bullet)
- Tailpipe & engine tech cut per-mile auto emissions 10-fold
- "Clean dirty diesels" (HV fuels & engines; still in progress)
- Re-invest in mass transit (helped stanch growth in auto travel)
- Decommissioning in-building incinerators
- Controls on upwind refineries, power plants, other sources
- Switch oil-fired power, steam & heat to natural gas
- De-industrialization (NYC & upwind)

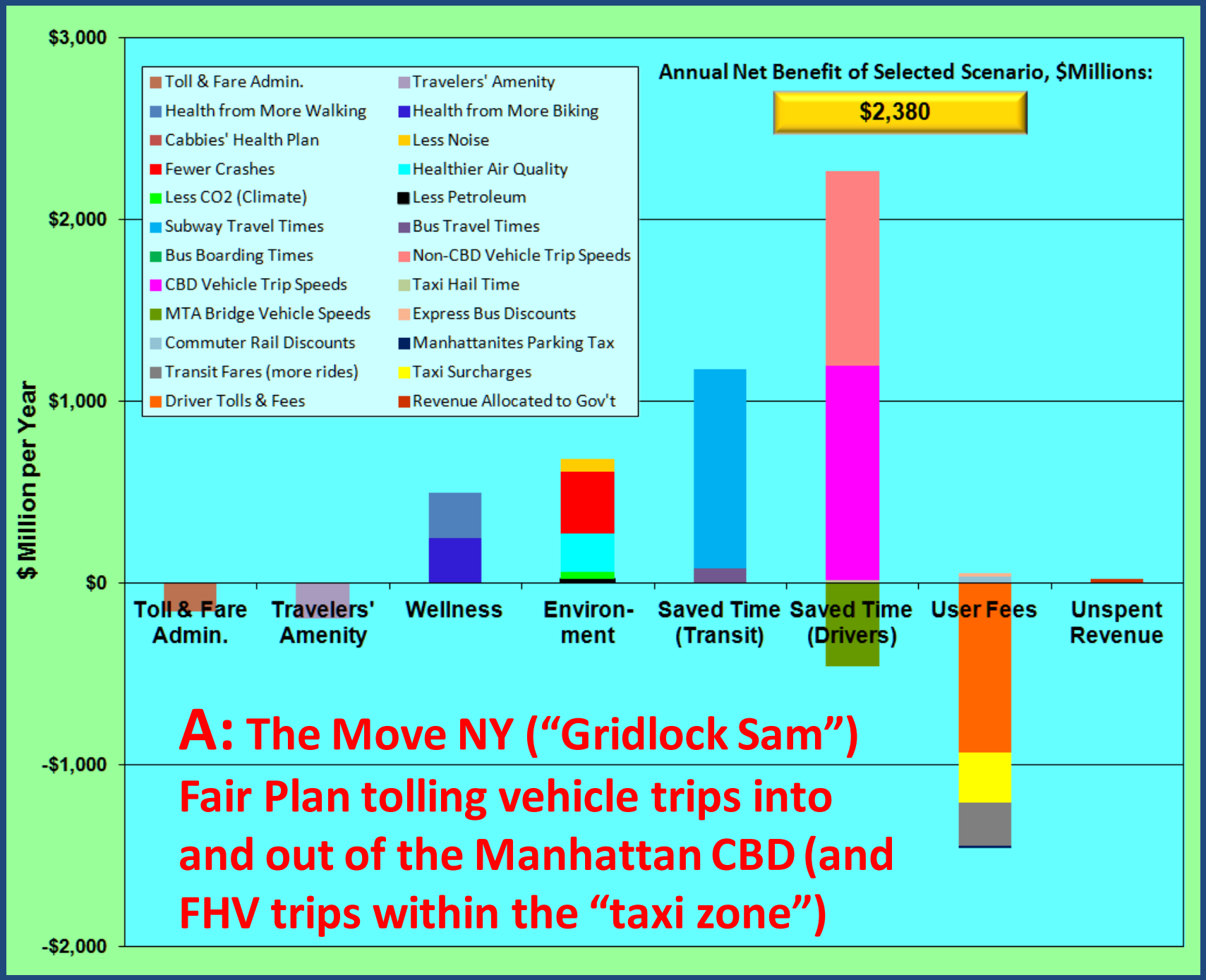
Q: What cleaned up NYC's air?

A: Engaged civil society

- Citizen activism
- Scientific research and advocacy
- Epidemiological research and advocacy
- Free and aggressive press
- Activist-smart government to counter corporate power
- Aroused citizenry bird-dogged government

Q:

It's 2017. What policy could benefit New Yorkers to the tune of ~$2.4 billion a year?

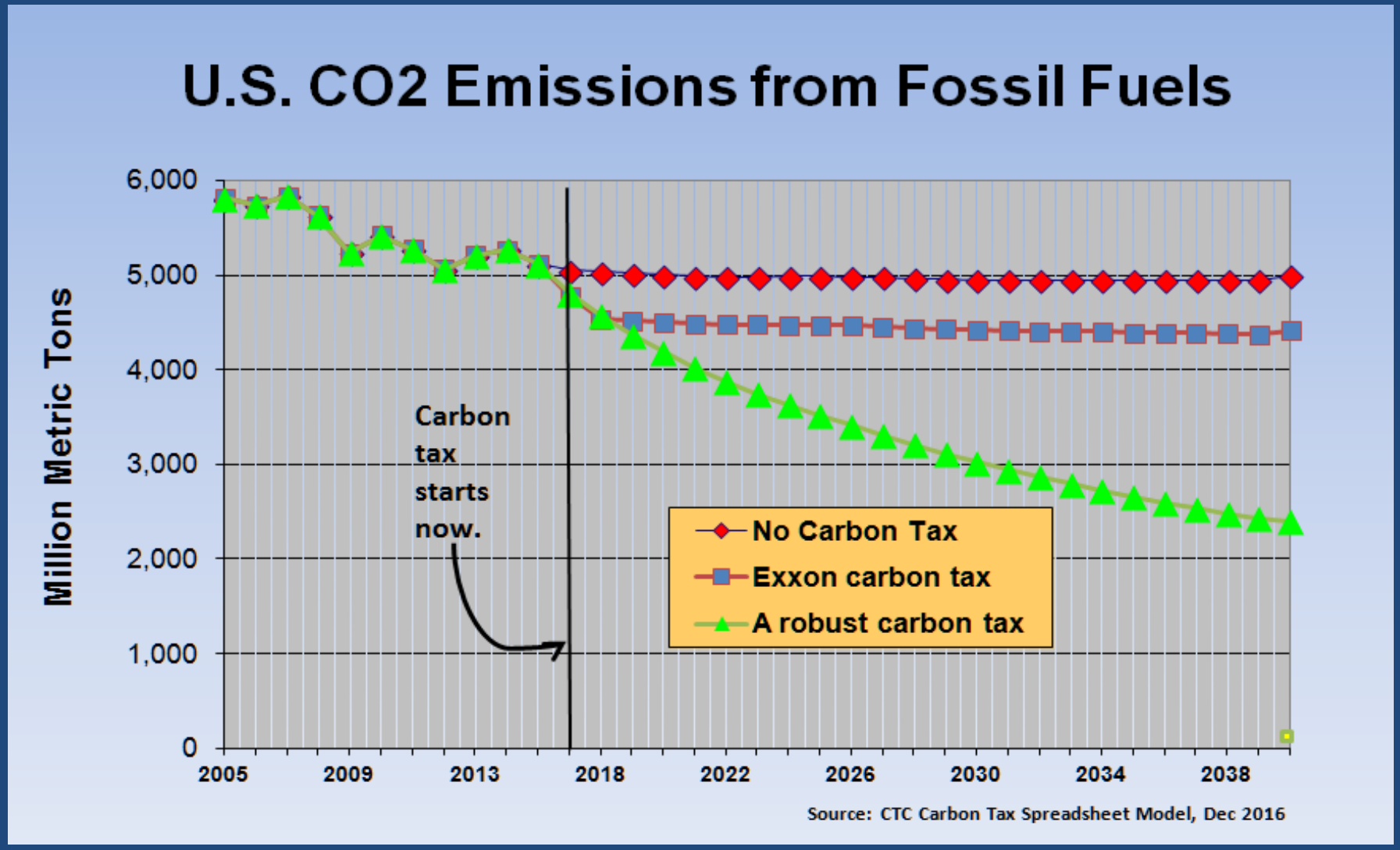


A: The Move NY ("Gridlock Sam")

Fair Plan tolling vehicle trips into and out of the Manhattan CBD (and FHV trips within the "taxi zone")

Q: What policy could drive down U.S. CO2 emissions fast enough to meet the 2°C target?

A: A robust, briskly rising carbon tax.



Q: What policy did the City of New York enact in 2016 to reduce the manufacture and dumping into our environment of plastic bags . . . only to have the State legislature and governor pre-empt it in 2017?

A: A 5¢ bag fee.

Q: What unites these "failed" policies (congestion charging, carbon tax, bag fee)?

A #1: They "internalize externality costs."

A #2: They make people pay for what is now free.

Cassandras have warned of the difficulty

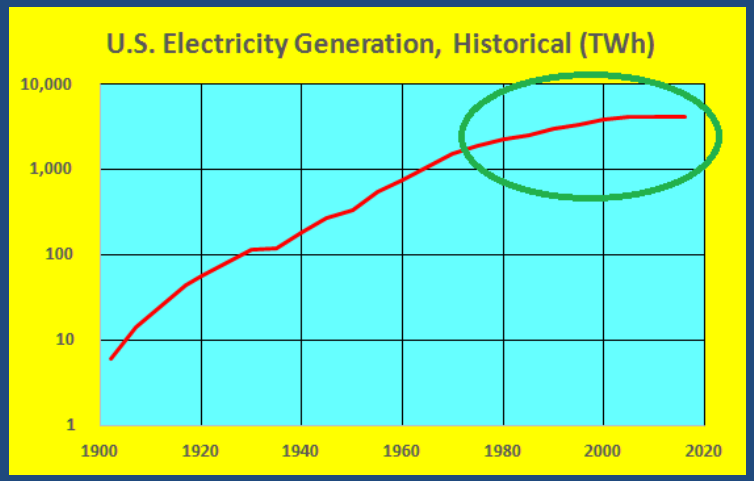
- **Kahneman & Tversky (prospect theory)**
- **Machiavelli**
- **Slemrod (U-Michigan)**

And difficulty grows with inequality.

So … why bother?

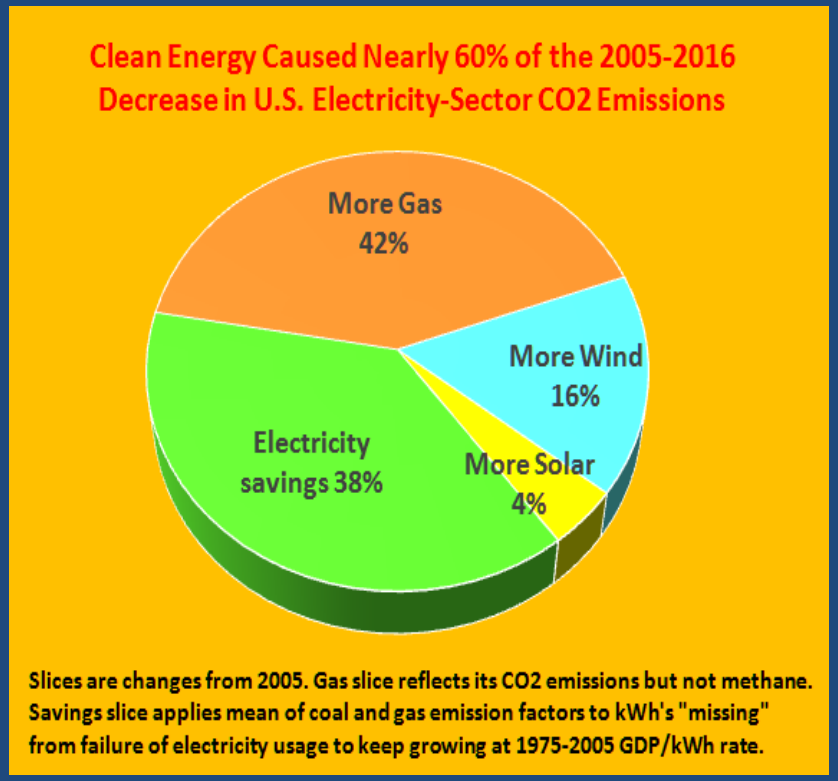
Why bother with externality pricing, when things are getting better?

1. Appliance and vehicle efficiencies are rising

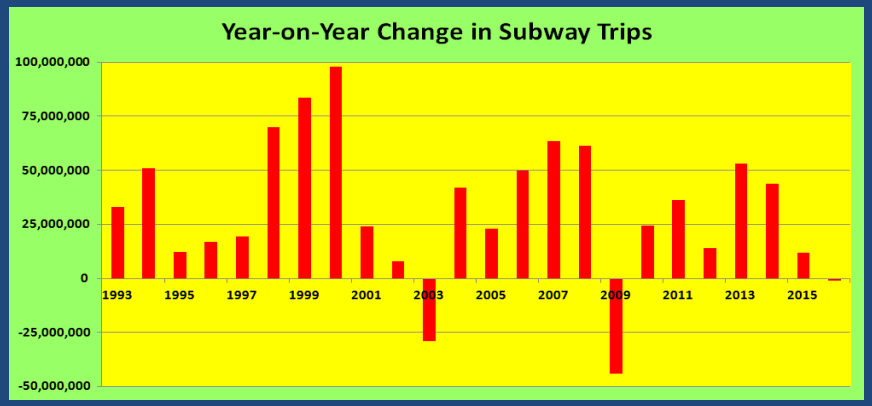


2.Solar and wind costs are plummeting

3. U.S. electricity-sector emissions have fallen 25% since 2005 (achieving 4/5 of the Obama CPP 2030 target)



4. Subways are booming (Δ rides = +3/4 since 1991)



Why externality pricing? Here's why.

- Good progress isn't enough (because climate crisis).
- Electricity = low-hanging fruit.
- Efficiency standards (yay) don't/can't govern usage.
- And they're inherently reactive.
- Jevons Paradox.
- Creative capitalism:
  - Example #1: Uber and other TNC's siphoning subway rides and gridlocking the CBD.
  - Example #2: A million uses no one has thought of yet.

Beyond modeling: What carbon taxes do

- Switch social defaults from consume to conserve.
- Hit the FF companies where it hurts: demand.
- Shrink the power of the FF corporations / lobby.

What we the people must do

- Join/work w/ Citizens Climate Lobby & Move NY.
- Persuade fellow Greens to push for carbon taxes.
- March for Science April 22 and for Climate April 29.
- Shame climate deniers.
- Isolate their enablers.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Broadway
Central Park W
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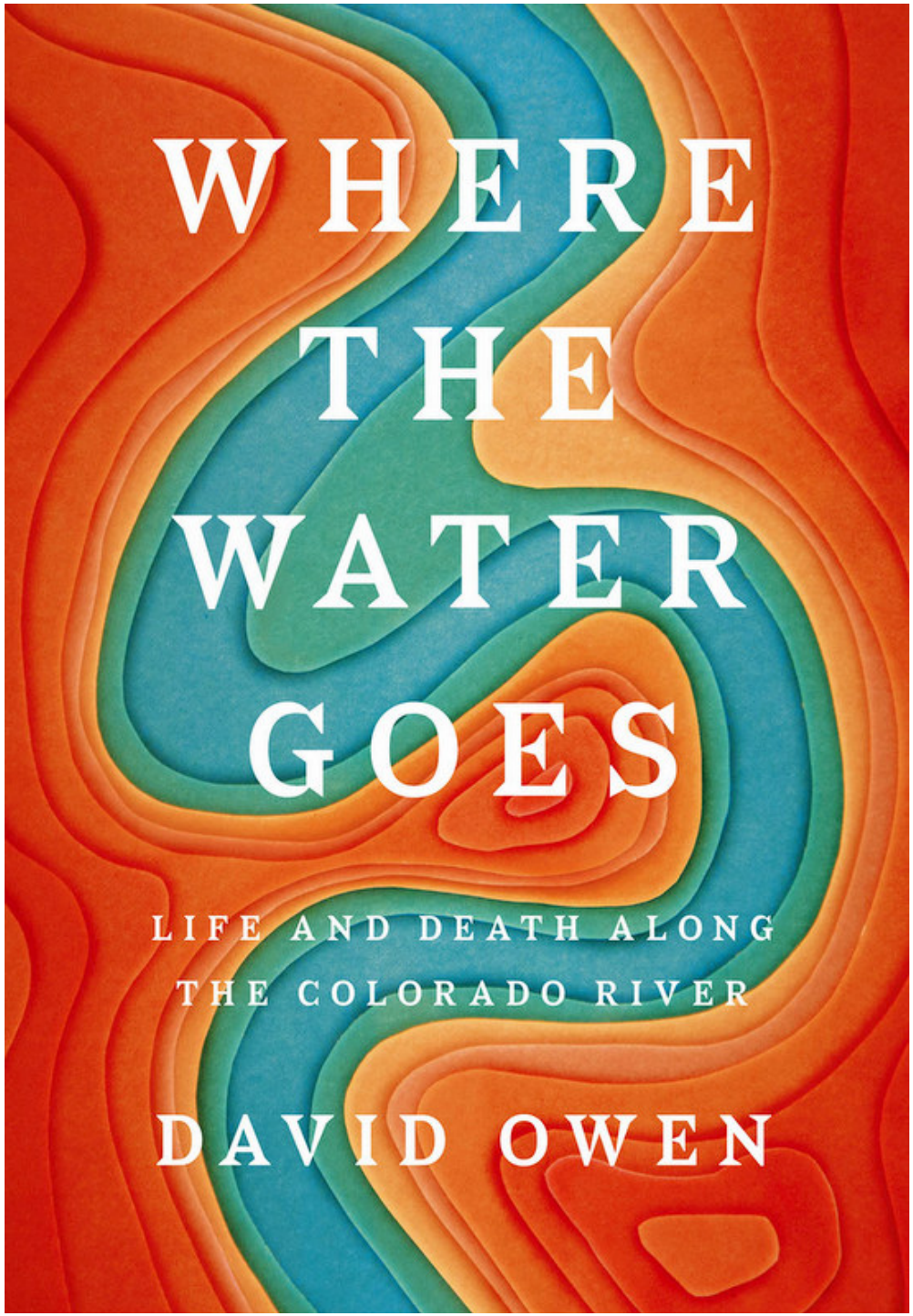
WHERE THE WATER GOES
LIFE AND DEATH ALONG THE COLORADO RIVER
DAVID OWEN

Making New York City Even Greener

Professor Katrina Wyman

New York, March 2017

NYU LAW
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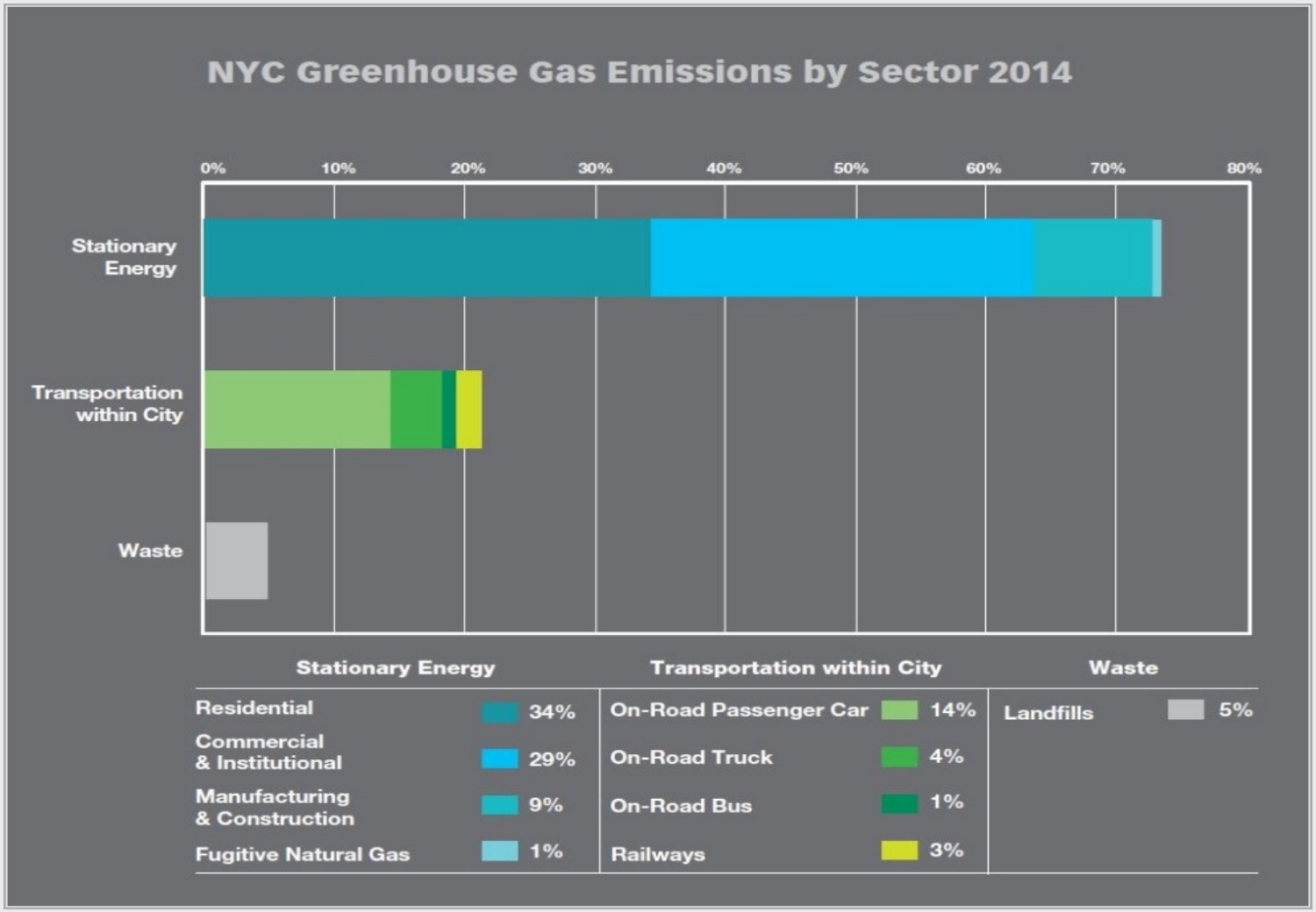
Frank J. Guarini Center on Environmental, Energy, and Land Use Law
at NYU School of Law

Greener buildings are key to greener cities:



Source: NYC Dept. of Transp. Strategic Plan 2016

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Policy Options for Improving Building Efficiency

- A focus on existing building stock is essential
  - 90 percent of the buildings that are here today will still be here in 2050
  - Cannot achieve deep carbon reductions by focusing on new construction alone

- Two main types of policy instruments are available:
  - Market-based approaches
    - e.g., energy disclosure requirements
  - Prescriptive approaches
    - e.g., energy upgrade ("retrofit") requirements

- A combination of these two approaches likely necessary
  - Consumers may behave irrationally even when presented with complete information

The Case for Building Energy Disclosure

- The "Energy Efficiency Gap": The market has failed to adopt many energy efficient technologies that would produce economic savings.

- There is evidence that market failures, including split incentives and information asymmetries, contribute to the energy efficiency gap:

  - E.g., Landlords who do not pay the electricity bill are less likely to have purchased Energy Star appliances (Davis, 2010).

Current Policy Landscape in NYC

- Local Law 84 (benchmarking):
  - Owners of buildings with more than 50,000* ft^2 must annually report building energy and water use.
  - Information is made "available" to the public on City website. *But*
    - very few people actually see the info
    - info is reported on 100-point scale that's hard to interpret

    → not adequately reducing information asymmetries
- EU suggests a means of improvement:
  - (1) include energy scores in advertisements for sale or lease
  - (2) post energy scores onsite where they are visible to the public

*this will be lowered to 25,000 in 2018

Example of EU Building Label

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Energy Upgrade Requirements

- Establish a checklist of EE upgrades required at time of sale
  - Other jurisdictions including San Francisco, Berkeley and Wisconsin have required this for years
- Focus on upgrades that require only modest capital outlays and have fast payback periods
  - Basic weatherization measures appear to meet these criteria
  - Put a cap on required expenditure to avoid overburdening low-income owners
- Take a flexible approach, offering multiple pathways to compliance
  - E.g., allow responsibility for upgrades to be transferred to the buyer
- For large buildings:
  - Tenant Star for tenants, performance standards?

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Creating Sustainable Rooftops

NYC has approximately 40 mi^2 of rooftop space, representing 13% of total land area, but only a fraction of that space is used in a sustainable way.

- Solar Photovoltaics
  - Reduce need for electricity from the grid
- White Roofs
  - Increase albedo effect
  - Reduce cooling needs during hot months
- Green Roofs
  - Increase rooftop insulation/decrease energy use
  - Reduce heat island effect
  - Stormwater management, biodiversity, food security, recreational opportunities
- Question: How can we better incentivize or facilitate move away from traditional roofs?

Policies to Support Green Roofs - Toronto

- Toronto has required green roofs to be included in new developments since 2010
- Requirement applies to buildings with gross floor area over 2,000 m^2
- Between 20% and 60% of the roof must be covered with vegetation (minimum coverage size increases with size of building)

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Transportation

- Over 20% of emissions from transportation
- A few ideas:
  - Invest in mass transit
    - Subway ridership declined in 2016 for the first time since 2009
  - Road pricing
    - Develop options for high-tech road pricing, modelled on Uber's "surge pricing" & propose a pilot regime for road pricing for part of the City

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There are many types of cities

- No one size fits all
- Some are growing and some are shrinking
- Some are on the coasts and some are inland
- Some are more densely populated than others

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Thank you

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