Environmental Commissions and the Struggle to Prevent Extreme Climate Change

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Alternate Title:

Why New Jersey Environmental Commissions will be part of a make or break effort to prevent the worst climate change

Will our Actions Make a Difference?

PNAS

Carbon choices determine US cities committed to futures below sea level

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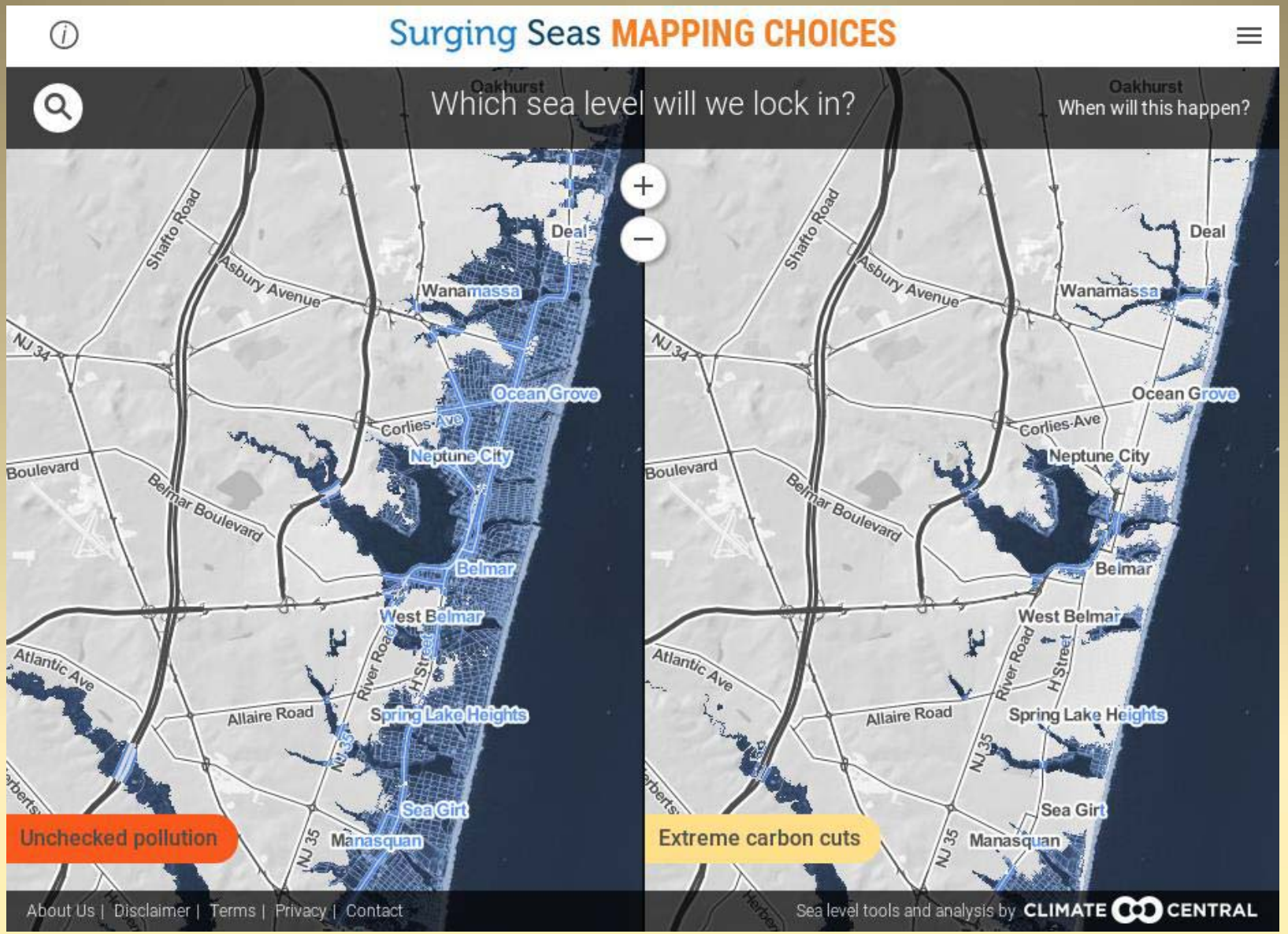
Anthropogenic carbon emissions lock in long-term sea-level rise that greatly exceeds projections for this century, posing profound challenges for coastal development and cultural legacies. Analysis based on previously published relationships linking emissions to warming and warming to rise indicates that unabated carbon emissions up to the year 2100 would commit an eventual global sea-level rise of 4.3–9.9 m. Based on detailed topographic and population data, local high tide lines, and regional long-term sea-level commitment for different carbon emissions and ice sheet stability scenarios, we compute the current population living on endangered land at municipal, state, and national levels within the United States. For unabated climate change, we find that land that is home to more than 20 million people is implicated and is widely distributed among different states and coasts. The total area includes 1,185–1,825 municipalities where land that is home to more than half of the current population would be affected, among them at least 21 cities exceeding 100,000 residents. Under aggressive carbon cuts, more than half of these municipalities would avoid this commitment if the West Antarctic Ice Sheet remains stable. Simi-

of up to 1.2 m this century has been estimated to threaten up to 4.6% of the global population and 9.3% of annual global gross domestic product with annual flooding by 2100 in the absence of adaptive measures (12). Higher long-term sea levels endanger a fifth of all United Nations Educational, Scientific and Cultural Organization world heritage sites (13). These global analyses depend on elevation data with multimeter rms vertical errors that consistently overestimate elevation and thus underestimate submergence risk (14). Here we explore the challenges posed under different scenarios by long-term SLR in the United States, where highly accurate elevation and population data permit robust exposure assessments (15, 16).

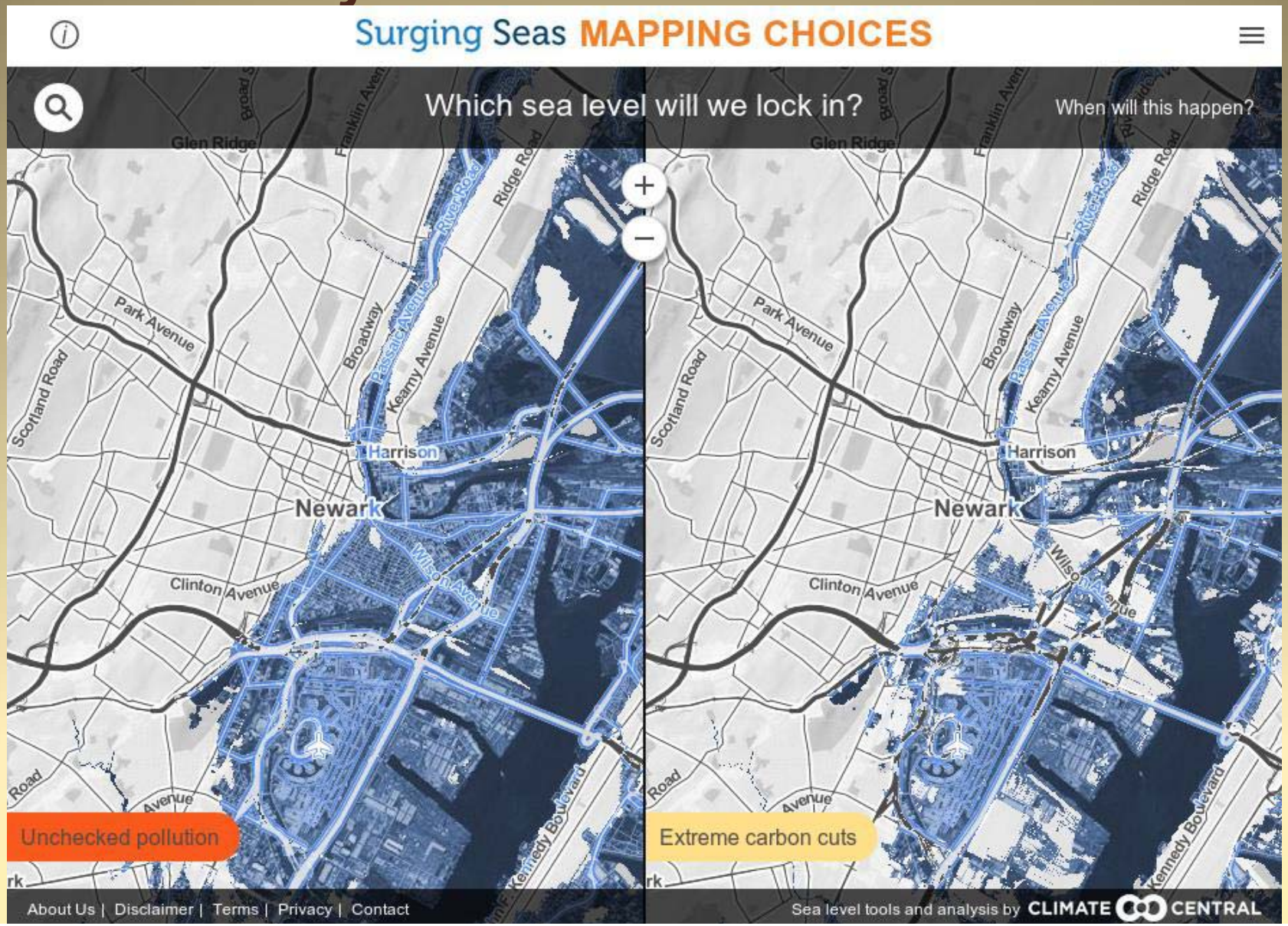
Our analysis combines published relationships between cumulative carbon emissions and warming, together with two possible versions of the relationship between warming and sea level, to estimate global and regional sea-level commitments from different emissions totals. The first version, the "baseline" case, employs a minor modification of the warming–SLR relationship from Levermann et al. (10) The second version, the "triggered"

ENVIRONMENTAL SCIENCES

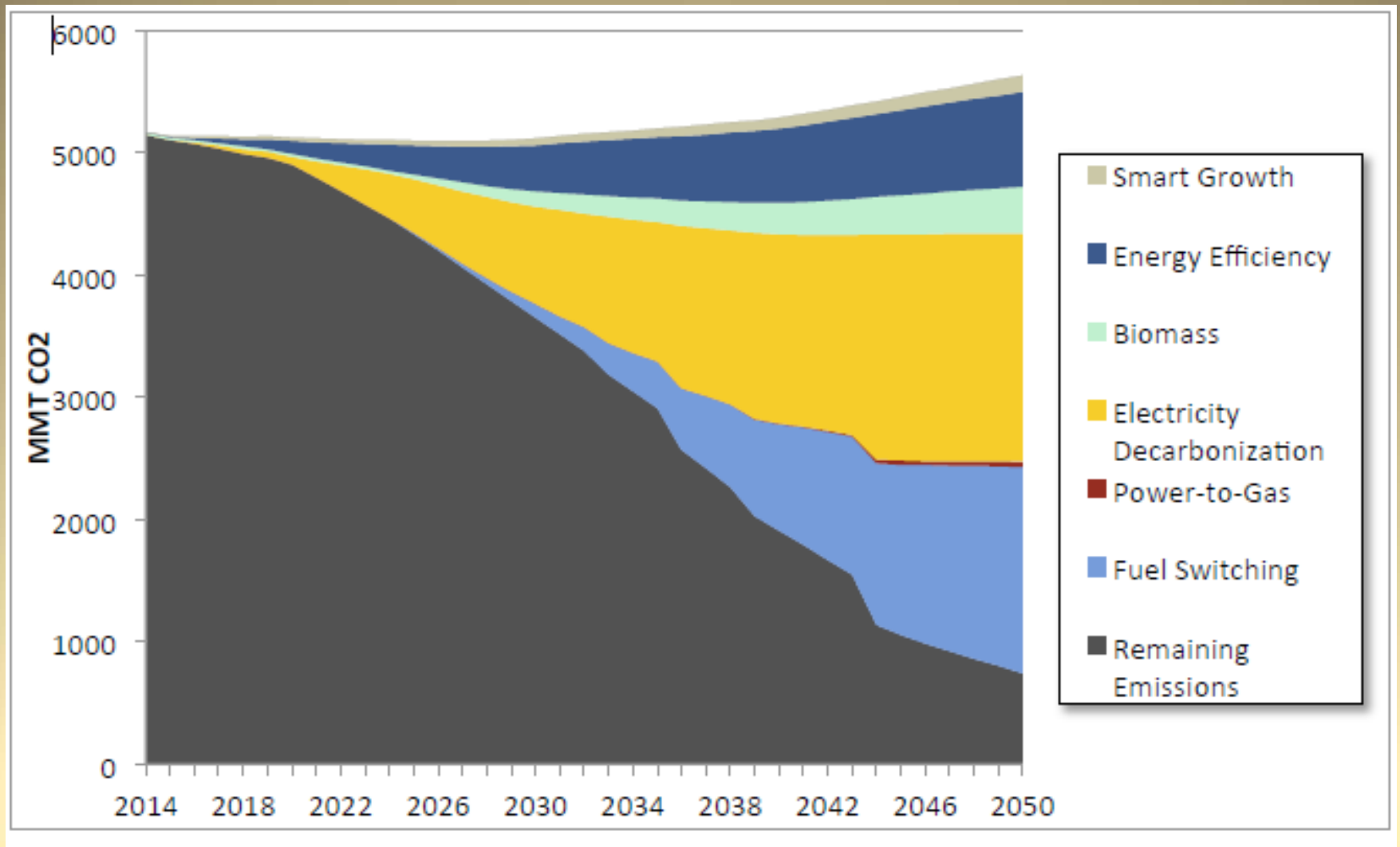
Sea level rise: just one of the ways



Not just our shore towns



Pathways to “Deep Decarbonization”



Source: Pathways to Deep Decarbonization in the United States--US2050 Report

Quick summary:

Whether or not we take action will make a difference

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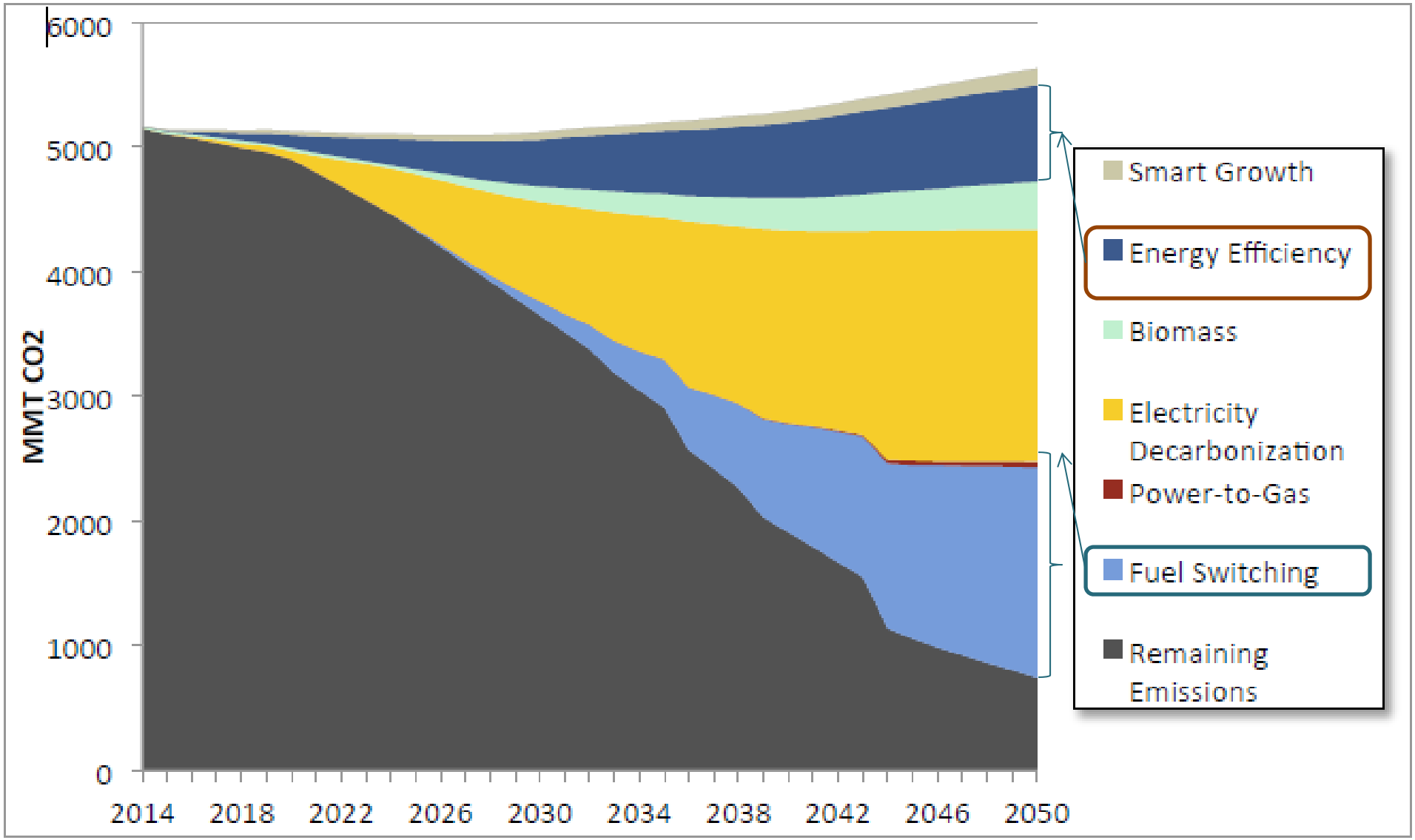
To do our share, we must find ways to eliminate 80% of our carbon emissions

Two major avenues:

- Near total switching to ultra-low carbon-emitting energy (renewable energy) where possible
- Energy Efficiency

Efficiency and Source Switching



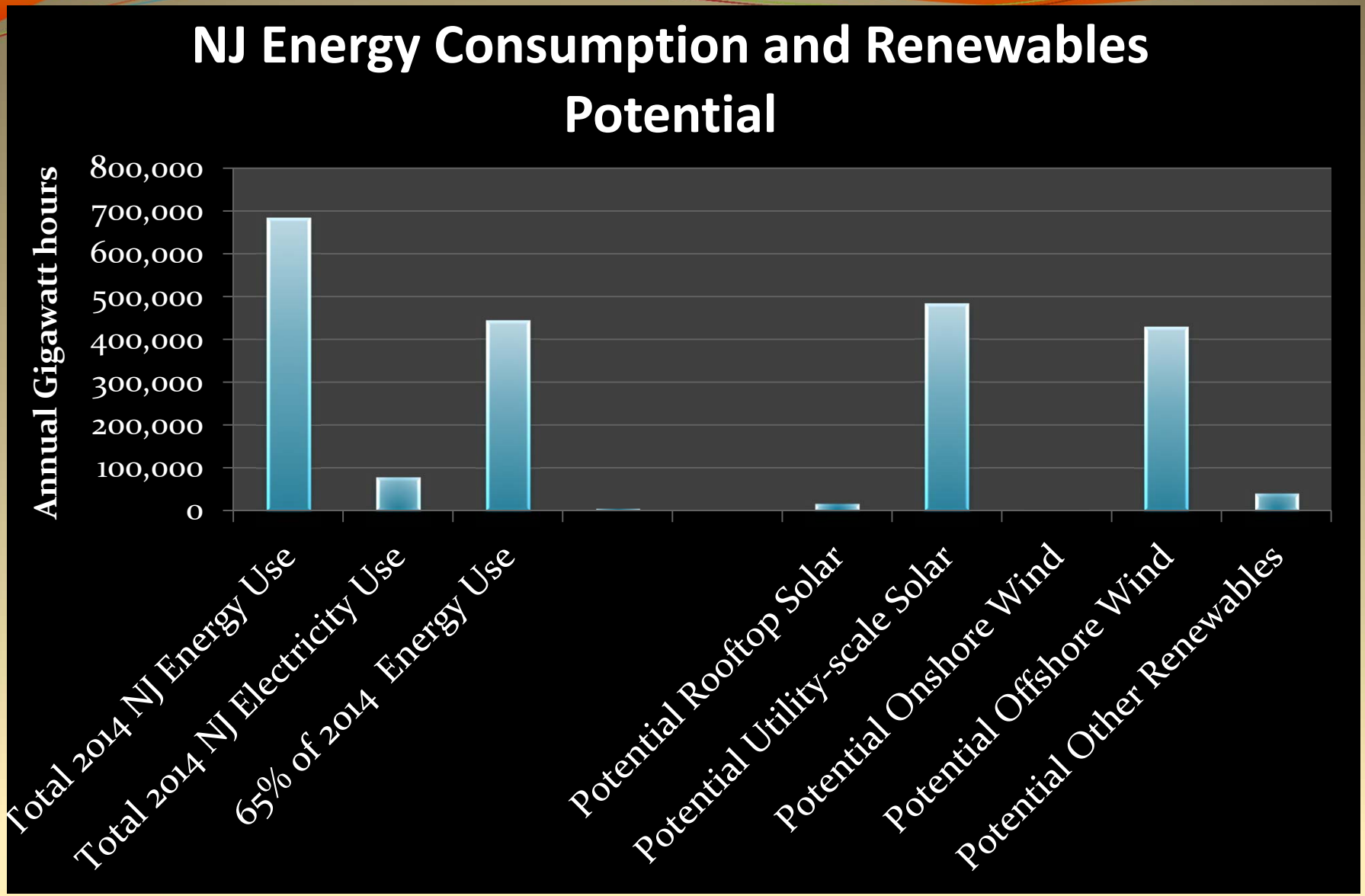
Actions at the local level:

Energy Efficiency and Converting to Clean Energy Sources

- Homes
- Commerce and non-profits
- School and municipal operations

Local role in fostering non-carbon electricity

NJ Energy Consumption and Renewables Potential



Sources: **US EIA: New Jersey *State Profile and Energy Estimates***

NREL : U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis

Why Environmental Commissions can be crucial to the success of climate actions

- Long range perspective
- Straddle local government and other local sectors
- Foster communication between municipalities
- Experience in navigating tradeoffs between priorities
- Don’t just oppose bad development but support good development

Environmental Commissions as Local Facilitators of Lower Carbon Energy

- Information and education
- Organizing promotional campaigns
- Enabling appropriate infrastructure (and resisting dead-end expenditures)
- Navigating tradeoffs i.e. getting to YIMBY (Yes in My Backyard)

Next steps for moving to a low-carbon future?

- Decide this is somethings we need to take on with urgency and seriousness
- Open channels of communication between environmental commissions and similar groups state-wide
- Develop a shared understanding of the problem and what environmental commissions can do about it
- Get to work on realistic but ambitious plans for our communities and state

“The clear and present danger of climate change means we cannot burn our way to prosperity. . .We need to find a new, sustainable path to the future we want.”

U.N. Secretary General Ban Ki-moon

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