



National Coal Council

2017 Annual Fall Meeting

September 27, 2017

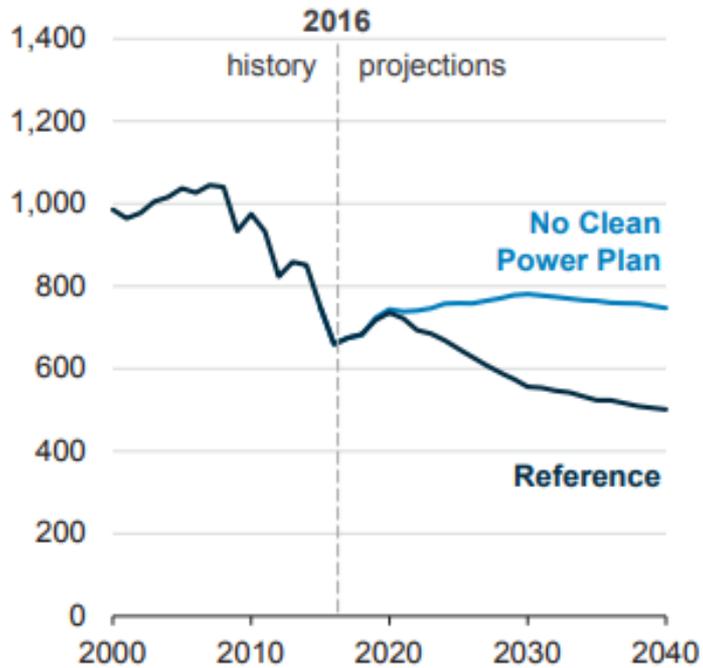
Birmingham, AL

Dan Byers
Vice President - Policy
Global Energy Institute
U.S. Chamber of Commerce



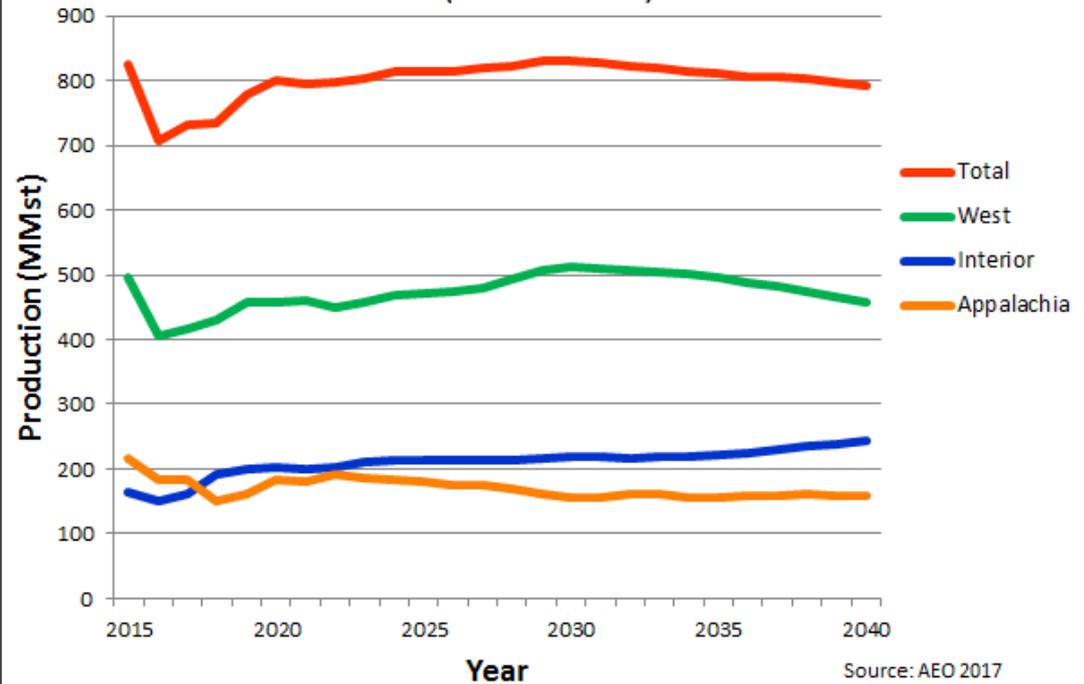
Flat is the New “Up”

Coal consumption in electric power sector
million short tons



Coal Production Outlook

(without CPP)





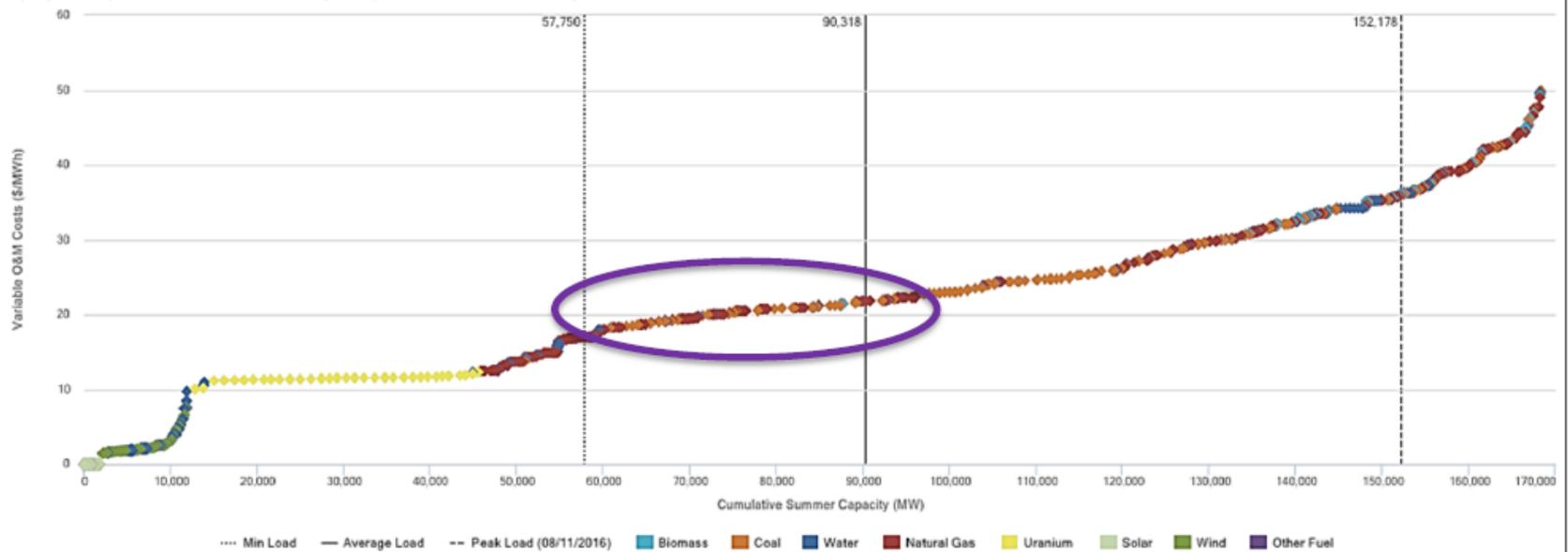
Coal-Relevant Issues to Watch

1. Gas Prices

Coal-natural gas price spreads have grown in influence

Generation Supply Curve - PJM: 2016

Capacity Technology Adjustments: Combined Cycle - 100.00%; Combustion Turbine - 100.00%; Hydraulic Turbine - 100.00%; Internal Combustion - 100.00%; Nuclear - 100.00%; Pump Storage - 100.00%; Steam Turbine - 100.00%; Wind Turbine - 100.00%; Other - 100.00%; Geothermal - 100.00%; Solar - 100.00%;
 Capacity Status Adjustments: Announced - 100.00%; Early Development - 100.00%; Advanced Development - 100.00%; Under Construction - 100.00%;

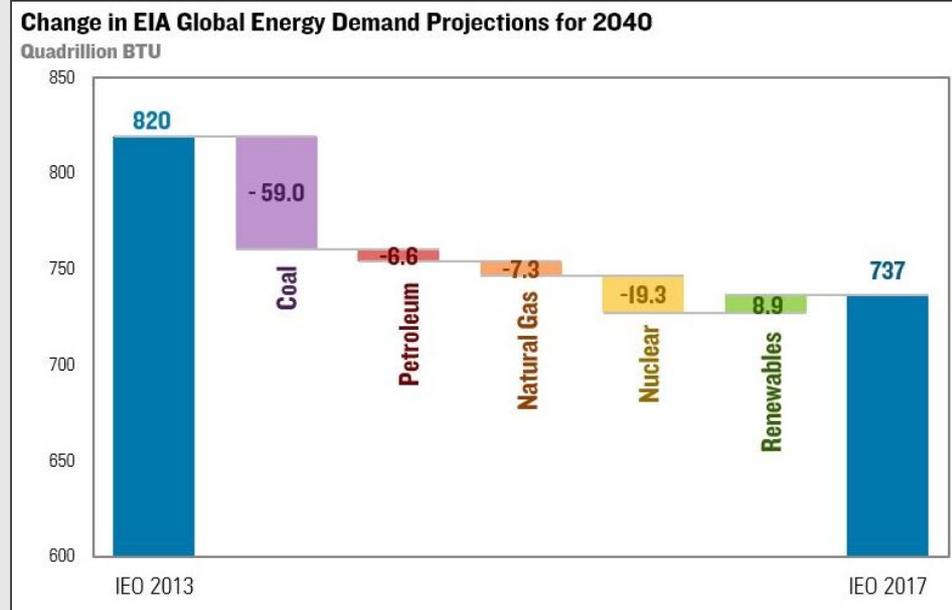
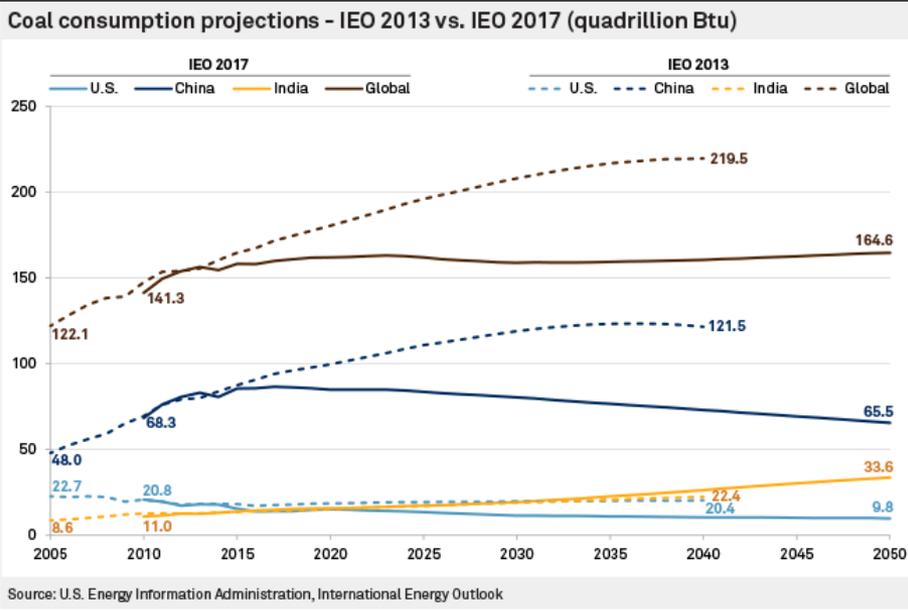


Source: S&P Global Market Intelligence, as of 2/27/2017.

● Every \$0.10/mmBtu change in natural gas moves +/- 4.5 million tons of Eastern coal and 8.6 million tons of PRB coal

1b. Economic Growth

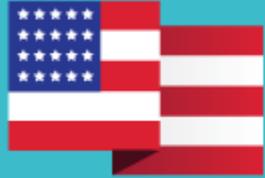
- **Headline finding of 2017 EIA IEO is lowered coal projections...**



- **...but primary driver of decreased electricity (and coal) demand between 2013 and 2017 International Energy Outlook is **reduced global economic growth** (3.6% annualized vs. 2.8% in 2017).**



1b. Economic Growth



#LetsGrow

- EIA Reference Case annual U.S. GDP growth of 2.2% results in *0.4%* annual electricity demand growth.
- High Economic Growth Case U.S. GDP growth of 2.6% results in *0.6%* annual electricity demand growth.
- In 2030, this modestly higher growth results in 81 billion kWh more demand—*2 percent of national demand.*



2. Grid Management Policies

- Market distortions gradually pressuring traditional baseload resources.
- Reliability not immediate concern, but *resiliency* risks from disruptive events grow as grid diversity is reduced.
- Improved price formation, “essential reliability services” may help address.
- **\$50k Q: What if anything will FERC and/or states do to address issue?**

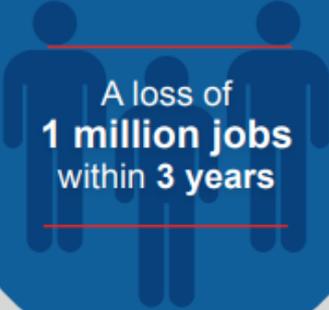
AMERICA NEEDS TO KEEP ITS DIVERSE ENERGY MIX

Today, America's diverse energy resources are providing abundant, reliable and affordable electricity that is critical to our economy and national security.

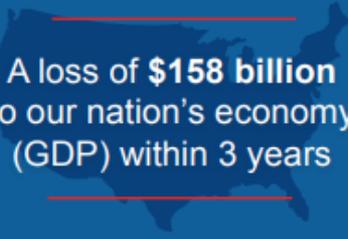
But that is at risk, thanks to subsidies, mandates and market conditions which are jeopardizing some of America's most reliable and resilient electricity resources. A new study we sponsored conducted by IHS Markit, a respected research firm, quantifies just how important maintaining all of America's electricity resources—coal, natural gas, nuclear and renewables—is for our economy.

The U.S. Department of Energy found that a diverse set of resources is vital for our security and our economic future, and to keeping the lights on 24/7. Thanks to this new IHS Markit study, we can now see the employment and economic costs of abandoning our diverse electricity mix.

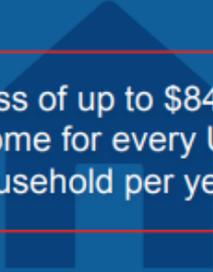
Our current energy mix, including significant contributions from nuclear and coal, is saving us \$114 billion per year in electricity costs – lowering the average retail price by 27 percent. Without this diverse, balanced electricity portfolio, prices could go up. These higher prices would lead to:



A loss of
1 million jobs
within 3 years



A loss of **\$158 billion**
to our nation's economy
(GDP) within 3 years



A loss of up to \$845 in
income for every U.S.
household per year.



Meanwhile, Down Under...

FINANCIAL REVIEW

But the government all-but confirmed on Tuesday that it had moved away from plans to implement a CET and will instead unveil a policy which places a heavier emphasis on cheap and reliable power .

Energy Minister Josh Frydenberg said last week's report by the Australian Energy Market Operator which highlighted an intermediate-term shortfall in baseload power if Liddell closed in 2022 had "reset the debate" and "placed a focus and a premium" on baseload and stability.

Mr Turnbull told Parliament "the real challenge to the reliability of the energy system is the failure of the current market system to take into account the importance of having baseload power".

"We need to ensure that the energy market design provides a suitable framework for investment that doesn't simply get new generation, but gets generation of the right kind," he said.

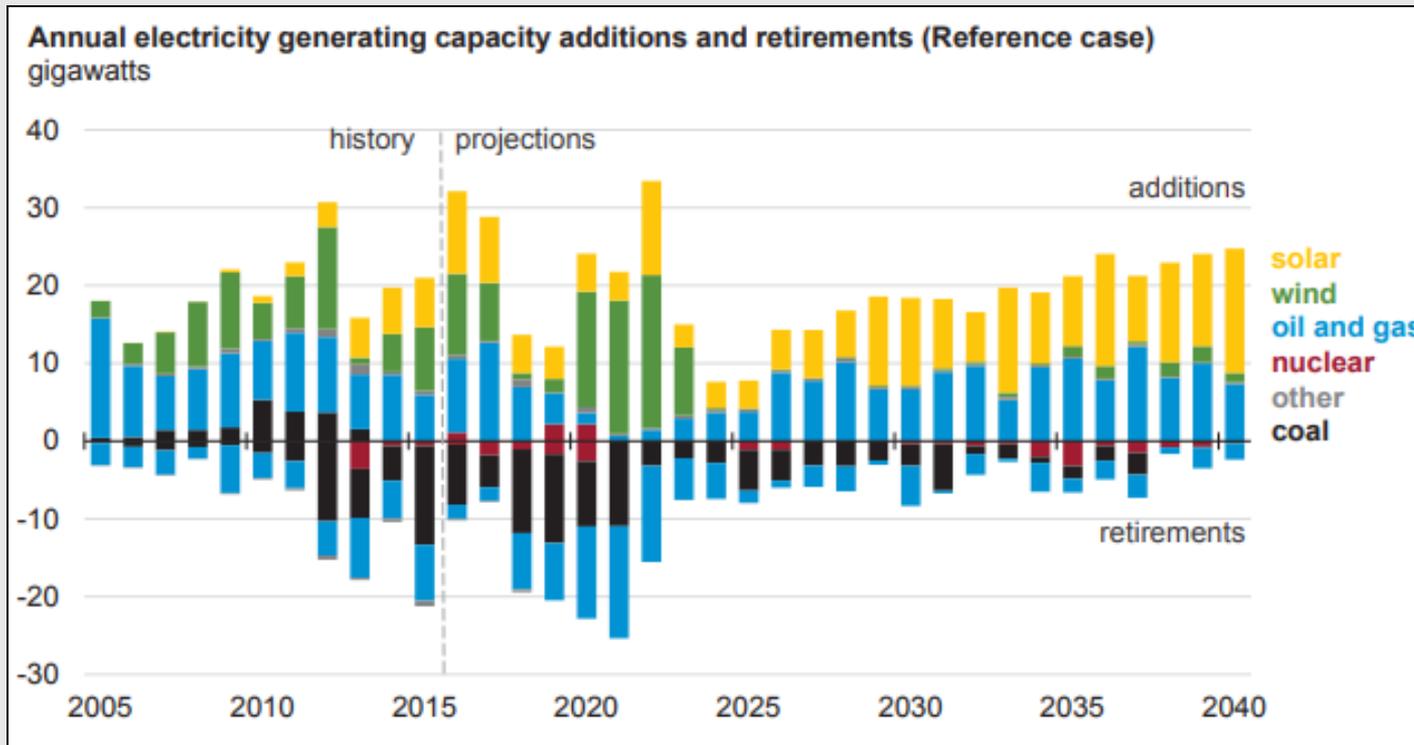
"Because you have to keep the lights on, and you have to ensure that people can afford to pay to keep the lights on."

Mr Turnbull insisted there could be a policy which kept coal burning longer but still enabled Australia to meet its 2030 emissions reductions targets.



3. Subsidies/Mandates

- PTC/ITC/RPS/EERS/PURPA/NET METERING/ETC
- AWEA projects 45 GW new wind capacity coming online between 2017-2023)





4. New 111(d) Guidelines

- **Formal CPP Repeal Proposal expected early October.**
- **Revised 111(d) guidelines likely emphasize inside-the-fence, state-driven, facility-focused flexible standards.**
- **CAA requirement to consider remaining useful life will be followed.**
- **Timeline an important factor.**



5. New 111(b) Guidelines

- **111(b) lawsuit currently in indefinite abeyance.**
- **Status of Kemper, Boundary Dam facilities illustrate need to revisit EPA's "adequately demonstrated" claims.**
- **New BSER likely to take cost, achievability, practical issues into account.**
- **Formal repeal and reconsideration of 111(b) rule likely to lag 111(d), though finalization may be concurrent.**



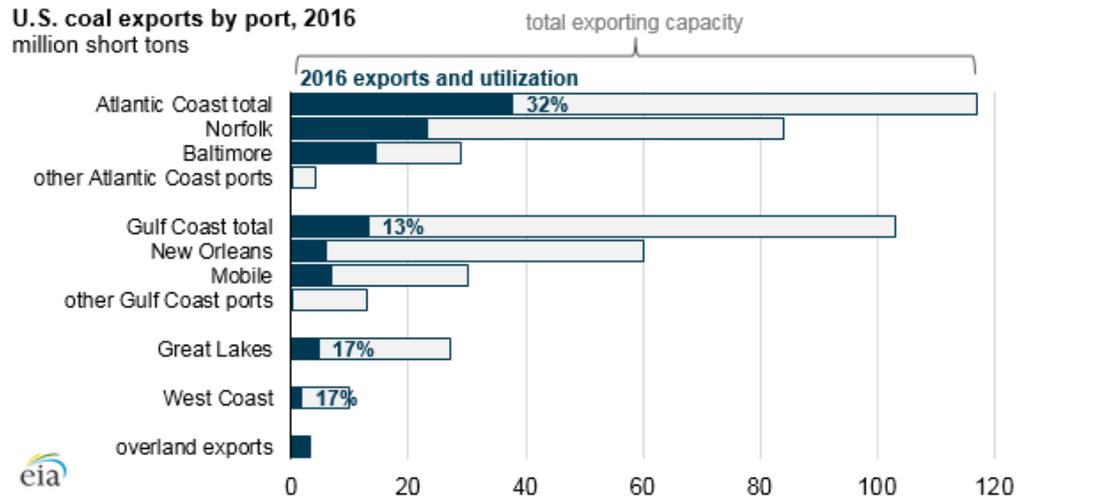
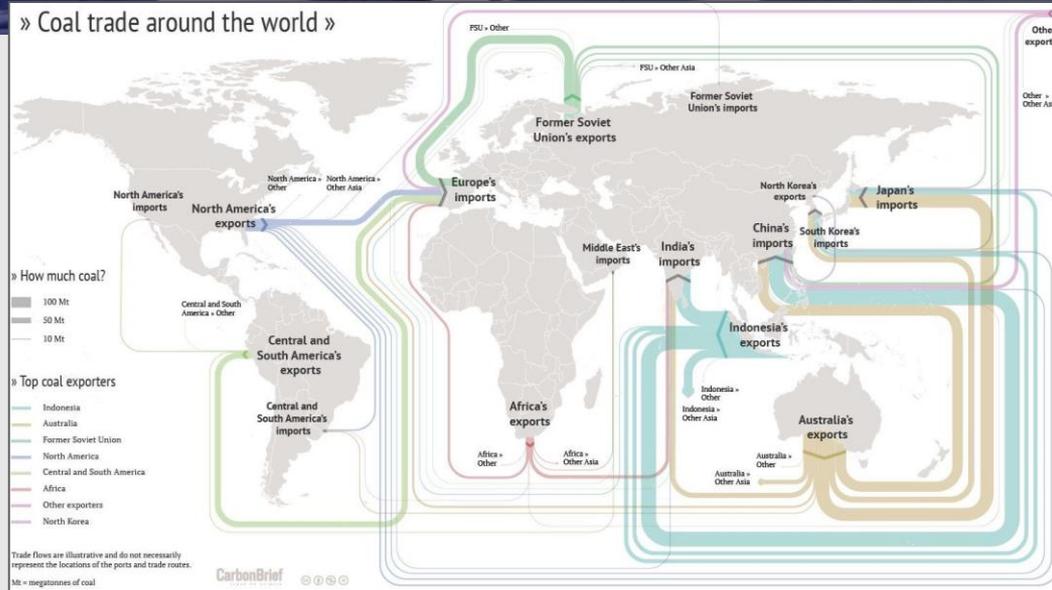
6. New Source Review Reform

Average Age of Coal Fleet by State



- Restrictive interpretation of NSR perversely discourages efficiency + operational improvements.
- Combination of administrative and statutory reforms necessary—focus on clarifying “major modification” and “routine maintenance.”
- May be addressed as part of CPP reconsideration.

7. Coal Exports

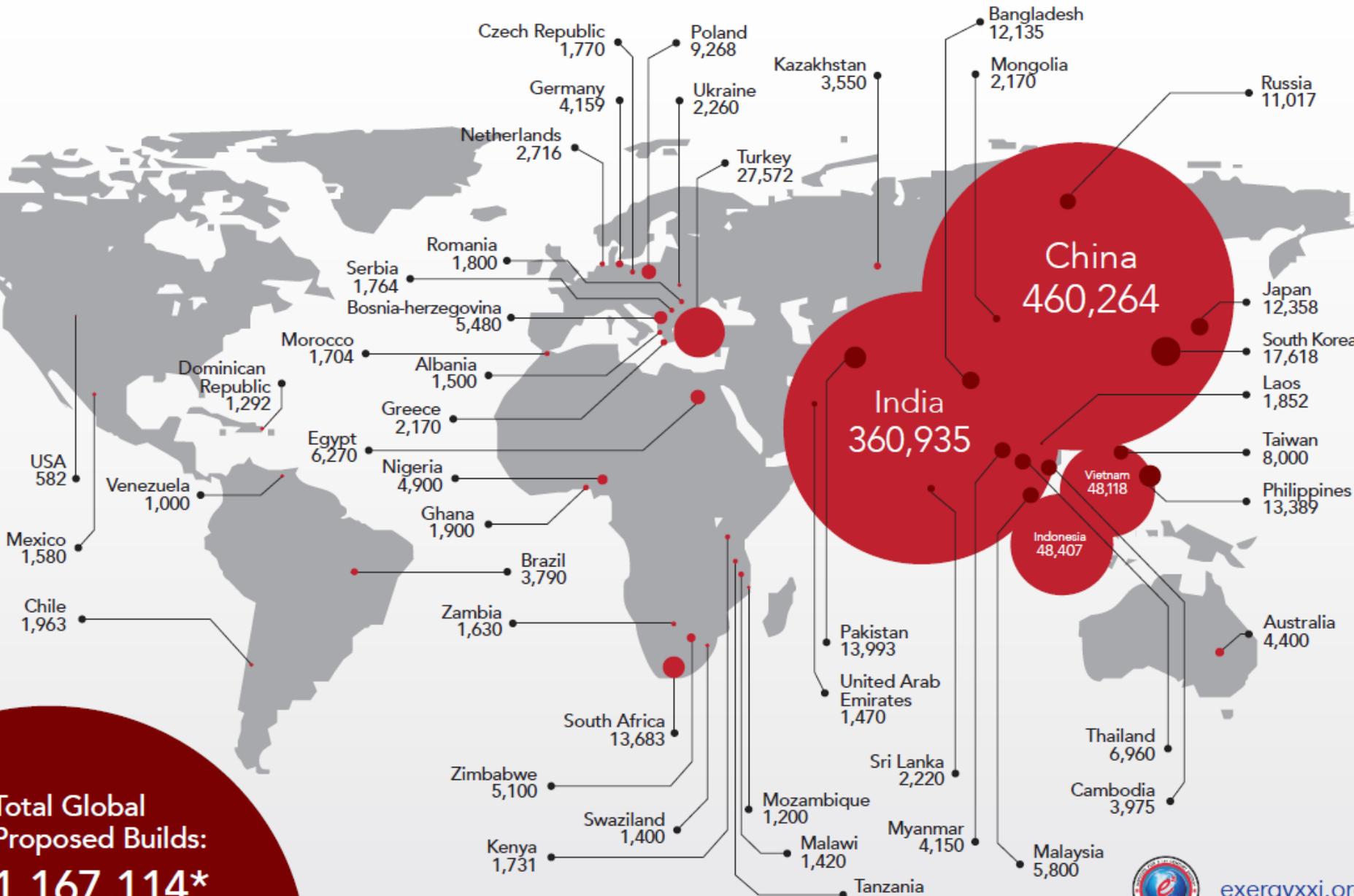


Source: U.S. Energy Information Administration, *Quarterly Coal Report* and various trade press reports and company press releases

Note: West Coast includes coal exported from Alaska.

Coal-fired Power Plants Planned and Under Construction

Total installed capacity (megawatts)



Total Global Proposed Builds:
1,167,114*

Source: Platts database, September 2015
Note: 26 countries planning to build new capacity of 1,000 MW or less are not shown



8. Retrospective Reg Reform

Recently Finalized Regulations Impacting Coal:

<ul style="list-style-type: none">Stream Protection Rule (Interior)	<ul style="list-style-type: none">Regional Haze (EPA)
<ul style="list-style-type: none">NEPA Guidance (White House)	<ul style="list-style-type: none">Regional Haze (EPA)
<ul style="list-style-type: none">CO2 Regulations for New Power Plants (NSPS) (EPA)	<ul style="list-style-type: none">Cross State Air Pollution Rule (CSAPR) Updates (EPA)
<ul style="list-style-type: none">CO2 Regulations for Existing Power Plants (ESPS) (EPA)	<ul style="list-style-type: none">Mineral Valuation (DOI-ONNR)
<ul style="list-style-type: none">070909090909 (EPA)	<ul style="list-style-type: none">Coal Lease Moratorium (Interior)
<ul style="list-style-type: none">"Waters of the U.S." (EPA)	<ul style="list-style-type: none">ES&F Designations (Interior)
<ul style="list-style-type: none">Coal Residuals (EPA)	<ul style="list-style-type: none">Monument Designations (POTUS)
<ul style="list-style-type: none">International financing (Treasury)	<ul style="list-style-type: none">MATS Supplemental Findings (EPA)
<ul style="list-style-type: none">Start-Up, Malfunction (EPA)	<ul style="list-style-type: none">Power Plant Emissions (EPA)



8. Prospective Reg Reform

- Energy legislation of any kind seems unlikely
- Great need for administrative/process reforms at EPA:
 - Restoration of cooperative federalism
 - Enhanced public participation, especially with small business
 - Cost-Benefit Accounting
 - Use of non-public scientific and technical data in regulations
 - Whole economy modeling
 - Black box modeling
 - Regulatory science reforms
- NEPA guidance and other permitting relief possible

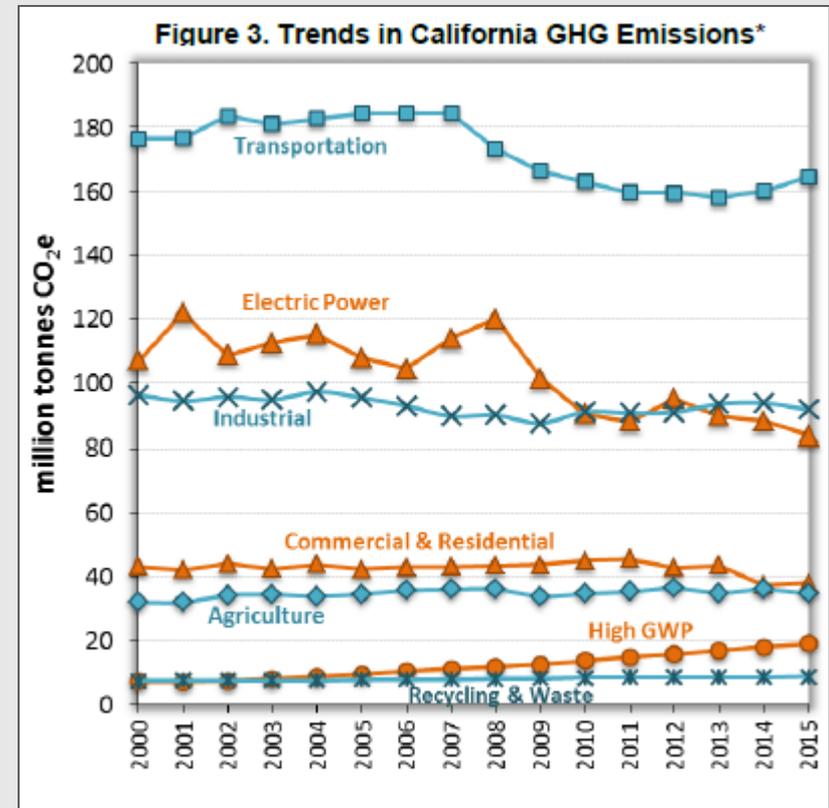


9. NEPA and “Downstream GHGs”

- August 2016: Obama White House releases NEPA GHG Guidance.
- March 2017: Trump White House rescinds NEPA GHG Guidance.
- August 2017: D.C. Circuit remands FERC pipeline EIS for failure to consider downstream greenhouse-gas emissions.
- September 2017: 10th Circuit (Denver) remands BLM coal lease EIS for similar reasons.
- Divergent agency approaches and court views likely to force clarifications *somewhere*.

10. California Cap and Trade, RGGI

- California's post-2020 cap-and-trade law sets forth most stringent carbon restrictions in the world.
- State must cut economy-wide emissions 40% (182 mmt) by 2030.
- Optimistic reductions for electric (40 mmt) and transportation (70 mmt) still leave large shortfall.
- **Success or failure of CA cap-and-trade in early 2020s will greatly influence national CO2 debate.**

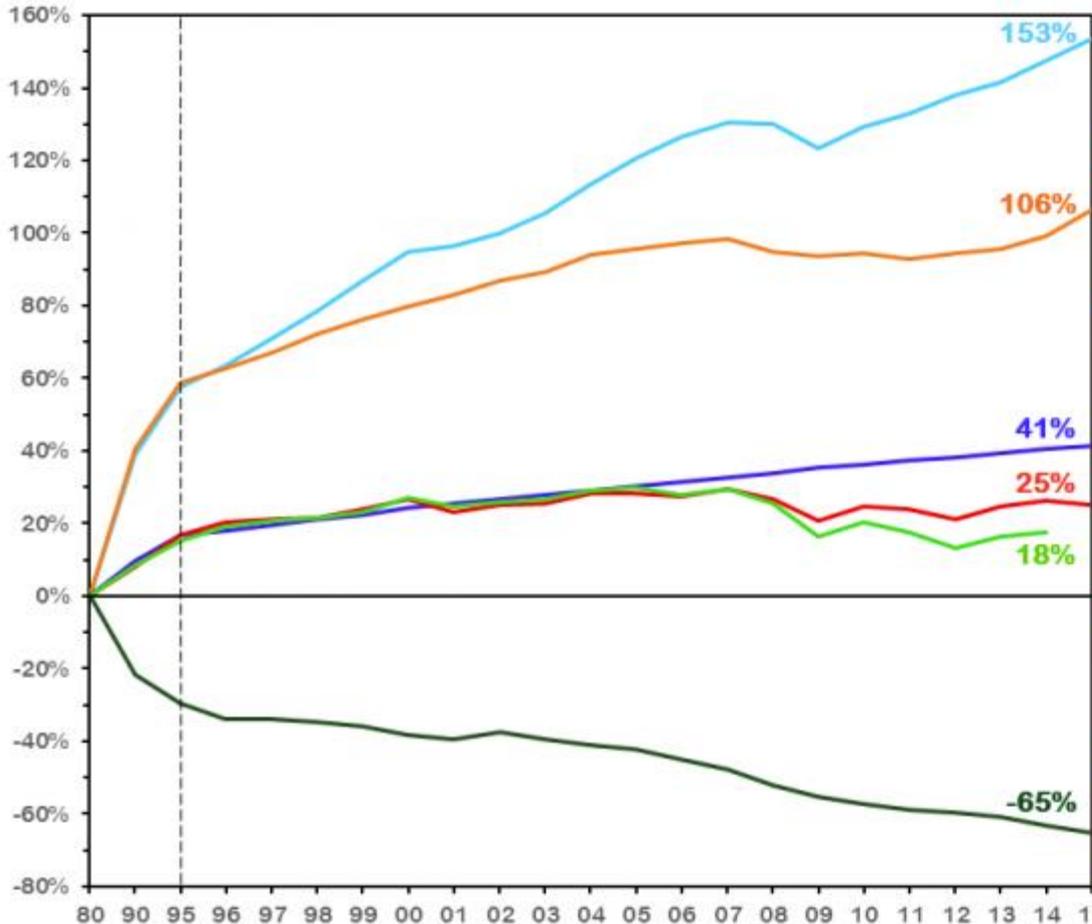




Clearing the Air on Cleaning the Air

Economic Growth + Environmental Progress

Comparison of Growth Areas and Emissions, 1980-2015



Gross Domestic Product



Vehicle Miles Traveled



Population



Energy Consumption



CO₂ Emissions



Aggregate Emissions
(Six Common Pollutants)



Not Your Father's Coal Plants

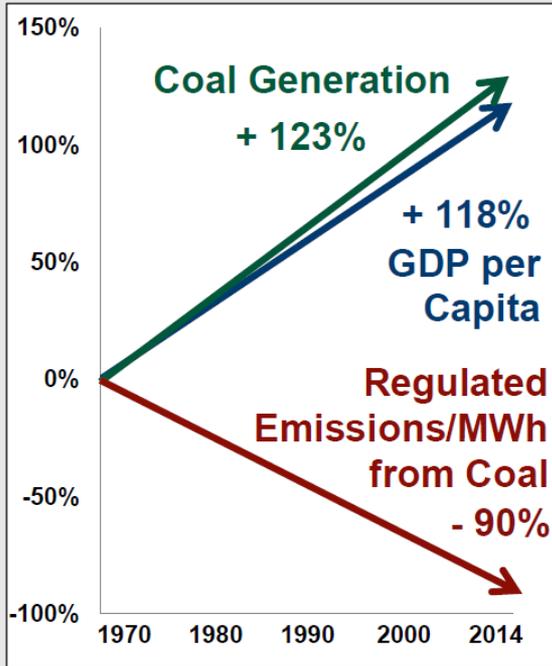
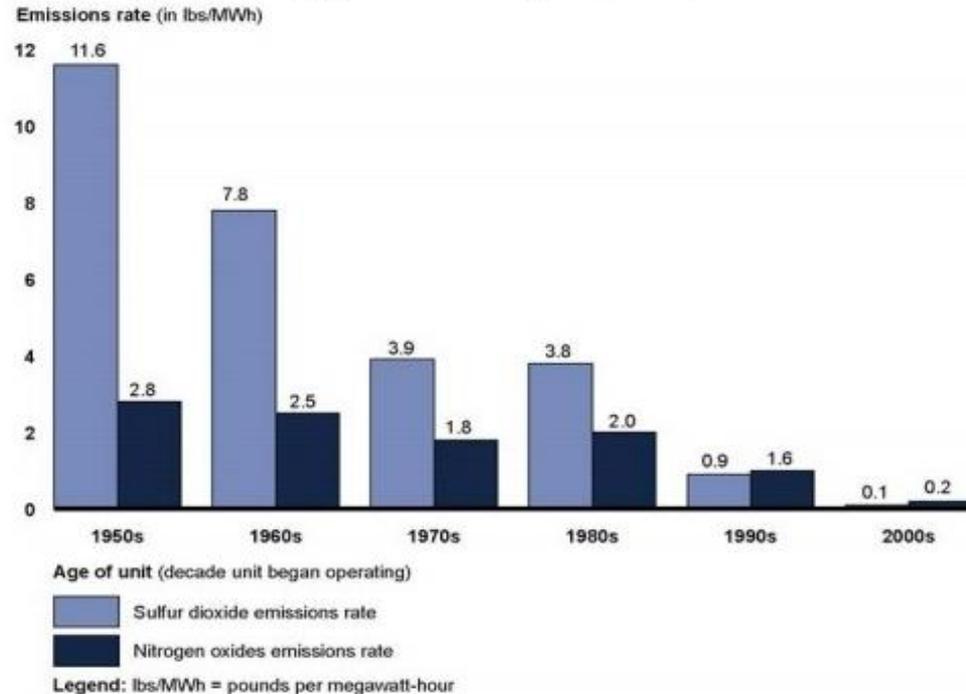


Figure 5: Emissions of Sulfur Dioxide and Nitrogen Oxides per Unit of Electricity Generated by Fossil Fuel Generating Units in 2010, by Decade Unit Began Operating

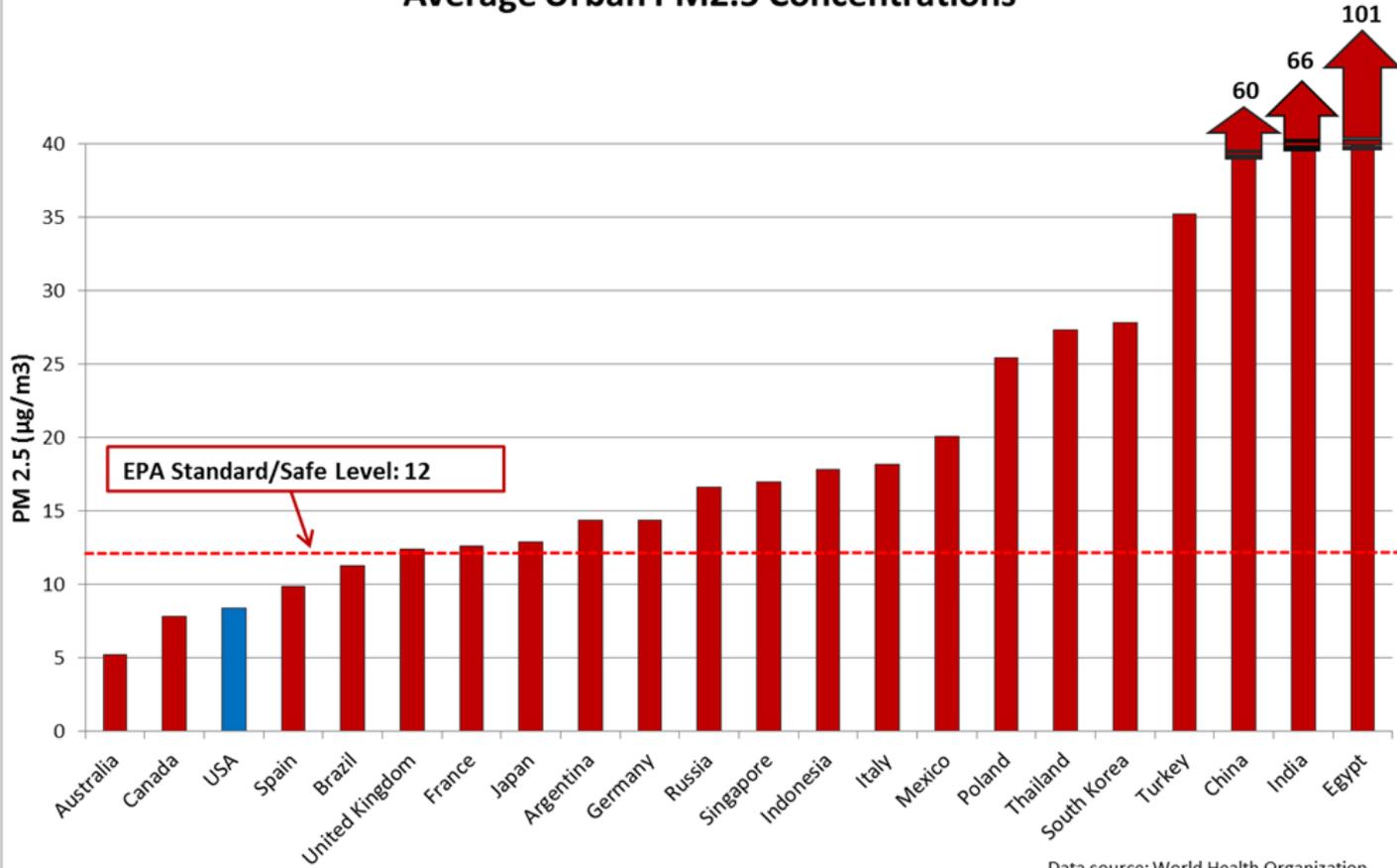


Source: GAO analysis of Ventyx data.



U.S. Clean Air Success Story

Average Urban PM2.5 Concentrations

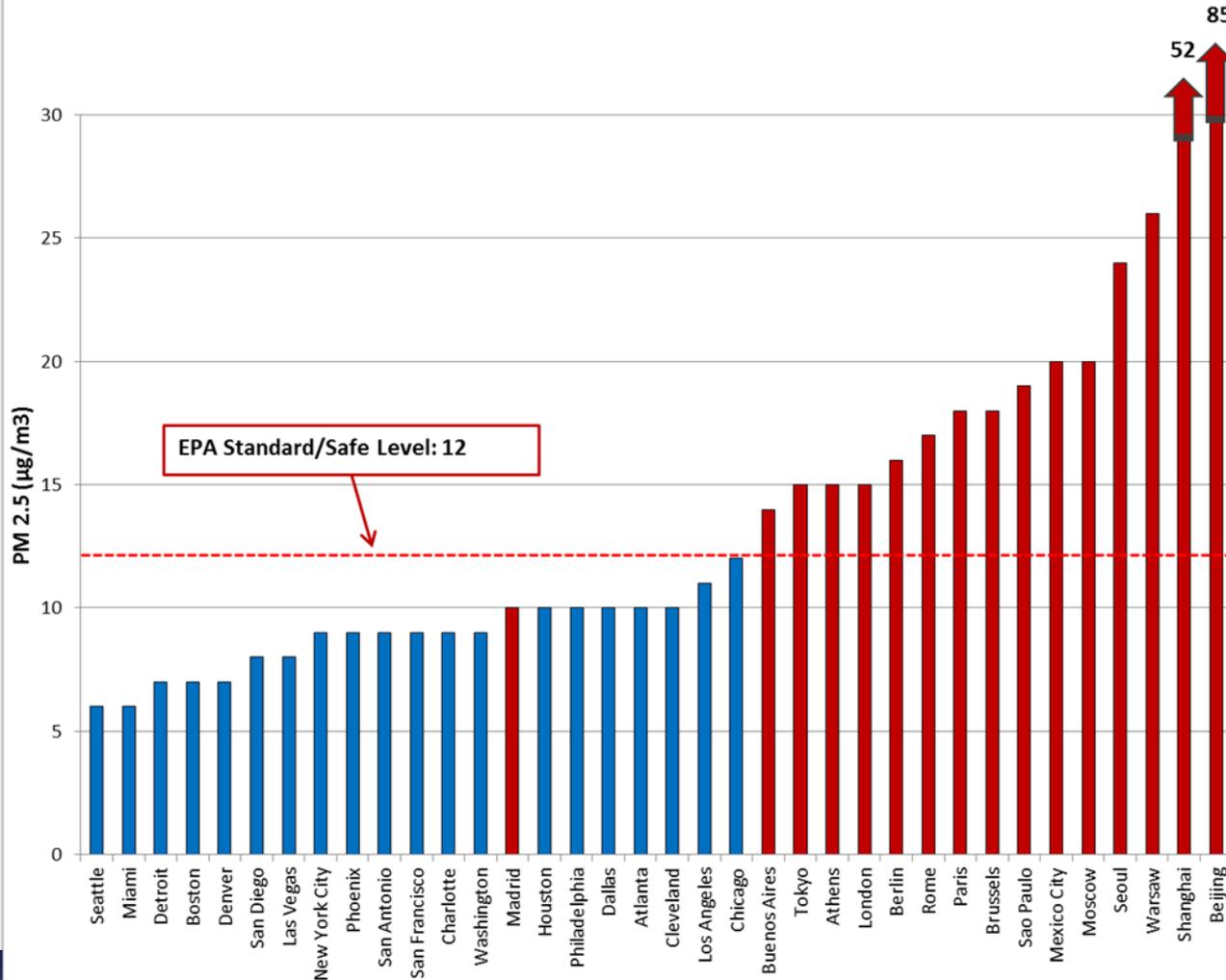


Data source: World Health Organization



U.S. Clean Air Success Story

Comparison of PM 2.5 Air Quality Levels in Major Global Cities



Data source: World Health Organization