

Consequences of Regulatory Changes on the Economy and Environment

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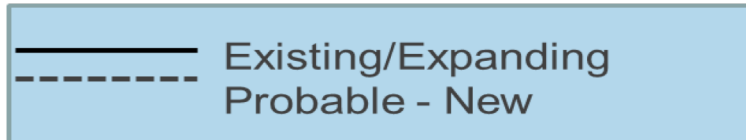
Consequences of Regulatory Changes on the Economy and Environment

We Are.....

- **90 member companies representing 135 facilities in East Harris County**
- **Industry coalition that supports best practices to:**
 - Continuously Improve health, safety, security, economic well being, and environmental performance
 - Operate facilities in a responsible manner
 - Promote innovation, effective communication and emergency management in the community
 - Develop and maintain effective relationships with local, state and federal officials
- **25,000 people strong, with more jobs coming.**
- **Driving the area economy with \$18 billion impact through taxes, payrolls, purchases and capital expenditures**

Consequences of Regulatory Changes on the Economy and Environment

Expansive Supply Infrastructure



Source: Press announcements, Bentek

Consequences of Regulatory Changes on the Economy and Environment

Texas Emission Reduction Program (TERP)

- Most effective NO_x emission reduction in state
- Responsible for decreases in O₃ concentrations in HGA
- Cost effective
- Focus on alternate fuels, seaport and railyard marine vessels, small businesses (diesel and non-road), etc.

Consequences of Regulatory Changes on the Economy and Environment

Workforce

- Texas HB 5 passed
- 25,000 employees
- Existing workforce has earned retirement
- Significant expansion of facilities - \$70 billion in announced projects
- Significant construction force needed
- Consistent education and training
- PetroChemWorks.com

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Coastal Barrier (Coastal Spine, Ike Dike)

- Major hurricane every 8 years
- Hurricane Harvey – August 25, 2017 – Category 4 Storm
- No current Federal funding for Galveston section
- No state funding
- U.S. Corps of Engineers study approved – Will take 10 years
- Must protect people, property, prevent pollution and preserve production

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Ozone Compliance State Implementation Plan

- Concern that SIP may focus on further NO_x reductions from industry sources
- Mobile sources are the major contributor
- Industry and state do not have jurisdiction on mobile sources (only federal control)
- TERP can help

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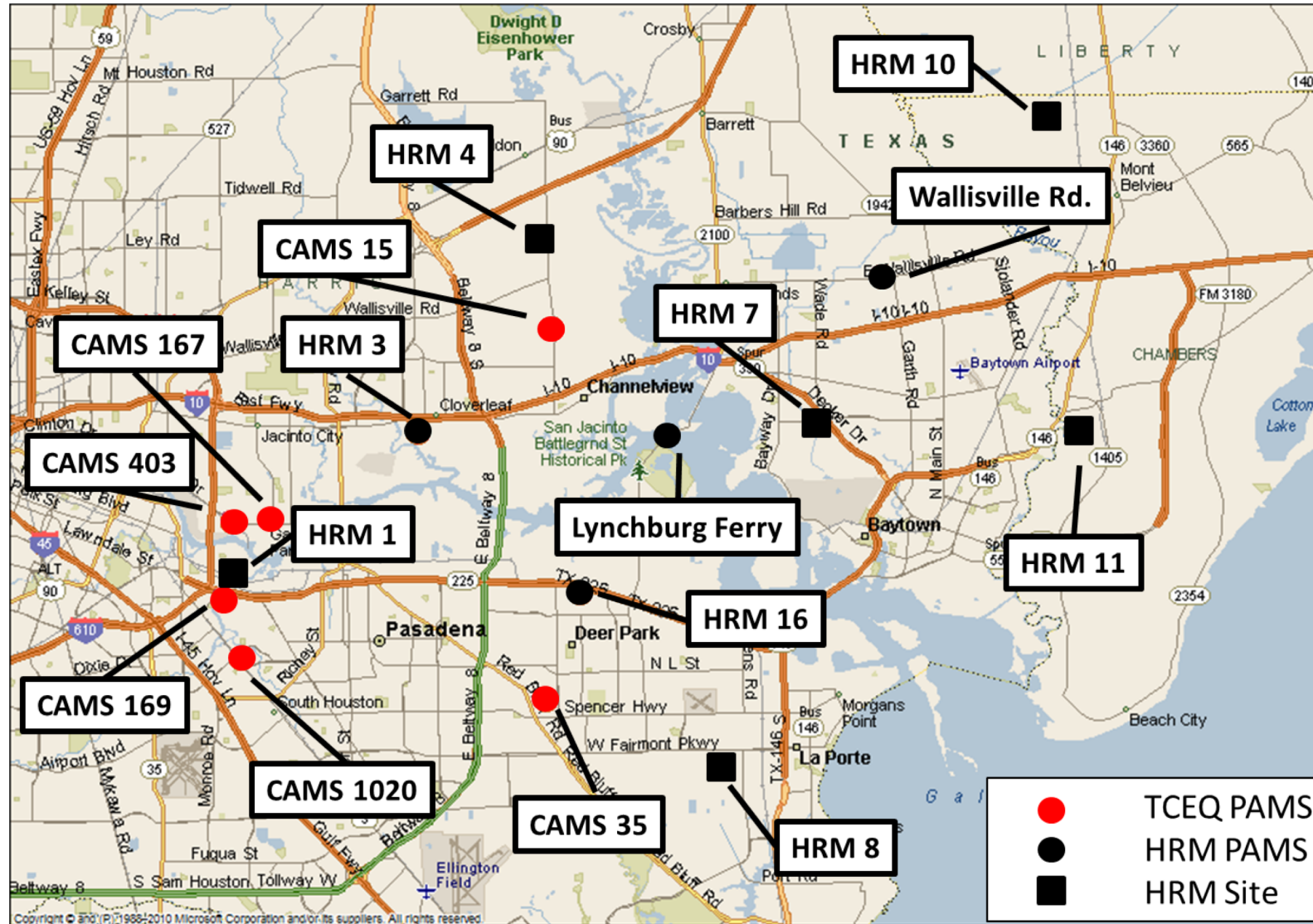
Expedited Permitting

- Funding for expedited permitting ends June 2019
- Delay in permitting inhibits facility construction and operations
- Delays, or decisions on permitting may move facilities to other locations

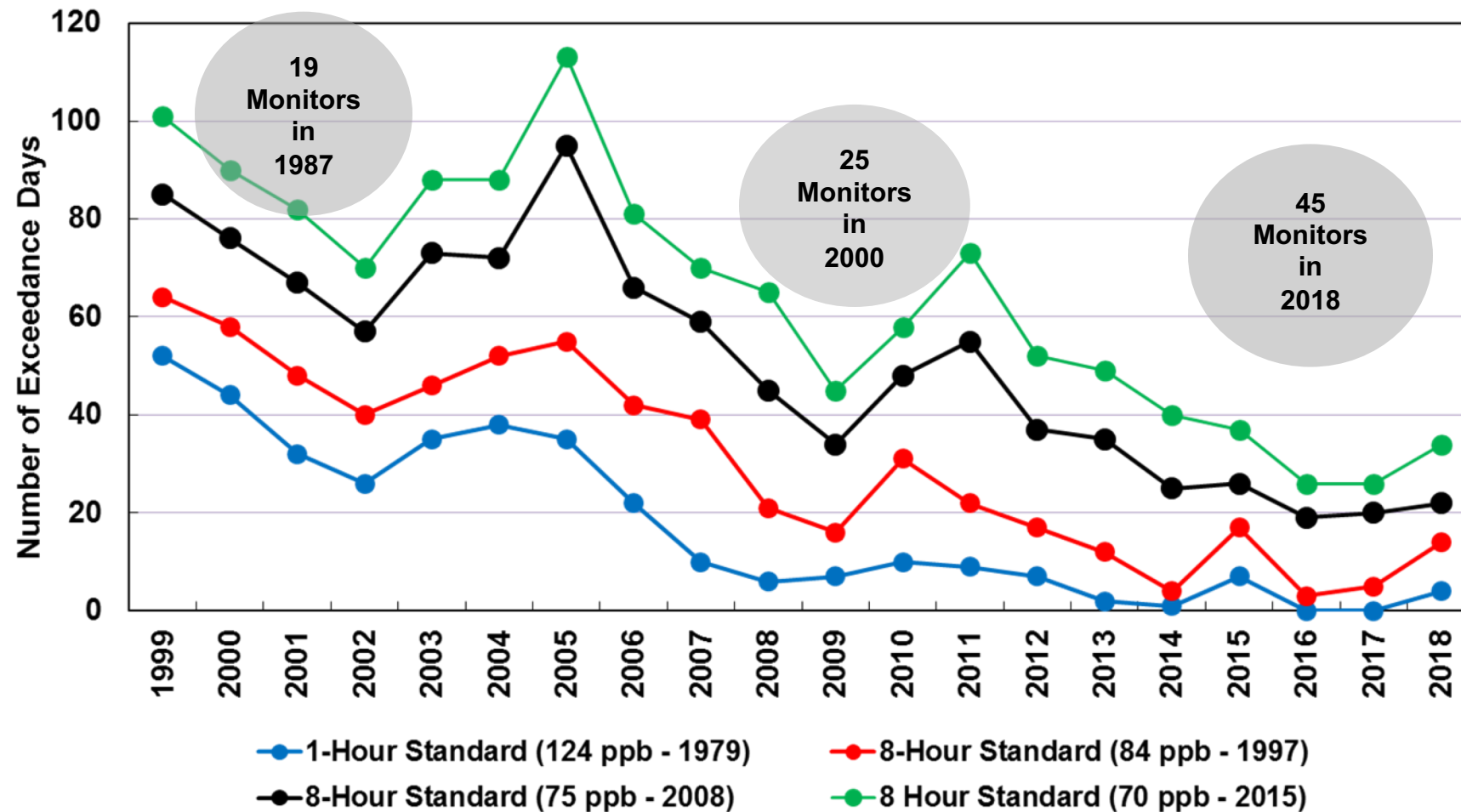
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Federal regs and policies are important and industry is always concerned about the federal government's influence on business; however, federal regs or policies usually have a longer time to implement. State and local agencies and elected officials are important on a nearer term. Issues like expedited permitting, shale gas, workforce and the Coastal Spine have a real impact on the local economy, environment and employment.

HRM Service Area



Days When Houston Area Monitors Exceeded EPA Ozone Air Quality Standard



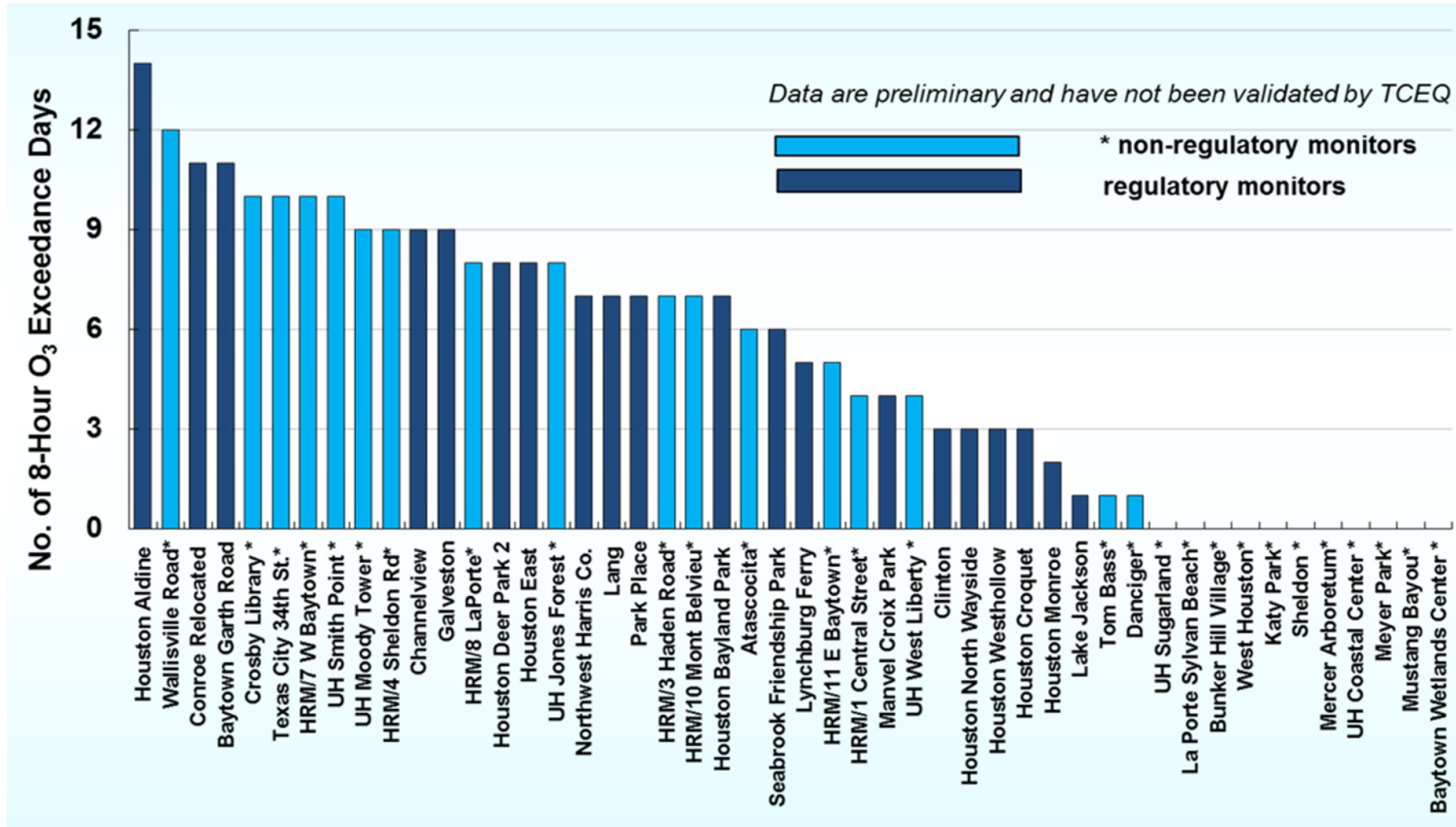
Significant Decline In Number of Ozone Exceedance Days

2018 data through
12/31/18

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2018 Houston Area Ozone Exceedance Days

8-hour 70 ppb Standard

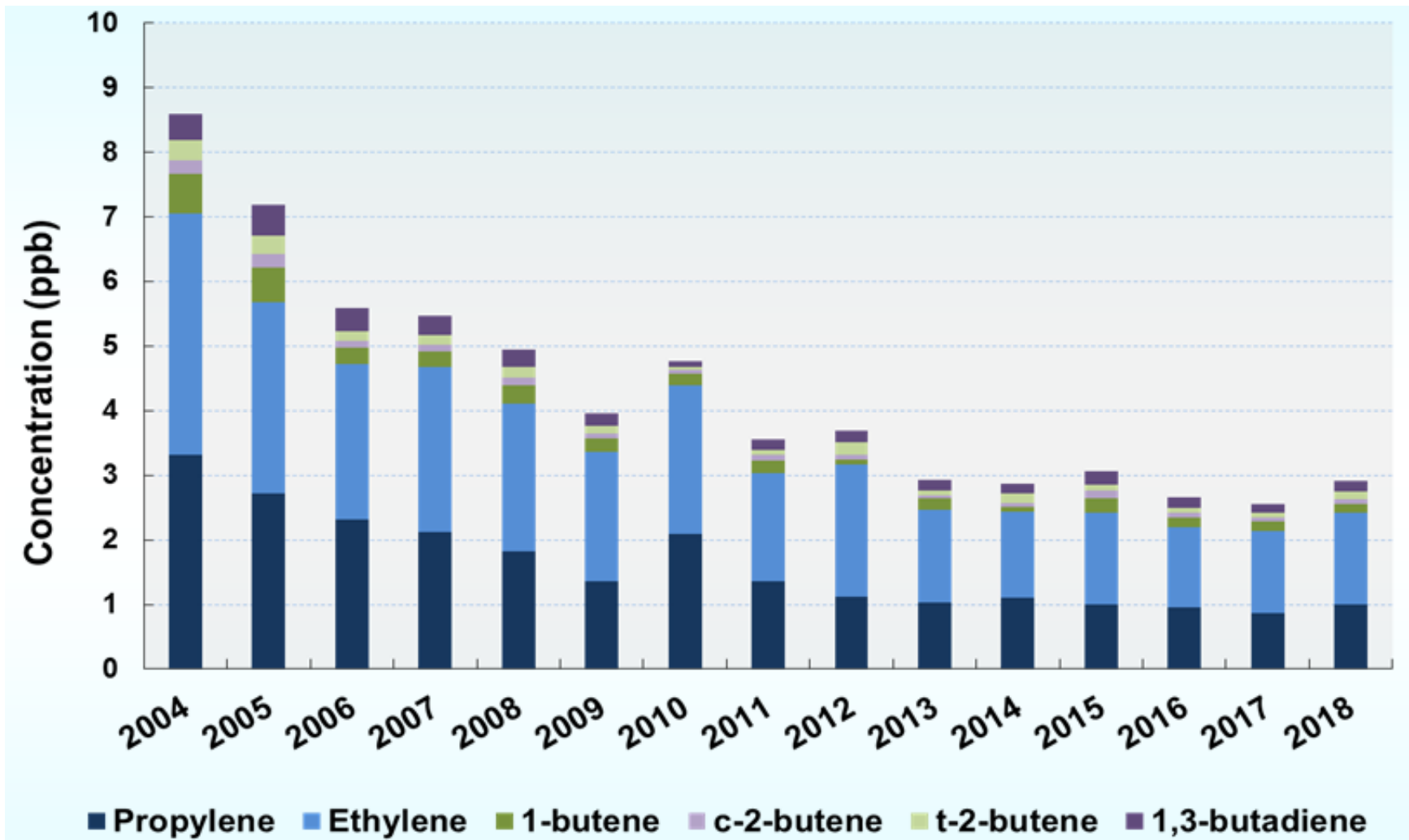


All 20 Regulatory Monitors Had Exceedance Days in 2018

2018 data through
12/31/18

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Annual Average HRVOC Concentrations from Auto-GC Sites in the Houston Area (2004 – 2018)

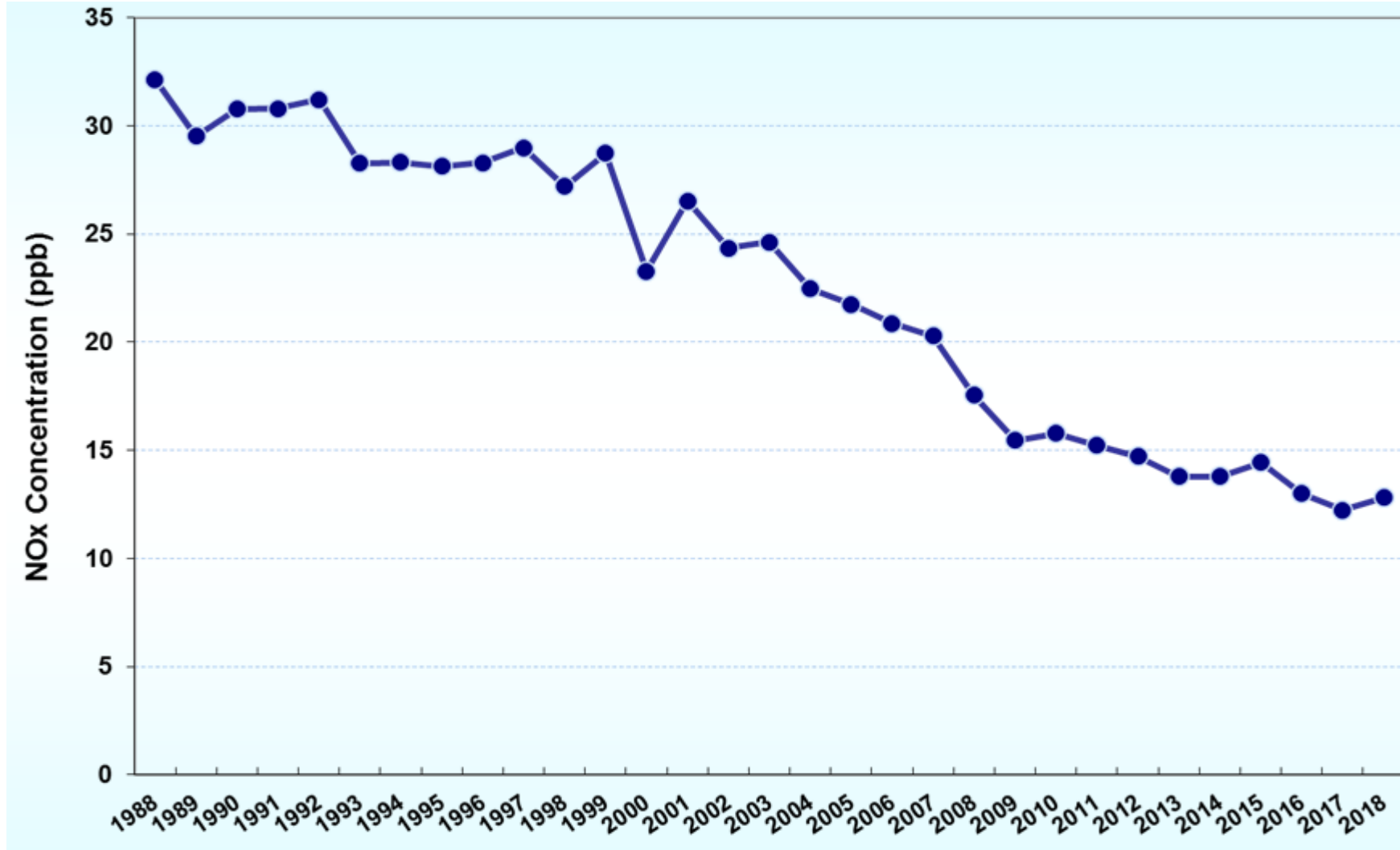


An average 68% reduction of HRVOC since 2004

Data through 12/31/2018

Annual Average NO_x Concentration

HRM and Core Area Monitors (Crawford/Texas Ave, Clinton, Lang, Aldine, Deer Park)

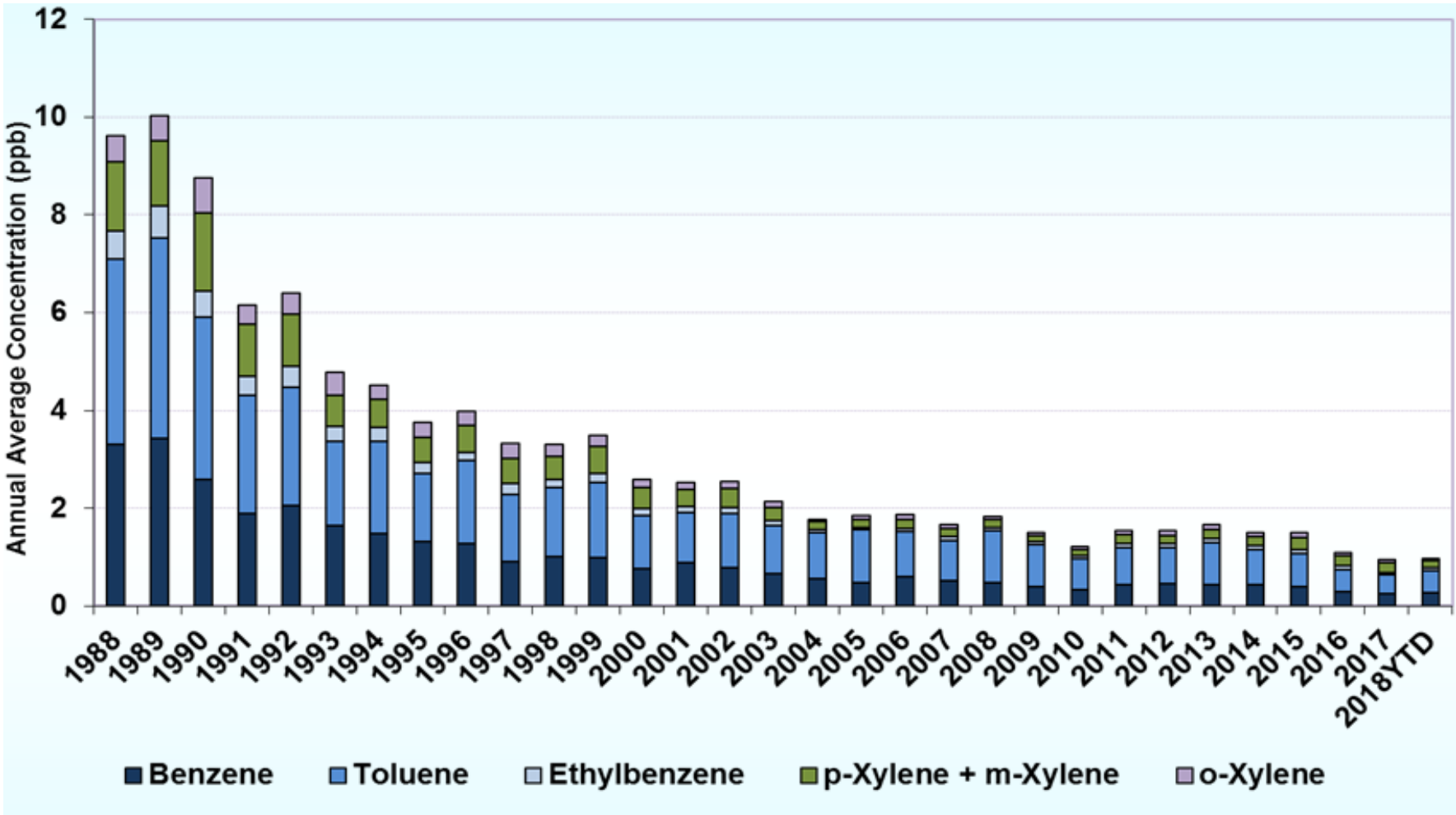


60% Reduction in NO_x Concentrations Since 1988

Data through 12/31/2018

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Annual Average BTEX Trends from the HRM Network (1988 – 2018)



89% Reduction in BTEX Concentrations Since 1988

Data through 12/31/2018

HRM Monitoring Program

Site	Criteria Air Pollutants							Non Criteria Air Pollutants				
	SO ₂	O ₃	NO ₂	CO	PM ₁₀	PM _{2.5}	Pb	H ₂ S	VOC Canister	EARS	Automated GC	BZ FRA
HRM 1 Central St.	√	√	√	√	√	√	√	√	√	√		
HRM 3 Haden Road	√	√	√	√	√	√		√	√	√	√	
HRM 4 Sheldon Road		√	√	√		√			√	√		
HRM 7 West Baytown	√	√	√	√	√	√		√	√	√		
HRM 8 La Porte		√	√	√		√			√	√		
HRM 10 Mont Belvieu		√	√	√					√	√		
HRM 11 East Baytown	√	√	√	√		√			√	√		
HRM 615 Lynchburg Ferry		√	√								√	√
HRM 617 Wallisville Road		√	√			√					√	
HRM 16 Deer Park	√							√			√	

Legend:

SO₂ =Sulfur dioxide

O₃ =Ozone

NO₂ =Nitrogen dioxide

CO=Carbon monoxide

PM₁₀ = Particulate Matter (10 micron)

PM_{2.5} = Fine Particulate Matter (2.5 micron)

Pb=TSP Lead

H₂S = Hydrogen Sulfide

VOC Canister = Every 6th Day Canister Sample

EARS = Emergency Accidental Release System

Automated GC = Automated Gas Chromatography

BZ FRA = Benzene Fast Response Analyzer

Meteorological Parameters: (All Sites)

Ambient Temperature

Wind Speed

Wind Direction

Standard Deviation of Wind Direction

Maximum Wind Gust

Precipitation (all sites, except Site 16)

Net Radiation

Barometric Pressure (only Site 16)