

EBC New Hampshire Webinar

Celebrating 50 Years of the United States Environmental Protection Agency

EBC



Welcome

Robert Varney

Chair, EBC New Hampshire Chapter

President, Normandeau Associates, Inc.



Environmental Business Council of New England
Energy Environment Economy

Thank you to our Sponsor



EBC

Introduction

Ken Rhodes

Program Chair & Moderator

Senior Vice President

Fuss & O'Neill, Inc.



Environmental Business Council of New England

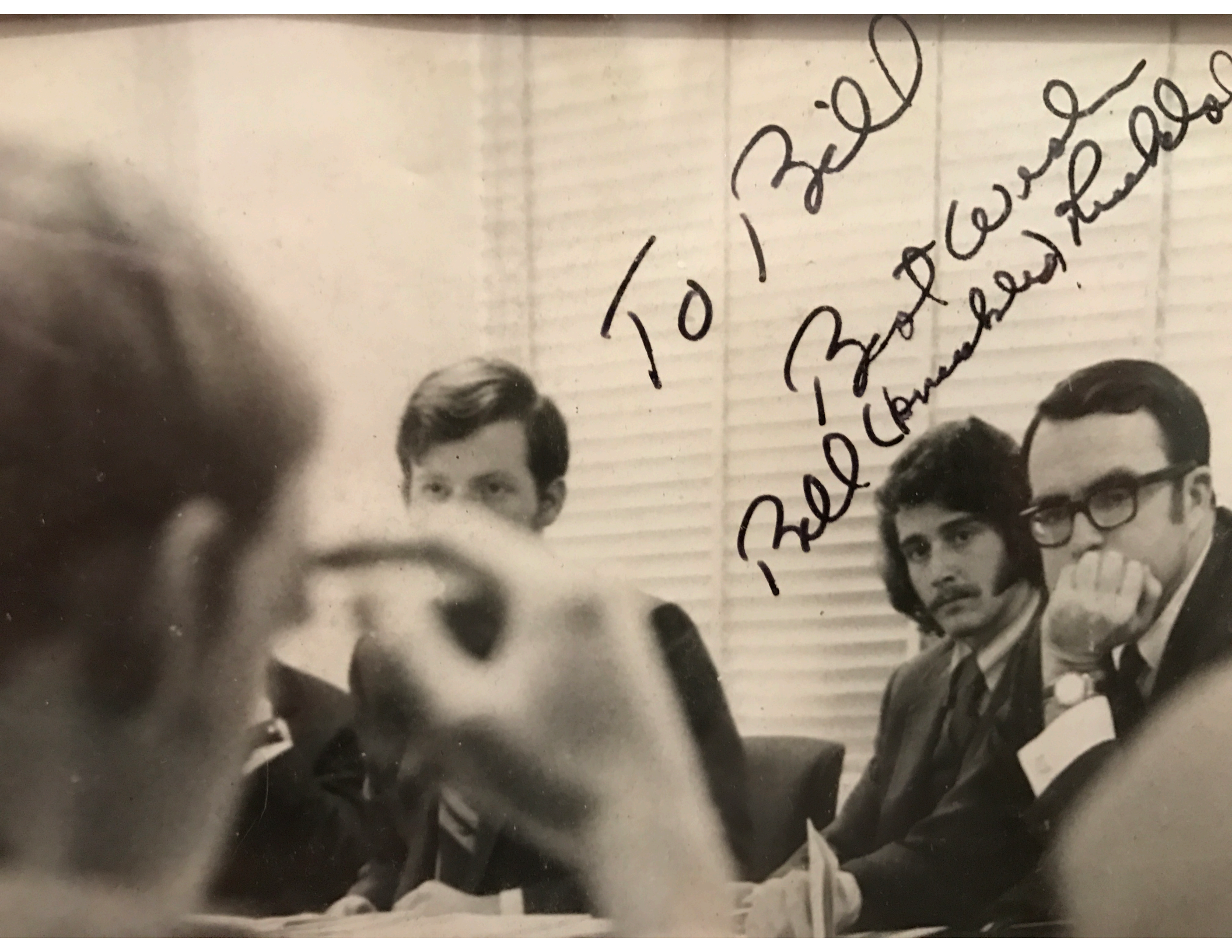
Energy Environment Economy

The Baby Boomer Generation

- **Bill Golden**, *Project Coordinator*
Boston Harbor Storm Surge Working Group
- **Ronald Poltak**, *Executive Director*
New England Interstate Water Pollution Control Commission (NEIWPCC)
- **Robert Varney**, *President, Normandeau Associates, Inc.*



To - Bill
- Bill (President) & Bill
- Bill (President) & Bill



Gen-X

Claire Golden Lund

*Associate Principal /
Vice President
GZA*

Rene Nahlik

*Senior Engineer /
Senior Project Manager
VHB*



Environmental Business Council of New England
Energy Environment Economy

Celebrating 50 Years of the United States Environmental Protection Agency

Two Gen-X – Points of View & Priorities

Claire Lund, PE, Associate Principal, GZA

Rene Nahlik, PE, Senior Engineer/Senior Project Manager, VHB

ACID RAIN IN THE WHITE MOUNTAINS

Discovered in 1960's

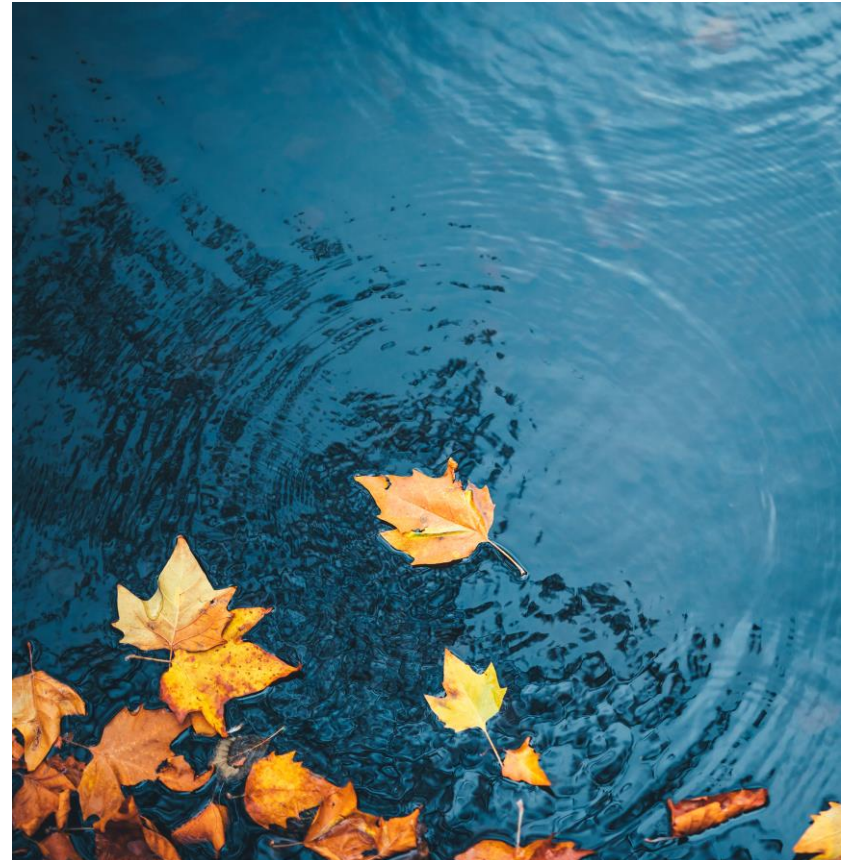
Long range transport of SO₂ &
NO_x from Midwest



Hubbard Brook Experimental Forest – NH

Progress

- Introduction of secondary pollutant concept
- 1990 CAA Amendments – ARP
- SO₂ and NO_x caps by certain deadlines
- 93% Reduction in SO₂
- 87% Reduction in NO_x
- 68% Reduction in Wet Sulfate Deposition
- 81% Improvement in Waters in LTM Program

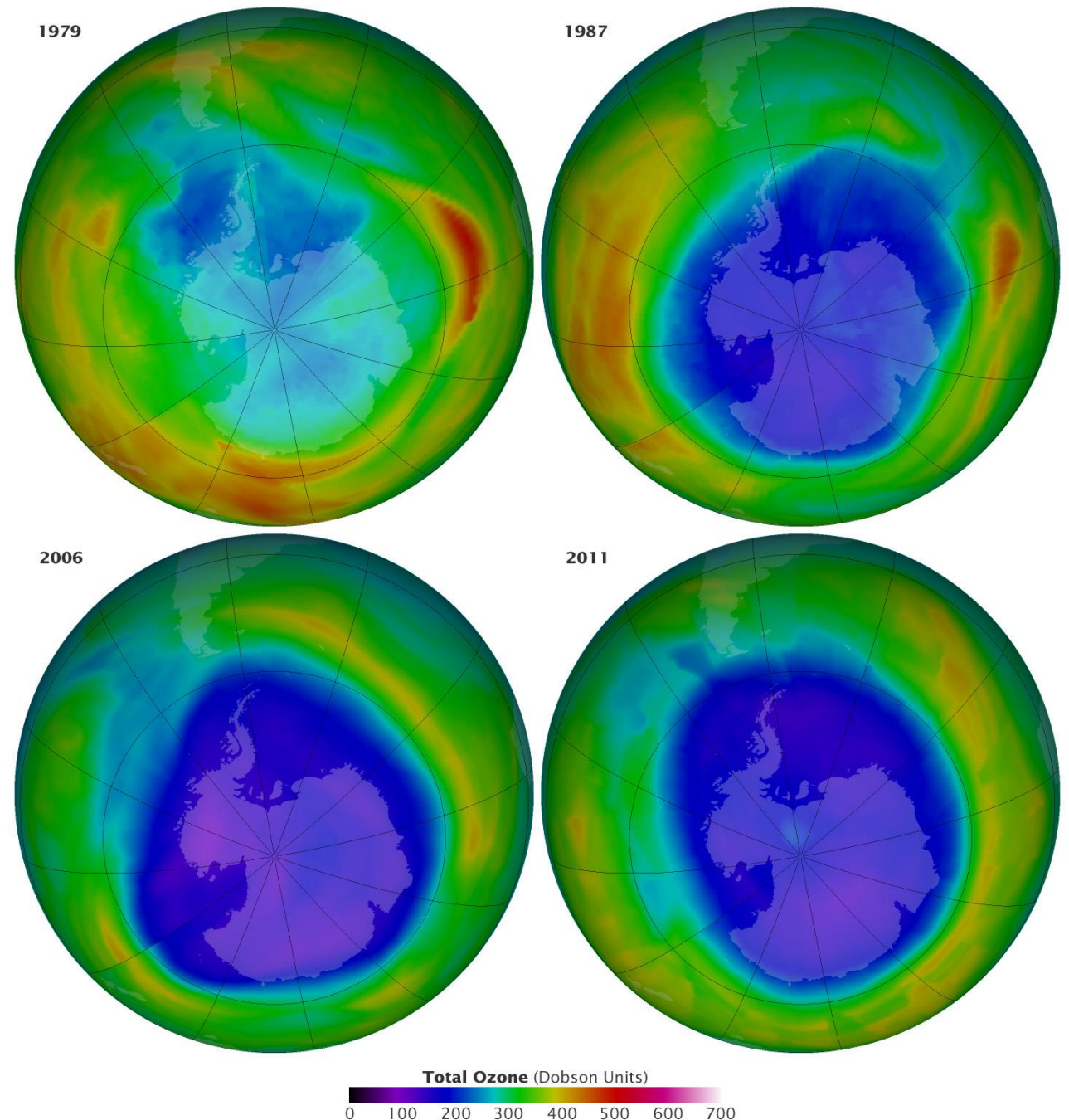


DISCOVERING A HOLE IN THE OZONE LAYER

May 16, 1985

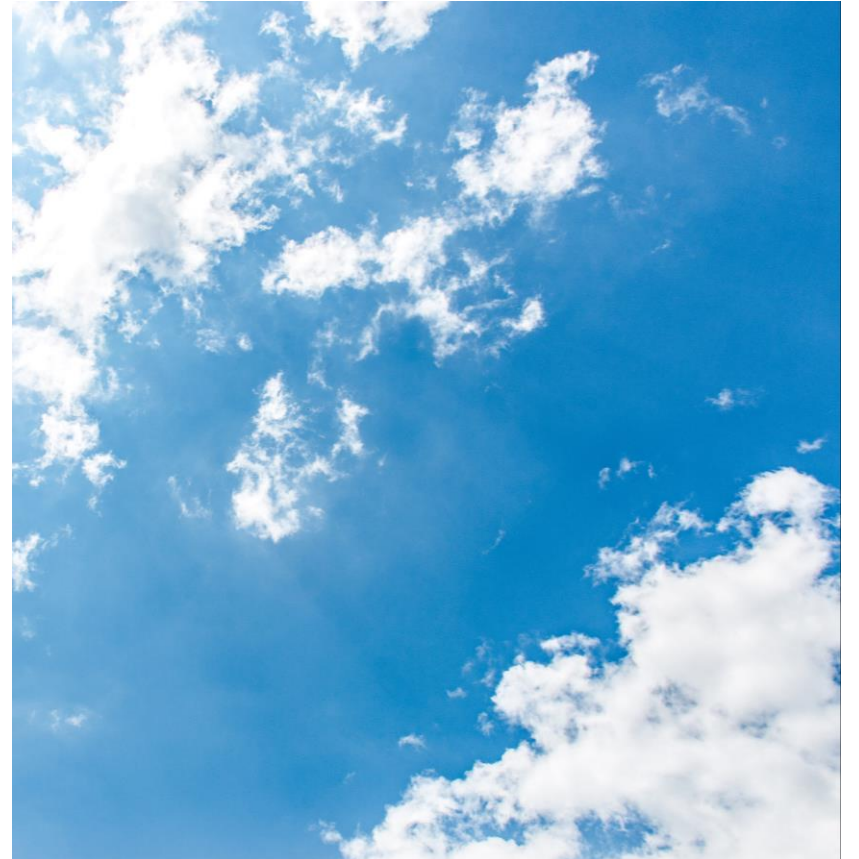
Ozone Depleting Substances (ODS) cause global environmental issue

Image Source:
<https://earthobservatory.nasa.gov/images/79198/watching-the-ozone-hole-before-and-after-the-montreal-protocol>



Progress

- **Montreal Protocol, 1987**
- **Ratified by all 198 UN Member States (only time)**
- **Ozone depletion substances were phased out**
 - **By 2000 in developed countries**
 - **By 2010 in developing countries**
- **1990 CAA Amendments (40 CFR 82)**
- **As of 2019, 197 countries ban CFCs**
- **2065 Recovery Predicted**



BHOPAL ACCIDENT

December 2-3, 1984

Water introduced into a methyl isocyanate tank leading to runaway exothermic reaction

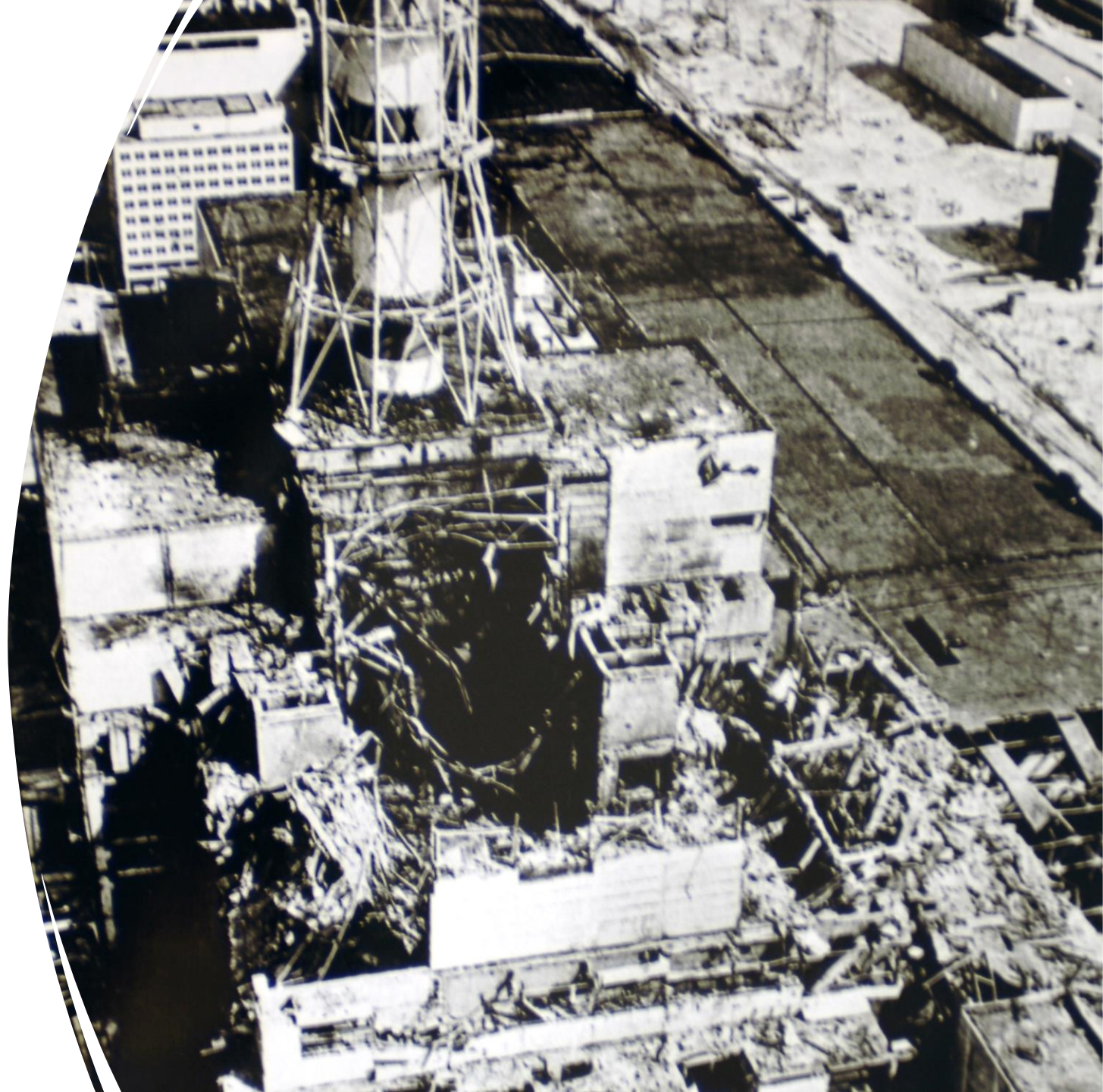
>500,000 people exposed to MIC



CHERNOBYL ACCIDENT

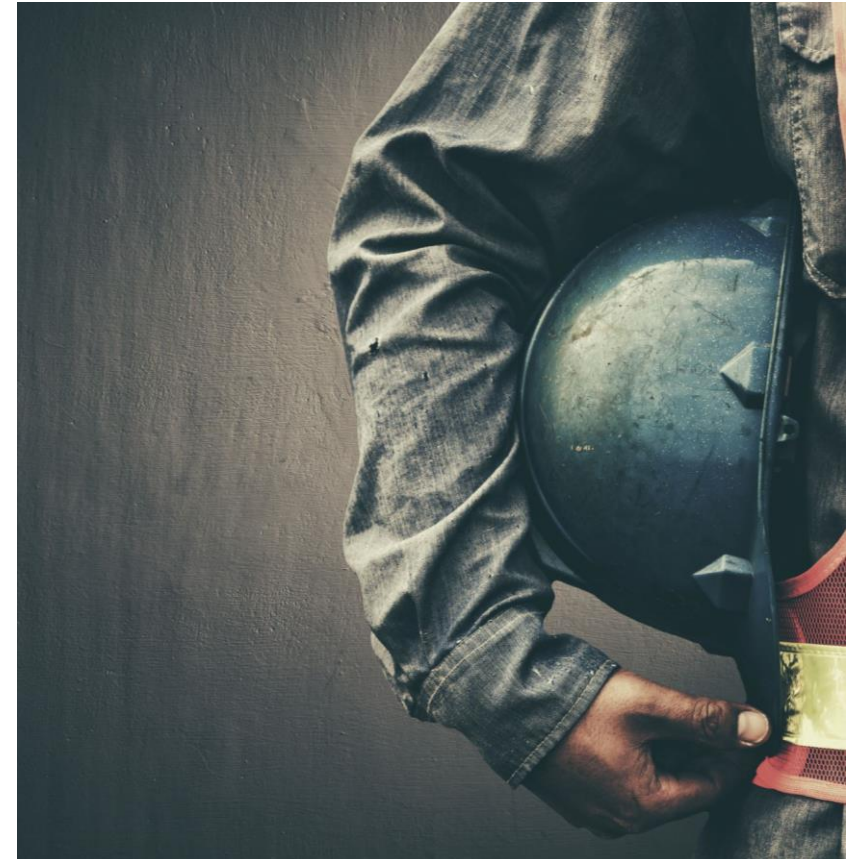
April 26, 1986

Photo Source: By IAEA Imagebank - 02790015, CC BY-SA 2.0,
<https://commons.wikimedia.org/w/index.php?curid=63251598>



Progress

- **Section 112(r) 1990 CAA Amendments**
- **Established requirement for regulations and guidance for Risk Management Plans for facilities that use extremely hazardous materials**
- identifies the potential effects of a chemical accident,
- identifies steps the facility is taking to prevent an accident, and
- spells out emergency response procedures should an accident occur
- **40 CFR 68 – Chemical Accident Prevention**
- **Requirements for facilities with more than a threshold quantity of regulated substance**





Exxon Valdez Oil Spill March 24, 1989



April 13, 1989
Dear Sir,
I am very sorry
but I am very mad
about the oil spill.
It is killing nature.
And it is killing

the sea otters.
It makes me very
sad because my
class is doing a report
on sea otters. And
sea otters are cute.
Sea otters are

endangered species. Please
clean up the oil spill.
Sincerely,
Kelli Middlestead.
Mrs. Ashley - 2nd grade
Franklin school.



Photo Source:
<https://response.restoration.noaa.gov/about/media/10-photos-tell-story-exxon-valdez-oil-spill-and-its-impacts.html>

Exxon Valdez Oil Spill

- On March 24, 1989, the oil tanker *Exxon Valdez* grounded on Bligh Reef in Prince William Sound, Alaska, spilling more than 11 million gallons of crude oil.
- The oil eventually affected 1,300 miles of coastline, with devastating impacts on fish & wildlife, as well as local industries and communities.
- The spill was the largest in U.S. history and tested existing plans for dealing with such an event.

Photo Source:
<https://response.restoration.noaa.gov/about/media/10-photos-tell-story-exxon-valdez-oil-spill-and-its-impacts.html>

TAKE TIME TO BE CAREFUL – NOW



EXXON VALDEZ
 Length - 987' Beam - 166' Draft - 64.5'
 1,485 kbbls. Crude Oil Service

March 1989 EXXON SHIPPING COMPANY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
FEBRUARY S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	APRIL S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29		1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24 <small>St. Patrick's Day</small>	25
<small>Palm Sunday</small>	27	28	29	30	31 <small>Good Friday</small>	
26 <small>Easter</small>						

Exxon Valdez Oil Spill Response

- Initial response was a massive effort involving the Coast Guard, NOAA, EPA, Exxon, and the state of Alaska.
- Many factors complicated the cleanup – magnitude of the release, remote location, and dynamic nature of the environment.
- Multiple approaches to control and cleanup the massive oil slick were employed with varying degrees of success.
- EPA specialists in the use of experimental bioremediation technologies also assisted in the spill cleanup.

Photo Source:
<https://www.epa.gov/history/epa-history-exxon-valdez-oil-spill>



EPA Administrator Bill Reilly at the Exxon Valdez oil spill cleanup site, August 1989



Photo Source: <https://response.restoration.noaa.gov/oil-and-chemical-spills/significant-incidents/exxon-valdez-oil-spill/response-exxon-valdez.html>

Exxon Valdez Oil Spill: A Gen X 'Point of View'



April 13, 1989
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Exxon Valdez Oil Spill: Progress Made



The Oil Pollution Act of 1990 was signed into law by George H.W. Bush.

Photo Source: Prince William Sound Regional Citizen's Advisory Council, <https://www.pwsrcac.org/about/oil-pollution-act-1990/>

- **Oil Pollution Act (OPA) of 1990** – strengthened EPA's ability to prevent and respond to catastrophic oil spills:
 - Established a “polluter pays” system, whereby the responsible party must pay for oil spill cleanup costs and damages
 - Created a trust fund financed by a tax on oil to clean up spills when the responsible party is unable
 - Required oil storage facilities & vessels to submit plans detailing how they will respond to large discharges
 - Required the development of Area Contingency Plans to prepare and plan for oil spill response on a regional scale
 - Created a multi-agency committee to coordinate oil pollution research

Reference: EPA, <https://www.epa.gov/laws-regulations/summary-oil-pollution-act>

Exxon Valdez Oil Spill: Progress Made



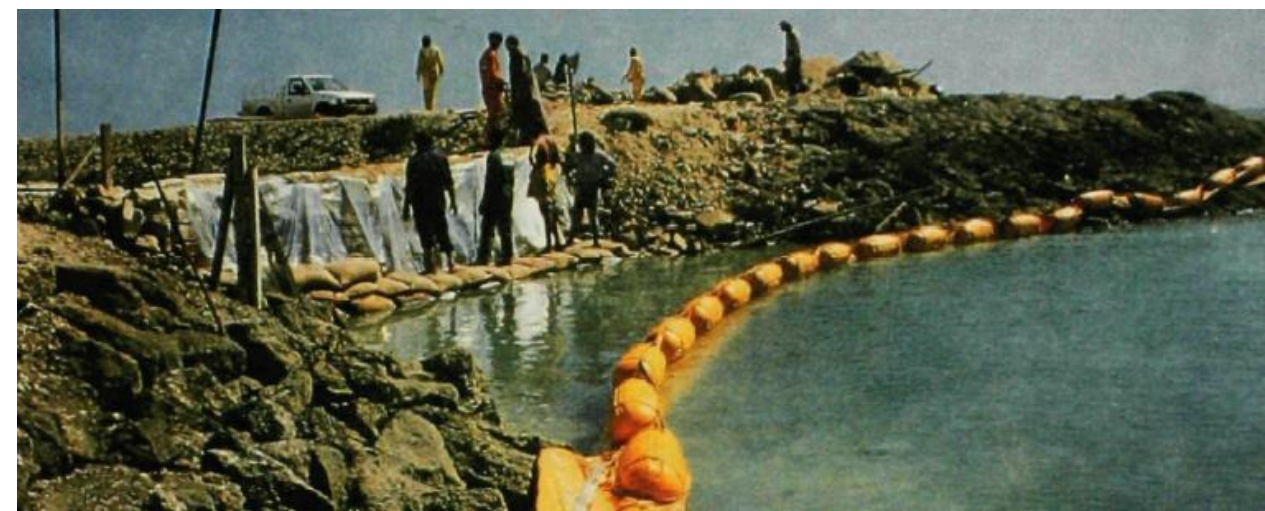
Photo Source: NOAA, <https://response.restoration.noaa.gov/about/media/10-photos-tell-story-exxon-valdez-oil-spill-and-its-impacts.html>

- The Norwegian tanker SKS Satilla collided with a submerged oil rig in the Gulf of Mexico in 2009 and despite this damage, did not spill any oil.
- Oil Pollution Act of 1990 required all new tankers and tank-barges to be built with double hulls to reduce the chance of another Exxon Valdez incident.
- January 1, 2015 was the final deadline for phasing out single-hull tankers in U.S. waters.

Reference: NOAA, <https://response.restoration.noaa.gov/about/media/10-photos-tell-story-exxon-valdez-oil-spill-and-its-impacts.html>



Kuwaiti Oil Fires
January-February 1991



Kuwaiti Oil Fires

- While retreating from their occupation of Kuwait during the Persian Gulf War, Iraqi military forces set fire to or otherwise damaged more than 700 Kuwaiti oil wells, storage tanks & refineries in January and February 1991.
- An estimated 900 million barrels of oil burned or spilled onto the land and into the Persian Gulf – many times more than the Exxon Valdez Spill.
- *"If Hell had a national park, it would be those burning oil fires."*
 - EPA Administrator William K. Reilly, after visiting the area in May 1991



Photo Source: EPA, 1991. "Environmental Crisis in the Gulf: The US Response", Gulf Task Force Office.

Kuwaiti Oil Fires: Response Efforts

- One early concern was that a 'killer smog' like Donora, PA (1948) could be created by the inferno.
- On March 10, an EPA-led interagency air monitoring team went to the Gulf – carrying with them as much field monitoring equipment as they could.
- In addition to the dense smoke and black oily rain from the oil well fires, the fire-fighters and emergency teams trying to monitor the pollution from the fires had to contend with unexploded land mines, bombs, and other war zone hazards.
- Fortunately, air monitoring found relatively low levels of sulfur dioxide and hydrogen sulfide – the key ingredients of killer smog – potentially because they were being incinerated by the intense fires.
- With support from EPA and others, impacted Gulf nations were able to install permanent monitoring systems and early warning networks.

Source: EPA, 1991. "Environmental Crisis in the Gulf: The US Response", Gulf Task Force Office.



US Officials, including EPA Administrator Bill Reilly, survey the blazing oil fields.



EPA Scientist collects oil samples as part of response efforts.

A Look to the Future



Millennials

Ian Gaudreau

Assistant Project Manager

GZA

Cristina Mendoza

Senior Consultant

Sustainserv, Inc.



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Millennial – Point of View & Priorities

Ian Gaudreau, Assistant Project Manager, GZA

Celebrating 50 Years of the United States Environmental Protection Agency

Millennial – Point of View & Priorities

Ian Gaudreau, Assistant Project Manager, GZA

University of New Hampshire

B.S. Environmental Conservation Studies (Policy-Based)

M.S. Civil Engineering (Environmental Focus)

Born 1991



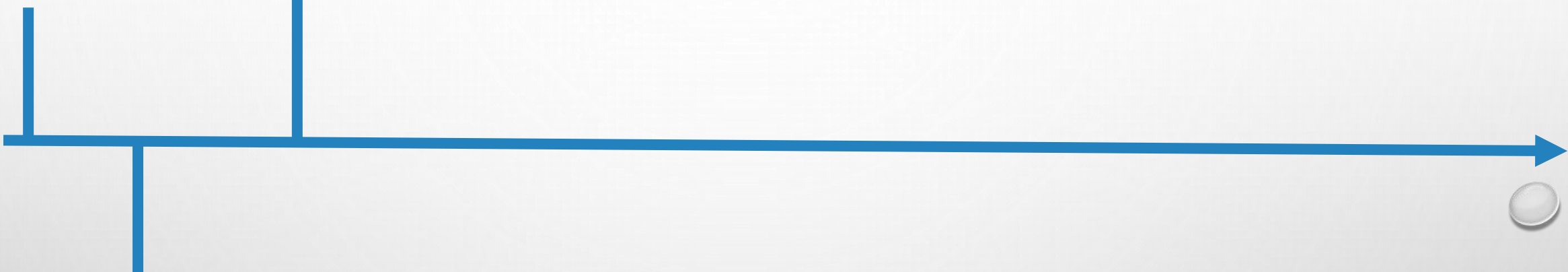
Born 1991



September 11, 2011
(10 years old)

Documentaries 2006
(15 Years Old)

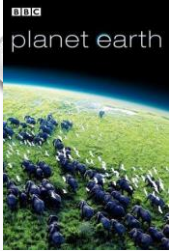
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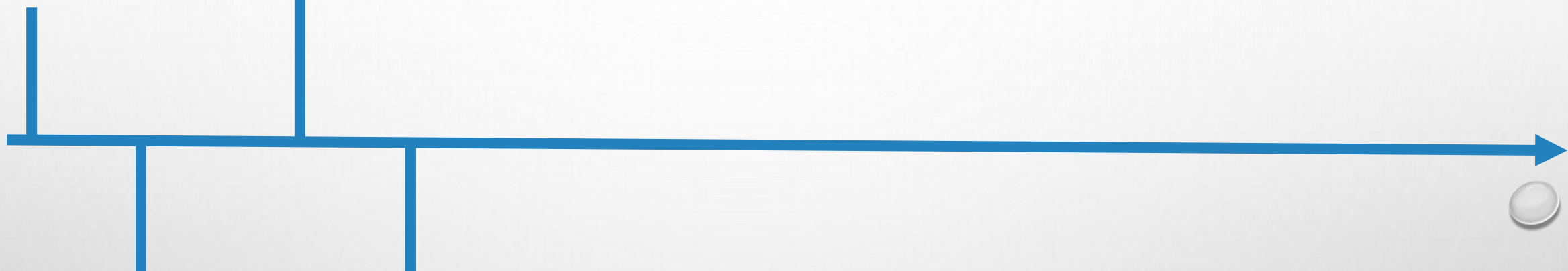
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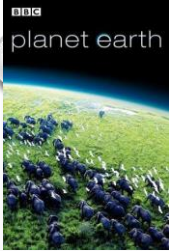
Obama Elected 2008
(17 Years Old)



Born 1991



Documentaries 2006
(15 Years Old)



Deepwater Horizon 2011
(20 Years Old)



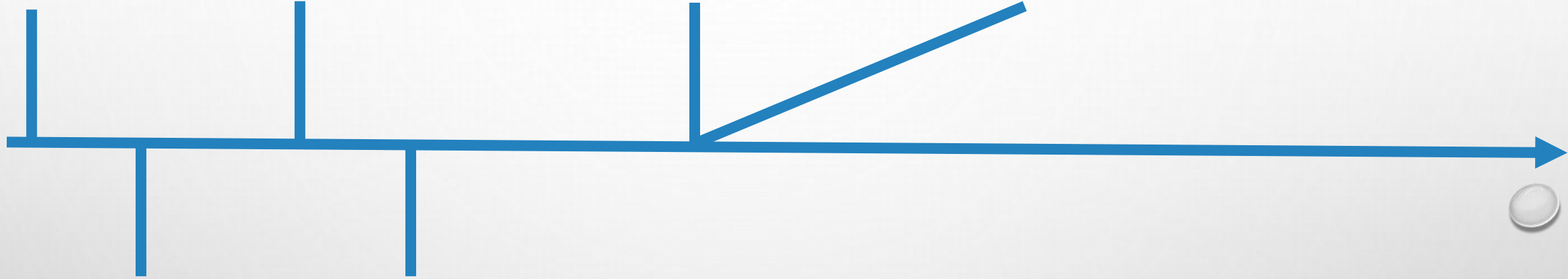
Fukushima Nuclear 2011
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*The differences in this chamber may be too deep right now to pass a comprehensive plan to fight **climate change**. But there's no reason why Congress shouldn't at least set a clean energy standard that creates a market for innovation."*

– President Barack Obama
January 2012 *State of the Union*

Born 1991



Documentaries 2006
(15 Years Old)



Deepwater Horizon 2011
(20 Years Old)



Fukushima Nuclear 2011
(20 Years Old)



Superstorm Sandy 2012
(21 Years Old)



September 11, 2011
(10 years old)



Obama Elected 2008
(17 Years Old)

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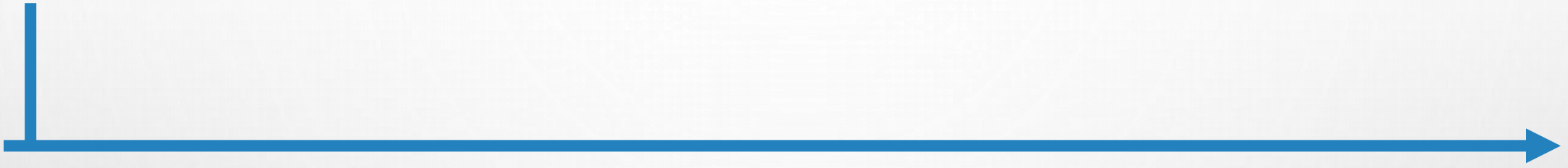
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Sources

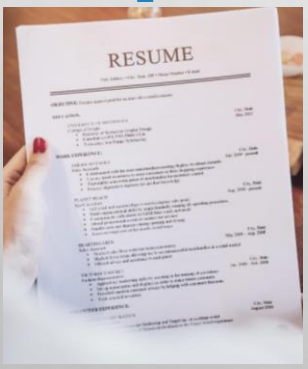
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<https://www.nbcnews.com/news/world/fukushima-nuclear-plant-water-ba-released-undersea-tumel-n1277630>
<https://www.britannica.com/event/Superstorm-Sandy>

Government Shutdown 2013
(22 Years Old)



Government Shutdown 2013
(22 Years Old)



Next day
UNH Career Fair

Government Shutdown 2013
(22 Years Old)



Graduated College 2013
(22 Years Old)



Next day
UNH Career Fair

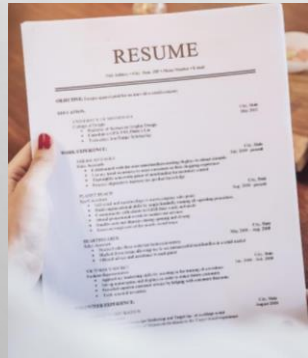
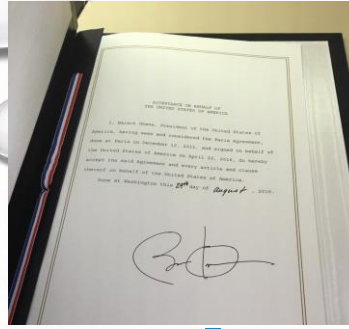
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(22 Years Old)



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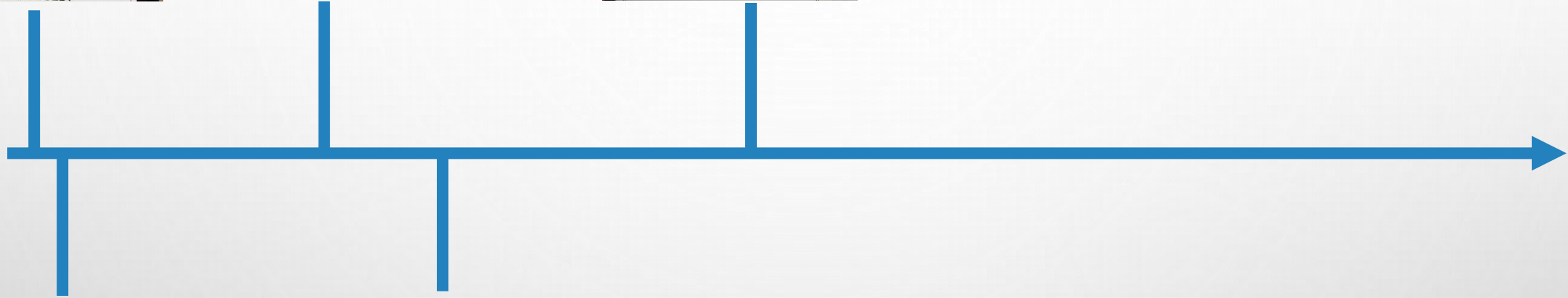
Paris Agreement 2016
(25 Years Old)



Next day
UNH Career Fair



First hear of PFAS 2015
(24 Years Old)



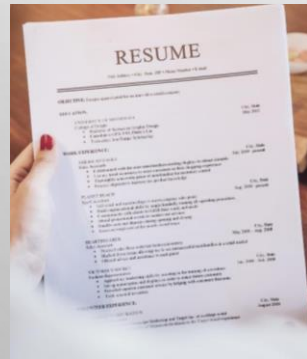
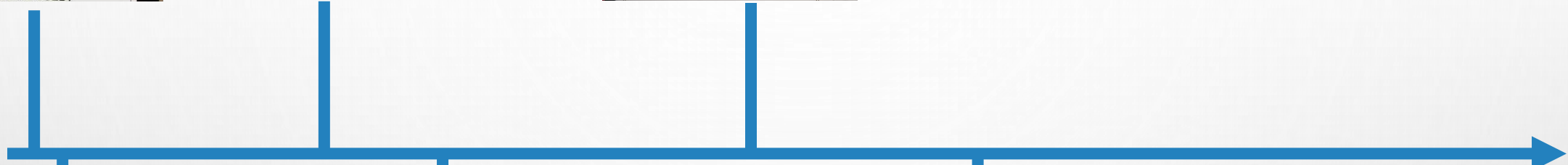
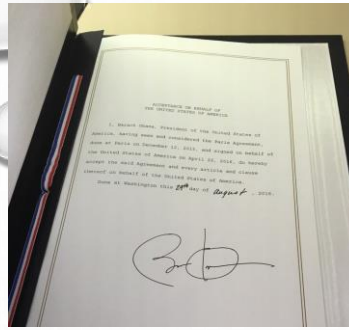
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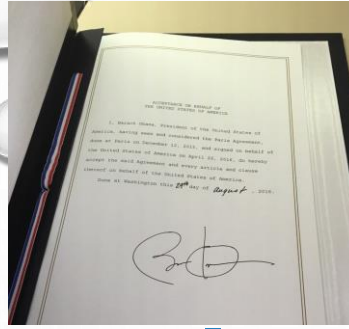
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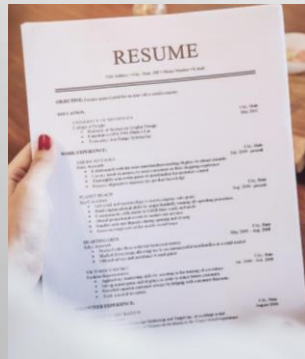
GZA GeoEnvironmental, Inc.

Start work at GZA 2017
(25 Years Old)

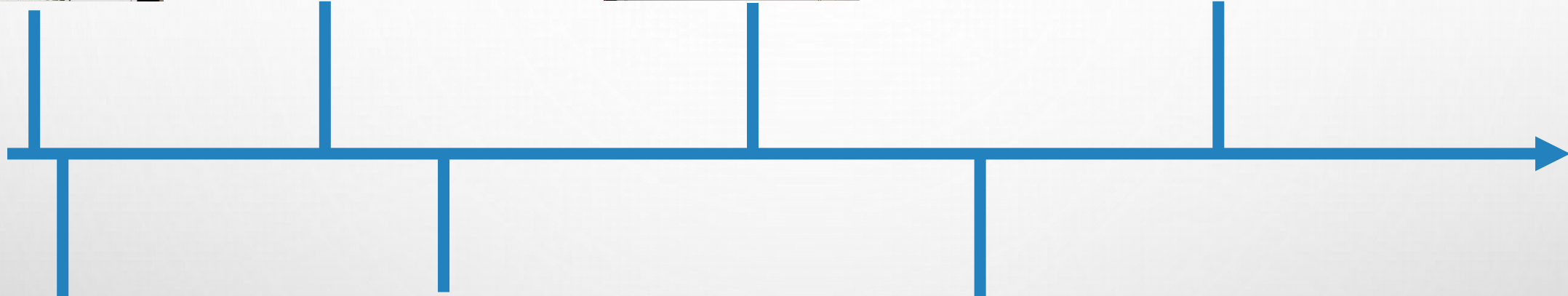
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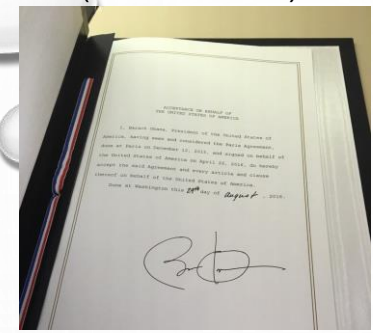
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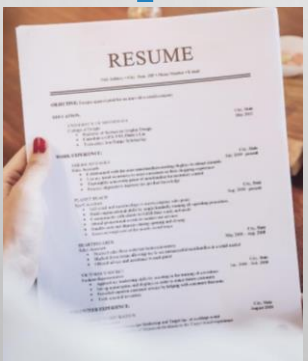
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Sources
<https://www.forbes.com/sites/pohinryan/2021/02/12/what-employers-want-to-see-in-your-resume-and-most-people-arent-doing-it/3sh=589ccf3b614d>
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<https://obamawhitehouse.archives.gov/blog/2016/09/03/president-obama-united-states-formally-enters-paris-agreement>

General Opinions

- Basic Pollution-related topics (CWA, Acid Rain) felt like the “founding fathers” of environmental problems
- EPA has always felt like “the man behind the curtain”, but rarely heard about specific accomplishments or progress
- Why are we not aggressively approaching current topics (climate change, renewable energy) with the same urgency?
- Massive divide in Federal Government between Democrats and Republicans make science-based decision-making frustrating

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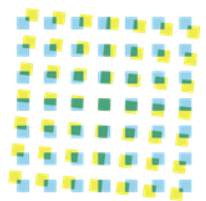
Could the Clean Water Act have been passed in 2021?

Progress

- January 2021: President Biden re-joins Paris Climate Agreement
- Sustainability and Cradle-to-Grave mentality commonplace
- Renewable energy production still on the rise
- Continued progress for air and water quality
- Significant progress in Federal stormwater regulations

Celebrating 50 Years of the US EPA Millennial Perspective

29 September 2021



sustainserv
Inspiring Meaningful Change



Cristina Mendoza

Senior Consultant - Millennial



- **Senior Consultant**
 - Sustainserv, Inc.
- **Environmental Scientist, Strategic Integration Lead**
 - Capaccio Environmental Engineering, Inc.
- **Masters of Business Administration**
 - Clark University Graduate School of Management
- **BA Environmental Conservation Biology**
 - Clark University
- **EBC Ascending Professionals Committee**
 - Committee Chair
- **Associated Industries of Massachusetts**
 - Sustainability Roundtable Expert Advisor
- **MassMEDIC Corporate Social Responsibility Workgroup**
 - Co-Founder
- **'e'inc. - Charlestown-based non-profit**
 - Board Member, Strategic Planning Committee Co-Chair

U.S. Environmental Careers

A Millennial Experience



High School Environmental Studies

- An Introduction to Environmental Studies

Just scratching the surface...

College Environmental Studies

- Environmental Science & Policy
- Environmental Conservation

Exploring a technical context...

Graduate Studies

- Sustainability in Business

Gaining a broader perspective...

2006 – 2010

An Inconvenient Truth
(2006)

2010 – 2014

BP Deepwater Horizon Oil Spill, Gulf of Mexico
(2010)

ExxonMobile Oil Spill, Nigeria
(2010)

2014 – 2015

Volkswagen Emissions Defeat Devices
(2015)

Exxon Climate Change Awareness Cover-Up
(2015)

U.S. Environmental Careers

A Millennial Experience



Internship Experience

- Environmental Scientist Intern
- Sustainability Intern

Career Experiences Phase I

- Environmental Scientist
- Sustainability Consultant
- Industry Network

Career Experiences Phase II

- Sustainability Consultant
- Industry Engagement

Gaining technical experience...

Industry and technical expertise...

Industry application and looking ahead...

2013 – 2015

Paris Agreement Sign-On
(2015-2016)

2015 – March 2021

Paris Agreement
Withdrawal (2019-2020)

EPA Website 'Climate Change' Scrub
(2018)

Amazon Wildfires
(2019-2020)

April 2021 – Present

Rejoin Paris Agreement
(2021)

IPCC AR6 Report
(2021)

EPA Website 'Climate Change' is Back!
(2021)

Looking Ahead



The need for collaborative and cohesive actions and efforts is critical to achieve climate and environmental goals.



Climate Change, GHG's and Environmental Accountability



Baseline GHG's – GHG Goals – GHG Action

Innovation & Technology - Renewables

Moderated Discussion

Ken Rhodes

Program Chair & Panel Moderator

Fuss & O'Neill, Inc.



Environmental Business Council of New England

Energy Environment Economy