

Submission date 3/3/2022

HEARING DATE: 3/10/2022

BILL: HB171 - **SPONSOR:** Delegate Fraser-Hidalgo

TITLE: Climate Crisis and Environmental Justice Act (CCEJ)

POSITION: Favorable

COMMITTEE: Economic Matters and Environment and Transportation

Also see Attachment A. Presentation to the Baltimore Section of the American Society for Quality (ASQ) slides 20 to 24 for photos of Cambridge flooding.

THE BALTIMORE SUN
A Tribune Publishing Company

**Cambridge flooding
demonstrates needs for
natural gas restrictions**

Kudos for The Baltimore Sun's editorial, "Maryland must reduce its natural gas consumption" (Feb 22). If the world had moved decades earlier to renewable energy, the Russian President Vladimir Putin's stranglehold on Europe would be more like a wet noodle rather than a garrote. However, we in Maryland must be aware that our families on the Eastern Shore are under the threat of invasion of a different sort.

The streets of Cambridge are invaded by seawater as it bubbles up through storm drains during high tide and drains off during low tide. Sea-level rise is caused by warming oceans, which are warmed by greenhouse gases that reflect heat back to Earth. One of the most potent greenhouse gases is methane, which utilities cleverly advertise as "natural gas."

Our public utilities blithely promote natural gas in the name of "lower energy cost." The energy costs are lower because the hidden cost of climate change is ignored. Each time we connect a gas pipe to a new building, we are adding to sea-level rise that threatens the Eastern Shore.

David Saunders, Baltimore

The Baltimore Sun | Friday, March 4, 2022

See slides 20 to 24 for
Cambridge, MD flooding

5T (Five Teams)

What Every Organization
Needs to Fight Climate Change



David M. Saunders, CC-P*

davidsaunders107@gmail.com

*Presentation to the
Baltimore Section of the American
Society for Quality (ASQ)
Dec 7, 2021*

* **Climate Change Professional (CC-P)**,
Certified by the Association of Climate
Change Officers and the State of Maryland



ASSOCIATION OF CLIMATE CHANGE OFFICERS



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Tuition

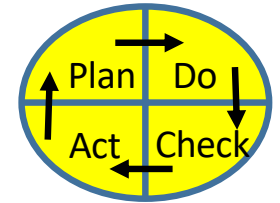
ACCO Members:
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www.climateofficers.org

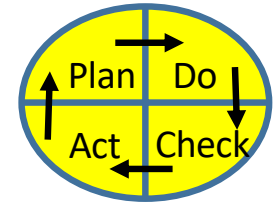


Agenda

- ☐ Team 1. **Strategy Team:** Why climate change is a quality issue.
- ☐ Team 2. **Adaptation Team:** How to protect our vulnerable assets.
- ☐ Team 3. **Mitigation Team:** How to lower our greenhouse gases emissions.
- ☐ Team 4. **Reporting Team:** Managing greenhouse gas data.
- ☐ Team 5. **Opportunity Team:** How to profit from the fight against climate change.

Please type your questions in the CHAT

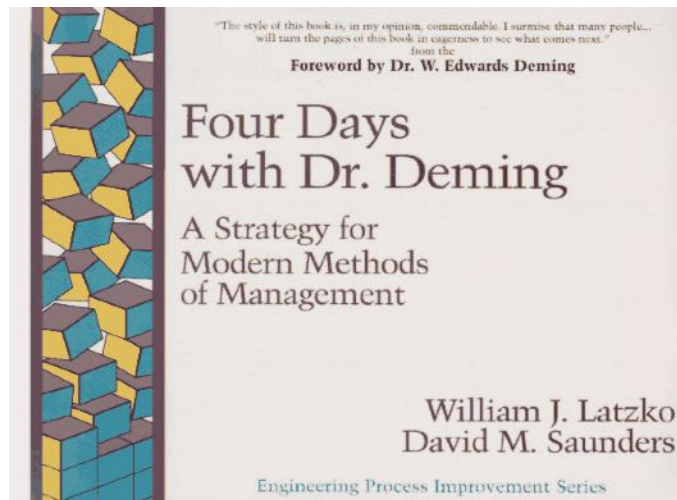
Agenda



- Team 1. **Strategy Team:** Why climate change is a quality issue.



Dr. W. Edwards Deming Obligations of Top Management



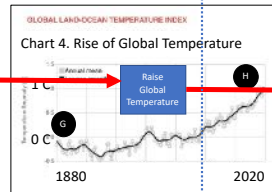
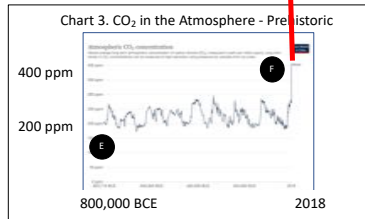
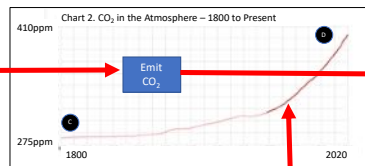
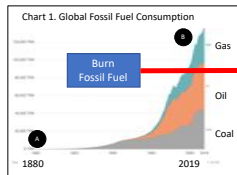
Larry Fink's 2021 letter to CEOs



- The world's largest asset manager, with almost \$7 trillion under management
- 2021 Letter to CEOs
- "every management team and board will need to consider how climate change will impact their company's stock."

Cause

Effect



Increase Adverse Events

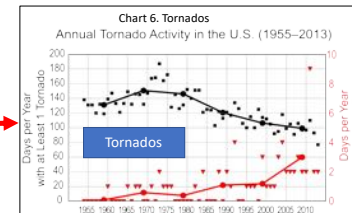
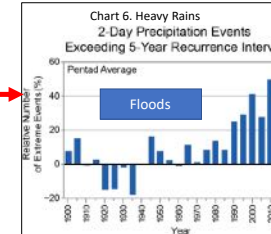
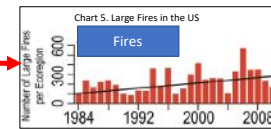


Chart 1. CO₂ in the Atmosphere - Prehistoric

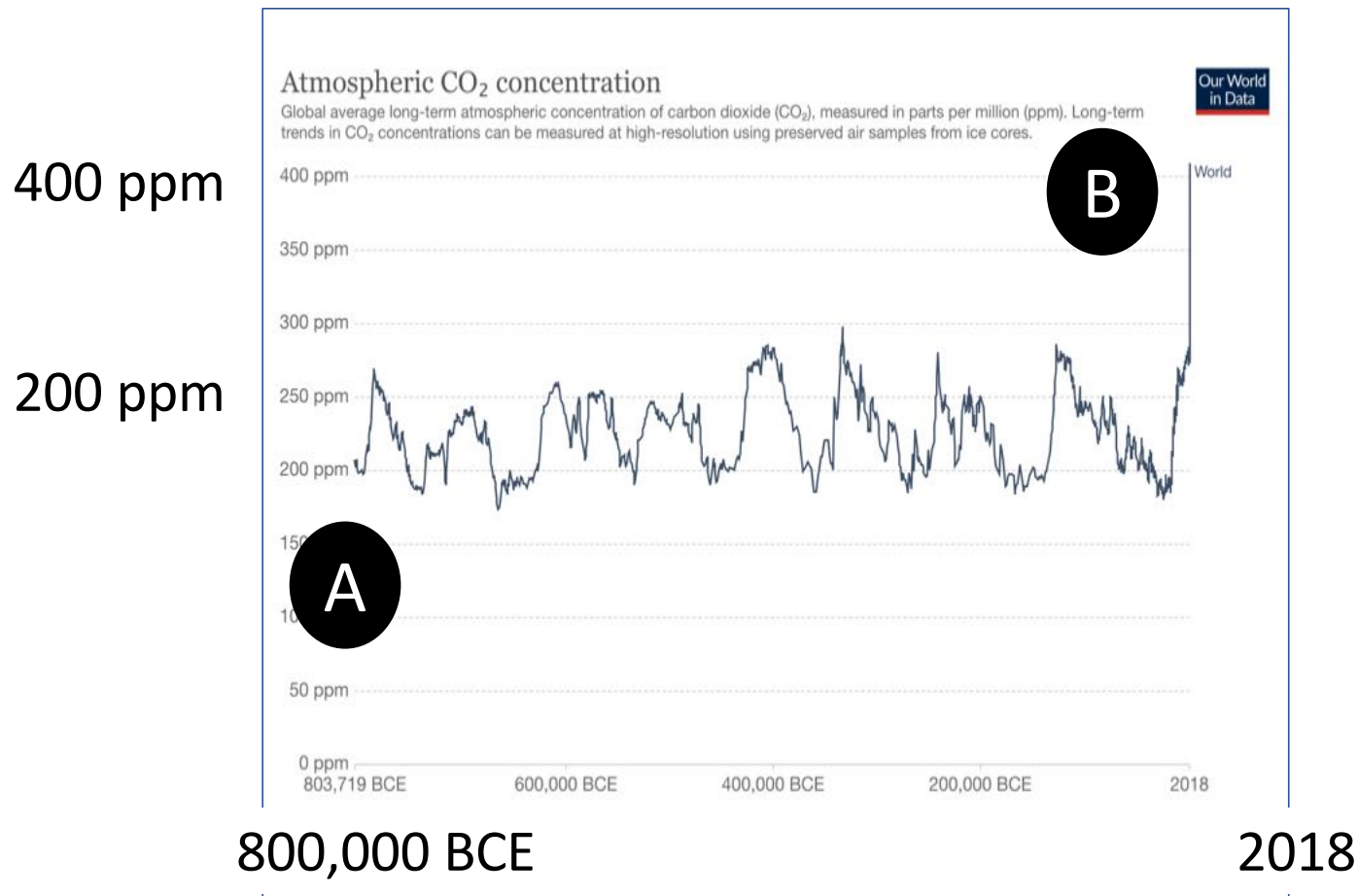


Chart 2. CO₂ in the Atmosphere – 1800 to Present

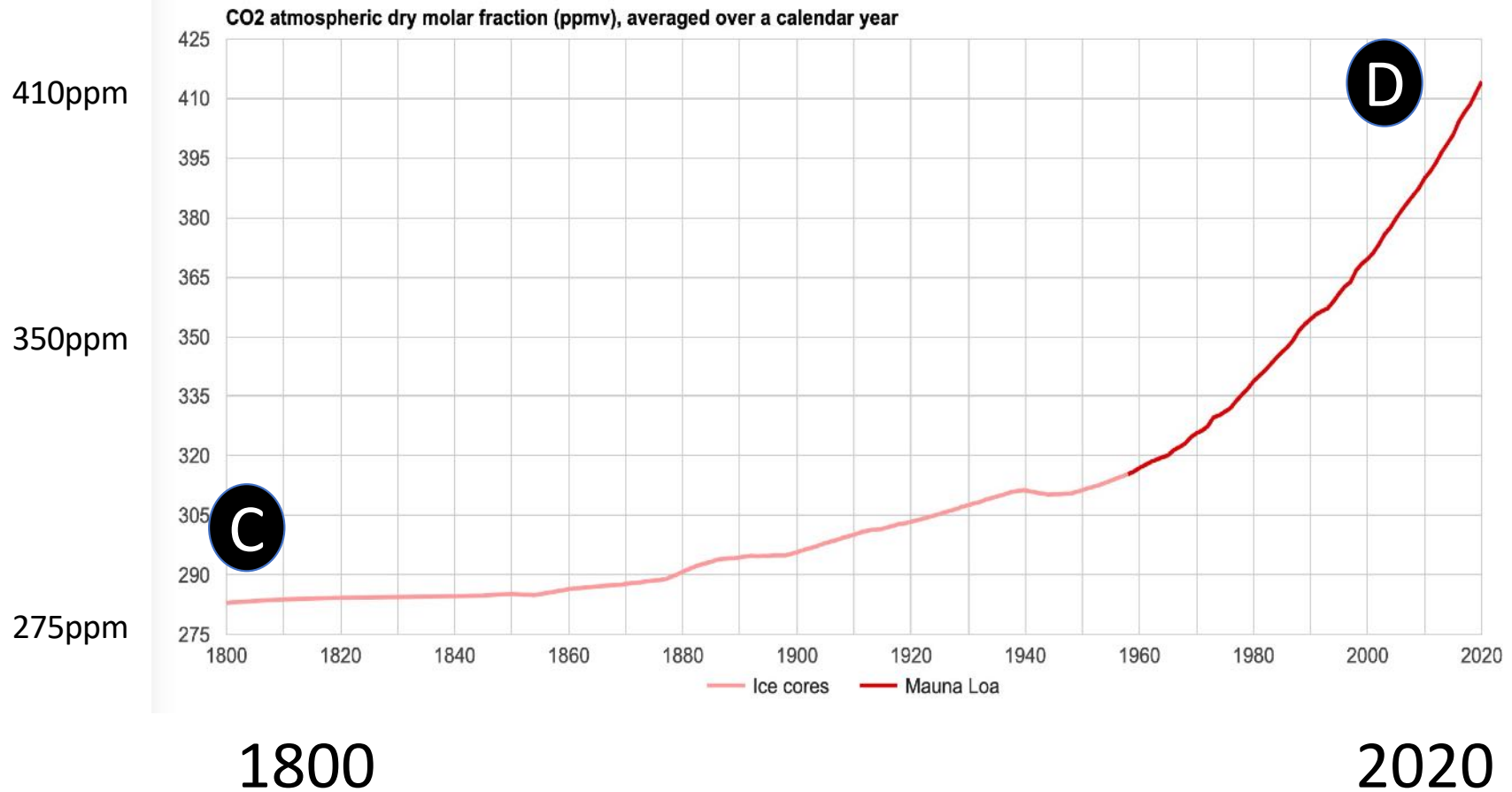
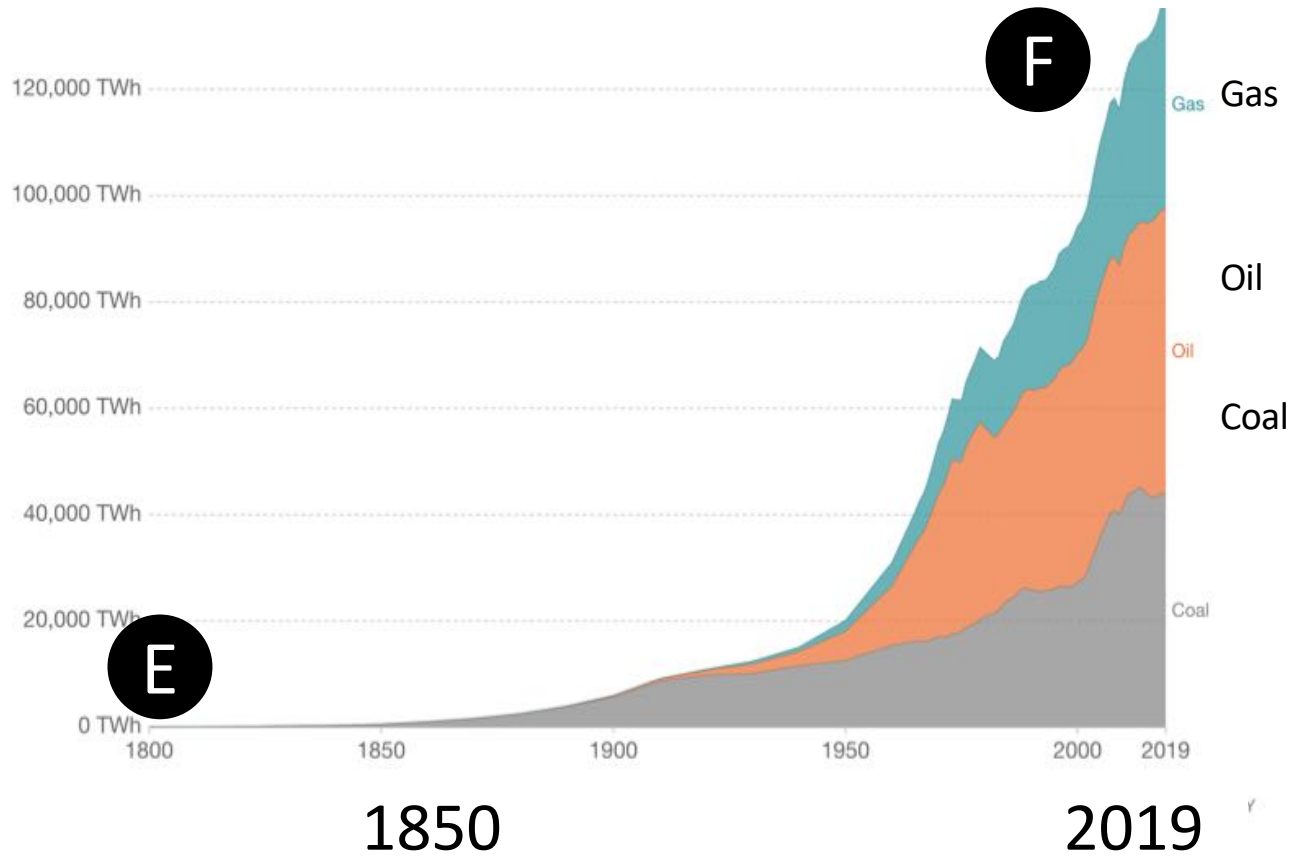


Chart 3. Global Fossil Fuel Consumption





GlobalChange.gov

U.S. Global Change Research Program



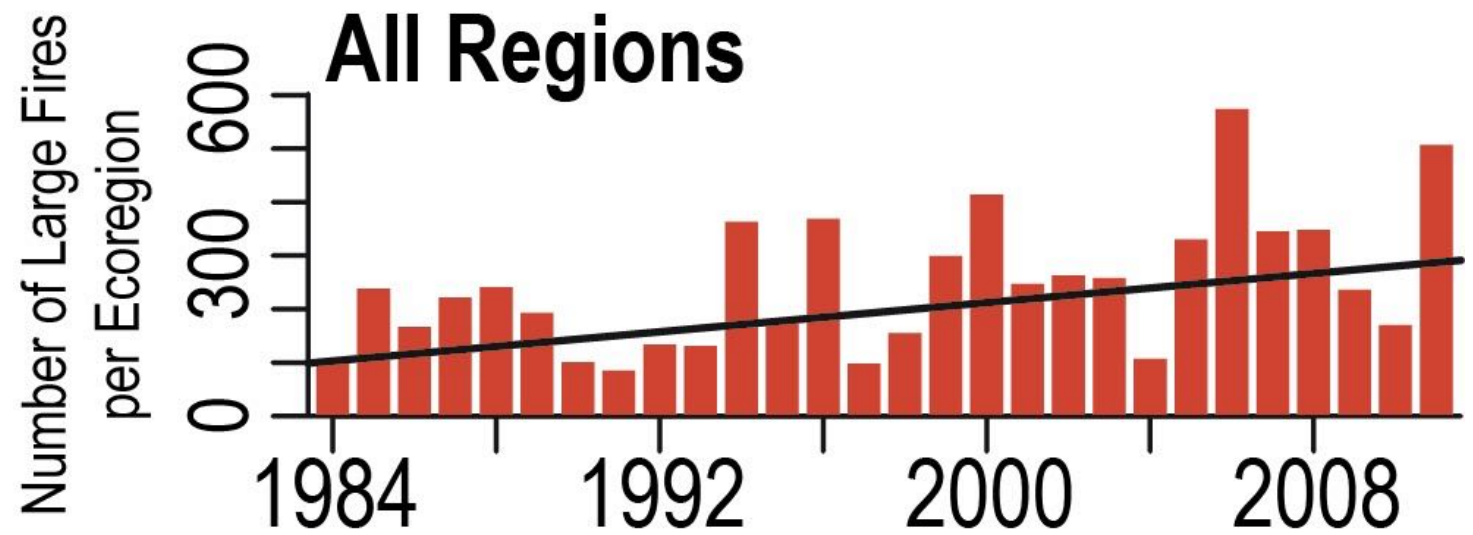
U.S. Global Change Research Program

1800 G Street, NW, Suite 9100, Washington, DC 20006 USA

Tel: +1 202.223.6262 | Fax: +1 202.223.3065



Large Fires in the US



Heavy Rains



2-Day Precipitation Events Exceeding 5-Year Recurrence Interval

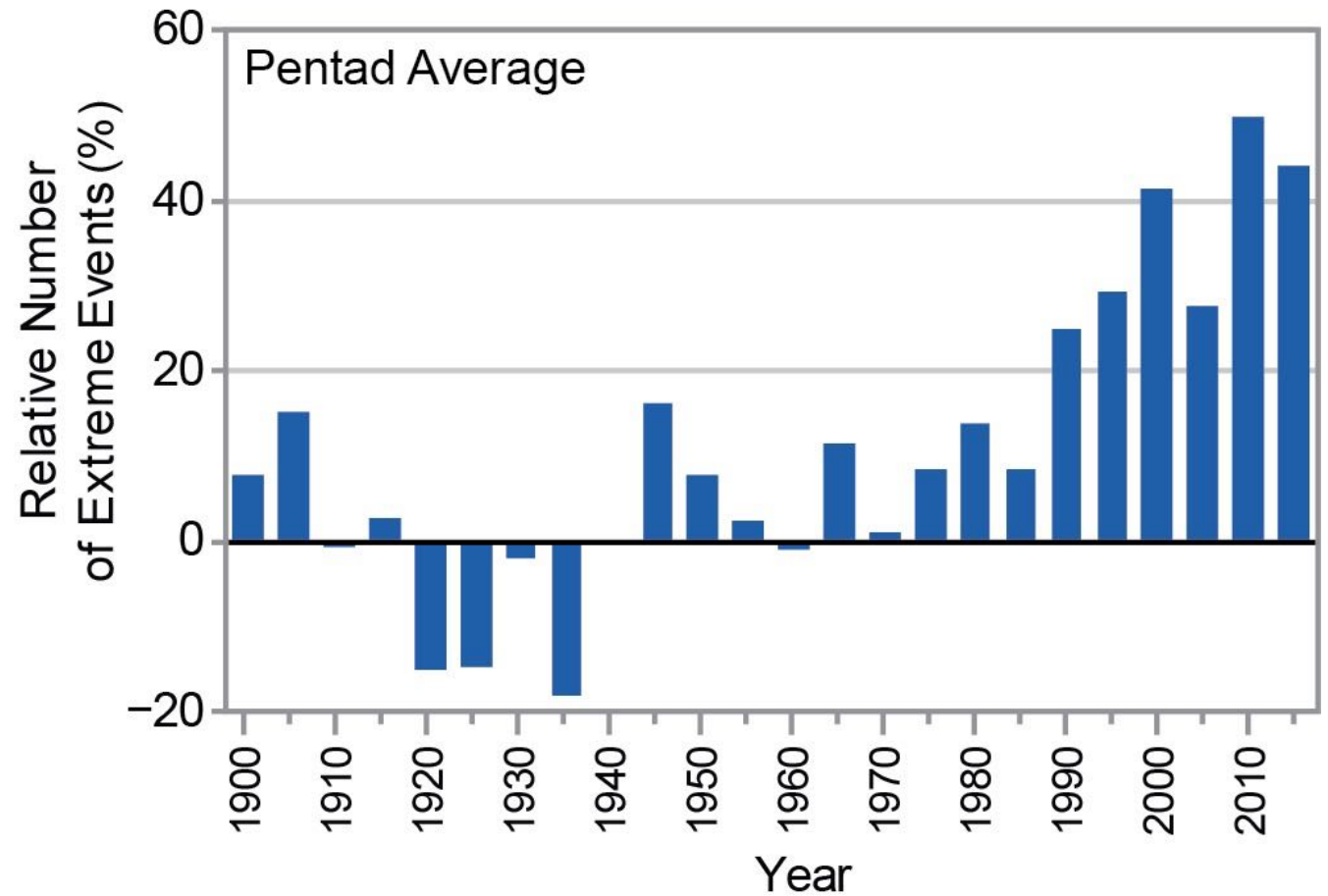
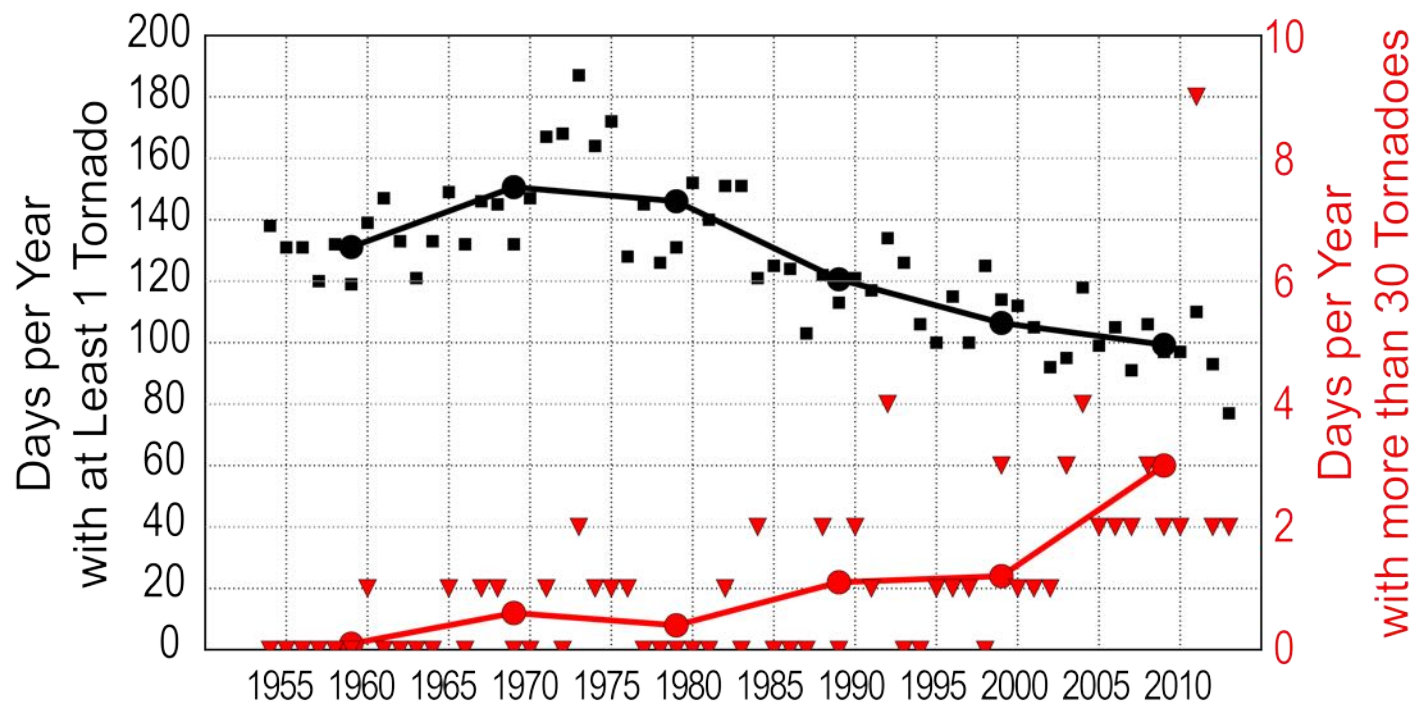




Chart 7. Tornadoes
Annual Tornado Activity in the U.S. (1955–2013)



<https://science2017.globalchange.gov/chapter/9/>

Appropriateness for Readership

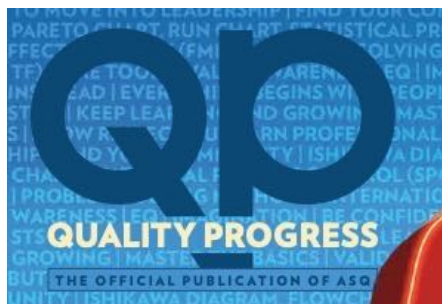
Does the manuscript provide useful information in a format that a majority of readers of all levels of expertise can benefit from?

POINTS

2

COMMENTS:

I do not believe QP is the appropriate place for a controversial article on climate change.

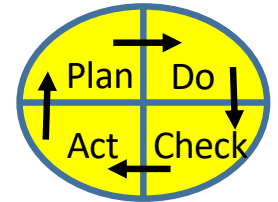


Chesapeake Climate Action Network (CCAN)



For more info: <https://chesapeakeclimate.org/>

Agenda



- ❑ Team 2. **Adaptation Team:** How to protect our vulnerable assets.



1. How to conduct an adaptation project



**National Oceanic
and Atmospheric
Administration
(NOAA)**

- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action

Source: <https://toolkit.climate.gov/>

Cambridge, Maryland, October 2021







“Nuisance Flooding”

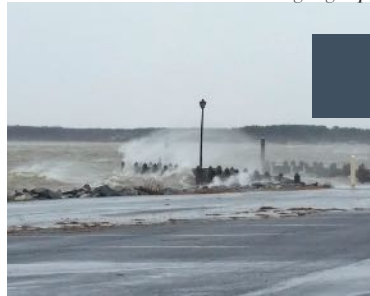




The 1-percent annual chance flood is also referred to as the 100-year flood.

GREAT MARSH PARK FLOOD VULNERABILITY

Sources and geographic extent of flooding.



WAVES AT GREAT MARSH PARK

Photograph of waves taken at Great Marsh Park boat launch and parking area. Photo Credit: Herve' O. Hamon

1% ANNUAL CHANCE FLOOD

The FEMA regulated 1% annual chance floodplain impacts the shoreline, roadways and properties within this area. The park's interior, due to increased land elevation, is not impacted.

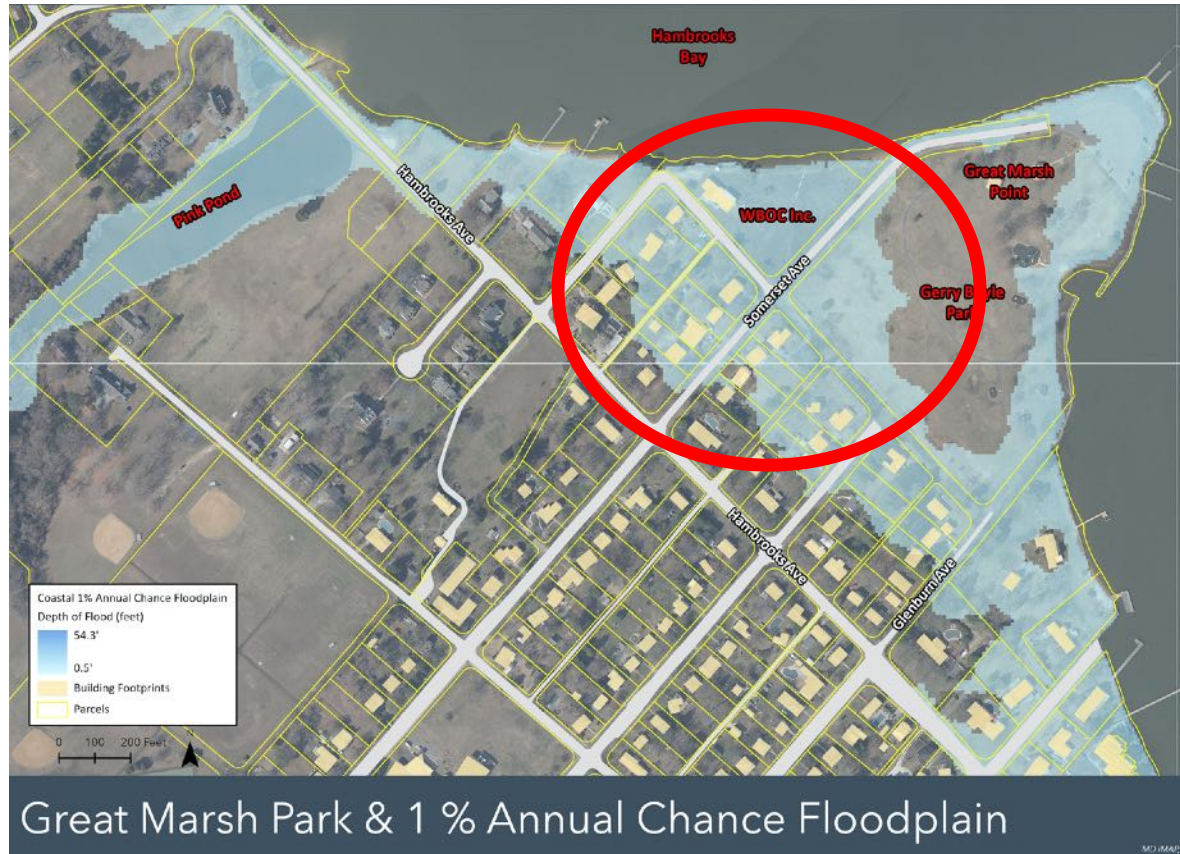


CLIMATE READY ACTION BOUNDARY (CRAB)

The FEMA floodplain limit remains inundated with an additional 3 feet of water added to it. The Newly Inundated area shows how 3 additional feet of water moves across new areas of the landscape based on the land elevation profile.



Larger format maps are on the following pages.



FEMA provides communities with updated Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) Reports that focus on the probability of floods and that show where flooding may occur as well as the calculated 1-percent-annual-chance flood elevation. The 1-percent-annual-chance flood, also known as the base flood, has a 1% chance of being equaled or exceeded in any given year.

Solicitation of Expressions of Interest to Provide Technical and Administrative Support to the City of Cambridge for Advance Flood Mitigation Planning

October 9, 2020

1. Background

The City of Cambridge has been awarded a FEMA Grant for Advanced Flood Mitigation Planning to develop strategies to mitigate the impact of projected sea level rise and major storms out to year 2100. The City has developed a project plan and is soliciting expressions of interest to provide technical and administrative support in the implementation of its plan and the documentation of the planning process.

2. Scope of Services

The scope of services requested includes technical and administrative support in project planning and documentation, community outreach, vulnerability and risk assessments, and the development of mitigation strategies and concept designs in three phases.

- **Project planning and documentation of the planning process** - the contractor will provide technical and administrative support to the project team in the implementation of FEMA's Flood Mitigation Guidance, and their Local Mitigation Handbook in the development of Cambridge's flood mitigation strategies, plans and the documentation of the process to guide its future implementation.
- **Public Outreach**- The contractor will support the project team in the development of our public outreach strategy framework. Contractor support will also include establishing a Website for outreach, the development and dissemination of outreach material, logistics support for meetings, and documentation of public input to the planning process. Contractor support will be tailored to the project as we progress from each phase of the project.
- **Vulnerability and Risk Assessment**- The project team will leverage much of the studies completed by the Eastern Shore Land Conservancy and Salisbury University in support of the development of the Dorchester County Flood Mitigation Plan. Contractor support will include providing technical and administrative support in defining the scope of

3. Type of Contract Anticipated

This will be a Task Order Contract with no guarantees of scope or dollar values. A contract will be awarded with an initial task to support the team in the first phase of the contract.

4. Scope of Initial Task

The project is being mobilized in October 2020 and the project team will establish the project management systems and operating procedures in the first few months of the project. The initial task will include providing technical and administrative support in the management of current operations and providing technical and administrative support to each of the functional areas of project planning and documentation, public outreach, vulnerability and risk assessment, and mitigation strategy development.

5. Evaluation Criteria

The following factors will be used in evaluating proposals.

- Experience in providing similar flood mitigation planning support to other municipal clients
- Knowledge and Experience in evaluating flood risk on the Eastern Shore of MD, Dorchester County and Cambridge
- Experience in the planning and design of flood protection projects
- Specialized capabilities and experience in the development of flood mitigation strategies and concept designs that integrate conventional flood mitigation measures with environmentally friendly concepts to create, for example, a "living levee" and/or the application of innovative use of living systems such as oyster beds to mitigate wave action offshore.
- Availability of local resources and presence to support the project team.
- Small and Disadvantage Business participation –qualified small and disadvantage business are encouraged to participate either as a prime contractor or as part of a team

6. Responses to Notice

Interested parties should respond to the announcement no later than November 2, 2020.

City of Cambridge, MD

Solicitation for Flood Control Plan

CLIMATE RESILIENT DESIGN STANDARDS AND GUIDELINES FOR PROTECTION OF PUBLIC RIGHTS-OF-WAY

B.2 HARBORWALK AS FLOOD BARRIER (RAISED SEAWALL)

Refer to Climate Resilient Design Standards and Guidelines for notes and guidance.

DOWNLOADABLE FILES:

Standard PWD Details for reference and download can be found [here](#)

B.2 SAMPLE HARBORWALK AS FLOOD BARRIER (RAISED SEAWALL)

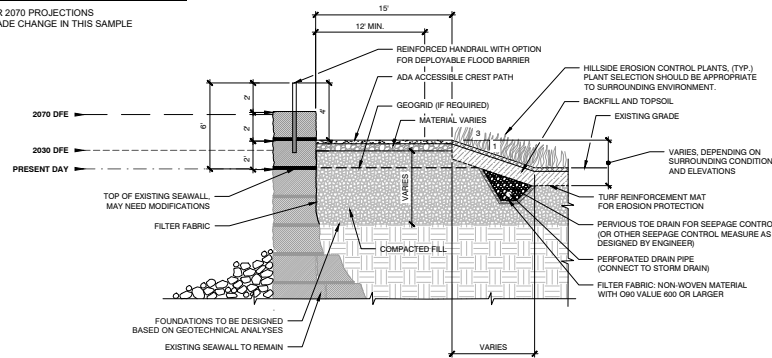
[CAD](#)

[PDF](#)

SAMPLE

Increased Height from Existing Ground Surface (+ ft)	Minimum Crest Width	Slope Width	Total Width
1	15	3	18
2	15	6	21

NOTE: 4 FT. IS USED FOR SAMPLE BARRIER FOR 2070 PROJECTIONS
SEAWALL IS RAISED 4 FT. WITH 2 FT. GRADE CHANGE IN THIS SAMPLE



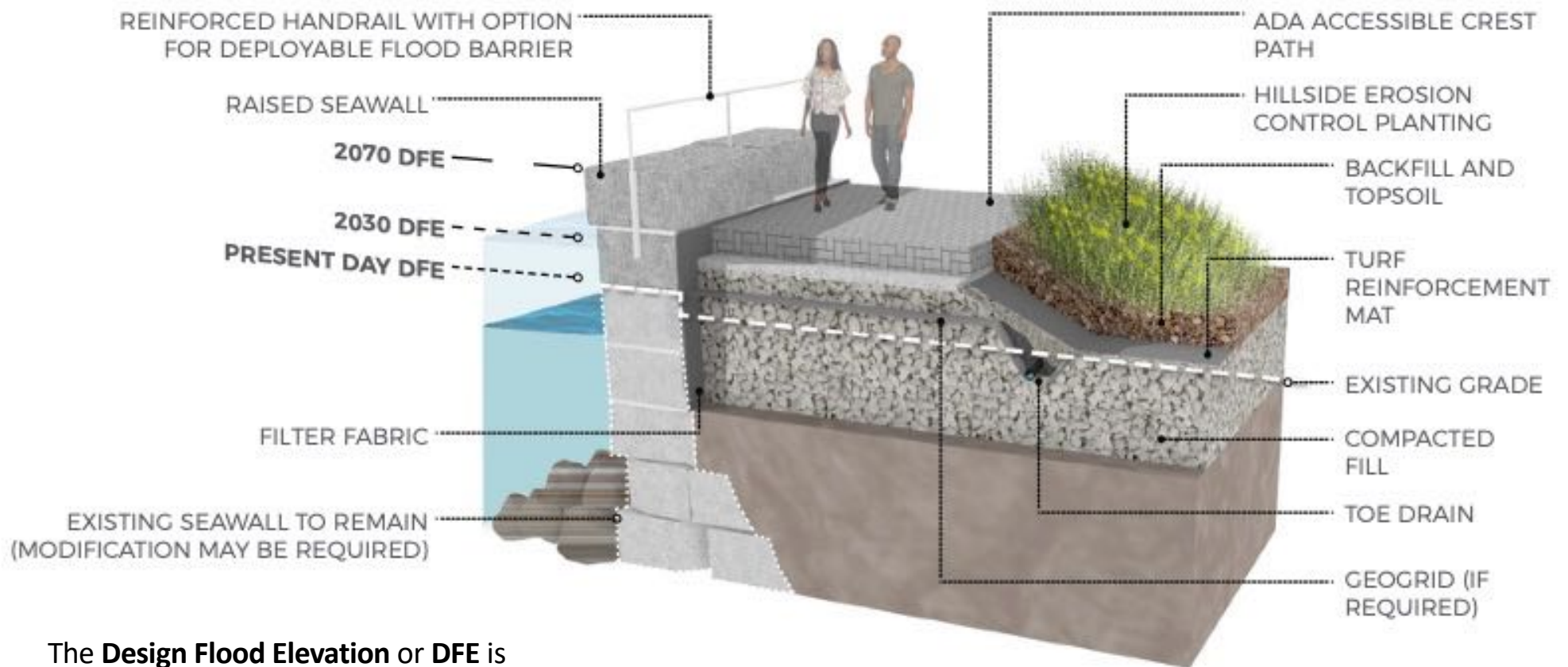
NOTES:

- HANDRAIL DESIGN FOR ASCE 7 LOADS
- STRUCTURAL DESIGN OF ANCHORAGE IS REQUIRED
- PERFORM WALL STABILITY CALCULATIONS FOR PROPOSED CONDITION (BEARING SLIDING/OVERTURNING/GLOBAL)
- DIMENSIONS ARE BASED OFF ASSUMED SLOPED OF 3H:1V (HORIZONTAL:VERTICAL)
- FOR ADDITIONAL CONSIDERATIONS SEE GUIDELINES DOCUMENT
- DFE - DESIGN FLOOD ELEVATION (FREEBOARD INCLUDED)
- 2070 DFE: THE DESIGN FLOOD ELEVATION FOR THE 1% ANNUAL FLOOD EVENT WITH 40 INCHES OF SEA LEVEL RISE. DESIGN FLOOD ELEVATION (DFE) INCLUDES FREEBOARD ON TOP OF THE BASE FLOOD ELEVATION

SAMPLE - NOT TO SCALE

1 CITY HALL SQUARE
ROOM 714
BOSTON, MA 02201-2024

PUBLIC WORKS DEPARTMENT
(T): 617 635 4900
(E): publicworks@boston.gov



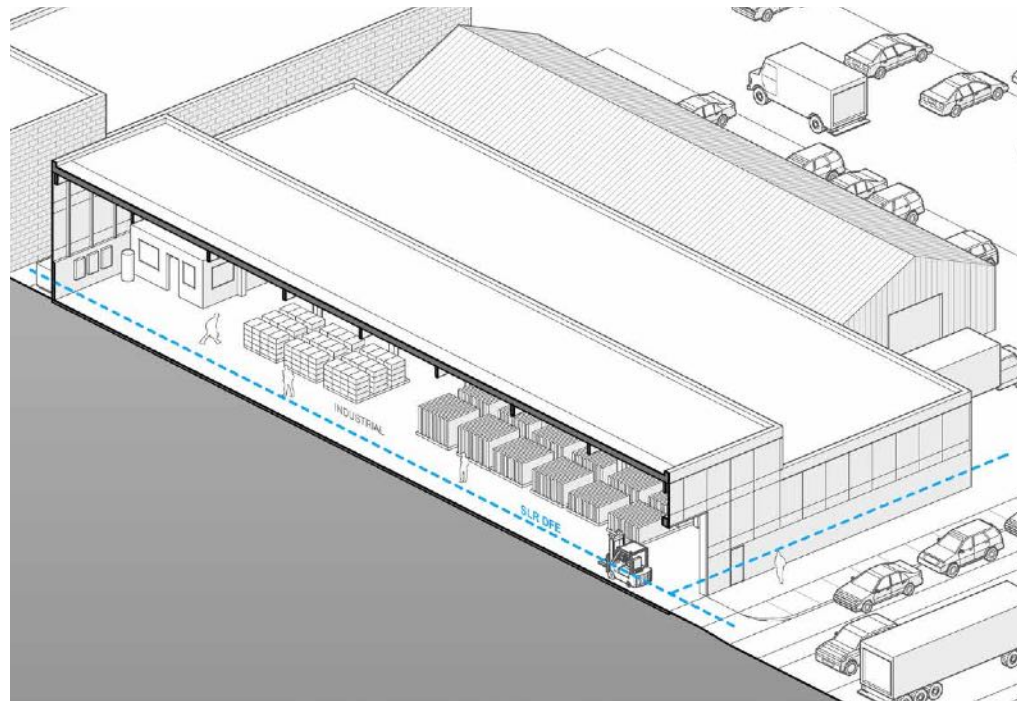
The **Design Flood Elevation** or **DFE** is used for determining elevation of building elements in new construction.



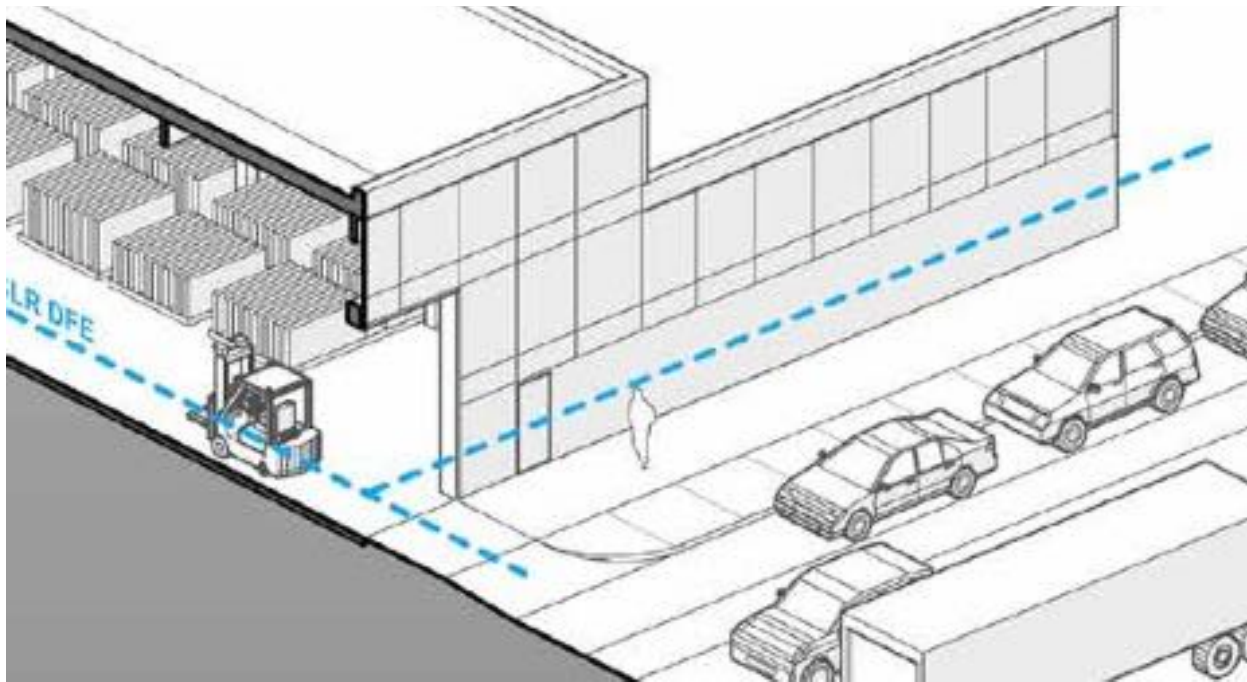
General Industrial

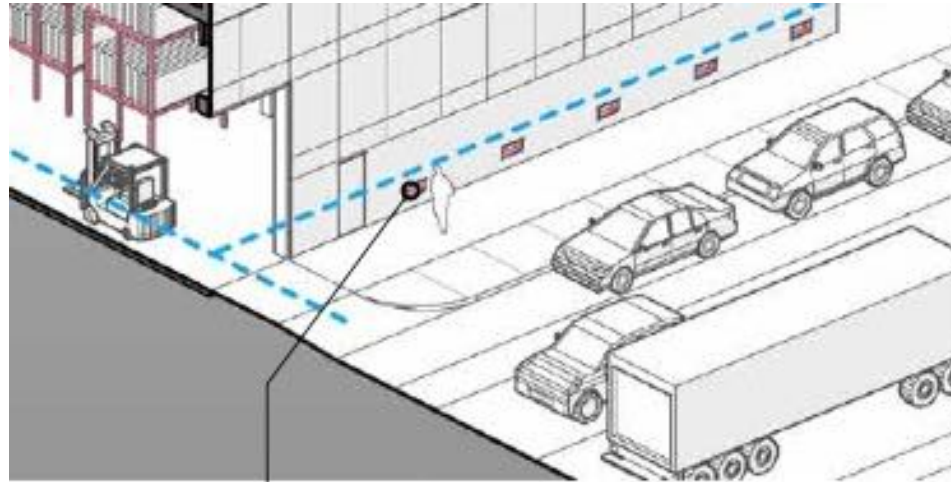
Existing Conditions

This type is prevalent in parts of South Boston and Dorchester, as well as some waterfront areas of Charlestown and East Boston. They are one to two stories in height. Some examples may have elevated loading docks and ground floors, which make them easier to adapt to the SLR-DFE.



Design Flood Elevation (DFE): defined by FEMA as the height of the lowest structural member of an inhabitable floor.





Building Envelope and Access

Wet Floodproofing

Install flood vents at basement walls in order for water to enter and balance hydrostatic forces.

Use water-damage-resistant materials below the SLR-DFE.

Technical Considerations

Suitability

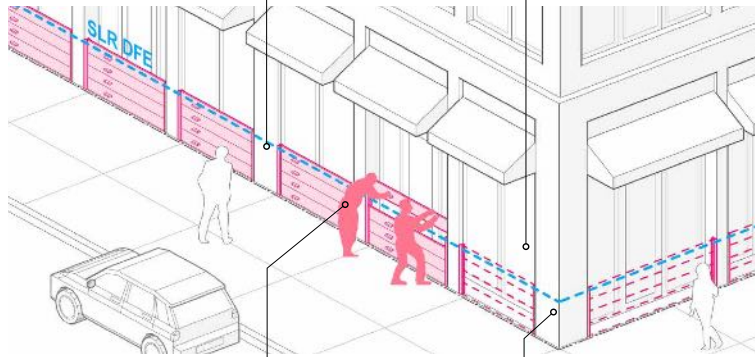
Dry floodproofing is not allowed to protect residential buildings, except for parts of a building that are used for access, parking, or storage. For all other uses, if utilizing a temporary flood barrier system, consider setting the barriers back to allow for an area of assisted rescue per state building code requirements, as well as a movable code-compliant stair, handrails, and landing. Any temporary barrier or means of egress should not encroach into the public right of way without coordination with the City of Boston (see BPWD, Section 7 page 72.)

Flooding Depth

Dry floodproofing is most practical where flood depths do not exceed 3' and when flood velocities and durations are low. Per FEMA standards, dry floodproofing is not allowed in special flood hazard areas with high velocity wave-action (V-zones, Coastal A-Zones) because it does not protect against wave action, erosion, scour, and may make the building subject to greater risk of structural failure.

Means of Egress

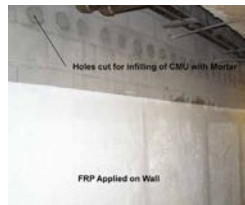
Flood barriers cannot block an accessible means of egress. Per ASCE 24-14, a dry floodproofed building must have at least one door satisfying building code egress requirements for an emergency escape above the applicable flood elevation.



Sealants and Interior Drainage

Waterproofing and sealants can be applied either to the exterior or interior side of walls and floors (as shown below) to make them impermeable.

Water may still seep through small openings in a dry floodproofed building. Therefore, a dry floodproofed building requires a drainage system utilizing sump pumps with backup power to remove any leaked water.



Interior waterproofing and structural reinforcing
Source: FEMA, 2013. *Floodproofing Non-Residential Buildings*.

Human Intervention

Dry floodproofing often requires human intervention for storage, maintenance, and implementation of shields and barriers, along with training of building owners or facilities personnel to properly deploy and maintain these systems. These dry floodproofing systems should be incorporated into a building's emergency operations plan.



Drop-in flood shields inserted into brackets
Photo: Flood Panels LLC

Structural Integrity

Engineering must be performed to ensure the structure can withstand hydrostatic pressure by flood waters and saturated soils. This includes reinforcing above-grade walls and foundations to withstand these flood pressures. Because of the flood pressures imposed by water and saturated soils, dry floodproofing is most appropriate for concrete and load-bearing masonry structures without basements.

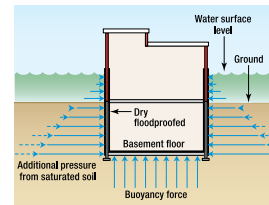


Diagram showing various hydrostatic forces on building
Source: FEMA, 2013. *Floodproofing Non-Residential Buildings*.

Technical Considerations

Repair and Replacement

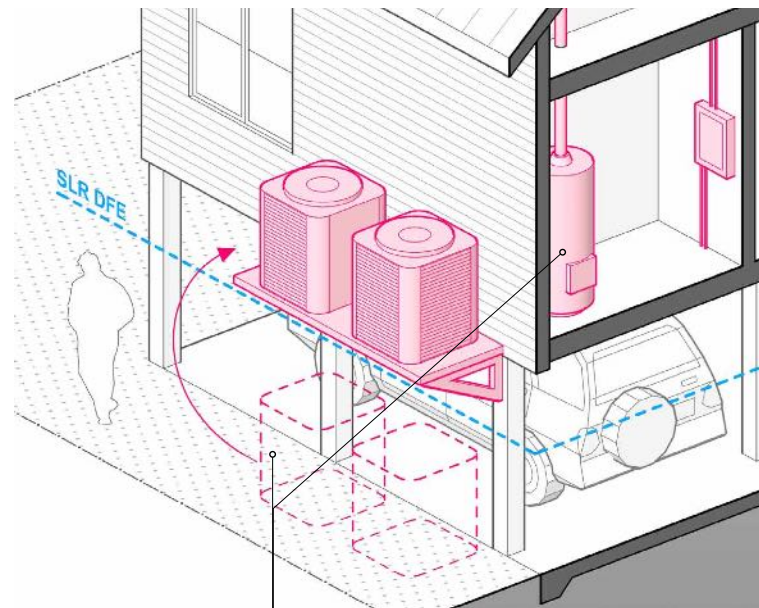
Use natural cycles of repair and replacement as opportunities to improve the flood resilience of building utility systems and equipment. For example, replacing an old furnace in the basement with a more compact mini-split heat pump can improve efficiency, reduce fossil fuel use, and make relocating or elevating heating and cooling systems more feasible in space-constrained buildings.

Energy Audits

Building owners should conduct an energy audit to identify opportunities for improvements in energy efficiency to coincide with resilience upgrades. This is not only limited to replacing old equipment with higher-efficiency models. An energy audit can reveal how upgrades to the building envelope can reduce heating and cooling loads, which can result in equipment down-sizing in addition to added efficiency.

Utility Coordination

Coordinate with the local utility company when planning modifications to the placement of electric and/or gas meters.



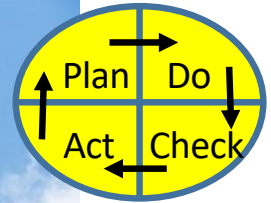
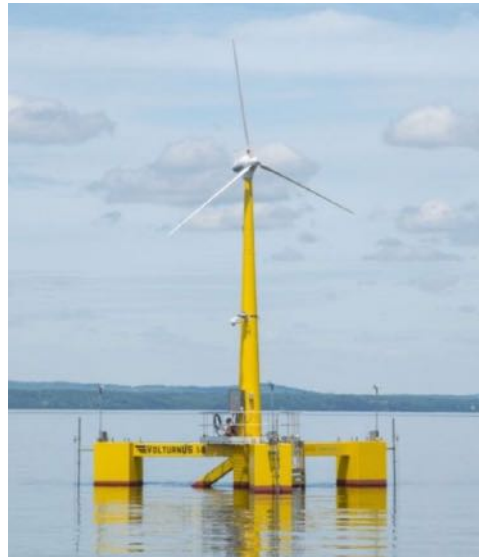
Protecting in Place

If protecting in place is the most feasible option, watertight walls and shields are most practical when flood depths are less than 3'. Utilize a watertight closure panel if a floodwall is too high to step over. Utilize anchors and tie-downs to hold equipment in place.

Elevating Equipment

When relocating or elevating MEP systems, consider horizontal and vertical clearances for routine maintenance; venting requirements for combustion equipment; drain pans for equipment containing water storage to prevent leakage; and provisions to prevent equipment from freezing.

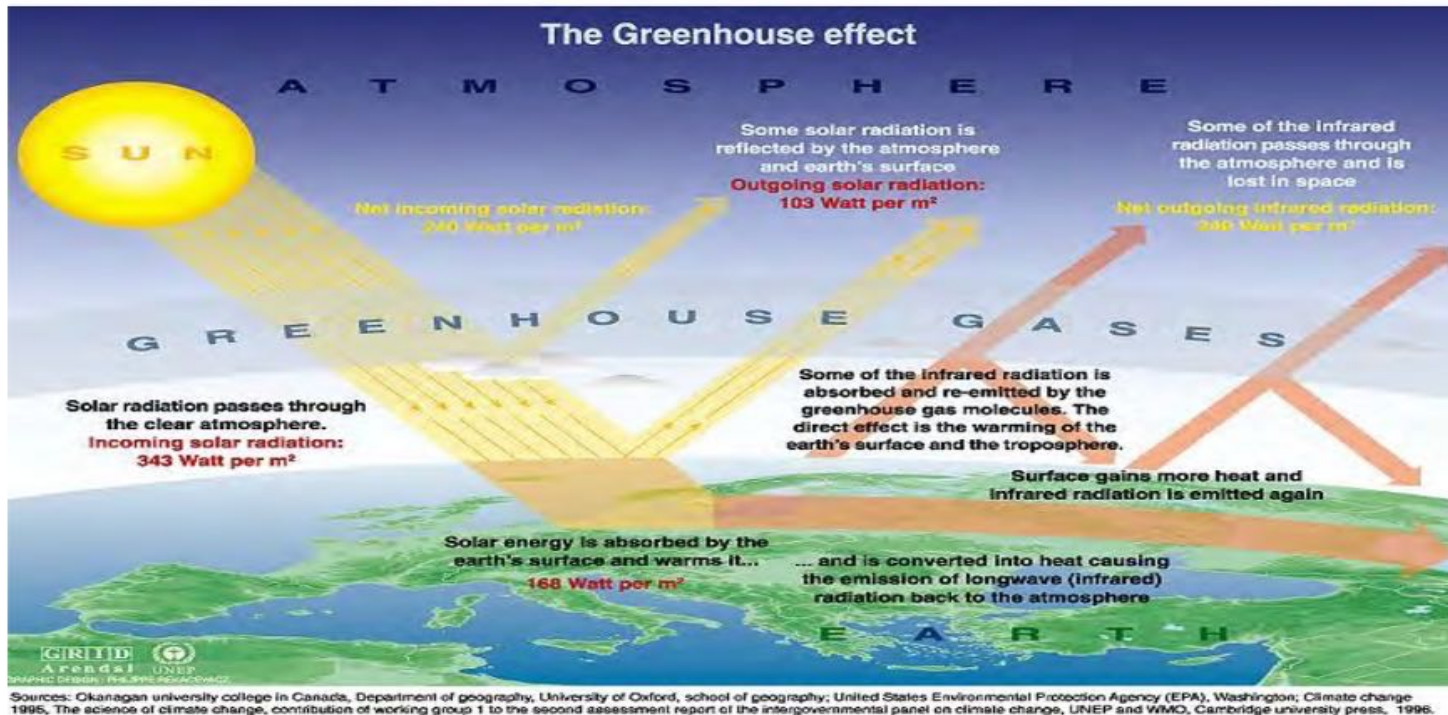
Agenda



- ☐ Team 3. **Mitigation Team**: How to lower our greenhouse gases emissions.



Anthropogenic Global Warming



Slide 9 of 68



Live Online CC-P® Prep Program #3
GHG-101: Basics of GHG Accounting, Reporting & Disclosing GHG Emissions (July 27, 2020)



CO₂ from Burning Coal

- Coal (carbon content of 78%)
1.00 short ton (2,000 pounds) of coal
2.86 short tons of carbon dioxide

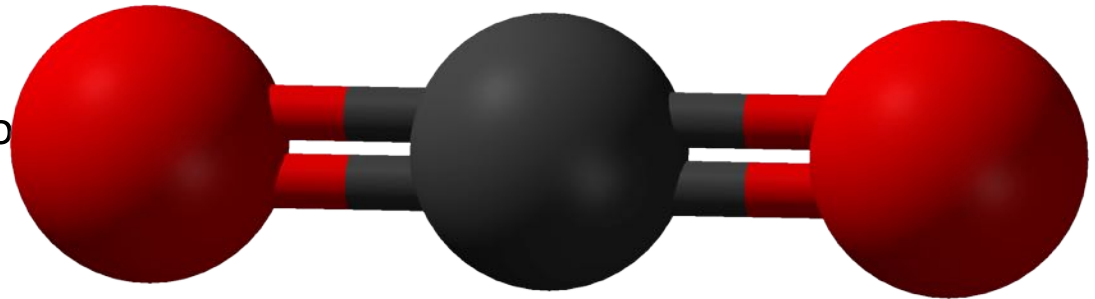
- Atomic weight

Carbon	12	12
Oxygen	16	32
<hr/>		
Carbon Dioxide (CO ₂)		44

- My House

1026 Therms of “natural gas”

5.6 tons of CO₂ (equivalents) for 100 years



Source: U.S. Energy Information Administration



BGE needs smart grid, not natural gas infrastructure

I agree with David S. Lapp that “investments made for gas infrastructure (are) just too costly” (“Gas infrastructure investments: too costly for consumers and environment,” Sept. 28). Baltimore Gas and Electric’s \$1.3 billion investment does not account for the hidden cost of climate change and stranded assets.

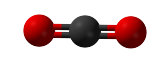
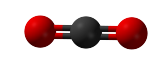
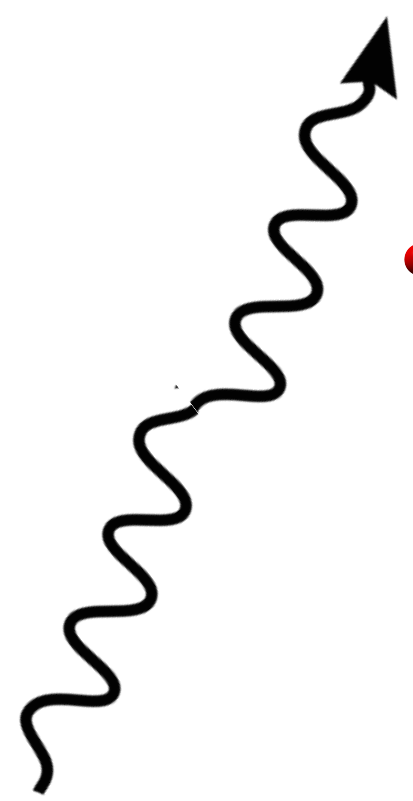
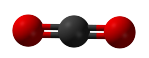
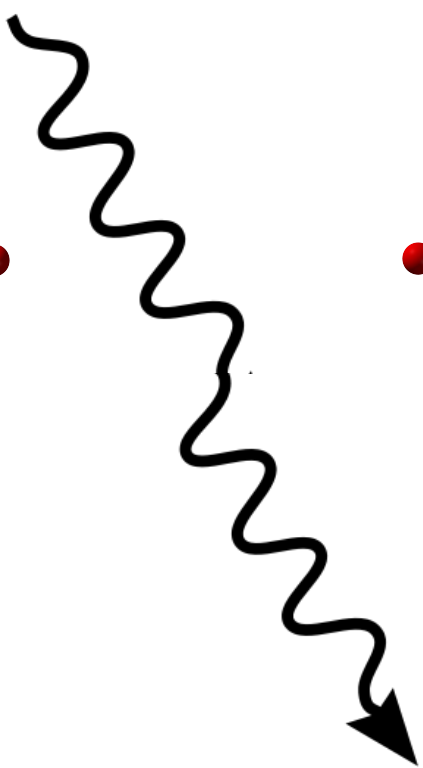
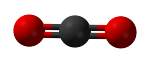
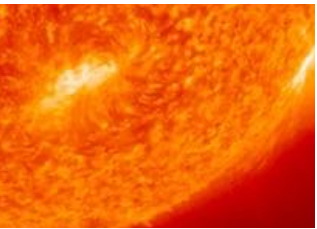
Last year, BGE billed me \$677 for 1,026 therms of natural gas. What BGE did not show was that burning 1,026 therms emits a hazardous 5.4 metric tons of greenhouse gas emissions. These emissions are proven to exacerbate floods, tornadoes, hurricanes, droughts, wildfires and sea-level rise. The answer is to replace gas furnaces with electric heat pumps powered by clean energy.

BGE’s \$1.3 billion investment should be for a smart grid instead of a gas pipe.

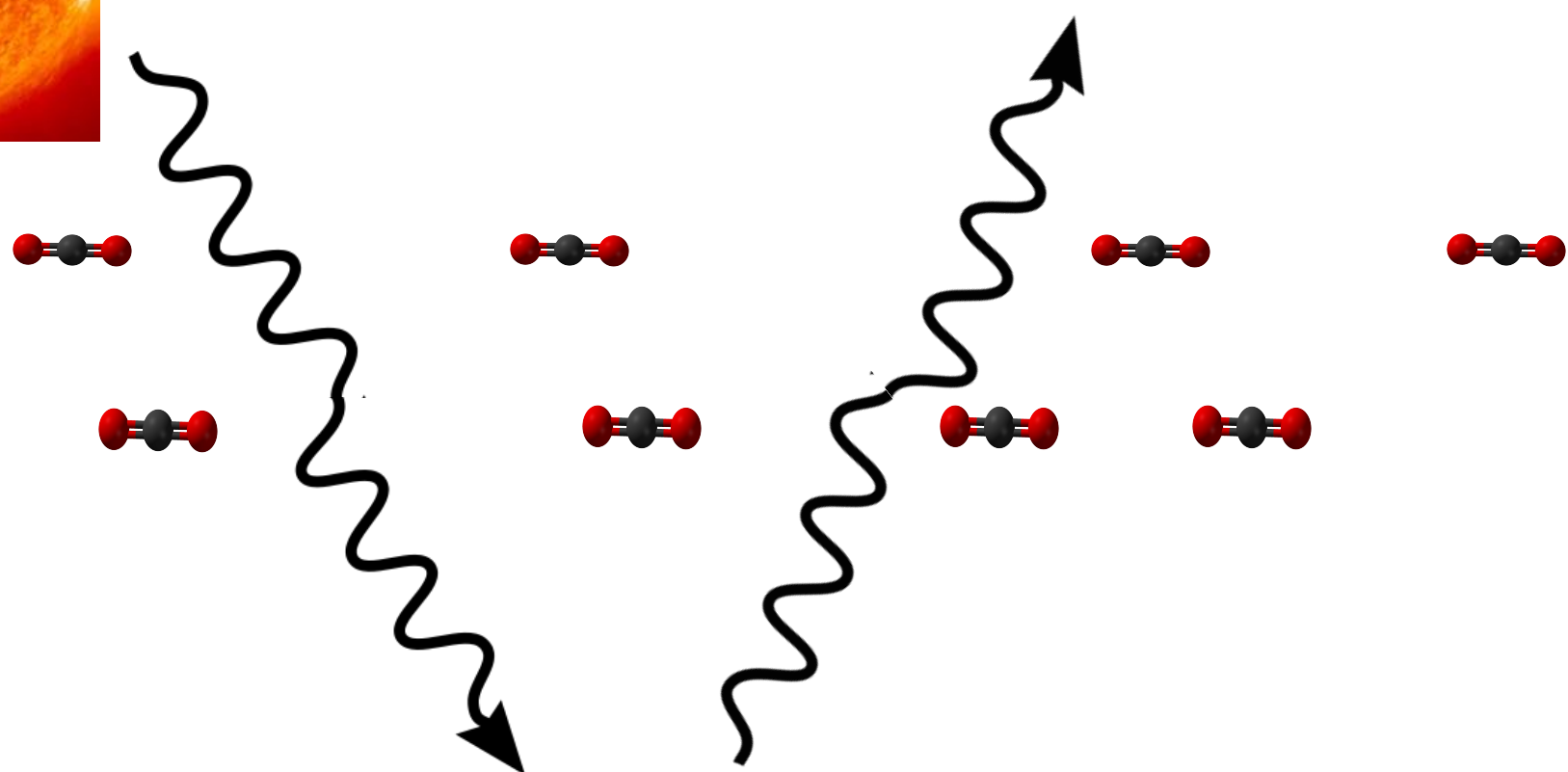
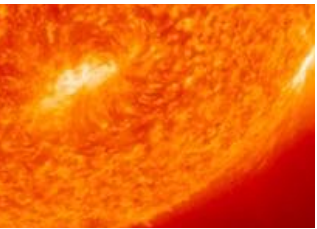
David Saunders, Baltimore

The writer is a Climate Change Professional certified by the Association of Climate Change Officers and the State of Maryland.

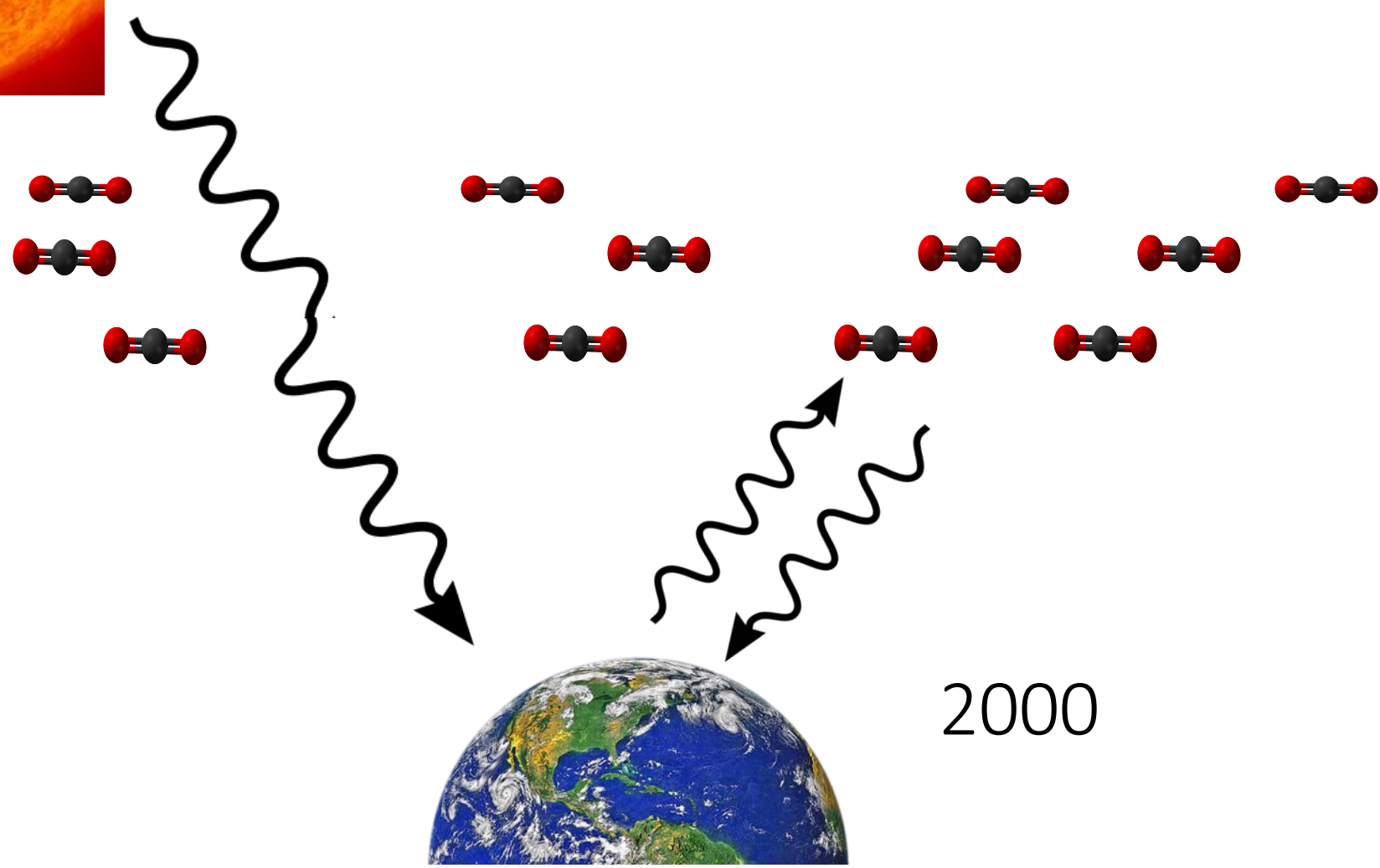
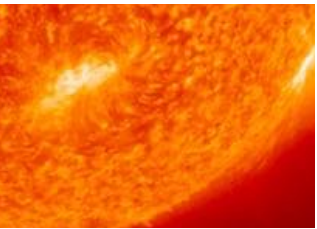
Letter to the Editor
10-07-2021



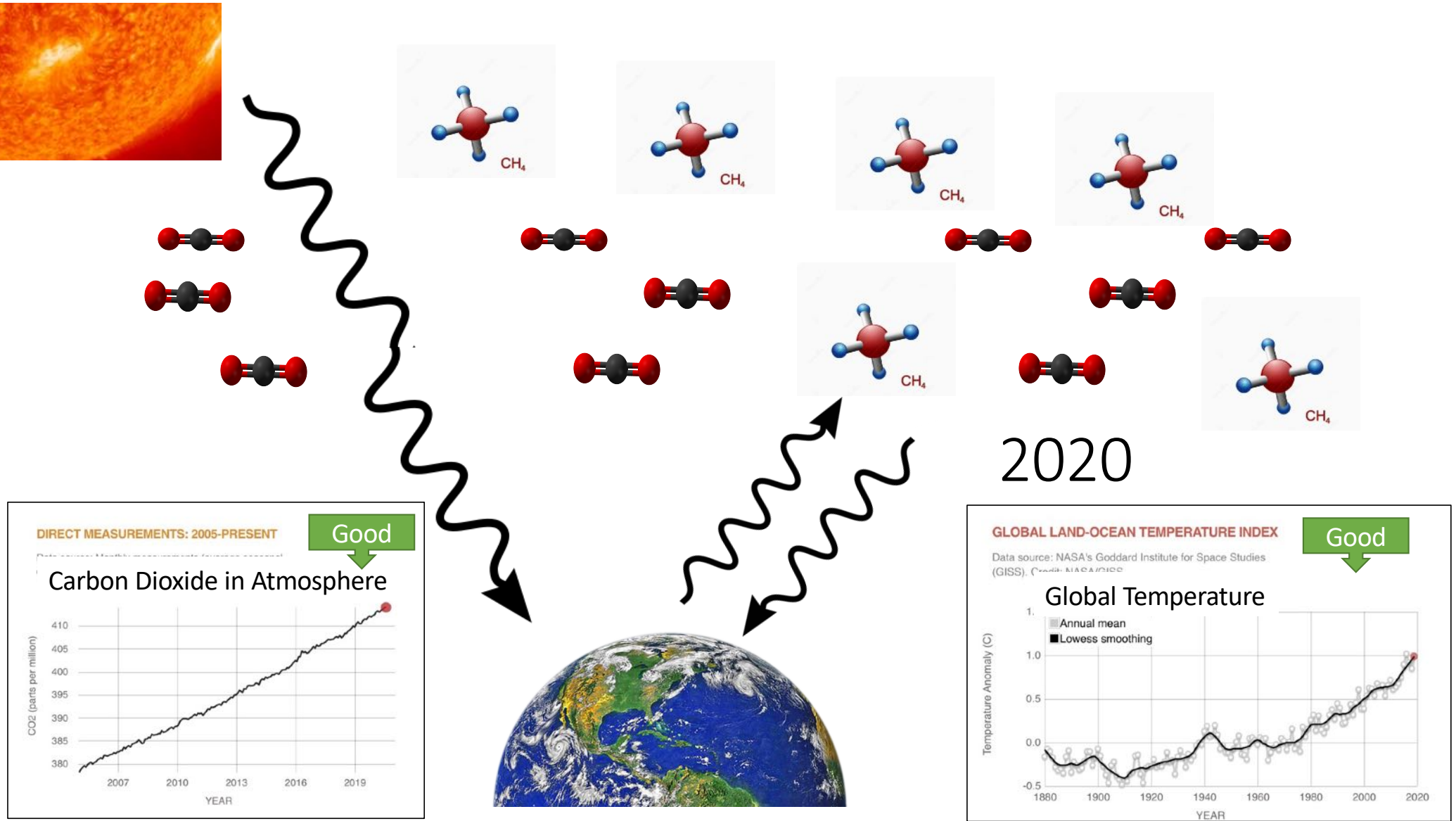
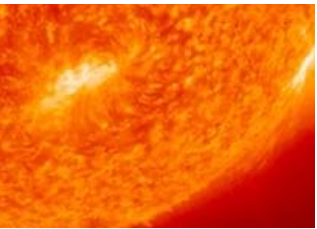
1800



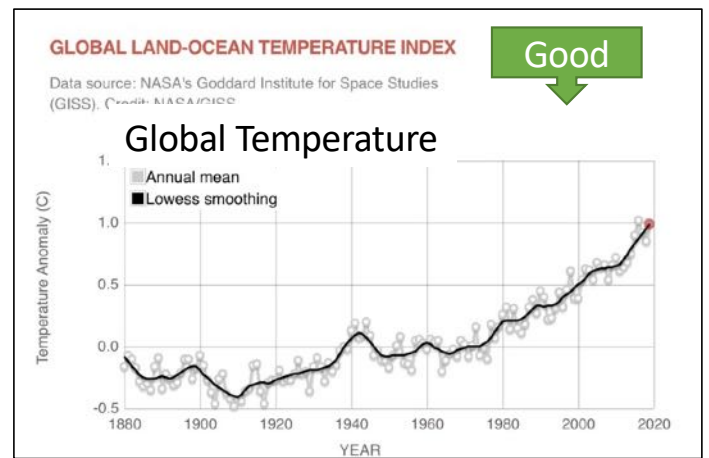
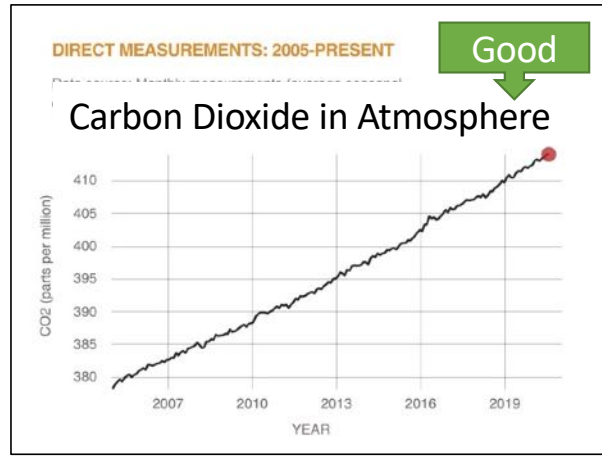
1900



2000



2020



Greenhouse Gases (GHGs)

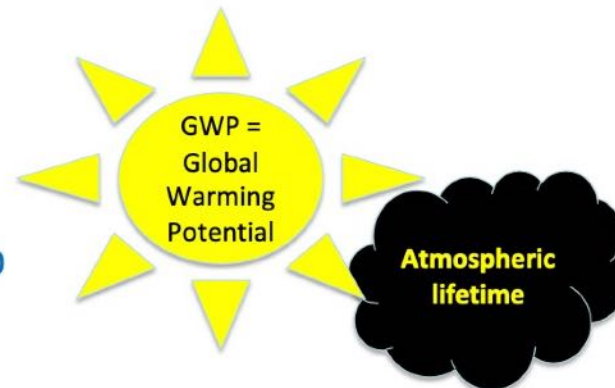
GWP = Global Warming Potential

Kyoto Gases:

- Carbon dioxide (CO_2) GWP 1
- Methane (CH_4) GWP 21
- Nitrous oxide (N_2O) GWP 310
- Hydrofluorocarbons (HFCs)
(HFC 134a) GWP 1,300 → 1,430
- Perfluorocarbons (PFCs)
(CF_4) GWP 6,500
- Sulphur hexafluoride (SF_6) GWP 23,900

+

- Nitrogen trifluoride (NF_3)
GWP 17,200
- Hydrofluorinated ethers (HFEs)
GWP 11 → 14,900

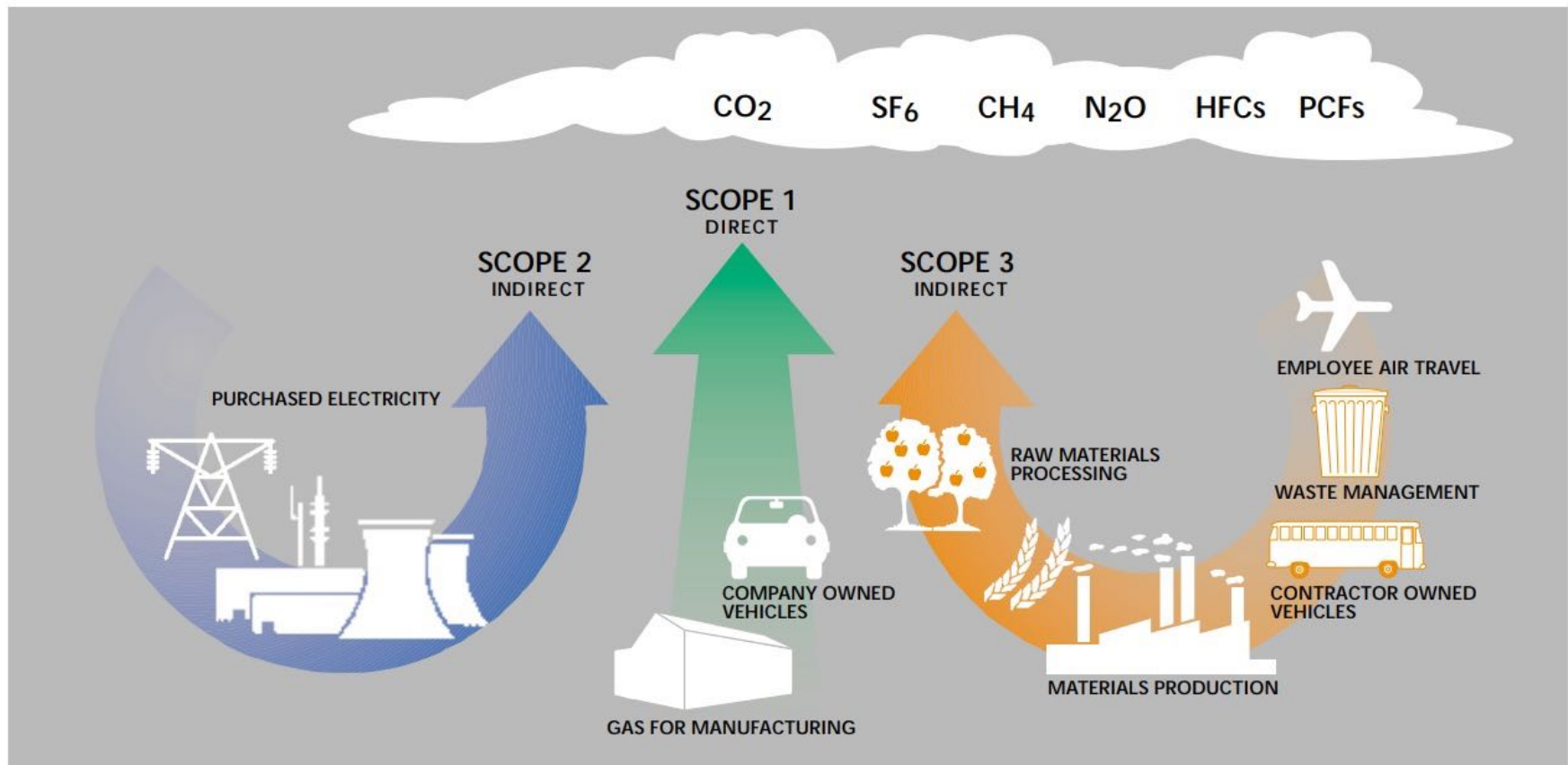


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Disclosing GHG Emissions (July 27, 2020)

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Source: New Zealand Business Council for Sustainable Development

INFORMATION ON EMISSIONS

The table below refers to emissions independent of any GHG trades such as sales, purchases, transfers, or banking of allowances

EMISSIONS	TOTAL (mtCO ₂ e)	CO ₂ (mt)	CH ₄ (mt)	N ₂ O (mt)	HFCs (mt)	PFCs (mt)	SF ₆ (mt)
Scope 1							
Scope 2							
Scope 3 (OPTIONAL)							



Direct CO₂ emissions from Biogenic combustion (mtCO₂)

BASE YEAR

Year chosen as base year

Clarification of company-determined policy for making base year emissions recalculations

Context for any significant emissions changes that trigger base year emissions recalculations

Base year emissions

EMISSIONS	TOTAL (mtCO ₂ e)	CO ₂ (mt)	CH ₄ (mt)	N ₂ O (mt)	HFCs (mt)	PFCs (mt)	SF ₆ (mt)
Scope 1							
Scope 2							
Scope 3 (OPTIONAL)							

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Target's Renewable Electricity Goal Makes Way For a Brighter Future

June 12, 2019 - Article reads in 3 minutes

COMPANY

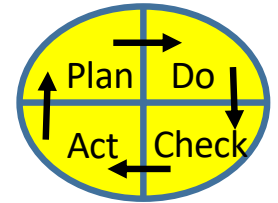
our goal

committing to source 100%
of our electricity from renewable
sources by 2030.

Target Reaches 500 Solar Installations



Agenda



- Team 4. **Reporting Team:** Managing greenhouse gas data.

Mandatory Reporting Requirements in the U.S.

Regulator	Threshold	Who must report?	Coverage
EPA GHG Reporting Program	25,000 mT CO ₂ /yr	<ul style="list-style-type: none"> • Direct emission facilities • Fossil fuel/gas suppliers • CO₂ injection sites 	<ul style="list-style-type: none"> • 8000+ facilities • 85-90% emissions • ~50% total US emissions
California Air Resource Board / SB 32	25,000 mT CO ₂ /yr	<ul style="list-style-type: none"> • Industrial facilities • Fuel suppliers • Electricity importers 	<ul style="list-style-type: none"> • 775 facilities and fuel suppliers
Massachusetts GHG Registry	5,000 mT CO ₂ e/yr	<ul style="list-style-type: none"> • Facilities emitting > 5000 mT CO₂e/yr +/- or regulated under MA Clean Air Act • Retail sellers of electricity 	Roughly 300 facilities
EPA Clean Power Plan		<ul style="list-style-type: none"> • Electricity Generating Units 	Hourly CO ₂ emissions and net energy output



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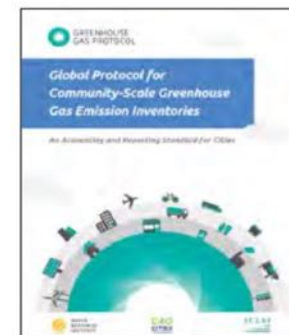
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Design Consideration: Common Protocols & Standards

- Global Protocol for Community-Scale Greenhouse Gas Emissions (GPC)
- ICLEI Greenhouse Gas Protocols (4 total)
 - US Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (ICLEI version of the GPC)
 - Local Government Operations Protocol (LGOP)
 - Global Protocol for Community Scale Emissions
 - Recycling and Composting Emissions Protocol
- ISO 14064-1:2018 Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

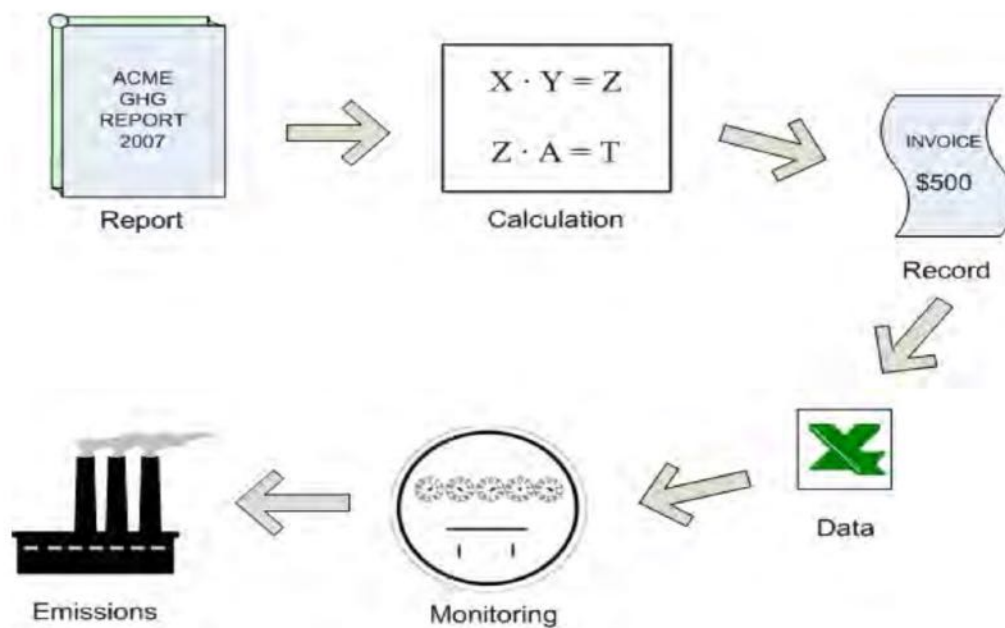


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Following the Audit Trail



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Voluntary Reporting & Disclosure

Securities and
Exchange
Commission
(SEC)
Guidance on
Climate
Change
Disclosure for
Publicly-traded
Companies

SEC INTERPRETIVE GUIDANCE ON CLIMATE CHANGE DISCLOSURE	
Section of Guidance	Examples of Potential Disclosure Items
Impact of Legislation & Regulation International Accords	<ul style="list-style-type: none"> • Cost to purchase credits in a cap and trade system • Costs to improve facilities to comply with regulatory limits of a cap and trade system • Changes to profit/loss from changed demand for goods and services
Indirect Consequences of Regulation or Business Trends	<ul style="list-style-type: none"> • Decreased demands for goods with significant GHG emissions, or increased demand for those with lower emissions • Increased demand for energy from alternative energy sources • Decreased demand for services related to fossil fuels, such as drilling services or equipment maintenance
Physical Impacts	<ul style="list-style-type: none"> • Disruption of manufacturing or transport for registrants with operations on coastlines • Indirect impacts to major customers or suppliers from severe weather, such as hurricanes or floods • Increased claims and liabilities for insurance and reinsurance companies • Decreased agricultural production due to drought or other weather changes

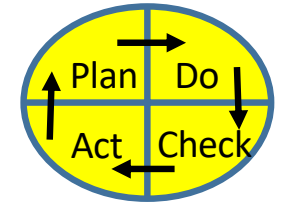


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Disclosing GHG Emissions (July 27, 2020)

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Agenda



- ❑ Team 5. **Opportunity Team**: How to profit from the fight against climate change.



ASSOCIATION OF CLIMATE CHANGE OFFICERS



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3. Governance, Law & Policy
4. Materiality, Risk Management & Economics

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5 Companies That Embrace the Concept of a Circular Economy

SPECIAL
COLLECTION

There are tons of ways to be a part of a circular economy! Whether its through ride-sharing or car-sharing apps, recycled fashion, or biodegradable products- each time we opt-in, we're encouraging more companies to go circular.

Apr 15, 2018

1. TIMBERLAND: FROM TIRES TO SHOES

Timberland has partnered with Omni United, a tire manufacturer, and distributor to produce footwear using recycled tires. Footwear is one of the biggest users of virgin rubber. Once Timberland Tires have reached the end of their product life, they are shipped to a recycling facility and turned into crumb rubber. This crumb rubber is processed into sheet rubber for the outsoles of Timberland shoes.

2. JOHNSON CONTROLS: RECYCLED BATTERIES

Johnson Controls has managed to design a battery that is 99% recyclable, an incredible feat for a product so chemically complex and hazardous. By encouraging consumers of conventional batteries to recycle, the company received enough material to prevent hundreds of millions of batteries from ending up in landfills.

3. AQUAZONE: TURNING WASTEWATER INTO FERTILIZER

This Finish company has developed a method of upcycling wastewater into fertilizer! The wastewater is treated biochemically, and solids, water, and nutrients are separated. The water can be used for irrigation or can be further recycled into drinking water; the sludge is nutrient-rich and can be used as an organic fertilizer.

4. VIGGA: A SHARED WARDROBE

The shared economy is another beautiful faction of a circular economy. With a monthly subscription to VIGGA, customers get 20 pieces of children's clothing. Once the clothes don't fit anymore, they are returned and the customer receives another set one size bigger. In this system, the company has an incentive to design high-quality, long-lasting clothes that directly serve their bottom line.

5. RAW FOR THE OCEANS: UPCYCLING OCEAN TRASH INTO CLOTHING

Pharrell Williams has joined the circular economy with his clothing line RAW for the Oceans, which recovers plastic found on the shoreline into wearable fashion, such as jeans, graphic t-shirts, and even kimonos! This is done by breaking down plastics and turning it into a weavable clothing fiber called Bionic Yarn.

How to drive fossil fuels out of the US economy, quickly

The US has everything it needs to decarbonize by 2035.

By David Roberts | @drvox | david@vox.com | Aug 6, 2020, 10:10am EDT

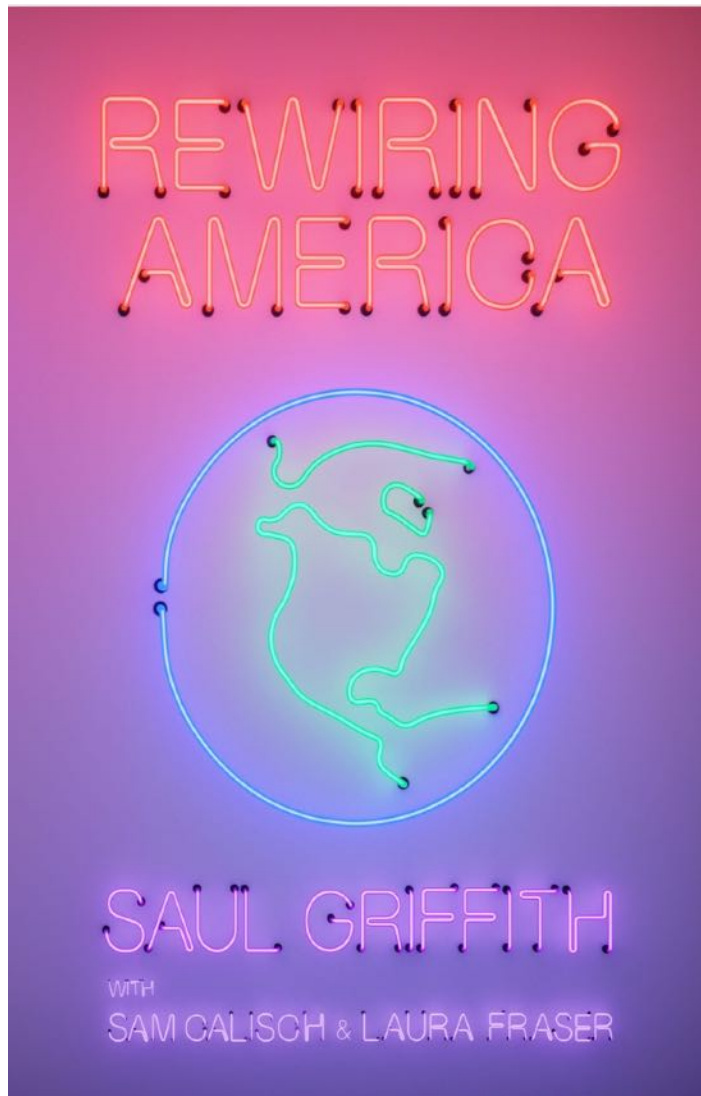
f t SHARE



The roof of the 96,000-square-foot "Circo" building on Platte Street in the Lower Highland neighborhood in Denver.

In the runup to World War II, President Franklin Delano Roosevelt enlisted the entire US economy in an effort to scale up production of war material. All of the country's resources were bent to the task. In 1939, the US had 1,700 aircraft; in 1945, it had 300,000 military aircraft and 18,500 B-24 bombers.

Source: <https://www.vox.com/energy-and-environment/21349200/climate-change-fossil-fuels-rewiring-america-electrify>



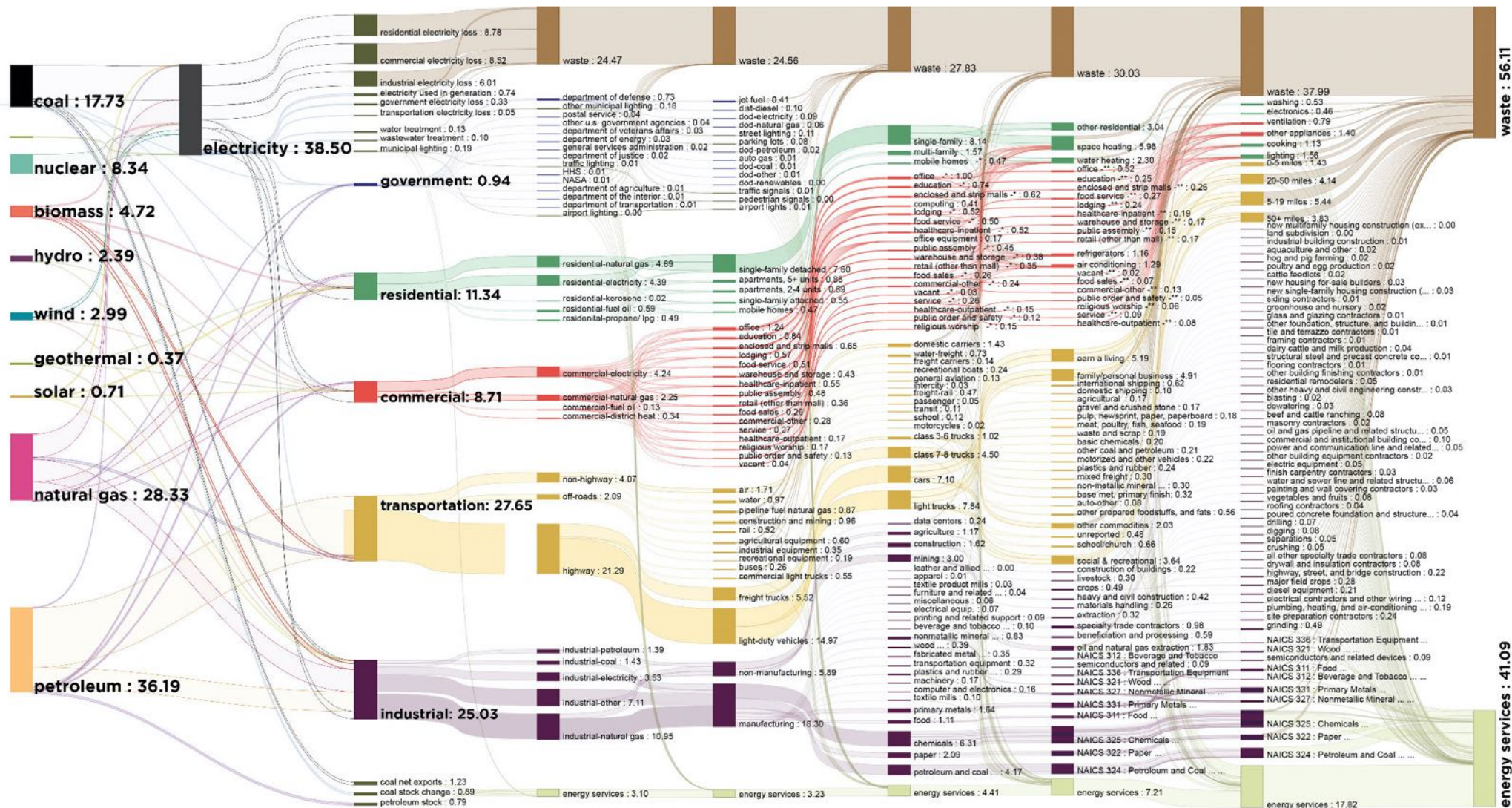
REWIRING AMERICA

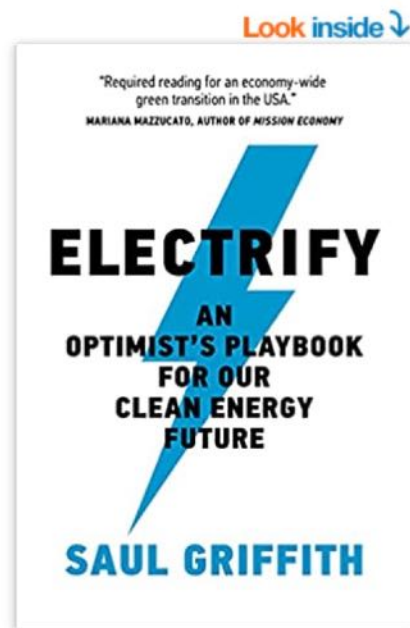
A Field Manual for the Climate Fight

Saul Griffith

with more than a little help from

Laura Fraser
Sam Calisch
July 29, 2020





Electrify: An Optimist's Playbook for Our Clean Energy Future Hardcover – 2021

by Saul Griffith (Author)

★★★★★ 30 ratings

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An optimistic--but realistic and feasible--action plan for fighting climate change while creating new jobs and a healthier environment: electrify

Climate change is a planetary emergency. We have to do something. What? Saul Griffith has a plan. In *Electrify*, Griffith lays out a detailed, optimistic but feasible—for fighting climate change while creating

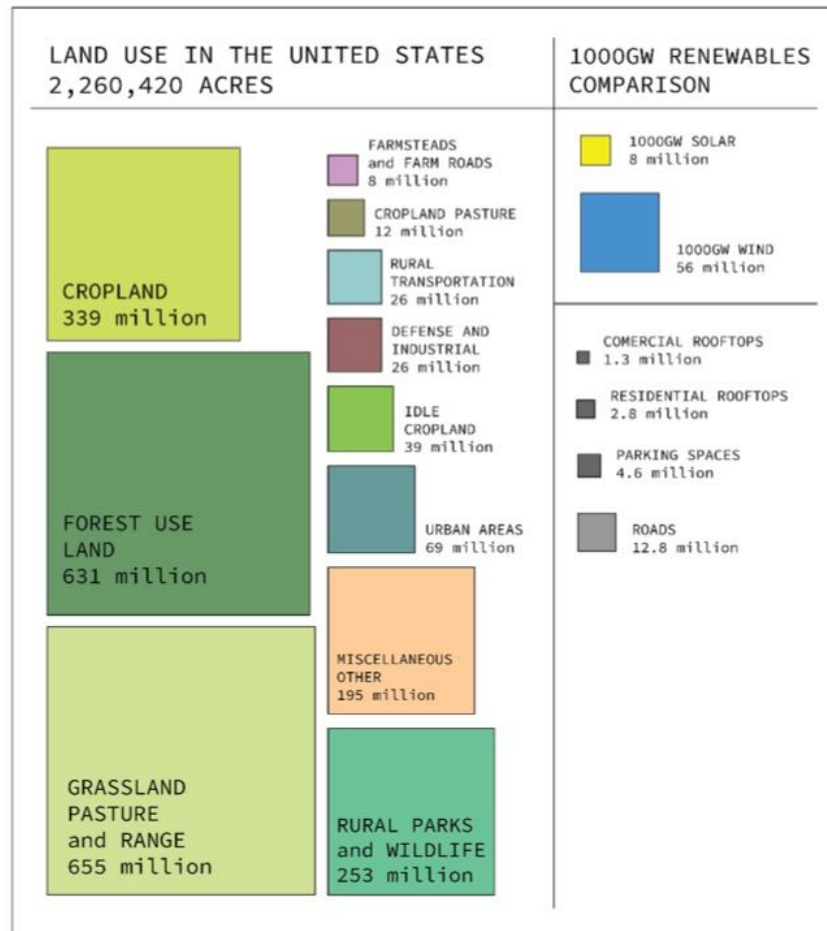
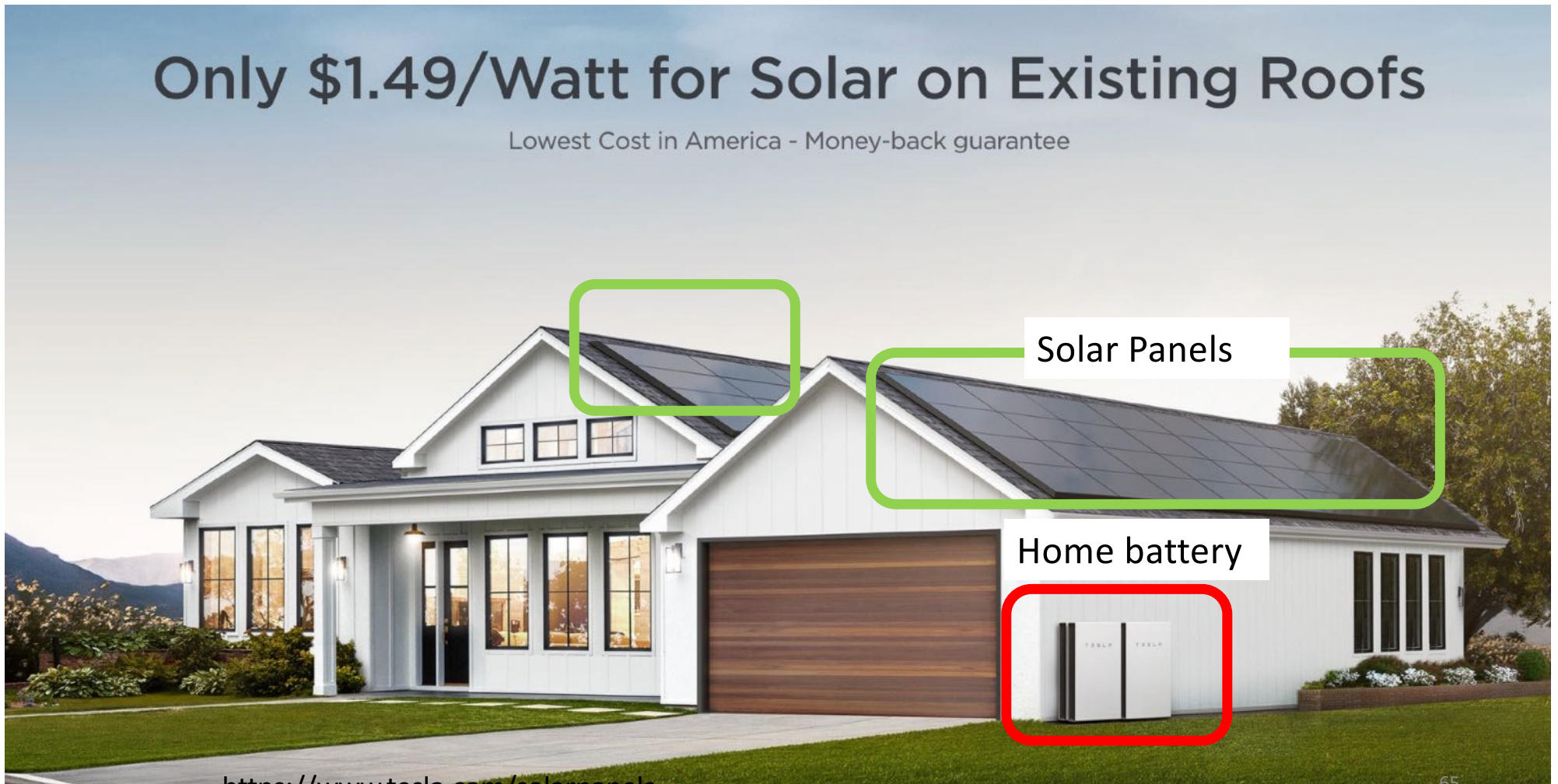


Figure 6.2: Illustrative areas of the U.S. land use, including reference areas for renewables. Thanks to Kirk Von-Rohr



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Solar Panels

Home battery

<https://www.tesla.com/solarpanels>

The American Jobs Plan 101: Spending

- A plan to invest \$2-3 trillion into infrastructure and jobs.
- Key components include:
 - Transportation sector: ~\$600 billion
 - Power sector: ~\$500 billion
 - Affordable housing: ~\$200 billion
 - R&D: \$180 billion
- Many groups have called for more spending, from \$4-10 trillion.
- Congress will ultimately set the scale of spending.

Build Back Better



Agenda

- ✓ Team 1. **Strategy Team**: Why climate change is a quality issue.
- ✓ Team 2. **Adaptation Team**: How to protect our vulnerable assets.
- ✓ Team 3. **Mitigation Team**: How to lower our greenhouse gases emissions.
- ✓ Team 4. **Reporting Team**: Managing greenhouse gas data.
- ✓ Team 5. **Opportunity Team**: How to profit from the fight against climate change.

Please type your questions in the CHAT