CLIMATE CHANGE

YWCA Bethlehem is sponsoring

"Climate Change: Lehigh Valley Strategies for Today & Tomorrow"

Wednesday, October 16, 2019, 11:00 am to 12:30 pm

Kirkland Village Retirement Community, Bethlehem, PA

** Please park behind the First Presbyterian Church on 2344 Center St., Bethlehem - enter Kirkland on side entrance past gazebo**

A five-member panel, including staff from the Lehigh Valley Planning Commission, will address approaches Allentown, Bethlehem and Easton are undertaking on climate change and answer audience questions about plans for the future.

Moderator - Lawrence B. Eighmy, Managing Principal of The Stone House Group, an environmental and sustainability consulting firm in Bethlehem. The firm has worked extensively with educational institutions and others on climate action planning, energy management and related fields.

Panelists include **Becky A. Bradley**, Executive Director, Lehigh Valley Planning Commission; **Geoff Reese**, Director of Environmental Planning, Lehigh Valley Planning Commission; **Attorney A. (Tinku) Khanwalkar**, Chair, Allentown Environmental Advisory Council; **Brian Hillard,** Bethlehem Environmental Advisory Council, and **Attorney Charles Elliott**, Easton Environmental Advisory Council.

This FREE 90 - minute program starts at 11:00 am. No RSVP required.

Register for the 2020 eight-week Winter Series at this lecture and receive a $10 discount.

Questions - 610-867-4669, ext. 101; adminassist@ywcabethlehem.org or ywcabethlehem.org

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“The single most important development in the fight against climate change hasn’t been the Paris Agreement, or the U.S. shale gas boom, or even the advancement of solar and battery technology…

…the most important has been that mayors, CEOs, and investors increasingly look at climate change not as a political issue but a financial and economic one…”

- Michael Bloomberg and Carl Pope, *Climate of Hope*

Greenhouse Gases

Carbon and the Carbon Cycle

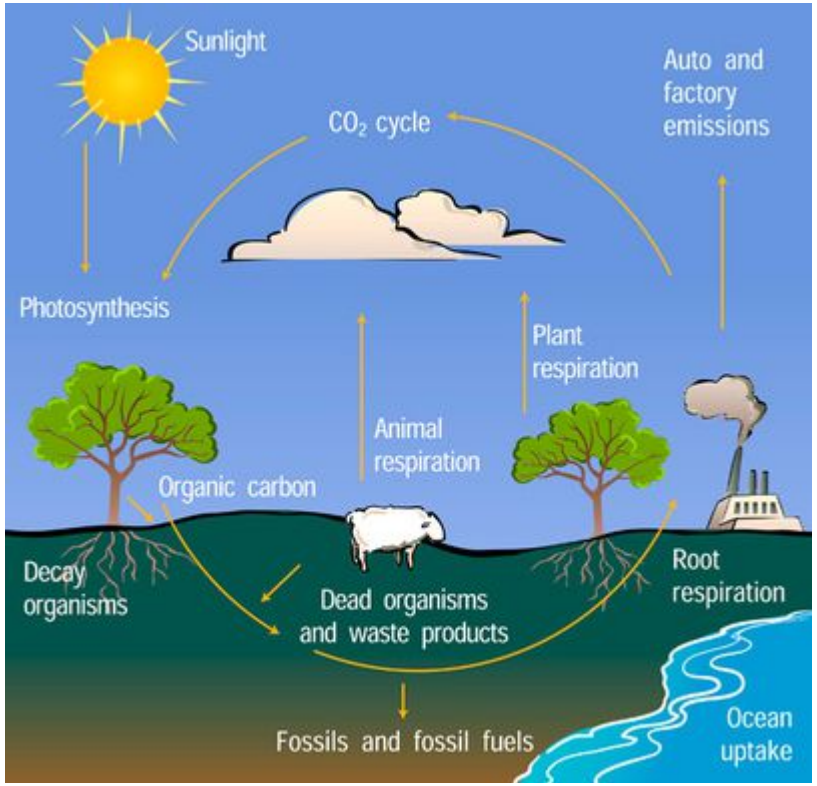


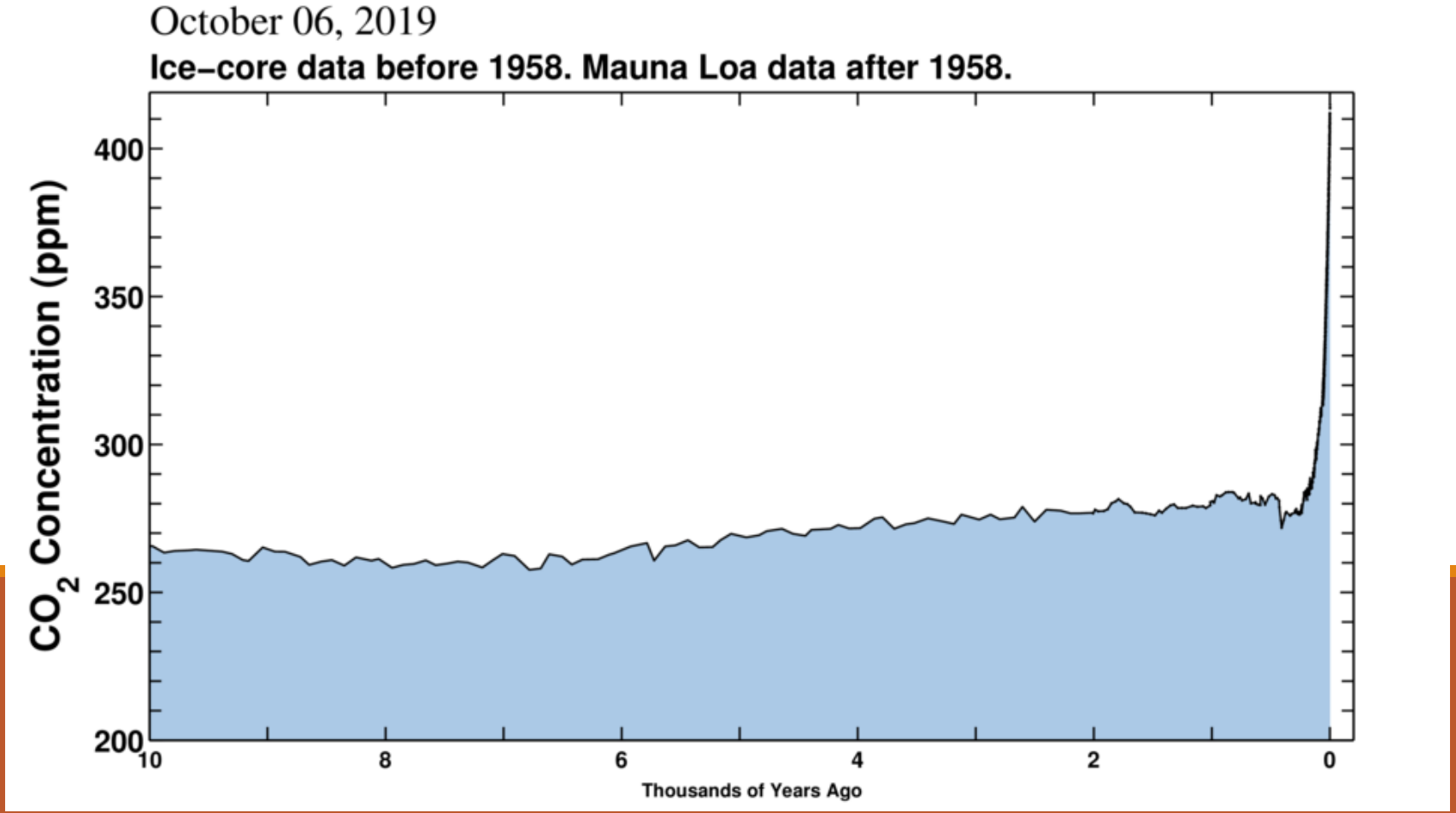
Photo credit: University Corporation for Atmospheric Research – Center for Science Education

Comprises a sequence of events necessary to sustain life

Describes movement of carbon as it is recycled and reused throughout biosphere

History of Atmospheric Carbon

- *Keeling Curve*
- Daily record of atmospheric carbon dioxide from Scripps Institution of Oceanography at UC San Diego
- Supported by the US DoE



History of Atmospheric Carbon

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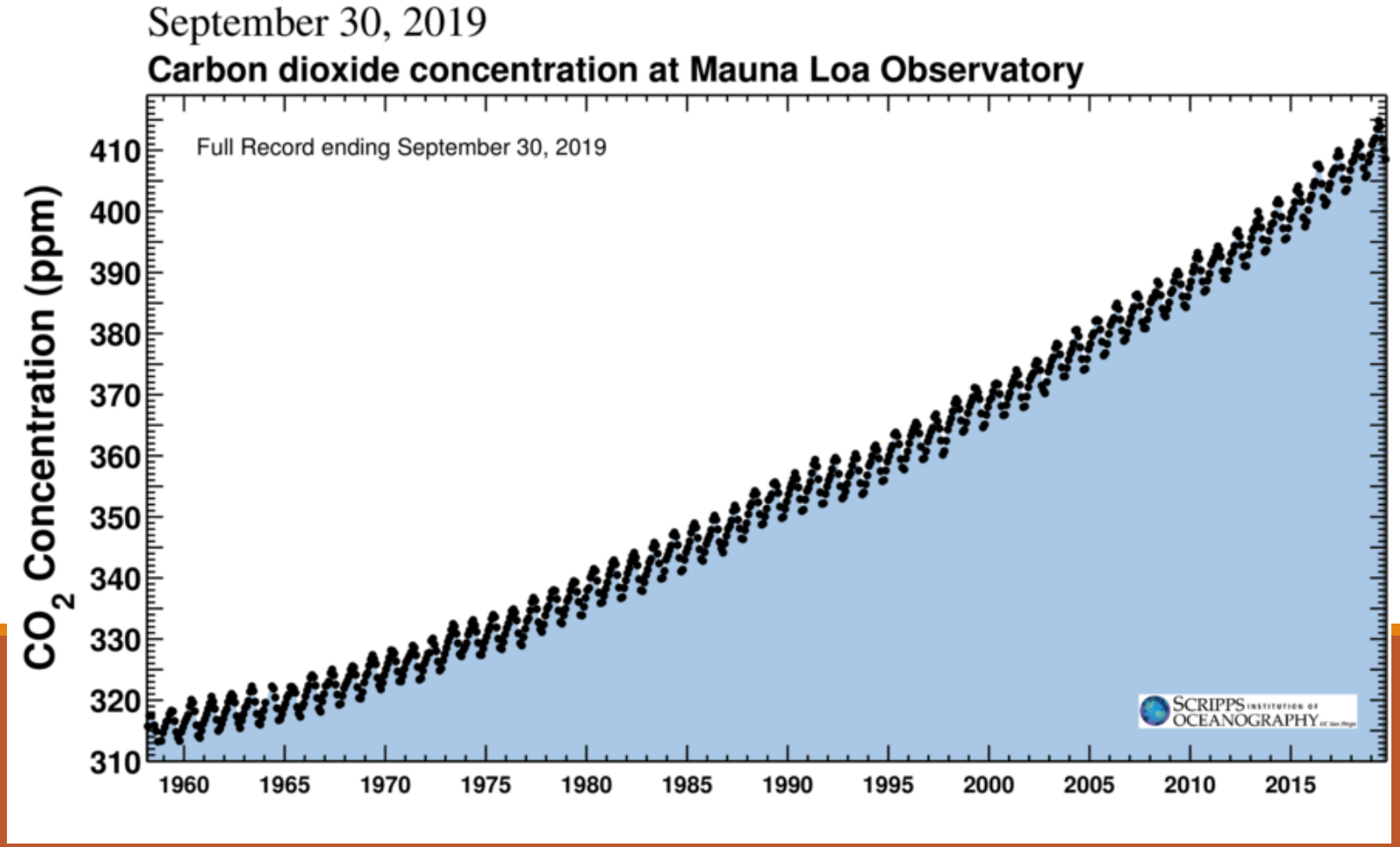
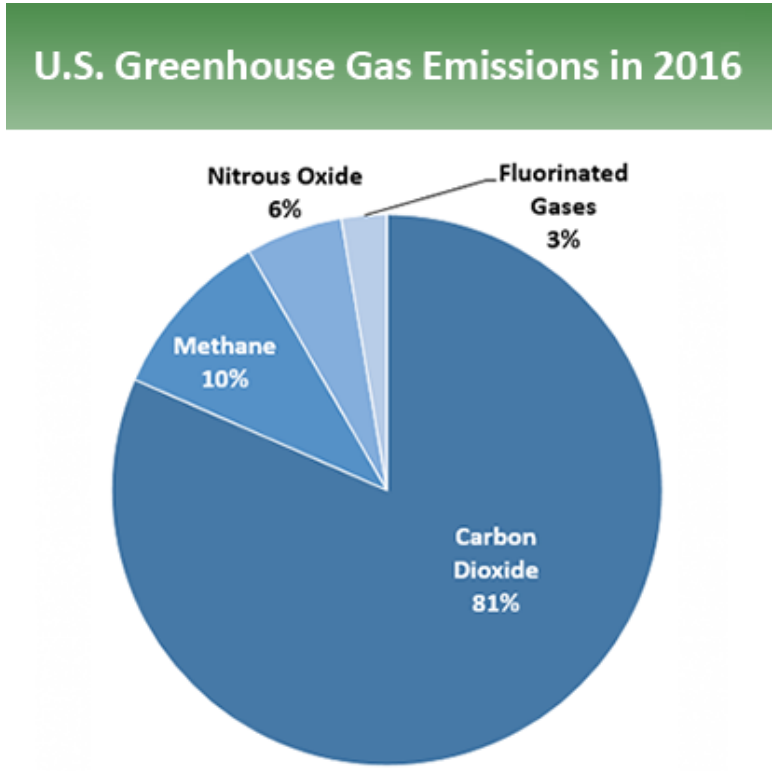


Greenhouse Gases



U.S. Environmental Protection Agency (2018). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016

Help keep the Earth warm due to the Greenhouse Effect

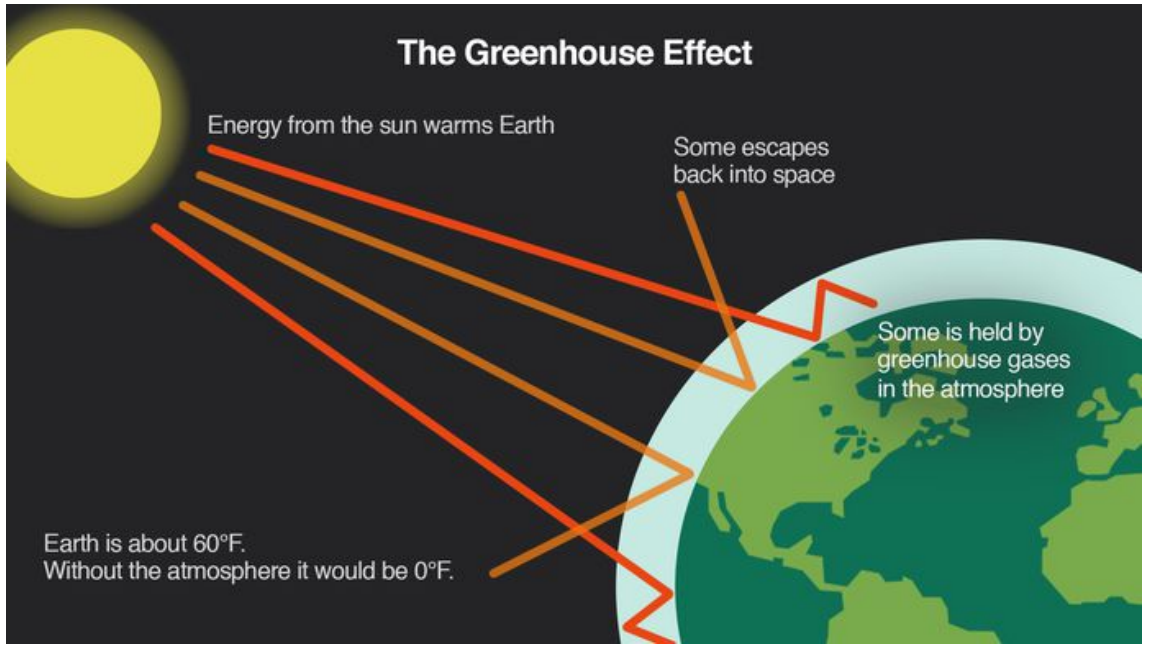


Photo credit: Climate Central Media Library

Greenhouse Gas Inventory

Scope 1 results from controlled sources by the institution

Scope 2 results from generation of purchased energy for the institution

Scope 3 emissions are from the value chain of the reporting institution

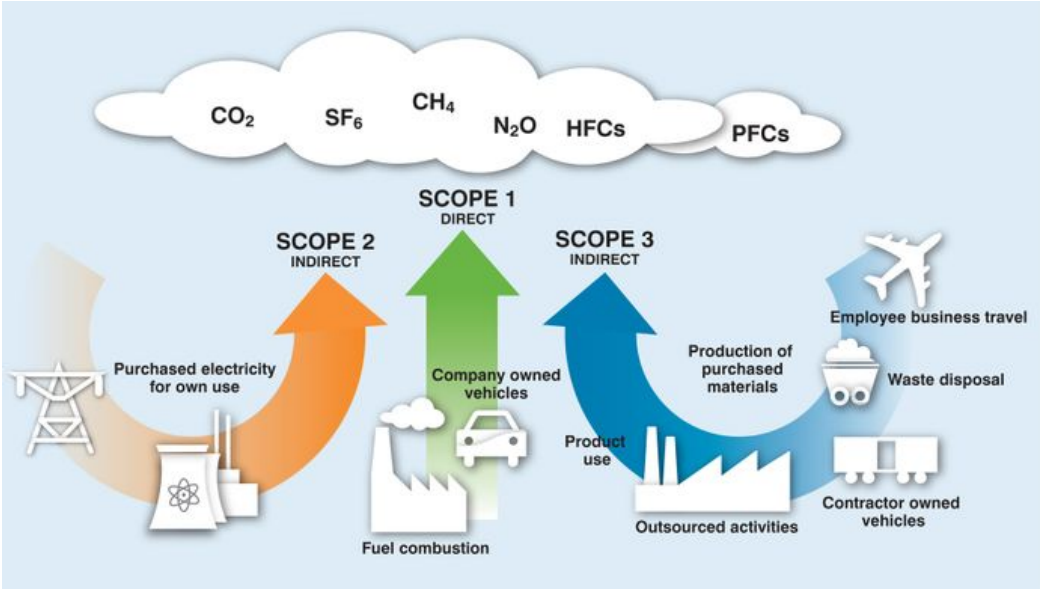


Photo credit: Life Cycle Initiative

Greenhouse Gas Accounting

CO_2e Emissions by Fuel Source (per million BTU)

Electricity	Coal	#6 Heating Oil	#2 Heating Oil	Propane	Natural Gas	Biomass	Solar/Wind
91% more CO_2e emissions than natural gas*	81% more CO_2e emissions than natural gas	42% more CO_2e emissions than natural gas	40% more CO_2e emissions than natural gas	40% more CO_2e emissions than natural gas	53 kg of carbon dioxide-equivalent emissions per million BTU	Zero Net GHG Emissions (Biogenic)	Zero GHG Emissions
							
101 kg	**96 kg**	**75 kg**	**74 kg**	**63 kg**	**53 kg**	**0 kg**	**0 kg**

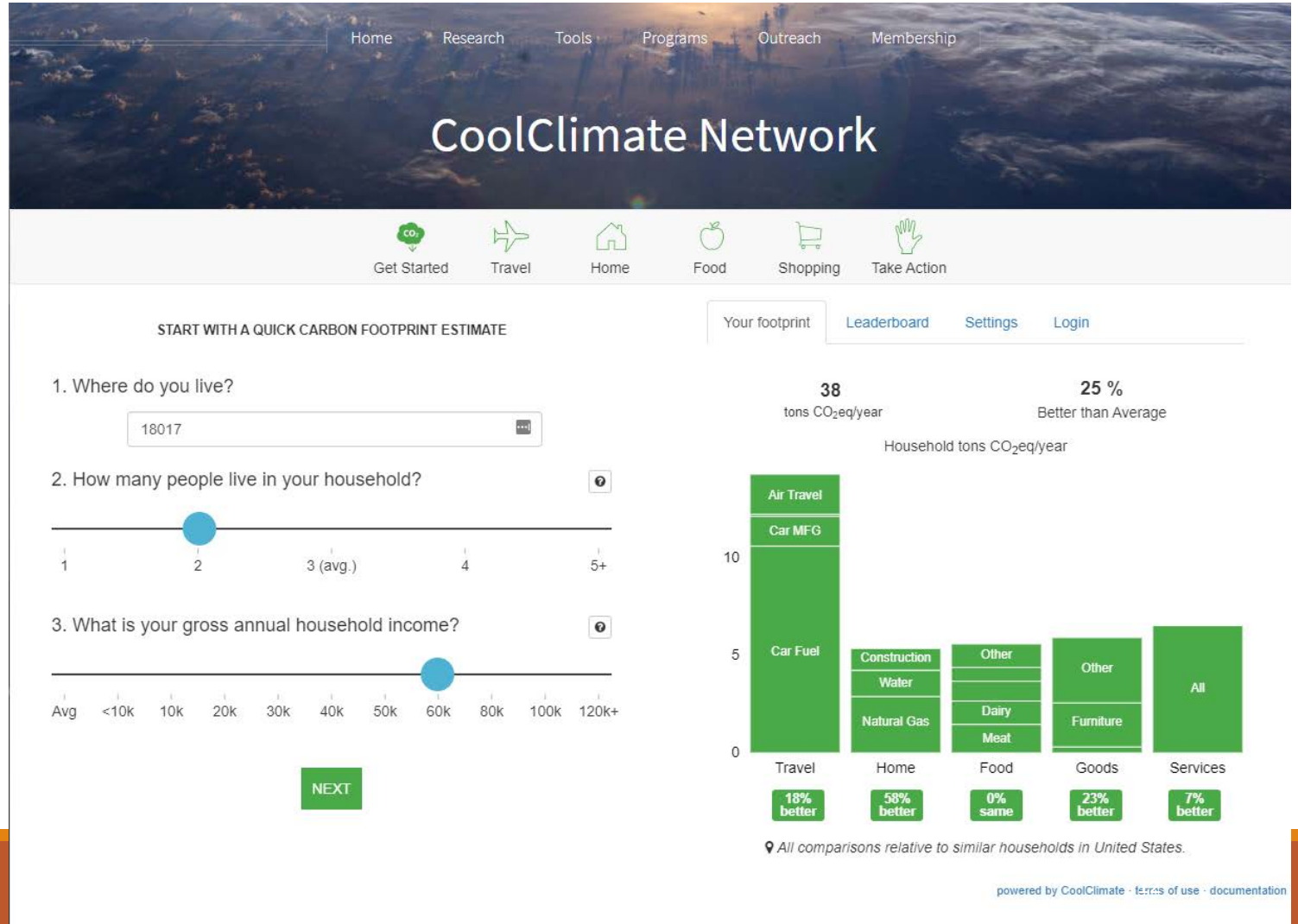
Source: EPA Emissions Factors for Greenhouse Gas Inventories, eGRID 2016

*GHG emissions from electricity generation are based on the RFC East region in eGRID 2016 data

Carbon Footprint

Total emissions caused by an individual, event, organization, or product, expressed as a carbon dioxide equivalent

https://coolclimate.berkeley.edu/calculator



Introduction of the Panel Members

Our Panelists

Becky A. Bradley
Executive Director
LVPC

Geoff Reese
Director of Environmental Planning
LVPC

Brian Hillard
Technical Specialist
The Sustainable Energy Fund
Member of the Bethlehem EAC

Charles Elliott
Attorney
Member of the Easton EAC

Irene Woodward
Director of Planning and Zoning
City of Allentown

Lehigh Valley Planning Commission

BECKY BRADLEY – EXECUTIVE DIRECTOR

GEOFF REESE – DIRECTOR OF ENVIRONMENTAL PLANNING

GROWING REGION

Lehigh Valley, Facing West

LVPC + LVTS

Lehigh Valley Planning Commission | Lehigh Valley Transportation Study

FUTURE LV
FUTURE LEHIGH VALLEY
THE REGIONAL PLAN

Efficient and Coordinated Development Pattern

LVPC + LVTS
Lehigh Valley Planning Commission
Lehigh Valley Transportation Study

Historic Corridor Revitalization Concept

Hanover Avenue, Allentown

LVPC + LVTS

Lehigh Valley Planning Commission | Lehigh Valley Transportation Study

FUTURE LEHIGH VALLEY

FUTURELV
THE REGIONAL PLAN

Connected Mixed-Transportation Region

LVPC + LVTS

Lehigh Valley Planning Commission

Lehigh Valley Transportation Study

MacArthur Road Concept

MacArthur Road, Whitehall Township

LVPC Lehigh Valley Planning Commission

LVTS Lehigh Valley Transportation Study

FUTURELV
FUTURE LEHIGH VALLEY
THE REGIONAL PLAN

Protected and Vibrant Environment

LVPC + LVTS
Lehigh Valley Planning Commission
Lehigh Valley Transportation Study

Crossroads Village Concept

Belfast, Plainfield Township

LVPC + LVTS

Lehigh Valley Planning Commission

Lehigh Valley Transportation Study

FUTURE LEHIGH VALLEY
FUTURELV
THE REGIONAL PLAN

Competitive, Creative and Sustainable Region

LVPC + LVTS
Lehigh Valley Planning Commission
Lehigh Valley Transportation Study

Shopping Mall Redevelopment Concept

Whitehall Mall at MacArthur Road and Grape Street, Whitehall Township

FUTURE LV
FUTURE LEHIGH VALLEY
THE REGIONAL PLAN

Safe, Healthy, Inclusive and Livable Communities

LVPC + LVTS
Lehigh Valley Planning Commission
Lehigh Valley Transportation Study

Commuter Trail Concept

D & L Eastside Trail

Commuter Trail Concept

D & L Westside Trail

LVPC + LVTS

Lehigh Valley Planning Commission | Lehigh Valley Transportation Study

City of Bethlehem

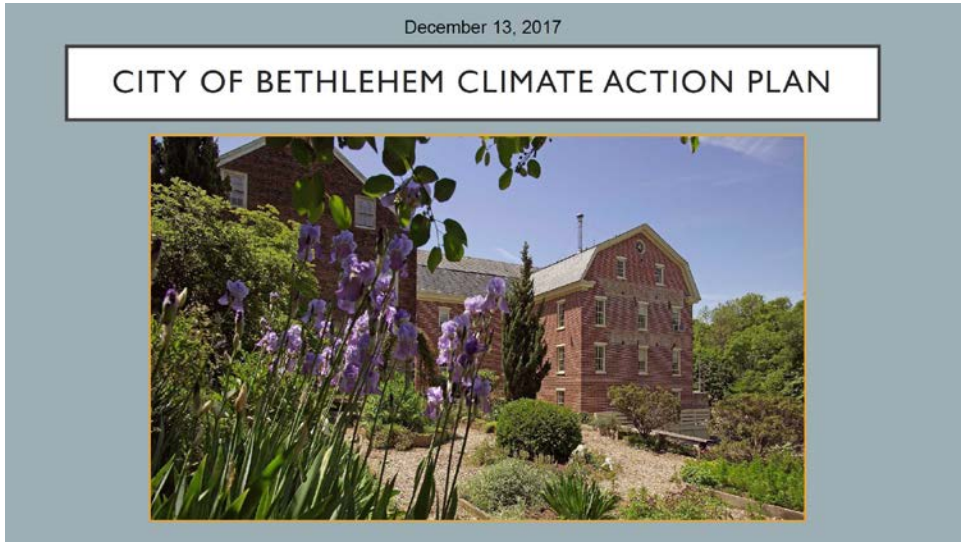
BRIAN HILLARD – ENVIRONMENTAL ADVISORY COUNCIL

Bethlehem signs the Three City Proclamation

- Bethlehem pledges to reduce carbon footprint by 20%
  - **28% emissions reduction achieved**
- Traffic signal conversion to LEDs – 70% reduction in energy saving 300 tons of CO_2 annually
- Non-decorative streetlight conversion – 70% energy reduction saving 2,000 tons CO_2 annually
- City facility ECMs – HVAC, lighting, etc. reduce energy by 30% saving 500 tons of CO_2 at City Center, 900 tons at other buildings
- City tree planting – 239 trees planted
- South Bethlehem Greenway completed – Phase 5 planned
- 50% renewable energy purchased in 2014; committed to purchasing 100% renewables beginning in 2019

Bethlehem initiates Climate Action Planning again in 2017

- In January of 2017 Bethlehem City Council unanimously passes a resolution brought forth by Councilman William Reynolds endorsing the creation of a Climate Action Plan
  - Climate Action Working Group – several meetings held to initiate public and department discussions
  - City signed onto several climate agreements, including
    - U.S. Mayors Climate Protection Agreement
    - Compact of Mayors
    - Mayors National Climate Action Agenda
    - We Are Still In
    - Ready for 100
    - Worked with Bethlehem Environmental Advisory Council (EAC) and other community groups to research climate action planning



Moving the Climate Action Plan Forward

- Bethlehem dedicated $30,000 in 2019 City budget towards climate action planning, more in 2020
- With EAC recommendation, City looks to hire consultant to assist with drafting a plan
  - RFPs request issued, with four firms submitting proposals; City yet to make decision
- Bethlehem EAC worked on several initiatives, including:
  - Community Energy Efficiency program
  - Recommendation for City plastic bag ban
  - Recommendation for electric vehicles adoption into City fleet
  - Recommended City require new or retrofitted buildings over a certain size obtain a solar assessment, and if appropriate, install solar pv
- Alliance for Sustainable Communities completed 'Climate Action Planning for the Lehigh Valley', outlining actions both regionally and within municipalities

THE NURTURE NATURE CENTER

City of Easton

CHARLES ELLIOTT – ENVIRONMENTAL ADVISORY COUNCIL

City of Easton
Climate Change Planning Documents

Easton "*Comprehensive Plan 2035: Transform, Unify, Thrive*" (2016)
- Plan Vision includes: "provide integrated solutions for sustainable development, stormwater management and *climate resiliency*"

Global Covenant of Mayors for Climate and Energy (see, *e.g.*, *WSP Process Documentation Memo*) (2017)

Hazard Mitigation Planning (FEMA/LVPC) (2018)

Climate Change Vulnerability Assessment (June 2018, Nurture Nature Center/WSP)

EPA/PADEP MS4 (Municipal Separate Storm Sewer System) planning for stormwater management (2018-2019)

Other local NGO documents: Alliance for Sustainable Communities *Sustainability Impact Analysis* (Summer 2018); *Climate Action Planning for the Lehigh Valley* (August 2019)

City of Easton
Climate Change Implementation

- Easton EAC-drafted solar energy ordinance 2013 (mitigation)
- Community level GHG Inventory 2016 (mitigation metrics)
- City Council resolution (2018) pledging GHG emissions reduction of 30% by 2030 and 80% by 2050 (mitigation)
- Car-sharing program (mitigation)
- Electric vehicle charging stations @ city public garages (mitigation)
- LED lighting fixtures, streetlights (mitigation)
- Walking/biking trails and improved connectivity; bike parking facilities and education to reduce motor vehicle use (mitigation)
- Historic building renovation and preservation (mitigation: conservation of embedded energy in existing buildings)

City of Easton
Climate Change Implementation

- Pilot scale city composting program – reduction of organic material to landfill (mitigation)
- Urban farming/food production – organic, local (mitigation)
- Expanding urban forest and canopy: planting >1,500 street trees alone in the past 10 years; more planted in city parks and on private property, funded by city and TreeVitalize grants – professional urban forester on staff – reduces heat island effects, improves air quality (mitigation)
- New bike sharing program to start Spring 2020 (mitigation)
- City electric energy 100% wind power via RECs (mitigation)
- Alternative energy production (Hugh Moore Park: FERC-permitted “Archimedes screw” turbine generator hydropower; WWTP: biogas methane heat capture/power production) (mitigation)

City of Easton
Climate Change Implementation

- MS4 program – green infrastructure, replacement of aging stormwater management systems (adaptation)
- Identification of “cooling stations” and opening hydrants for extended periods of excessive heat (adaptation)
- Floodplain regulations to minimize flood damages (adaptation)
- Hazard mitigation planning (flood/drought/heat events; “reverse migration” risk) (adaptation)
- Public education (mitigation and adaptation)
- *But*: overall climate action plan integrating all elements is needed

City of Allentown

IRENE WOODWARD – DIRECTOR OF PLANNING AND ZONING

Allentown Vision 2030

DRAFT PLAN

Urban Systems- Principles

THE FIVE URBAN SYSTEMS ARE A COMPREHENSIVE WAY TO UNDERSTAND THE CITY OF ALLENTOWN, AND ENCOMPASS MANY DIFFERENT FORCES AND FACTORS THAT MAKE UP THE SYSTEMS OF THE CITY.

Under each system is a set of principles and several policies, projects, and programs that will enhance these systems. The Principles can be defined as the goals for each System. The actions that accompany each Principle detail how those goals will be accomplished, and have been sourced through the survey, interviews, and community meetings. Principles are listed by topic below:

ECONOMIC DEVELOPMENT

HOUSING

ACCESSIBILITY + CONNECTIVITY

SERVICES + AMENITIES

LIVING SYSTEMS

Living Systems

Allentown will be a place where residents and visitors experience an environment where the health of the community and the environment is paramount. Allentown will plan for a sustainable, vibrant, and resilient future for the city and the region. In Allentown, residents will be connected to opportunities to reduce their energy usage, cultivate their own food, and enhancing the natural environment.

Plan for a Sustainable and Resilient Allentown

Improve Community Health Outcomes

Increase Environmental Stewardship

Create Productive and Connected Urban Landscapes

LIVING SYSTEMS

Plan for a Sustainable and Resilient Allentown

As cities consider their long-term sustainability and resilience, they need to respond to shocks, like a natural disaster, as well as stressors, like a lack of food access. As a growing city and economic center, Allentown needs to consider the long term viability of its services in light of shock and stressors associated with economic conditions like rapid growth, environmental conditions associated with climate change, and social conditions like access to services and opportunities for immigrant populations. Allentown can reinvent itself as a model small city with regard to sustainability and resilience.

1.a Climate Action Plan

1.b Resilience Plan

Plan para un Allentown Sostenible y Resiliente

A medida que las ciudades consideran su sostenibilidad y resistencia a largo plazo, deben responder a las crisis, como un desastre natural, así como a factores estresantes, como la falta de acceso a los alimentos. Como ciudad y centro económico en crecimiento, Allentown necesita considerar la viabilidad a largo plazo de sus servicios a la luz de las crisis y los factores estresantes asociados con condiciones económicas como el rápido crecimiento, las condiciones ambientales asociadas con el cambio climático y las condiciones sociales como el acceso a servicios y oportunidades para poblaciones inmigrantes. Allentown puede reinventarse como una pequeña ciudad modelo con respecto a la sostenibilidad y la resiliencia.

1.a Plan de Acción Climática

1.b Plan de Resiliencia

LIVING SYSTEMS

Improve Community Health Outcomes

Community health is closely tied to the places where we live, learn, work and play. Improvements in residents' health result from limiting exposure to negative conditions, such as poor air quality, flooding, and noise, as well as from adopting of beneficial activities like exercise and healthy eating habits. To improve community health, Allentown can adopt the CDC's call to "change the context to make healthy choices easier."

2.a Design for Public Safety

2.b Neighborhood Health Center

2.c Community Health Program

Mejorar los Resultados de la Salud Comunitaria

La salud comunitaria está estrechamente vinculada a los lugares donde vivimos, aprendemos, trabajamos y jugamos. Las mejoras en la salud de los residentes se deben a la limitación de la exposición a condiciones negativas, como la mala calidad del aire, las inundaciones y el ruido, así como a la adopción de actividades beneficiosas como el ejercicio y hábitos alimenticios saludables. Para mejorar la salud de la comunidad, Allentown puede adoptar el llamado de la CDC a "cambiar el contexto para facilitar las opciones saludables"

2.a Diseño para la Seguridad Pública

2.b Centro de Salud del Vecindario

2.c Programa de Salud Comunitaria

LIVING SYSTEMS

Increase Environmental Stewardship

Everyone can care for the environment, whether in daily actions by an individual or in larger and longer-term actions that need to be accomplished by many people acting together. There needs to be a mix of activity to improve Allentown's environment, from engaging residents and businesses to support neighborhood cleanups to working to mitigate noise pollution.

3.a Neighborhood Clean Up

3.b Noise Pollution Mitigation Program

3.c Floodplain-Zoning Alignment

3.d Green Infrastructure Fund

3.e Improve Air Quality

3.f Energy Efficiency Programs and Policies

Aumentar la Administración Ambiental

Todos pueden cuidar el medio ambiente, ya sea con acciones diarias de un individuo o con acciones más grandes y a más largo plazo que deben ser realizadas por muchas personas. Es necesario que haya una combinación de actividades para mejorar el entorno de Allentown, desde involucrar a los residentes y las empresas para apoyar la limpieza del vecindario hasta trabajar para mitigar la contaminación acústica.

3.a Limpieza del Vecindario

3.b Programa de Mitigación de la Contaminación Acústica

3.c Alineación de Zonas Inundables

3.d Fondo de Infraestructura Verde

3.e Mejorar la Calidad del Aire

3.f Programas y Políticas de Eficiencia Energética

LIVING SYSTEMS

Create Productive and Connected Urban Landscapes

Urban open space and parks are often considered a sign of environmental health, yet the presence of green space does not mean that the urban landscape is functioning at a healthy level. Allentown has many opportunities for win-win solutions where flood control and water quality improvements yield both ecological and economic benefits and opportunities for networked trails, parks, and outdoor recreation and learning environments.

4.a Parks and Open Space

4.b Stormwater Management

4.c Urban Agriculture and Community Gardens

Crear Paisajes Urbanos Productivos y Conectados

Los espacios abiertos urbanos y los parques a menudo se consideran una señal de salud ambiental, sin embargo, la presencia de espacios verdes no significa que el paisaje urbano esté a un nivel saludable. Allentown tiene muchas oportunidades para soluciones en las que todos ganan, donde el control de inundaciones y las mejoras en la calidad del agua producen beneficios ecológicos y económicos para senderos, parques y entornos de recreación y aprendizaje al aire libre.

4.a Parques y Espacios Abiertos

4.b Manejo de Aguas Pluviales

4.c Agricultura Urbana y Huertos Comunitarios

CATALYTIC ACTION

Network of Greenways and Urban Trails

Goal:

Link Allentown's parks and greenspaces through a network of greenways and urban trails that provide a safe, walkable and bikeable transportation network focused on connecting Allentown's neighborhoods, parks and greenspaces, employment centers, and local services and amenities (i.e. grocery stores, shops, restaurants, health centers, etc.).

Focus:

By linking greenspaces and parks throughout the city, create an alternative transportation network focused on pedestrians and cyclists. Investments in parks and in walk/bike/roll infrastructure should prioritize connectedness and foster an alternative transportation network. Emphasis should be on projects that complete network links, connect high density areas to green space, and/or aligned with other investments such as new parks, community spaces, and mixed-use developments

Next Steps:

Build on the existing and planned greenways and bike/pedestrian trails that follow the Little Lehigh Creek, Jordan Creek and Lehigh River to encourage a vision for a network of interconnected spaces.
Design and install legible wayfinding and branding. Create neighborhood-specific identities within the brand system, which could inspire neighborhood stewardship.
Update the City of Allentown "Connecting Our Community" Plan and the Parks and Recreation Master Plan.
Collaborate with advocacy groups to achieve shared goals and seek additional funding resources.
Align with LVPC's WalkRollLV planning process.

Partners:

City of Allentown Parks and Recreation; City of Allentown Bureau of Planning & Zoning; City of Allentown Department of Public Works; D&L Trail; Wildlands Conservancy; DCNR; DCED; Trexler Trust

Hope for the Future

POLICY

C-Pace

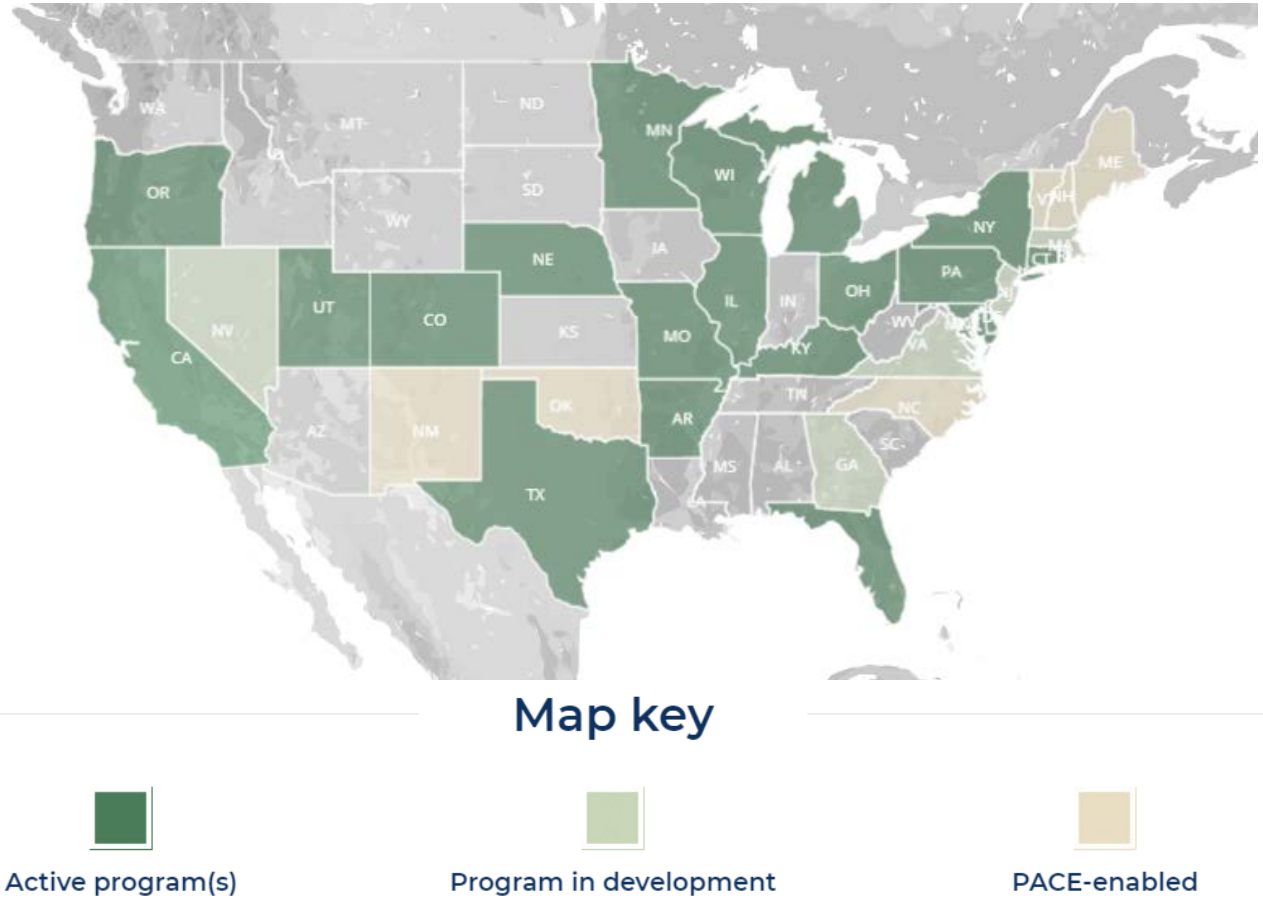
Facilities located in jurisdictions with CPACE programs

Long-term financing (10+ years) with lower monthly payments

Pilot projects at a few locations before implementing more broadly

Transfer financing obligations at the time of sale

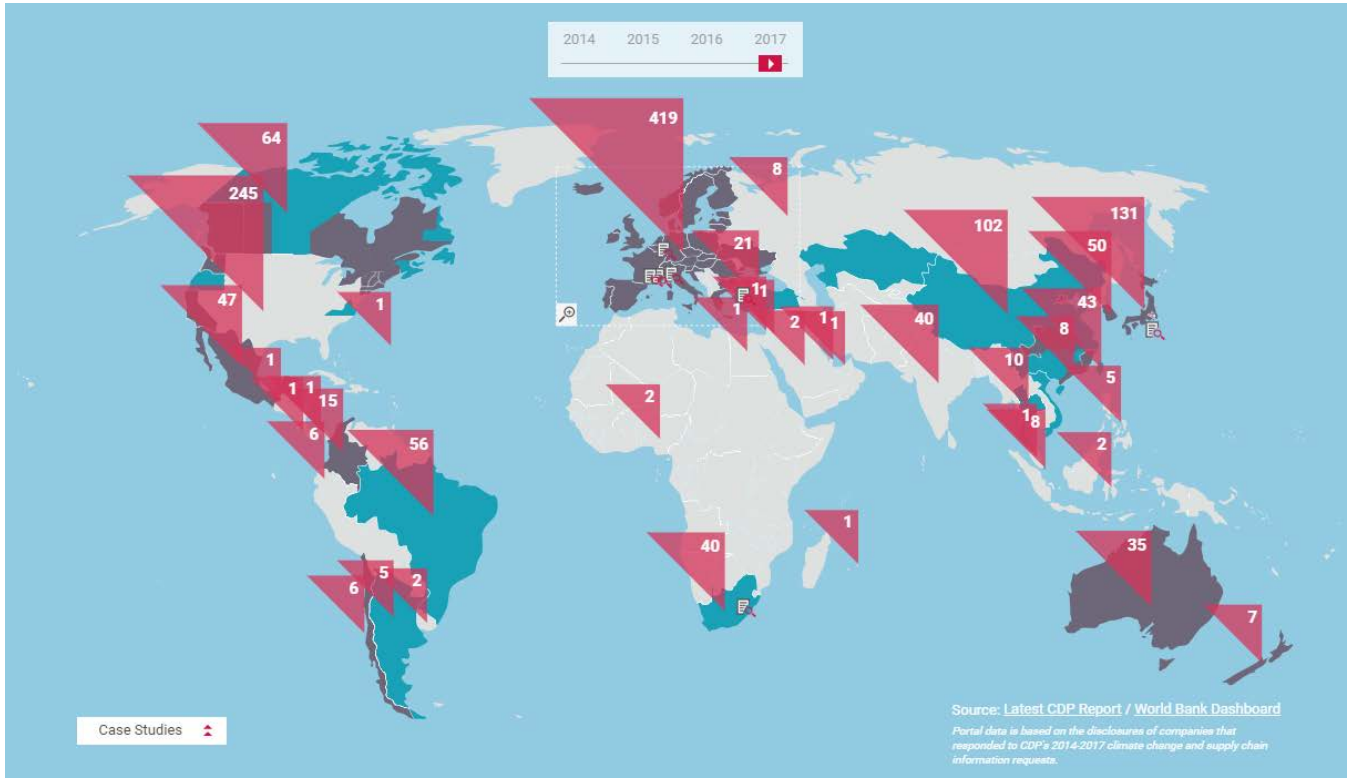
Invest in long-term improvements to building resiliency and reliability



Carbon Disclosure Project

Supports companies and cities to disclose

Nearly a fifth of global GHG emissions are reported through CDP



Triangle: Number of companies that disclose
Blue: Countries with emerging carbon disclosure policies
Grey: Countries with existing carbon disclosure policies

State of Pennsylvania Environmental Commitments
(Executive Orders 2019-01 and 2019-07)

Reduce energy consumption by 3% per year

Replace 25% of the state passenger car fleet with battery electric and plug-in electric hybrid cars by 2025

Procure renewable energy to offset at least 40% of the Commonwealth's annual electricity use

GreenGov Council

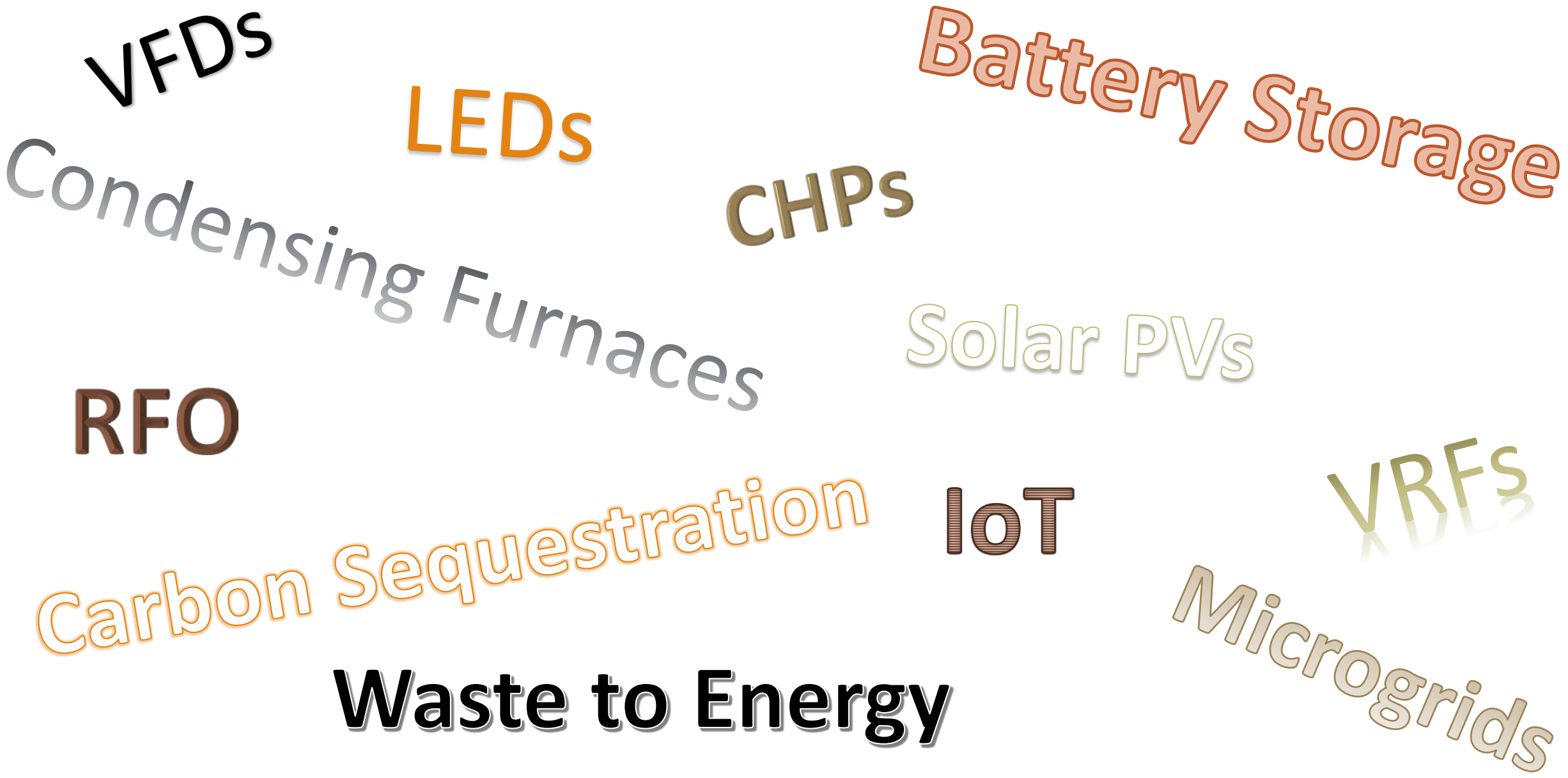
Carbon Dioxide budget consistent with **RGGI**

Current PA electric fuel inputs:

- 39% Nuclear
- 56% Fossil Fuels
- 5% Renewable

Hope for the Future

TECHNOLOGY

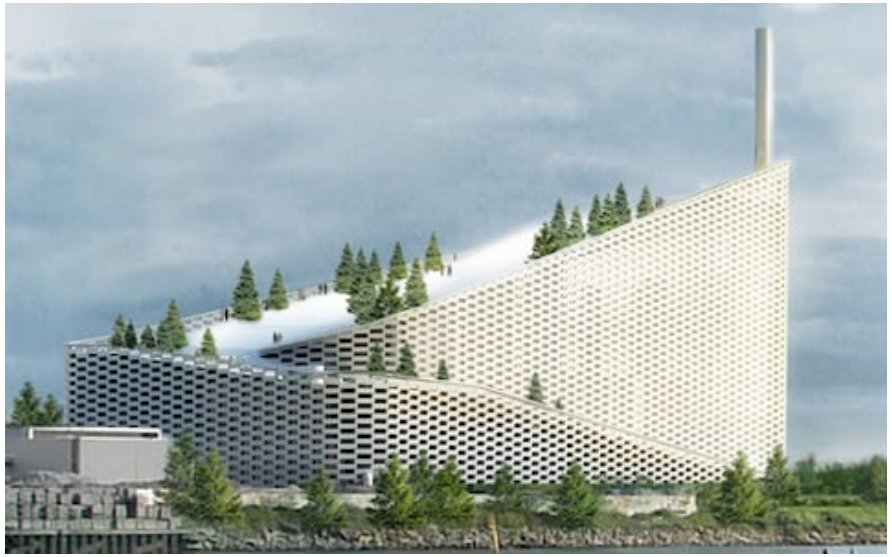

VFDs
LEDs
Battery Storage
Condensing Furnaces
CHPs
Solar PVs
RFO
VRFs
Carbon Sequestration
IoT
Microgrids
Waste to Energy

Regenerative Planning and Architecture

Beyond just sustainability

Considers the place, site, systems, energy, building, fauna, and flora

Biophilic Design



Chicago Navy Pier – SITES Gold Certified

- 100% native plant species
- Conserved 73% of existing plants and healthy soils
- Irrigated entirely by harvested rainwater

Net Zero Buildings

Generate as much or more energy than consumed annually

Utilize passive gains through appropriate design

Regenerative design framework

Healthy, innovative environments

Hope for the Future

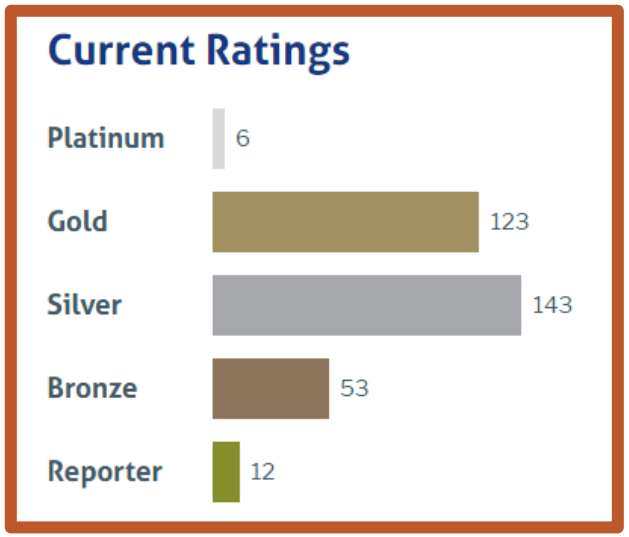
TIPPING POINT

Environmental Action in Universities

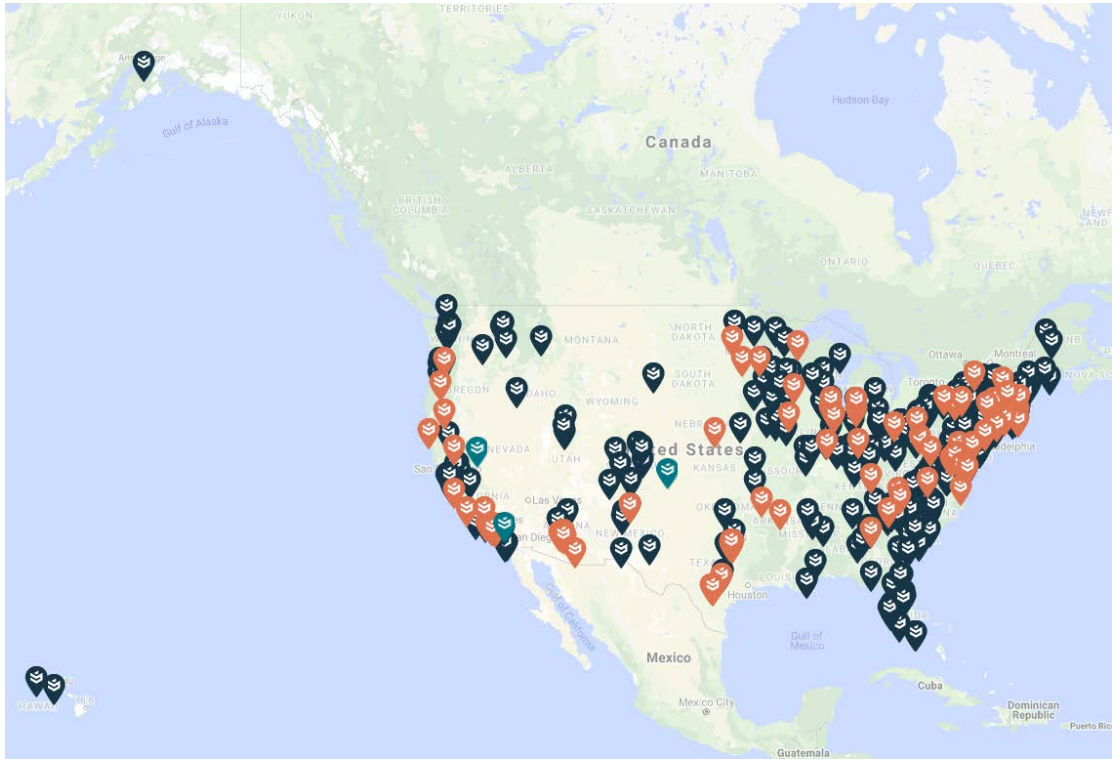
SecondNature

Climate Action Planning

STARS Report



The adjacent figures include all institutions with a valid STARS report.



Climate Leadership Network representing signatories of the Carbon Commitment, Resilience Commitment, and Integrated Climate Commitment

Environmental Action in Corporations

Corporation™

Setting the new corporate standard for social and environmental performance.

bcorporation.net

citi

September 19, 2017

Citi to be 100 Percent Powered by Renewable Energy by 2020

Deutsche Bank

Sustainable operations

We achieved climate neutrality in 2013

PHILIPS

We commit to becoming carbon neutral by 2020 at the UN Climate Change Conference COP21.

Morgan Stanley commits to sourcing 100% of its global energy needs from renewable energy by 2022.

ENVIRONMENT

Google Is Now 100% Powered by Wind and Solar Energy

They're proving the status quo can change.

Latest releases

Barclays goes carbon neutral in the UK

12 Mar 2007 09:00

John Varley, Group Chief Executive, Barclays, said: "Climate change has a significant potential impact on our business – on the markets in which we operate and on the customers and clients we serve. Reducing our environmental impact is a business priority. "Going carbon neutral in

Apple is carbon neutral in 23 countries

by KIRSTY STYLES — Mar 21, 2016 in APPLE

Cushman & Wakefield to Support Industry Buy-in of First Standards-Based Carbon Neutral Global Program Aimed at Commercial Real Estate

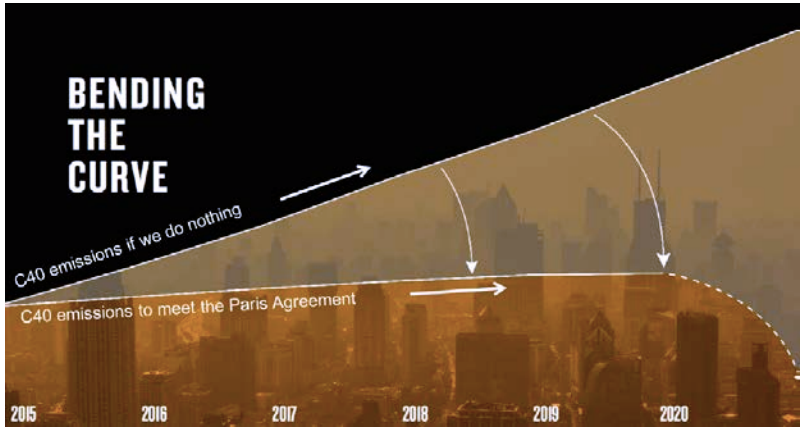
CUSHMAN & WAKEFIELD

Environmental Action in Cities

NYC Plan, NY Stretch

Benchmarking Laws

Global Compact of Mayors



CITIES' KEY ROLE

Cities are also crucial actors in reducing GHG emissions and creating liveable and safe places to work & live. If well designed, climate action can indeed produce multiple benefits, including: improved health, reduced expenses, better air quality and increased job opportunities.

C40 CITIES *account for*

96 affiliated cities

1 in 12 people worldwide

25% of global GDP

Environmental Action in Cities

2030 DISTRICT®

2030 PALETTE®

AIA 2030™

The Power of Working Together

"We know that climate action only works when we get everyone involved: our government, our businesses, neighborhoods, and residents."
- Marty Walsh, Mayor of Boston, MA

Earth Day, Allentown

Living Local Mural by artist Tom Maxfield, Nurture Nature Center

Earth Day, Bethlehem

Bibliography

FAVORITE PUBLICATIONS

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SecondNature - https://secondnature.org/

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Thank you for coming!