Municipal Energy Planning

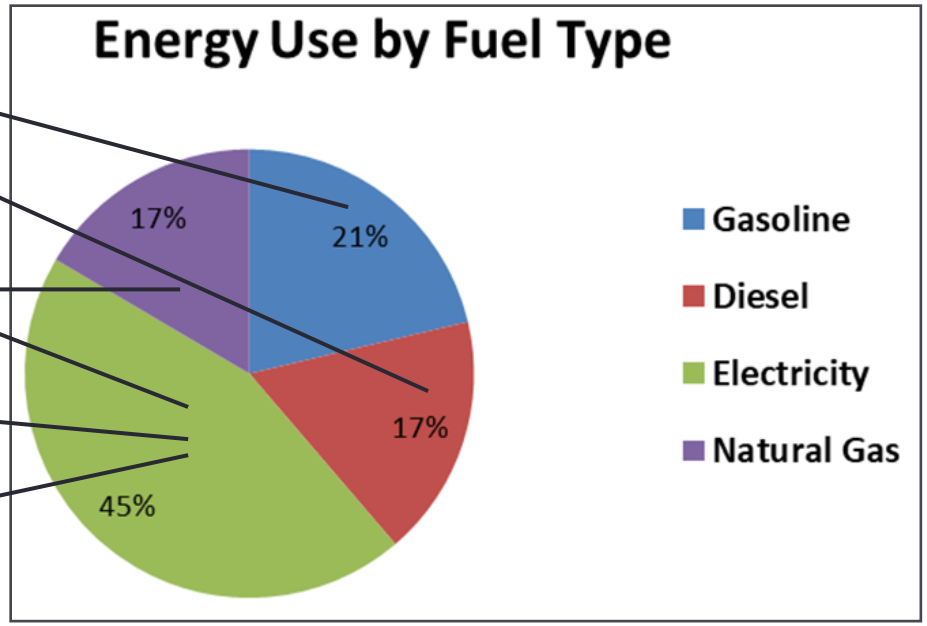
EAC – three key roles

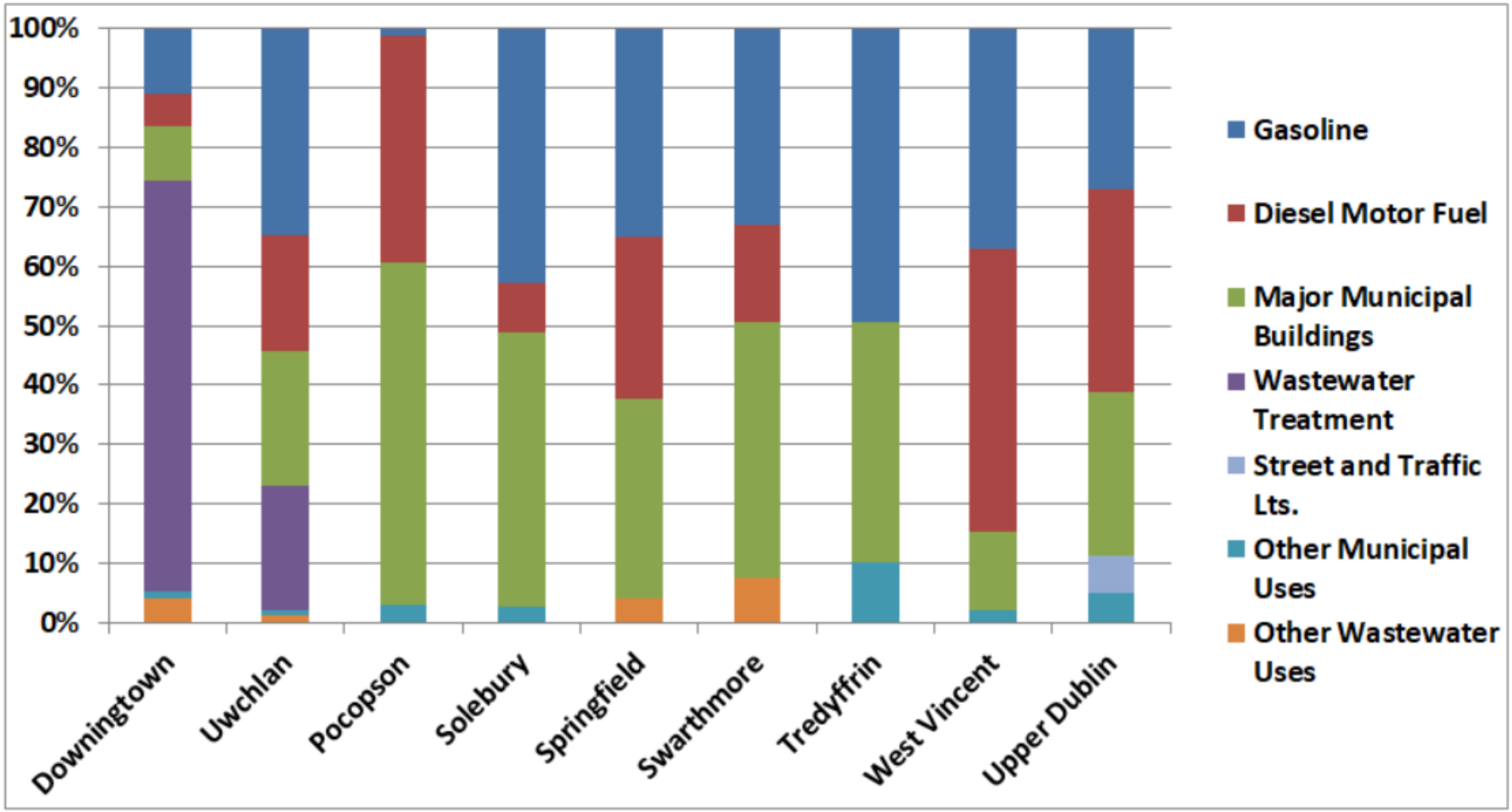
- Leading by example in municipal operations
- Guidance for enabling policy and removing road blocks (governance issues)
- Resilience of community

Municipal Energy Planning

What are the sources of municipal GHG emissions?

- Fleet fuel usage
  - Light-duty vehicles
  - Heavy-duty vehicles
- Municipal building
- Outdoor lighting
- Wastewater facilities





Municipal Energy Planning

Energy Usage Contributing to GHG Emissions

Municipal Energy Planning

Facility Nickname	Total Annual Electric Consumption (kWh)	Total Annual Gas Consumption (Ccf)	Liquid Fuels (gallons)	Facility Type	Street Address
UWCHLAN TOWNSHIP	740,276			Other-Utility	460EAGLEVIEW BLVDSWR PLT
Uwchlan Township - Gasoline			35,000		
Uwchlan Township - Diesel			17,000		
SUPERVISORS OF UWCHLAN TWP		15,980		Government Office	715N SHIP RDEO RT 100
UWCHLAN TWP	199,827			Government Office	715N SHIP RDWRHSE
SUPV OF UWCHLAN TWP ADMIN BLDG	97,663			City Hall or City Center	715N SHIP RD
Street Lighting	45,260				
SUP OF UWCHLAN TWP GROUNDS MAIN		3,168		Government Office	715N SHIP RD
UWCHLAN TOWNSHIP	20,169			Other-Utility	715N SHIP RDPUMP STATION
UWCHLAN TOWNSHIP	18,647			Other-Utility	0PUMP STAPUMP STA
SUPERVISORS OF UWCHLAN TWP	9,565	434		Government Office	114BELL-TAVERN RD
UWCHLAN TOWNSHIP	5,546			Government Office	0DEVON DR
UWCHLAN TOWNSHIP	4,803			Government Office	0POTTSTOWN PIKEAT SHIP RD
UWCHLAN TOWNSHIP	3,852			Street lighting	1201DOWLIN-FORGE RDPOND
UWCHLAN TOWNSHIP	3,834			Other-Utility	0SHELMIRE RD
UWCHLAN SANITATION DEPT	3,630			Other-Utility	20RUTGERS DR
SUP OF UWCHLAN TWP	1,892			Government Office	0VILLAGE AVE
SUPERVISORS OF UWCHLAN TWP	1,750			Government Office	0RUTGERS DR
UWCHLAN TOWNSHIP	1,259			Government Office	253SPRING-RUN LNREAR
UWCHLAN SANITATION DEPT	849			Other-Utility	0N OAKLAND DR
UWCHLAN SANITATION DEPT	849			Other-Utility	0POTTSTOWN PIKE
UWCHLAN SANITATION DEPT	849			Other-Utility	0NORWOOD RD
UWCHLAN SANITATION DEPT DOWNING RDG MTR CHAMBER	812			Other-Utility	0CREEK RDPUMP
SUPV OF UWCHLAN TWP ADMIN BLDG	706			Government Office	220DOWLIN-FORGE RDPARK LTG
UWCHLAN TOWNSHIP	658			Property Management	715N SHIP RDCAR CHARGING STN
UWCHLAN TOWNSHIP	480			Property Management	715N SHIP RDLIGHT SERVICE
UWCHLAN TOWNSHIP	415			Government Office	0PARKSIDE DR
UWCHLAN TWP	0			Government Office	0PECK RDSIGN
TOTAL	1,163,591	19,582			

Facilities		Sewage-related		Liquid Fuel	
Street Lights					

How to get electrical and gas data

Municipality authorizes you to receive information

Then either:

Request the information you need on a one time basis, or

Get municipality access usage data on PECO.com/MyAccount/ (preferred)

Place data into spreadsheet (yearly usage)

Make sure that you get all of the accounts. Some are sometimes in strange places.

Municipal Energy Planning

Building heating and lighting

Benchmarking and assessments

Springfield study (to be covered by Joy)

Water and wastewater

More efficient pumps and aerators

Process modifications

Collection of motor vehicle gasoline and diesel information

Police vehicles (lots of vehicles, long hours, lots of idling)

Other light-duty vehicles (code enforcement, fire marshal)

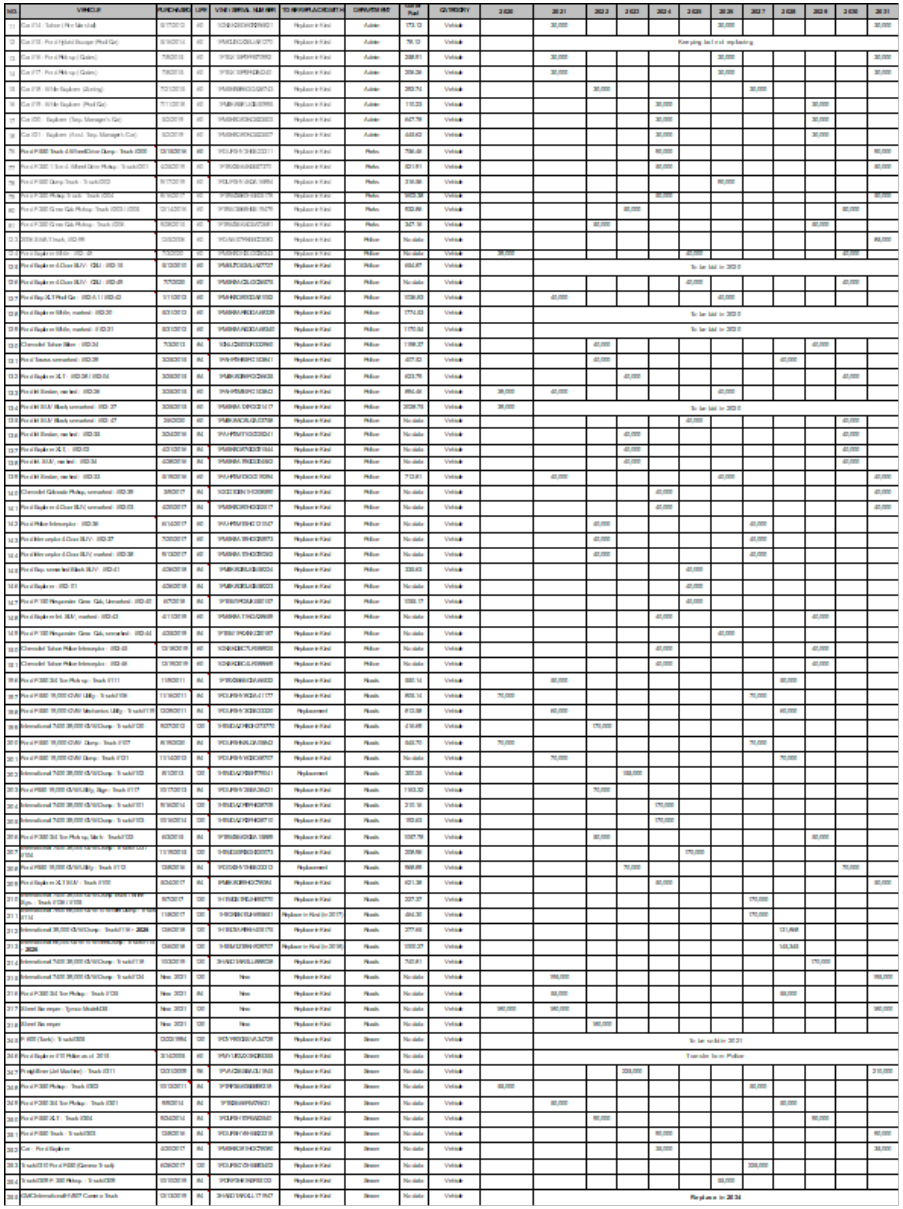
Heavy-duty (dump trucks, street sweepers)

Off-road equipment (backhoes)

Preliminary Analysis of Electrification of Vehicles

Vehicle fleet data:

- Vehicle number
- Vehicle type
- When purchased
- Expected vehicle life
- VIN number
- Department
- Gallons of fuel used per year
- Year of replacement



Preliminary Analysis of Electrification of Vehicles

West Goshen Township Fleet:

- 77 Vehicles
  - 40 Light-duty gasoline vehicles
  - 6 Medium-duty diesel vehicles
  - 31 Heavy-duty and specialty vehicles
- Vehicles considered for electrification:
  - 40 Light-duty gasoline vehicles
  - 6 Medium-duty diesel vehicles

Preliminary Analysis of Electrification of Vehicles

VEHICLE	Gasoline	Diesel	MPG	Police Idling	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
					Miles driven per year (plus fuel idling calculated as miles for police cars)											
Ford Police Interceptor - #52-36	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Interceptor 4-Door SUV - #52-37	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Interceptor 4-Door SUV, marked - #52-38	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Car #18 - White Explorer (Zoning)	292.74		23.5		6,879	6,879	6,879	6,879	6,879	6,879	6,879	6,879	6,879	6,879	6,879	6,879
Chevrolet Tahoe Silver - #52-24	1198.37		18.5	30%	28,821	28,821	28,821	28,821	28,821	28,821	28,821	28,821	28,821	28,821	28,821	28,821
Ford Taurus unmarked - #52-29	407.52		20.0	30%	10,596	10,596	10,596	10,596	10,596	10,596	10,596	10,596	10,596	10,596	10,596	10,596
Ford F-350 Crew Cab Pickup - Truck #206		347	10.0		3,472	3,472	3,472	3,472	3,472	3,472	3,472	3,472	3,472	3,472	3,472	3,472
Ford F-350 3/4 Ton Pick-up, Mark - Truck #122		1058	10.0		10,578	10,578	10,578	10,578	10,578	10,578	10,578	10,578	10,578	10,578	10,578	10,578
Ford Explorer XLT - #52-28 / #52-04	623.79		23.5	30%	19,057	19,057	19,057	19,057	19,057	19,057	19,057	19,057	19,057	19,057	19,057	19,057
Ford Int Sedan, marked - #52-35	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Explorer XLT, - #52-02	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Int. SUV, marked - #52-34	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford F-350 Crew Cab Pickup -Truck #203 / #205		933	10.0		9,329	9,329	9,329	9,329	9,329	9,329	9,329	9,329	9,329	9,329	9,329	9,329
Car #19 - White Explorer (Pool Car)	110.23		23.5		2,590	2,590	2,590	2,590	2,590	2,590	2,590	2,590	2,590	2,590	2,590	2,590
Car #20 - Explorer (Twp. Manager's Car)	647.78		23.5		15,223	15,223	15,223	15,223	15,223	15,223	15,223	15,223	15,223	15,223	15,223	15,223
Car #21 - Explorer (Asst. Twp. Manager's Car)	445.62		23.5		10,472	10,472	10,472	10,472	10,472	10,472	10,472	10,472	10,472	10,472	10,472	10,472
Chevrolet Colorado Pickup, unmarked - #52-39	740.00		23.0	30%	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126
Ford Explorer 4-Door SUV, unmarked - #52-03	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Explorer Int. SUV, marked - #52-43	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Chevrolet Tahoe Police Interceptor - #52-45	740.00		18.5	30%	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797
Chevrolet Tahoe Police Interceptor - #52-46	740.00		18.5	30%	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797	17,797
Ford Explorer XLT SUV - Truck #100	621.38		23.5		14,602	14,602	14,602	14,602	14,602	14,602	14,602	14,602	14,602	14,602	14,602	14,602
Car - Ford Explorer	400.00		23.5		9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
Ford F-350 Pickup Truck - Truck #204		1602	10.0		16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024
Ford Explorer 4-Door SUV - CSU - #52-49	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Int SUV Black, unmarked - #52-47	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Exp. unmarked Black SUV - #52-41	335.63		23.5	30%	10,253	10,253	10,253	10,253	10,253	10,253	10,253	10,253	10,253	10,253	10,253	10,253
Ford Explorer - #52-01	740.00		23.5		17,390	17,390	17,390	17,390	17,390	17,390	17,390	17,390	17,390	17,390	17,390	17,390
Ford F-150 Responder Crew Cab, Unmarked - #52-40	1055.17		23.0	30%	31,550	31,550	31,550	31,550	31,550	31,550	31,550	31,550	31,550	31,550	31,550	31,550
Ford Explorer White - #52-48	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Explorer 4-Door SUV - CSU - #52-15	654.87		23.5	30%	20,006	20,006	20,006	20,006	20,006	20,006	20,006	20,006	20,006	20,006	20,006	20,006
Ford Explorer White, marked - #52-20	1774.53		23.5	30%	54,212	54,212	54,212	54,212	54,212	54,212	54,212	54,212	54,212	54,212	54,212	54,212
Ford Explorer White, marked - # 52-21	1170.54		23.5	30%	35,760	35,760	35,760	35,760	35,760	35,760	35,760	35,760	35,760	35,760	35,760	35,760
Ford F-150 Responder Crew Cab, unmarked - #52-44	740.00		23.0	30%	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126	22,126
Ford Explorer #10 Police as of 2015	400.00		23.5		9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
Ford Int Sedan, marked - #52-26	740.00		23.5	30%	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607	22,607
Ford Int SUV Black, unmarked - #52-27	2028.75		23.5	30%	61,978	61,978	61,978	61,978	61,978	61,978	61,978	61,978	61,978	61,978	61,978	61,978
Car #16 - Ford Pick-up (Codes)	258.91		23.0		5,955	5,955	5,955	5,955	5,955	5,955	5,955	5,955	5,955	5,955	5,955	5,955
Car #17 - Ford Pick-up (Codes)	206.26		23.0		4,744	4,744	4,744	4,744	4,744	4,744	4,744	4,744	4,744	4,744	4,744	4,744
Ford Exp XLT Pool Car - #52-A1 / #52-42	1036.83		23.5	30%	31,675	31,675	31,675	31,675	31,675	31,675	31,675	31,675	31,675	31,675	31,675	31,675
Ford Int Sedan, marked - #52-26	894.46		23.5	30%	27,326	27,326	27,326	27,326	27,326	27,326	27,326	27,326	27,326	27,326	27,326	27,326
Ford Int Sedan, marked - #52-33	712.81		23.5	30%	21,776	21,776	21,776	21,776	21,776	21,776	21,776	21,776	21,776	21,776	21,776	21,776
Ford F-350 Pickup - Truck #302		740	10.0		7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400
Ford F-350 3/4 Ton Pick-up - Truck #111		550	10.0		5,501	5,501	5,501	5,501	5,501	5,501	5,501	5,501	5,501	5,501	5,501	5,501
Ford F-350 3/4 Ton Pickup - Truck #125		740	10.0		7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400	7,400
Car #15 - Ford Hybrid Escape (Pool Car)	78.12					Keeping but not replacing										

Preliminary Analysis of Electrification of Vehicles

Source	Demand over Time Used	Average Demand over Year
Existing	178 KWs over year	178 KWs over year
Light-duty and medium-duty vehicles	115 KW over 250 10-hour periods	33 KW over year
Electrification of municipal complex heating	226 KW over 150 day heating season	93 KW over year
Heavy-duty vehicles	~90 KW over 250 10-hour periods	~26 KW over year

Municipal Energy Planning

Installing solar arrays

Power purchase agreement (PPA)

- City of Phila., U. of Penn, SEPTA
- For a good presentation on how this is done: https://drive.google.com/drive/folders/16td6b-sePT2xjIP5DhDFyAA76J7acCVC

Purchasing of RECs (Renewable Energy Credits)

Municipal Energy Planning

Governance issues

- Inclusion of energy planning in comprehensive plan
- Revision (or adoption) of solar and wind ordinances
- Encouragement of energy efficiency measures
- Capability for future EVs charger installation and solar installation in new construction

Renewable Springfield

Our Path to a Clean Energy Future

- Springfield, Montgomery County
- Just outside Philadelphia
- 20,000 residents
- Committed to “Ready for 100” in January 2019

Springfield Township Environmental Advisory Commission

“Ready for 100”

- Sierra Club framework for municipal pledge:
  - 100% renewable electricity by 2035
  - 100% vehicles and building heat by 2050
- Both municipal operations and community-wide

Three new muni buildings in 2017

- Library (with green roof)
- Police/Admin
- Public Works

- Designed to be green, ***but not LEED***

- We assumed all was well with HVAC, lighting etc.

Practical Energy Solutions

- Energy auditor in Chester County
- Philadelphia's energy consultants for 10+ years
- Urged us to do energy audits on new building -- a hard sell to commissioners!
- Started with energy benchmark, comparing our buildings to their "peers" in the area.

The audit process

- The energy benchmark showed:
  - Our public works building was better than most PW buildings.
  - Library and police/admin buildings were underperforming.
- So now we had hard data, and…
- The commissioners then authorized the ***full*** audit.

- Surprising results:
  - HVAC was set to “hospital quality” air.
  - Heat and A/C were sometimes both on in the same room.
  - Automatic light timers weren’t optimized, etc.

Anticipated savings

- Township staff quickly implemented all recommendations.
- When "back to normal," PES anticipates our annual savings will be:
  - $16,000 reduction in electricity costs.
  - 200,000 pound reduction in CO_2 emissions.

- This was just the winter audit.
- We hope to do a summer audit this year. PES estimates our additional annual savings will match the winter audit.

SPRINGFIELD TOWNSHIP
ENVIRONMENTAL ADVISORY
COMMISSION

What we learned

- We should have paid for LEED commissioning!
- If the price of the full audit seems too high, start with the auditors doing an energy benchmark. That will tell you if and which buildings are underperforming.
- Springfield recovered the cost of the full audit in less than six months.
- Benchmarking and audit reports from PES are online:
- https://www.springfieldmontco.org/renewable-springfield/energy-efficiency/

Renewable Springfield

Our Path to a Clean Energy Future

Questions?

Thanks, and let's stay in touch!

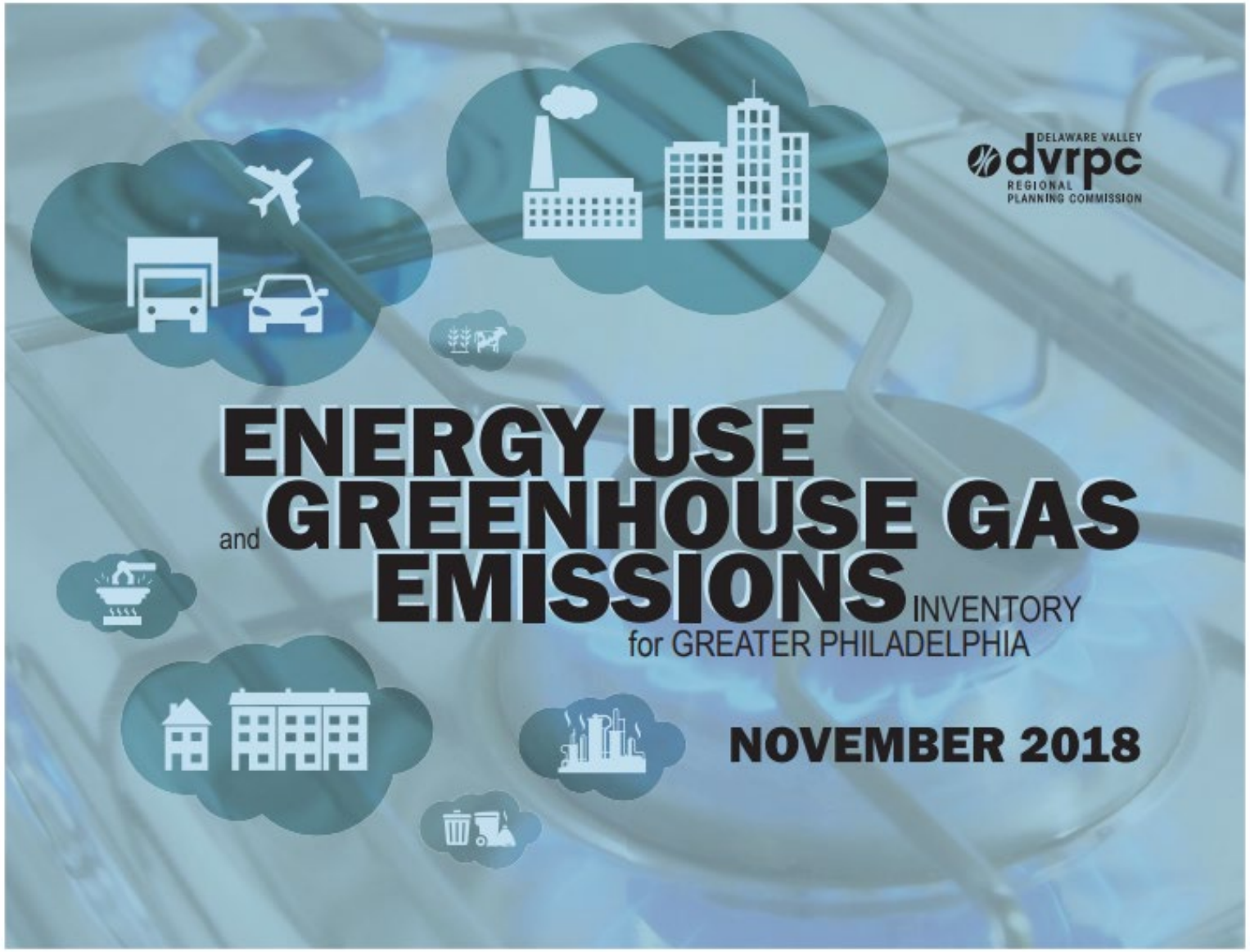
- Joy Bergey, Vice Chair
- Springfield (Montgomery County) Environmental Advisory Commission
- 215-313-1311, joybergey@gmail.com

Springfield Township Environmental Advisory Commission

Municipal Energy Planning

Community Outreach

Municipal Energy Planning



Municipal Energy Planning

Strategy Evaluation for GHG Reduction **Southeastern PA Area**

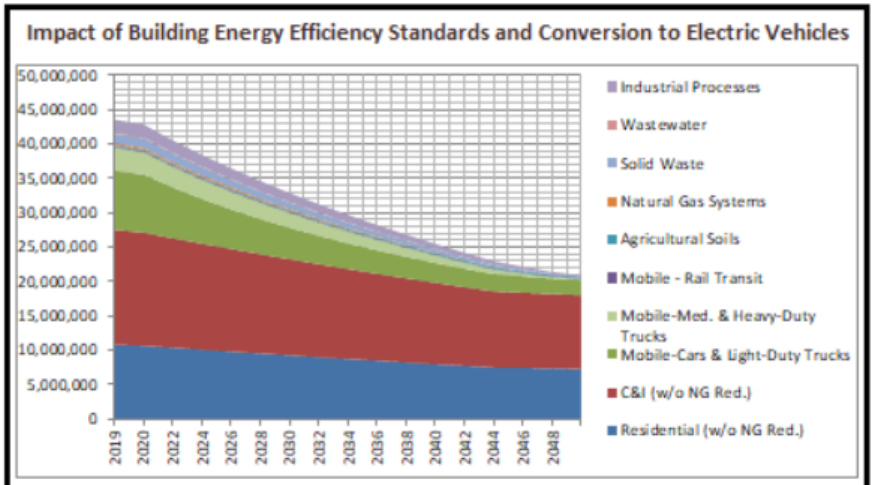
Impact of Building Energy Efficiency Standards and Conversion to Electric Vehicles

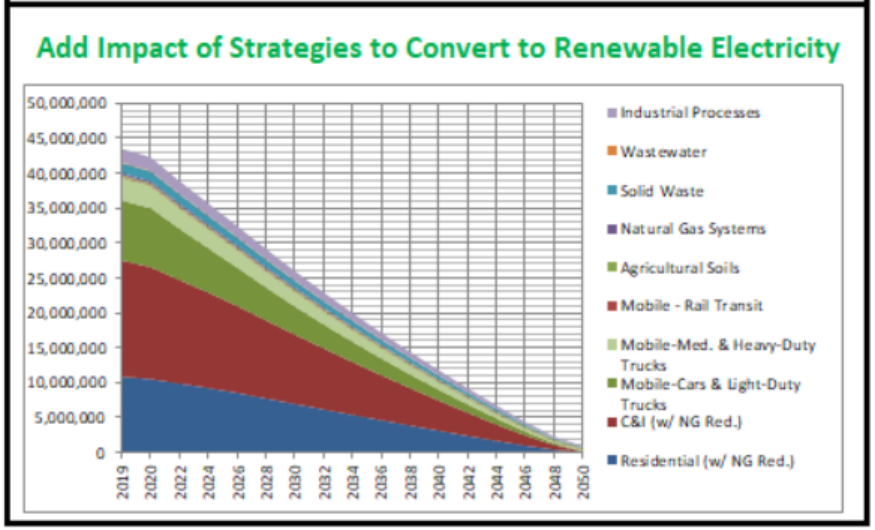
Residential Strategies	Participation Rate/Year	Change/Yr.	Commercial & Industrial Strategies	Participation Rate/Year	Change/Yr.
Highly efficient new housing	0.5%	45%	Highly efficient new commercial and industrial buildings	1.0%	40%
Increased thermal efficiency for existing houses	4.0%	24%	Increased thermal efficiency for existing buildings	4.0%	24%
Electrical Efficiency Increase	4.0%	24%	Electrical Efficiency Increase	4.0%	24%

Strategies for Non-Energy GHG Emissions	Default	No. Input	Mobile Source Strategie	Default	No. Input
			Rail Transit - Electrification of Locomotives	0.0%	1.5%
Agricultural Soil - No Change (Reserved)	0.0%	0.0%	Conversion to electric cars	3.5%	3.5%
Natural Gas Systems - 6.0% reduction per year after 2034	4.5%	4.5%	Increase in the miles per gallon for vehicles with Internal combustion engines (ICEs)	1.0	1.0
Waste Management - Reduction of solid waste	3.2%	3.2%	Reduction in VMT due to reduction in number of trips	0.3%	0.3%
Wastewater Management - (general assumption)	0.0%	3.2%	% decrease in emissions from 2019 for medium and heavy-duty trucks	3.2%	3.2%
Industrial Processes - No Sources	0%	3.0%	Improvement of public transit to limit vehicle miles of travel (VMT) increase of cars	0.3%	0.3%

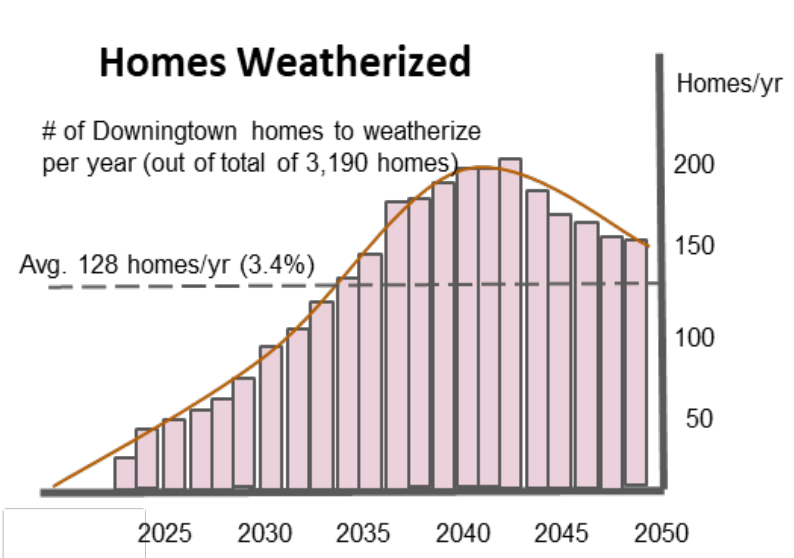
Add Impact of Strategies to Convert to Renewable Electricity

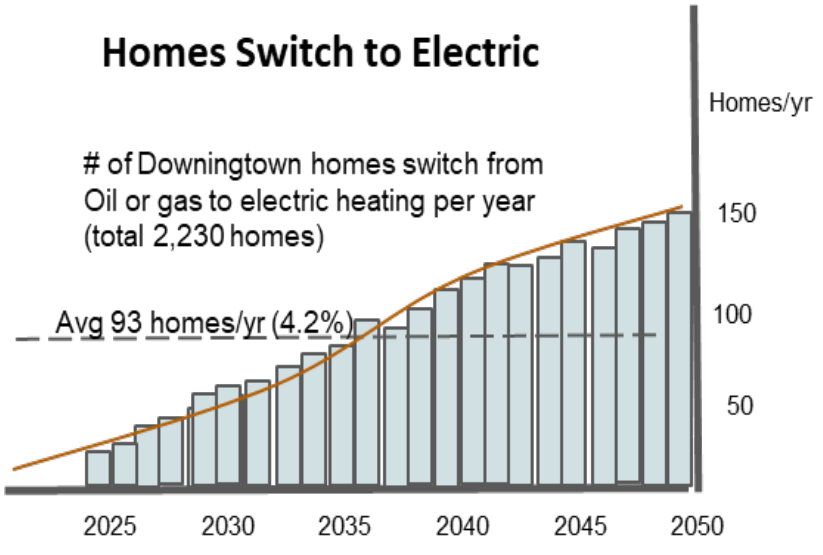
Strategies for Fuel Switching in Buildings			Strategies for Renewable Energy		
Natural Gas Elimination Starting in 2026	4.5%	4.5%	Growth in Renewable Electricity	3.2%	3.2%
Residential Oil and LPG Phaseout	3.5%	3.5%	Solar Electric Supply within Area		10.0%
C&I Oil and LPG Phaseout	3.5%	3.5%	(Reserved)		0.0%

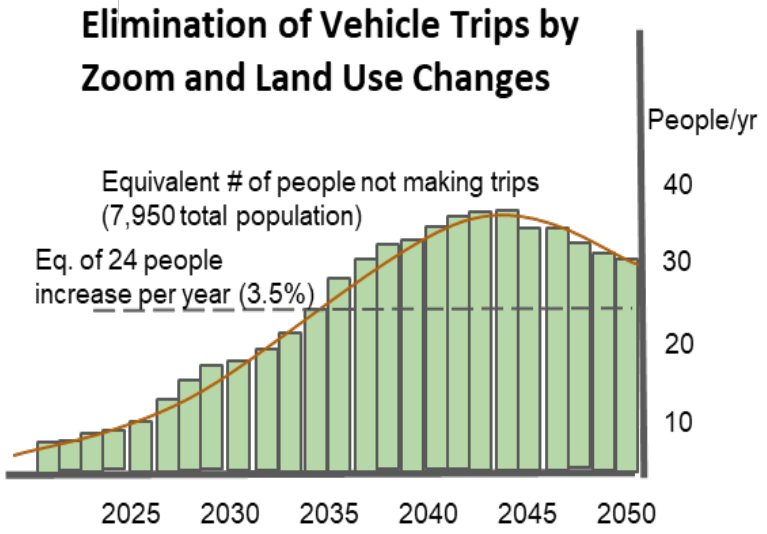


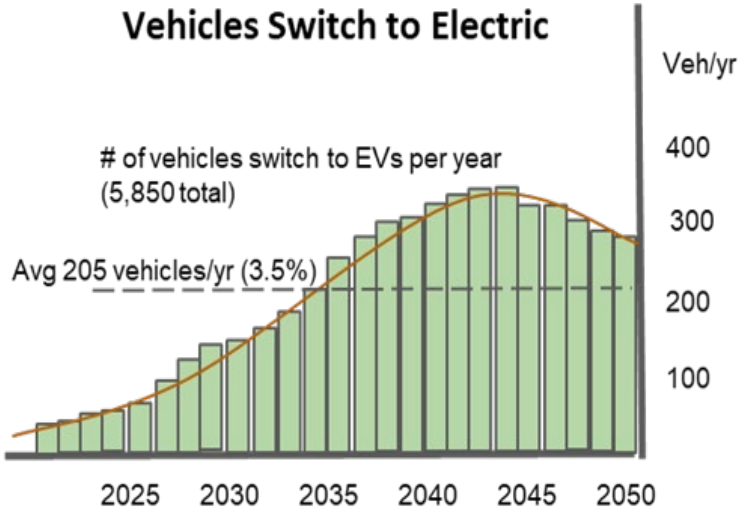


Municipal Energy Planning









Abington Township Environmental Advisory Council

HELPING ABINGTON GO GREEN

ETP Integration into a Local Climate Action Plan

EAC Network Conference

February 26, 2022

Cakky Braun Evans, LEED AP BD+C

Abington Township EAC Volunteer Member

CESP Four Focus Areas - Current Priority Strategies and Actions

Area & Team Members	Strategy	Rationale & Resources
Energy Procurement EAC: 3 EAC Members Twp: Mgr's Special Assistant and Finance Dept.	1. Short term: forgo RECs-Switch to broker bids for electric & NG 2.Leverage PECO data 3.Long term: Multi muni PPA	100% Tx Wind RECs added $7K/year for 2018-2021 • 2022 RECs approx. $37K/year • Redirect $ to muni projects to attain CO2e reduction goals
Energy Efficiency 1.WWTP uses half Twp electricity 2.10 of 70 accounts = 86% of usage 3.EAC FY 2022 Budget Requests	1.Twp WWTP Director enrolled in PA DEP's SWIFt training program 2.Leverage PECO cost, usage & demand data and Portfolio Mgr 3.Leverage other munis BMPs	• Decrease costs • Lead by example • Bryn Mawr students' work • West Chester, Springfield, Plymouth
EVs, Infrastructure & Fleet Mgt EAC Associate; Twp Mgr's Special Assistant and Public Works staff	1.Leverage other munis BMPs 2.Leverage PA DEP & PECO support 3.Fleet replacement analysis for 100% EV fleet by 2030	• Decrease emissions & costs • Leadership by example • DVRPC Muni EV Tool & Plan maps • Springfield Police Hybrid SUVs
Renewable Energy Production Two EAC Members Twp Mgr's Special Assistant, Public Works, Shared Energy Mgr	1.Short term: Renewable energy feasibility study to replace Twp Building HVAC system 2.Long term: Multi-Muni ETP + Solar PPA	• HVAC system inadequate • Plymouth's PES Bid • Lead by Example Opportunity

Key Actions Rollout

June 2016 Abington Township certified as a 3 STAR Community

June 2019 Abington Township Ready for 100 Clean Energy Resolution: A Vision for a 100% Clean Energy Future:

- Striving to transition to 100% clean renewable electricity, community-wide by 2035
- Striving to transition to 100% clean renewable energy when replacing hot water & space conditioning, vehicles & transportation equipment community-wide by 2050
- Striving to transition Township vehicle fleets to 100% electric vehicles by 2030
- At the request of the Board of Commissioners and Township Manager, the EAC will draft an energy transition plan for achieving these goals

March 2020 USGBC LEED for Cities and Communities Recertification Scholarship /LFC Guide and Abington's Current Project Plan

August 2020-May 2021 Five EACers "Abington Clean Energy Plan Team" (ACEPT) attend Ready for 100's Clean Energy Strategic Planning Series (CESP)

August 2020 Abington Selected for PA DEP Local Climate Action Program (training Sept 2020-June 2021)

January 2021 EAC's Brief Presentation to Abington Township Board of Commissioners on *1. Clean Energy Transition Plan, 2. Climate Action Plan (CAP), and 3. Supporting PA joining Regional Greenhouse Gas Initiative* → unanimous BOC RGGI Endorsement Letter

Jan-present Township Outreach to Form Climate Action Plan Collaborative (Invite Letter and expectations, Invitees, and Members)

Township creates CAP hub site to rollout Abington Township Climate Action Plan Public Meetings (April 2021 - June 2021)

July 2021 Board of Commissioners unanimously pass Climate Collaborative Resolution establishing GHG reduction goals (45% reduction by 2030 from 2010 emissions & net zero by 2050) and equity, transparency and inclusion principles

July 2021 Township submits DRAFT CAP (still being revised for adaptation, emergency management and monitoring)

August 2021 PA DEP Selects Abington for Shared Energy Manager Program; Focus on high emissions/energy facilities and feasibility study for replacing Township Administration Building HVAC system including renewable sources

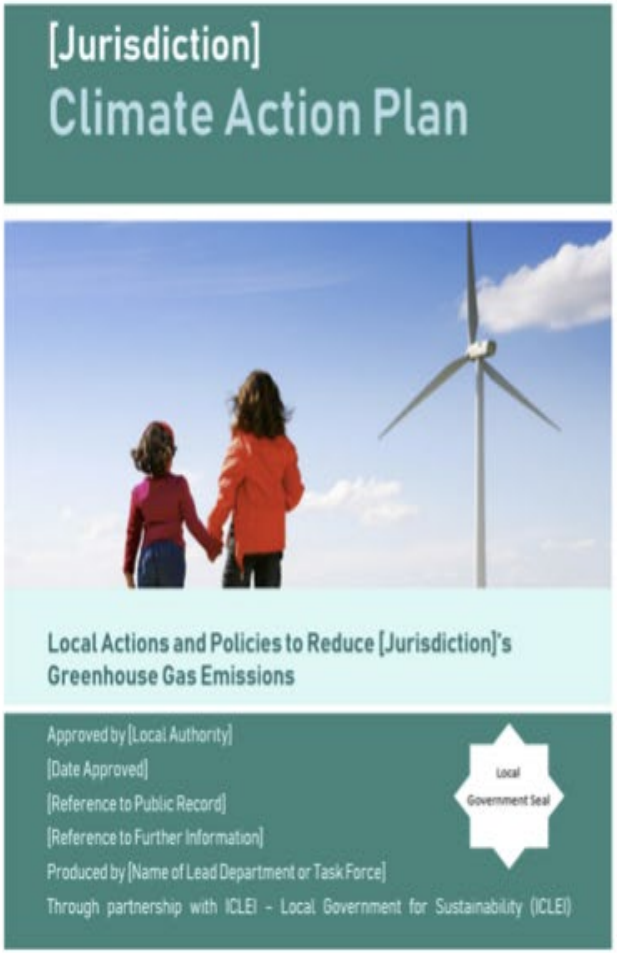
December 2021 Township Board of Commissioners unanimously approve EAC FY 2022 Requests

Abington's Waste Water Treatment Plant enrolled in PA DEP's SWIFt program 2021-2022 cohort to receive energy utility benchmarking, US Dept. of Energy training, and a free level 2 energy audit

Current initiatives include drafting a Land Review Sustainable Certification Checklist and CO2 Sequestration via Plantings

How PA Local Climate Action Program works

Local CAP Template



Local Climate Action Program (LCAP)

- ICLEI Local Governments for Sustainability – USA hired as contractor
- College student matched with local government
- ICLEI trains student on ClearPath inventory tool (fall semester) and climate action planning (spring semester)
- Final result: 41 GHG inventories & 40 local climate action plans

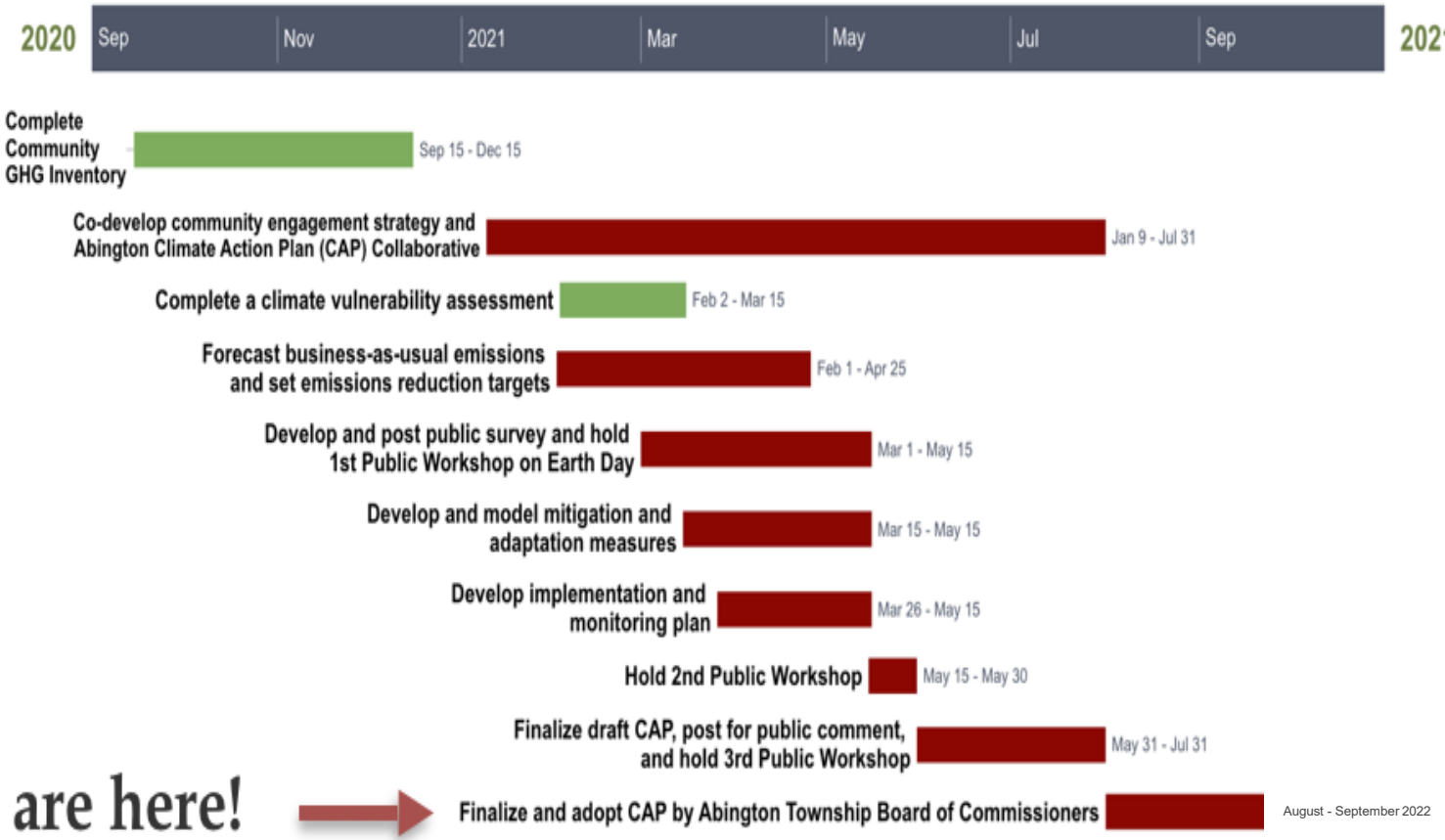
dep.pa.gov/LocalClimateActionProgram

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

The jurisdiction is responsible for community outreach and partnerships

Abington Township Climate Action Plan

Road to Carbon Neutrality - Cleaning It Down Throughout Our Town



We are here!


Commit
Pass a resolution
Goal setting shows political will
✔ 2019: Abington Passed Resolution
Plan
Develop a written plan for achieving the goals of the resolution
The plan identifies priority actions
2021: Draft Abington Climate Action Plan- Why we're here tonight
Act
Municipal Operations
Enabling Policies
Community Action Plan

Additional Free Resources

PA Climate Leadership Academy

Climate Leadership Activator Series

This online training program builds a foundational understanding of the risks and opportunities that climate change poses for state/local government agencies, infrastructure organizations, and businesses in Pennsylvania. It examines the impacts of climate change on organizational mission, operations, and constituents; analyzes and identifies opportunities to advance readiness and solutions grounded in economic vitality, public health, and security. This program is ideal for senior leaders in the public and private sectors who want a solid grasp of the knowledge base on climate change, its impact upon their organizations and communities, and available tools and resources to mitigate and adapt.

Certified Climate Change Professional (CC-P)

This two-month online program is designed to help participants build competencies to effectively integrate climate change into their decision-making and professional activities, as well as to advance their entrepreneurship and leadership skills. Leveraging a combination of on-demand online training resources and in-person cohort training, this workshop series will prepare attendees for the CC-P® exams and CC-P® Candidate entrance exam, and will satisfy the geographic elective requirements* for the CC-P® credential. The curriculum in this training series is regionally tailored for Pennsylvania and the mid-Atlantic United States.

For more information about this presentation, please feel free to contact Cakky Evans at EAC@AbingtonPA.gov or ClimatePlan@AbingtonPA.gov

Community -Wide Energy Action

Jim Wylie, SAC Vice-Chairperson
West Chester Borough

West Chester Area Climate Action Future

Community Engagement

West Chester Area Approach

- 6 Municipalities within the WC Area COG are Collaborating
- Steering Cmte w/ Reps from each EAC/SAC
- Weekly Zoom meetings
- Staff participation, reports to officials

Community Engagement

West Chester Area Approach

- 4 Stakeholder Groups:
  - Residents
  - Small Business
  - Big Business (Corp)
  - Education
- Public Meetings (zoom) for each – hosted by rotating municipalities

Community Engagement

West Chester Area Approach

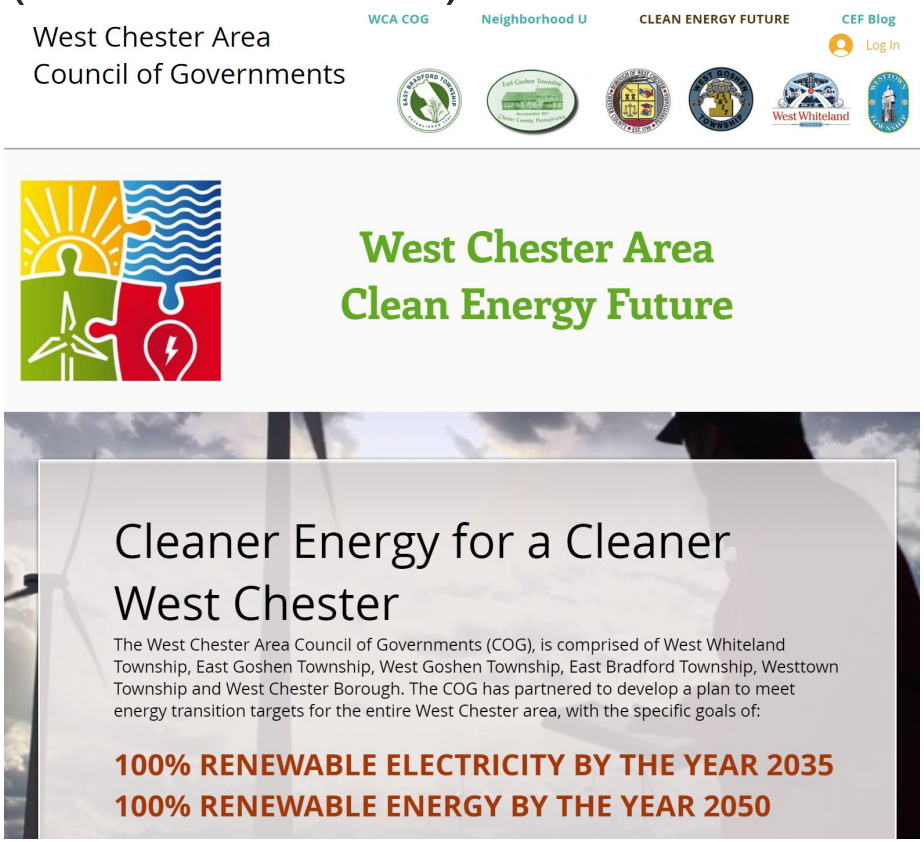
- Surveys, Blog articles pushed through Municipal social media and email newsletters
- In 2022 we'd like to do more:
  - media interviews
  - collaboration with elected officials
  - bigger Community Day events
  - targeted stakeholder meetings

Community Engagement

http://wcaCleanEnergy.org

WCA Clean Energy Future

- Dedicated website – managed by the Steering Committee (EAC members)



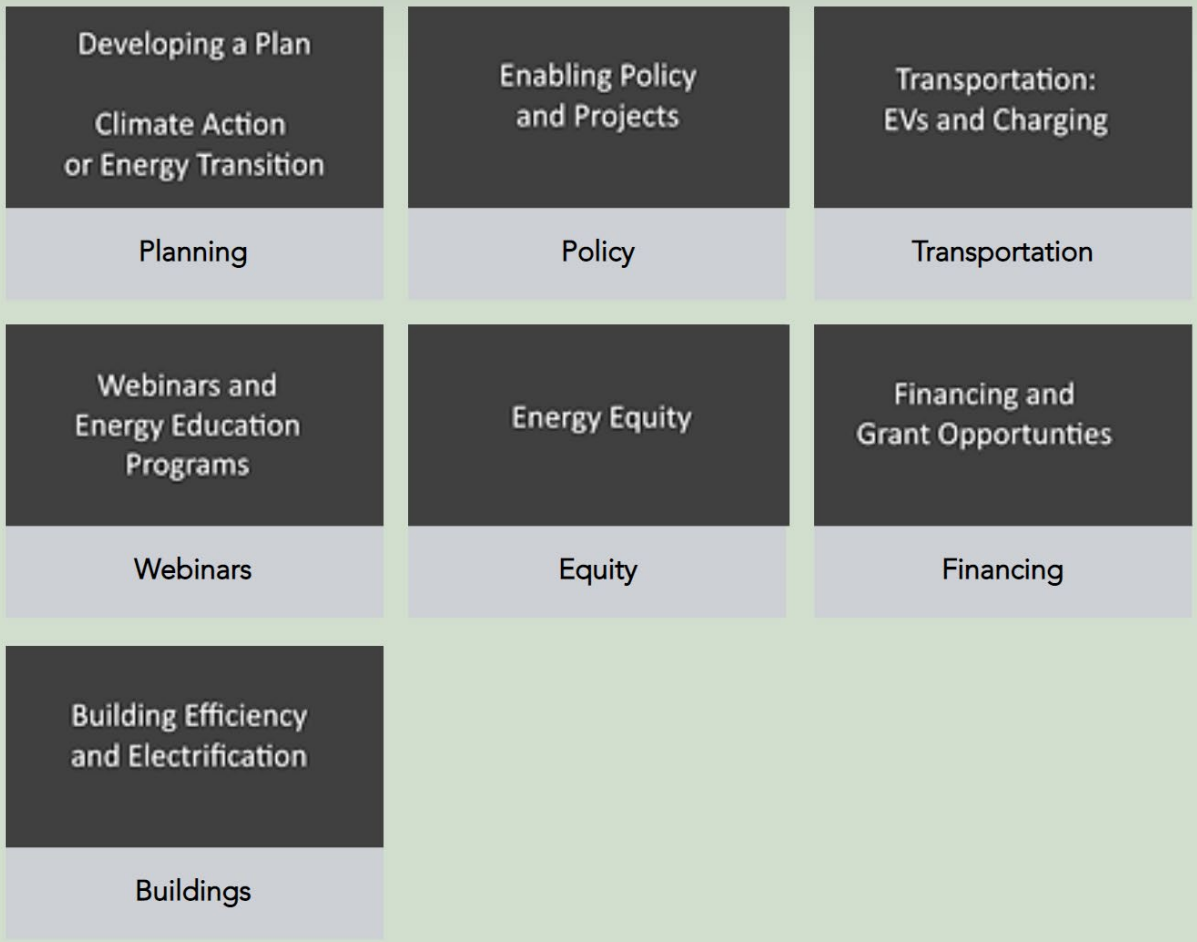
A Common Website for Any PA Community

Resources For The Public

Resources For Municipal Officials and EACs

Resources for Municipal Governments:

- Elected Officials
- Municipal Staff
- EAC Members



A Shared Platform For Community Engagement

Clean Energy PA

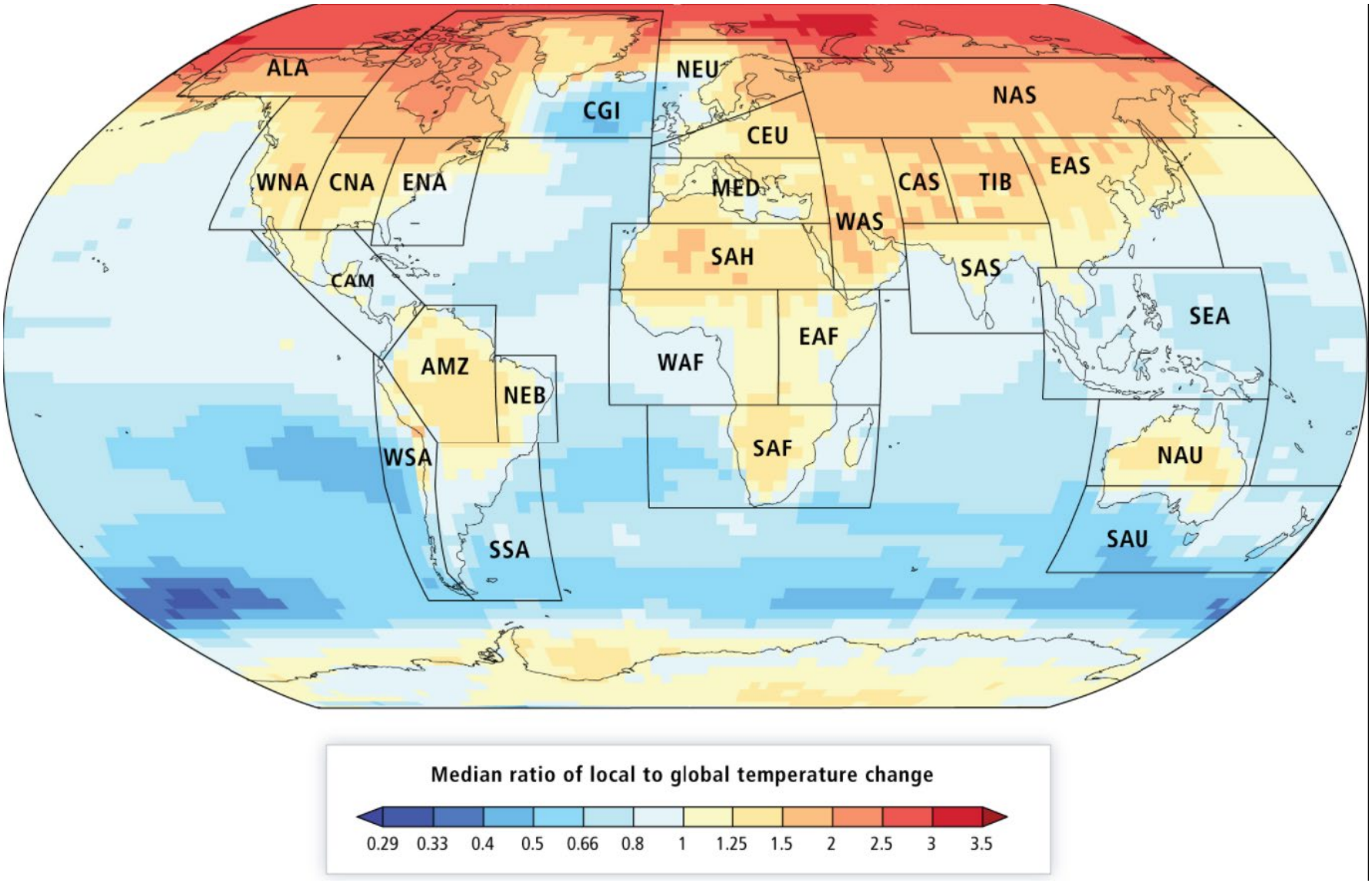
- Website – pacleanenergy.com
- jim.wylie@verizon.net

Q & A

Municipal Energy Planning

Resiliency

Municipal Energy Planning



Municipal Energy Planning

SIXTH ASSESSMENT REPORT
Working Group I – The Physical Science Basis

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Regional fact sheet – North and Central America

Common regional changes

North and Central America (and the Caribbean) are projected to experience climate changes across all regions, with some common changes and others showing distinctive regional patterns that lead to unique combinations of adaptation and risk-management challenges. These shifts in North and Central American climate become more prominent with increasing greenhouse gas emissions and higher global warming levels.

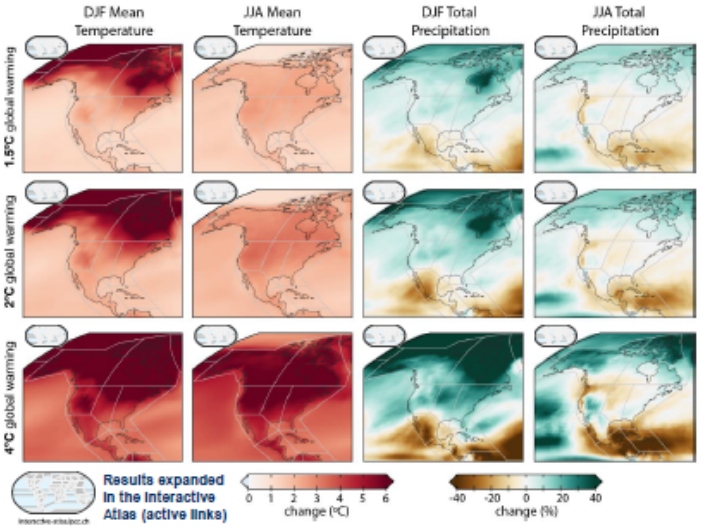
Temperate change (mean and extremes) in observations in most regions is larger than the global mean and is attributed to human influence. Under all future scenarios and global warming levels, temperatures and extreme high temperatures are expected to continue to increase (*virtually certain*) with larger warming in northern subregions.

Relative sea level rise is projected to increase along most coasts (*high confidence*), and are associated with increased coastal flooding and erosion (also in observations). Exceptions include regions with strong coastal land uplift along the south coast of Alaska and Hudson Bay.

Ocean acidification (along coasts) and marine heatwaves (intensity and duration) are projected to increase (*virtually certain* and *high confidence*, respectively).

Strong declines in glaciers, permafrost, snow cover are observed and will continue in a warming world (*high confidence*), with the exception of snow in northern Arctic (see overleaf).

Tropical cyclones (with higher precipitation), severe storms, and dust storms are expected to become more extreme (Caribbean, US Gulf Coast, East Coast, Northern and Southern Central America) (*medium confidence*).



Projected changes in seasonal (Dec–Feb, DJF, and Jun–Aug, JJA) mean temperature and precipitation at 1.5°C, 2°C, and 4°C (in rows) global warming relative to 1850–1900.

Based on CMIP6 using the SSP5 8.5 scenario to compute the warming levels.

Results expanded in the interactive Atlas (active links)

SIXTH ASSESSMENT REPORT
Working Group I – The Physical Science Basis

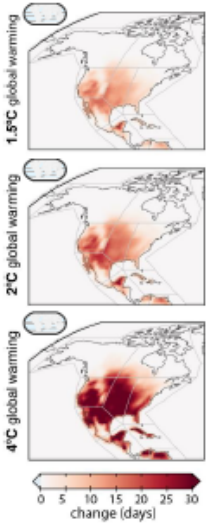
ipcc
INTERGOVERNMENTAL PANEL ON climate change

Northern North America (NWN and NEN)
- Temperature increases are projected to be very large compared to the global average, particularly in the winter (*high confidence*).
- Will experience annual precipitation increases (mean and extremes, *high confidence*) and in December–February (*likely*) snow amount in far northern parts of subregions (also see Introduction and Polar Fact Sheets).

Central and Western North America (CNA and WNA)
- Increases in drought and fire weather in WNA and CNA in observations and will continue to increase in the future particularly at higher warming levels (*high confidence*, but *medium confidence* for fire weather in CNA)
- Projected increase in extreme precipitation (*very likely*)
- Projected increase in river and pluvial flooding (*medium confidence*)
- Projected increases in precipitation in northern part of CNA in winter (*medium confidence*).

Eastern North America (ENA)
- Increases in mean and extreme precipitation (*very likely*).
- Expected increase in river and pluvial flooding (*medium confidence*)

Northern, Southern Central America and Caribbean (NCA, SCA, and CAR)
- Anticipated decrease in NA Monsoon precipitation (*medium confidence*).
- Mean annual and summer precipitation is likely to decrease, throughout the subregions but with large uncertainty regarding amount.
- Observed increase in droughts in NCA, SCA, and CAR, and these will continue in the future (*high confidence*).
- Fire weather is projected to increase in NCA (*high confidence*) and SCA (*medium confidence*).
- Projected temperature increases will be similar to the global mean change in Central America, but less than the global mean in CAR.



Projected changes in number of days with daily maximum temperatures over 35°C in summer at 1.5°C, 2°C, and 4°C (in rows) global warming relative to 1850-1900.

Based on CMIP6 using the SSP5 8.5 scenario to compute the warming levels.

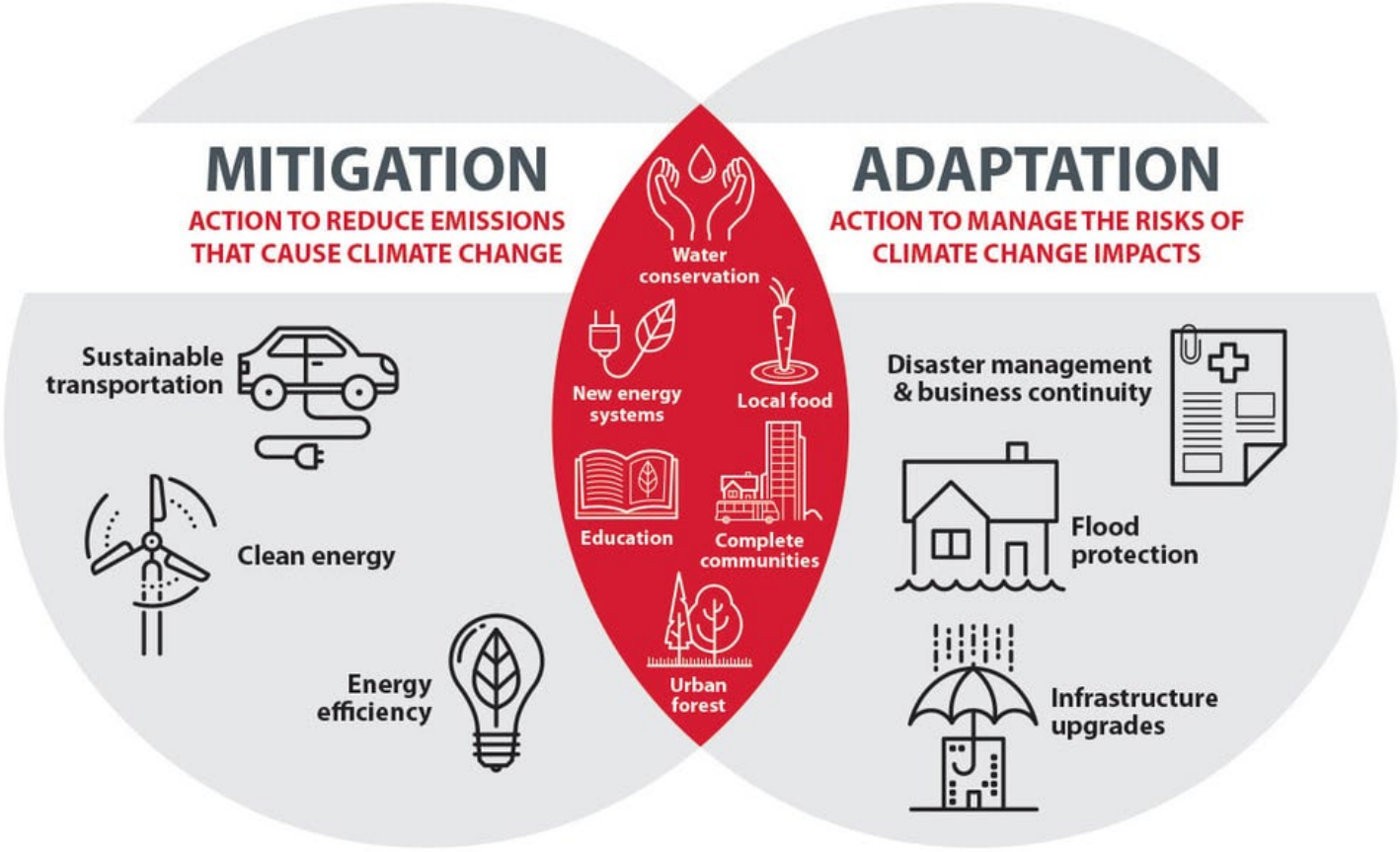
Results expanded in the interactive Atlas (active links)

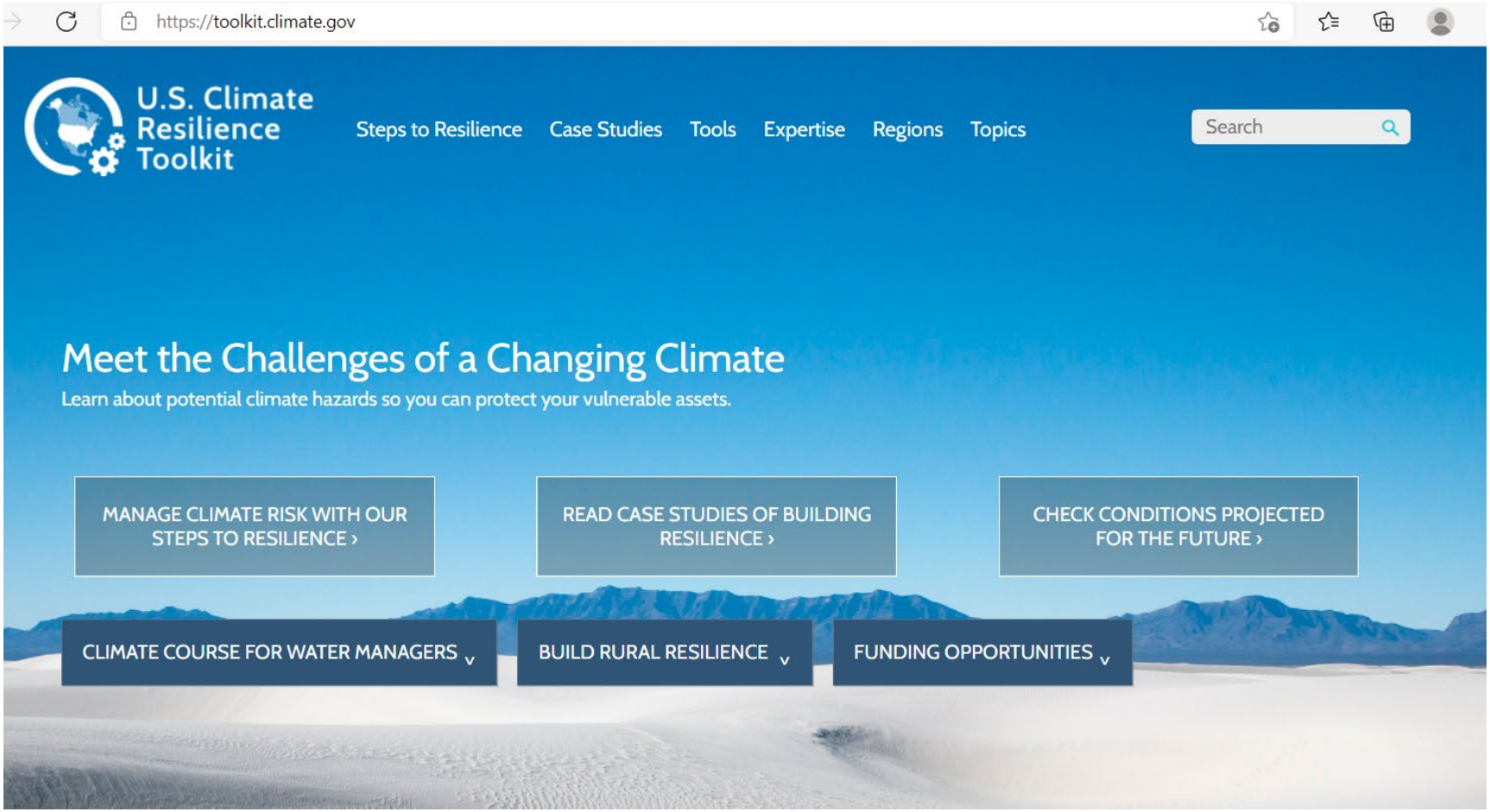
Links for further information:
Common Changes Box: TS.4.3.1, TS.4.3.2.6
Central and Western North America: TS.4.3.2.6, Table TS.5, Atlas.9.5, 12.4.6
Northern North America: TS.4.3.2.6, Atlas.9.5, 12.4.6, 12.4.9
Eastern North America: Atlas.9.5, Table TS.5, 12.4.6
Northern, Southern Central America and the Caribbean: TS.4.3.2.4, TS.4.3.2.6, TS.4.3.2.7, Atlas.9.5, Atlas.10.5 12.4.4, 12.4.6 and 12.4.7

Climate impact on Pennsylvania

- By 2050, five-fold increase in dangerous heat days
- Extreme weather: Drought severity increase of 50%
- Increased amount and concentration of rainfall
- Heightened flooding and stormwater runoff damage
- 20% to 60% reduction in snowfall
- Increased crop damage by heat, pests, and summer drought

Building Climate Resilience




https://toolkit.climate.gov
U.S. Climate Resilience Toolkit
Steps to Resilience
Case Studies
Tools
Expertise
Regions
Topics
Search
Meet the Challenges of a Changing Climate
Learn about potential climate hazards so you can protect your vulnerable assets.
MANAGE CLIMATE RISK WITH OUR STEPS TO RESILIENCE ›
READ CASE STUDIES OF BUILDING RESILIENCE ›
CHECK CONDITIONS PROJECTED FOR THE FUTURE ›
CLIMATE COURSE FOR WATER MANAGERS
BUILD RURAL RESILIENCE
FUNDING OPPORTUNITIES

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Local Governments for Sustainability
CANADA

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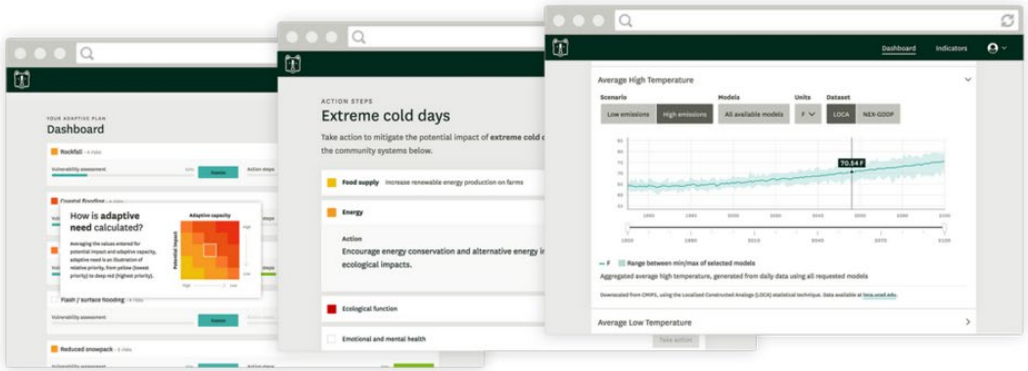
development. Active in 100+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equ
circular development. Our Members and team of experts work together through peer exchange, partnerships and capacity buildin
change for urban sustainability.

cal Governments
or Sustainability
CANADA

Why choose BARC?

- A proven and widely-recognized adaptation framework
- Program features are flexible and tailor-able to your municipality
- Builds internal capacity and multi-stakeholder collaboration
- Access to innovative tools and resources
- Collaborate with experts and peers in other municipalities
- Prepare for costly and extreme weather events
- Make informed decisions to improve resilience

ICLEI
Local Governments
for Sustainability
USA



emperate Adaptation Planner

Resilience Roadmap

A Collaborative Approach to Multi-Jurisdictional Planning

Home | 1 Intergovernmental Preparation & Coordination | Convene | Understand | Prepare | 2 Planning & Strategy Development | Develop | Prioritize | Commit | 3 Plan Adoptio Implementation & Ev

To mitigate hazards and risks, the Resilience Roadmap offers comprehensive guidance for federal, state, and local entities to effectively convene at the regional level for adaptable and holistic planning. This multi-jurisdictional approach requires major cooperation across boundaries, considerable reliance on partnerships and multi-agency collaborations, and significant utilization of interdisciplinary teams.

WHAT IS RESILIENCE?

The ability to anticipate, p
adapt to changing conditic
withstand, respond to, anc
from disruptions through
holistic planning and tech

Step-by-Step Process

To constructively lead intergovernmental planning efforts with tangible outputs, follow these steps in order:

1. Intergovernmental Preparation and Coordination
2. Planning and Strategy Development

Contact Eliza Hotchkiss wi
about the resilience plann

Adaptation Clearinghouse

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ADAPTATION PLANS & PROGRESS

TURN ON EMAIL NOTIFICATIONS

Small Communities

Small communities and rural areas (defined as municipalities with a population under 50,000 people) face unique climate adaptation challenges. Small communities often have limited administrative capacity within government, less diversified economies, more dependence on natural resources, and greater physical isolation from critical infrastructure and services. This page includes resources to help policymakers understand, plan, and prepare for impacts of climate change in rural areas and small communities.

Where relevant to the concerns of small communities, some resources from suburbs and counties with larger populations are also included.

If you are interested in these issues, please sign up for email updates to receive monthly notifications about all the latest resources on rural and small community adaptation.

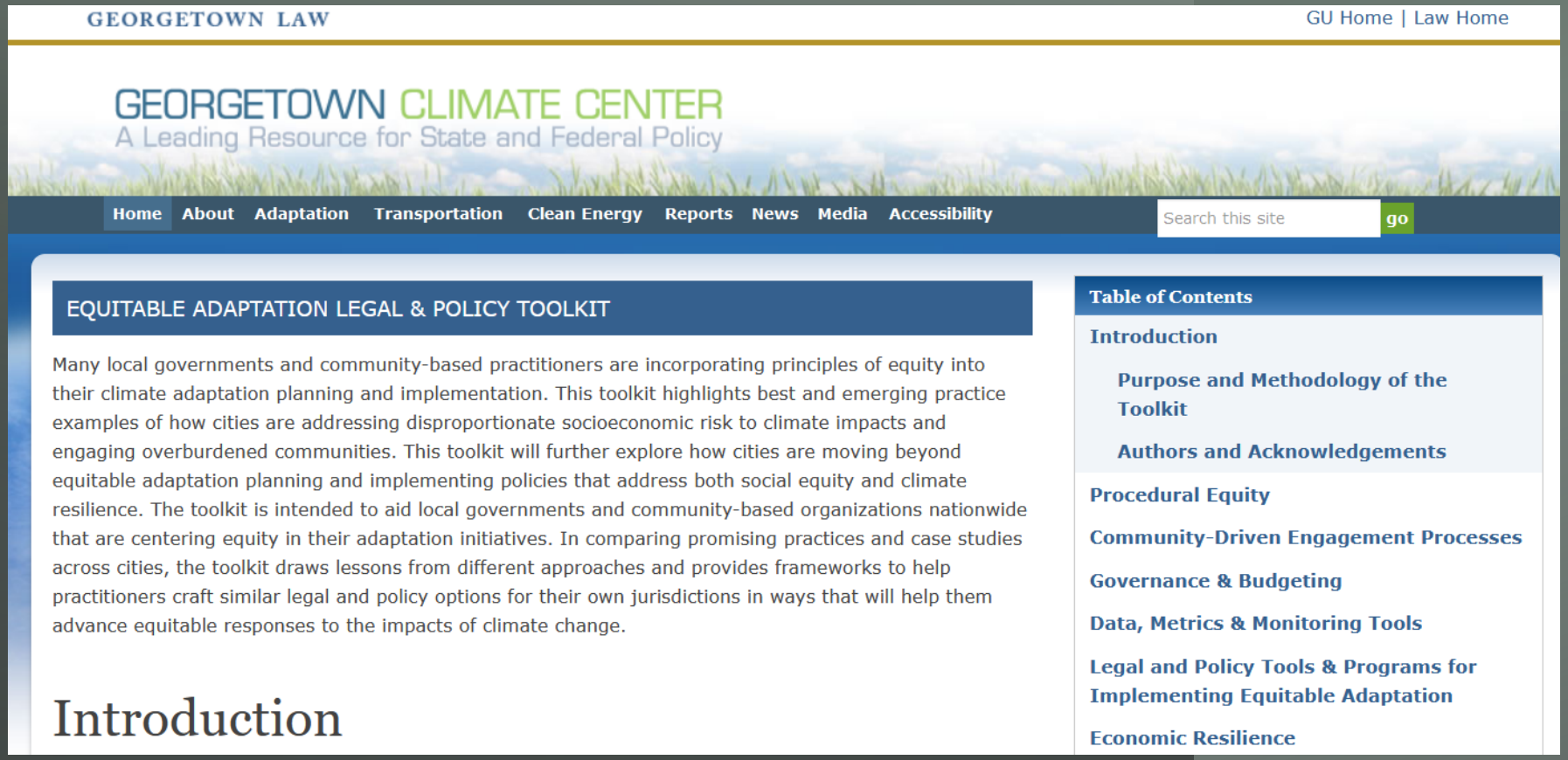
FIND STATE AND LOCAL ADAPTATION PLANS

The Georgetown Climate Center tracks progress states are making in implementing their adaptation plans and provides quick access to local plans in every state on their main website.

VIEW MAP

OR

SELECT A STATE



GEORGETOWN LAW

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GEORGETOWN CLIMATE CENTER

A Leading Resource for State and Federal Policy

Home About Adaptation Transportation Clean Energy Reports News Media Accessibility

Search this site go

EQUITABLE ADAPTATION LEGAL & POLICY TOOLKIT

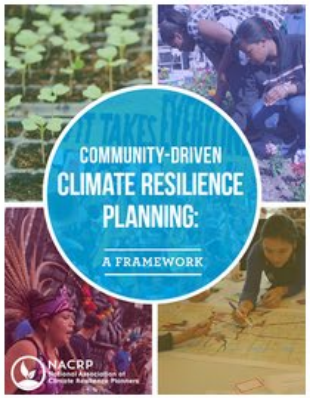
Many local governments and community-based practitioners are incorporating principles of equity into their climate adaptation planning and implementation. This toolkit highlights best and emerging practice examples of how cities are addressing disproportionate socioeconomic risk to climate impacts and engaging overburdened communities. This toolkit will further explore how cities are moving beyond equitable adaptation planning and implementing policies that address both social equity and climate resilience. The toolkit is intended to aid local governments and community-based organizations nationwide that are centering equity in their adaptation initiatives. In comparing promising practices and case studies across cities, the toolkit draws lessons from different approaches and provides frameworks to help practitioners craft similar legal and policy options for their own jurisdictions in ways that will help them advance equitable responses to the impacts of climate change.

Introduction

Table of Contents

MSC

Frameworks & Tools



Download

Community-Driven Climate Resilience Planning: A Framework

By Rosa Gonzalez in affiliation with NACRP

Published 2020

Learn how Community-Driven Climate Resilience Planning is a vital opportunity for cities to reorganize resources, foster meaningful relationships, and develop placed-based innovations that support all people to thrive despite climate disruption.

CHARACTERISTICS OF COMMUNITY-DRIVEN CLIMATE RESILIENCE PLANNING

EFFECTIVE

Solutions developed and driven by the people most impacted by the problem are more responsive and have better success in achieving their stated outcomes. Community-Driven Climate Resilience Planning supports public processes for developing the solutions that people really need by building the local expertise, relationships, and human power necessary to implement them. Community-driven processes work to build the conditions for resilience even before the plans have been implemented.

PLACE-BASED

The causes and consequences of climate change are global in nature while the most viable solutions for addressing them are local and regional. Effective climate resilience plans are those that are rooted in the cultural and ecological assets of a given region, address the unique challenges of that region, and facilitate meaningful participation among its residents, thus contributing to an increased sense of 'place.'

EQUITABLE

In both content and process, Community-Driven Climate Resilience Planning processes actively address the inequities that contribute to vulnerability. Community-Based Organizations (CBOs) help to identify and address barriers to participation so that vulnerable and impacted residents have equal voice in the planning process. All stakeholders work to ensure that resiliency plans include equity indicators and the necessary policy and systems change efforts to achieve equity.

DEMOCRATIC

Community-driven processes support healthy decision-making by: building the capacity of residents to participate in public policy and planning; nurturing a culture of participation in neighborhoods; and educating decision-makers so that they can more effectively represent the resiliency needs and interests of their constituents, and engage communities as assets to preparedness and resilience.

COLLABORATIVE

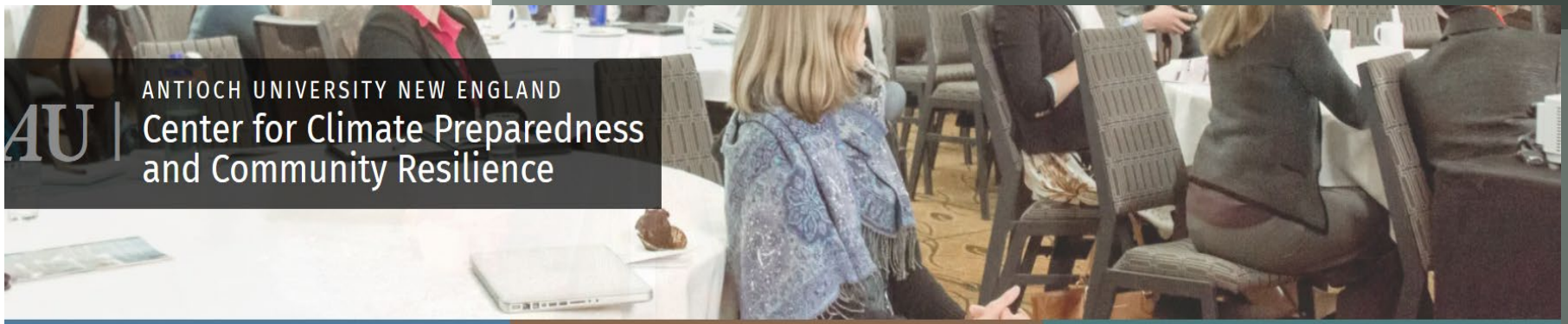
Climate resilience requires us to collaborate in new ways to develop solutions that are grounded in shared values and an understanding of the problems impacting vulnerable communities. Collaborative structures, such as partnerships and alliances, are vital to community-driven planning processes because they increase human capacity to implement solutions.

LIFE-AFFIRMING

Community-driven processes breathe life into the work of preparing communities for change and serve as an antidote to bureaucratic planning processes that can limit resident participation. They value living cultures by acknowledging not only the historical traumas that contribute to vulnerability, but also the cultural wealth and ecological wisdom of communities that is consistently ignored by conventional planning models. By integrating culturally relevant, creative, and embodied expression throughout the process, planning can rekindle connection to people and place, which is so vital to community stewardship.

INTEGRATIVE

Community-driven processes engage multiple sectors and disciplines in a "whole systems" approach to understanding problems and developing solutions. In this way, they foster multi-stakeholder partnerships that can more effectively carry out implementation.



WEBINARS

Thank you for joining us for the **Weathering Change: Local Solutions for Strong Communities** webinar series, co-sponsored by NOAA. Stay tuned for information about our next webinar.

You can use the **Past Webinars link** below to view the recordings of any of our past webinars in the Weathering Change webinar series.

Over this past year, we launched a new webinar series

REPORTS

Applied Research

NEW: How do we build community resilience to disasters in a changing climate? A review of interventions to improve and measure public health outcomes in the Northeastern United States

LOCAL SOLUTIONS CONFERENCES

2021 Local Solutions: Climate Preparedness Communities of Practice

Tuesday, March 16th, 2021

Thank you to all of the participants in our 2021 Virtual Local Solutions:

Contact your regional or the national VOAD

Southeastern PA
Voluntary Organizations
Active in Disaster

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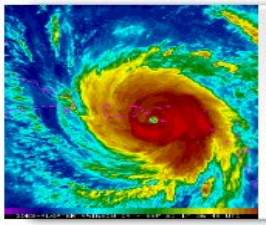
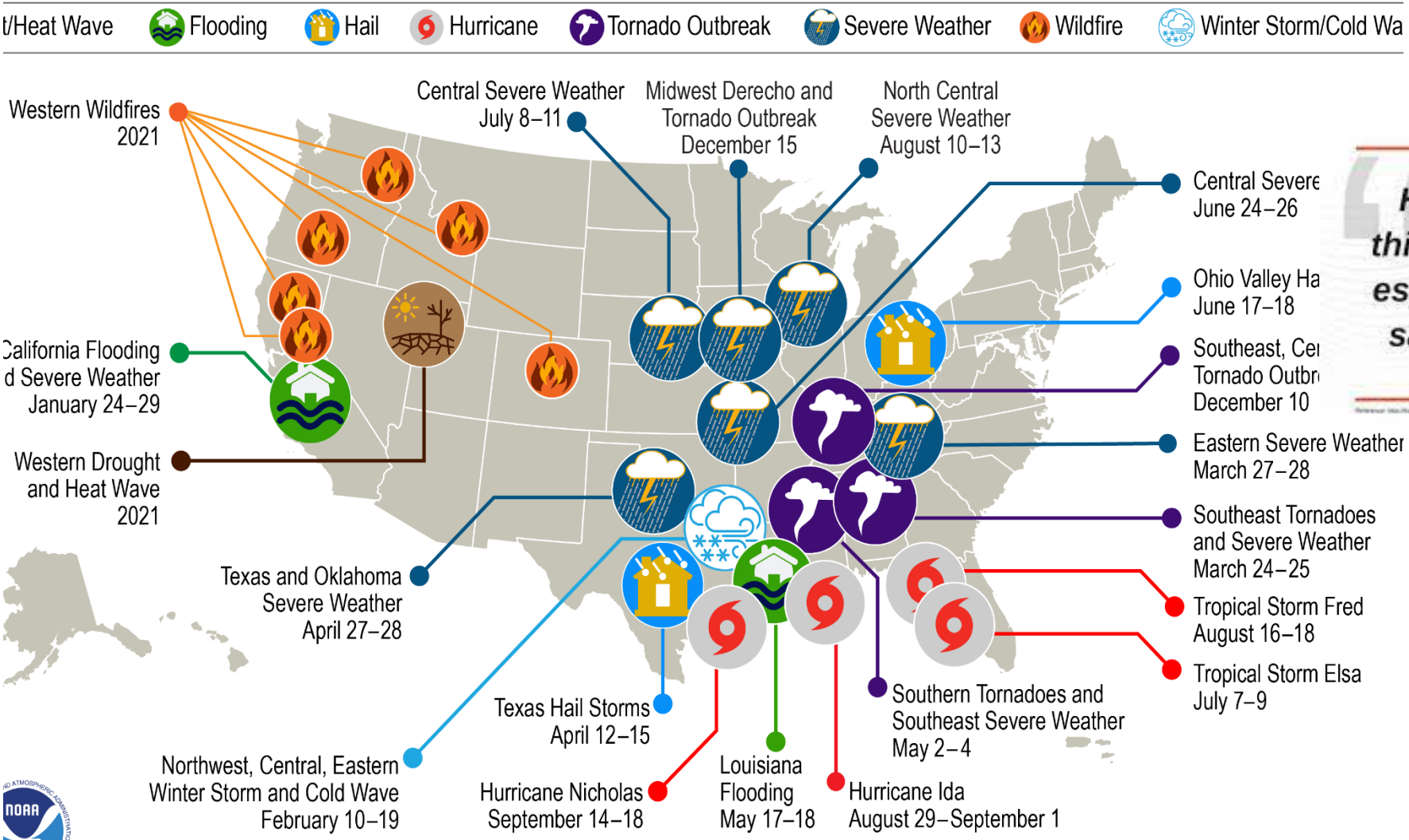


Hurricane Maria Long Term Recovery

The Greater Philadelphia Long Term Recovery Committee helped residents of Puerto Rico who have relocated to Pennsylvania in the wake of the devastation caused by Hurricane Maria in September 2017. SEPA VOAD members join various faith-based, non-profit, governmental, business, and other community-focused agencies and organizations to help with a multitude of disaster-related needs. **Read more...**

U.S. 2021 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the ***20 separate billion-dollar weather and climate disasters that impacted the United States in 2021***