

# Prince William County

## Community Energy and Sustainability Master Plan (CESMP)

Sustainability Commission Check-In

February 2023

# Presentation Objectives



Review CESMP and County Goals



Methodology Review of GHG Forecast/Reduction Scenario



Review CESMP Actions and Feedback



Review Action Prioritization Process



Discussion Workgroups

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# AECOM Team Introductions



**Emily Dhingra**  
Climate Adaptation  
and Resiliency



**Tauhirah Abdul-Matin**  
Project Manager



**Vanessa Goh**  
GHG Mitigation



**Erin Falvey**  
Deputy Project  
Manager



**Karen Massey**  
Senior Advisor



**Katrina Lewis**  
Senior Advisor



**Project Director**  
Ida Namur

# Review of CESMP Goals



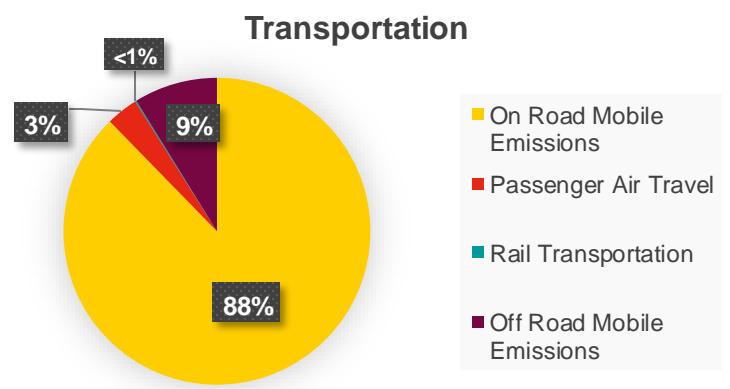
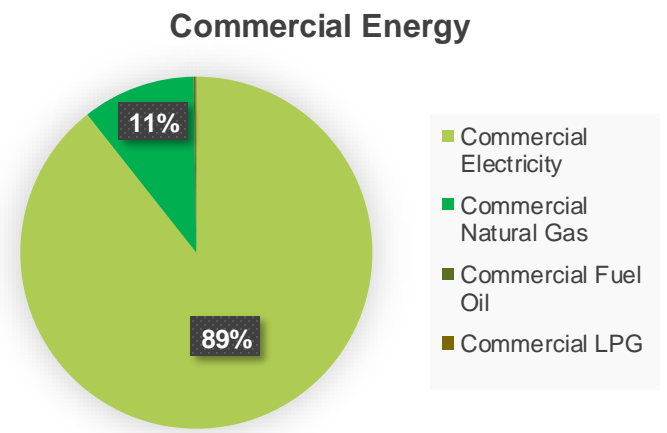
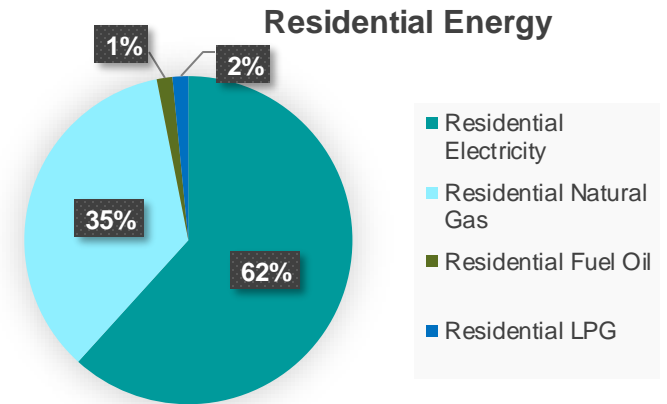
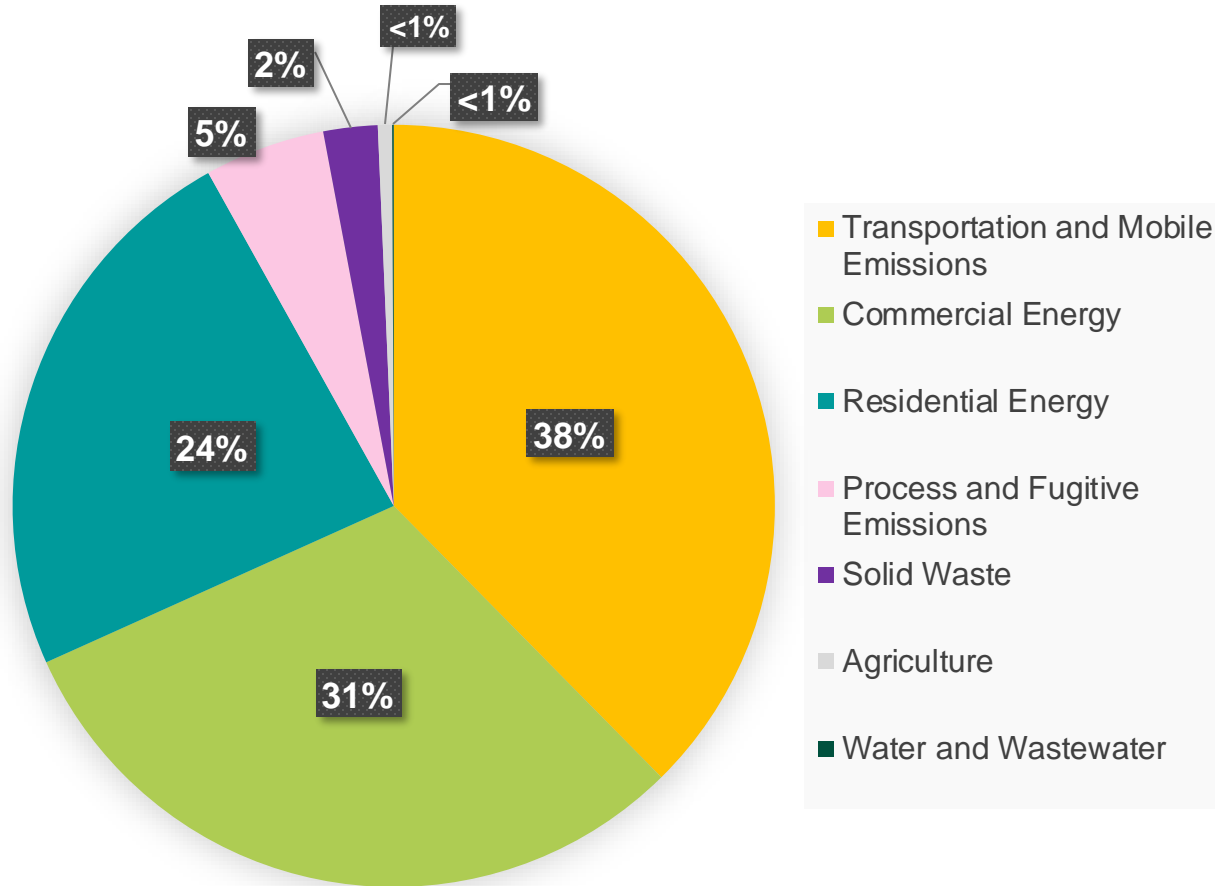
# MWCOG Climate & Resiliency Goals

1. Reduce County-wide GHGs by 50% from 2005 Baseline by 2030
2. Provide 100% Renewable Electricity County-wide by 2035
3. Provide 100% Renewable Electricity for County Government Operations by 2030
4. Carbon Neutral County Government Operations by 2050
5. Develop climate resilient actions to move towards being a Climate Ready Region by 2030

# Review of GHG Forecast & Reduction Scenario

How was the GHG reduction scenario developed and what was it used for?

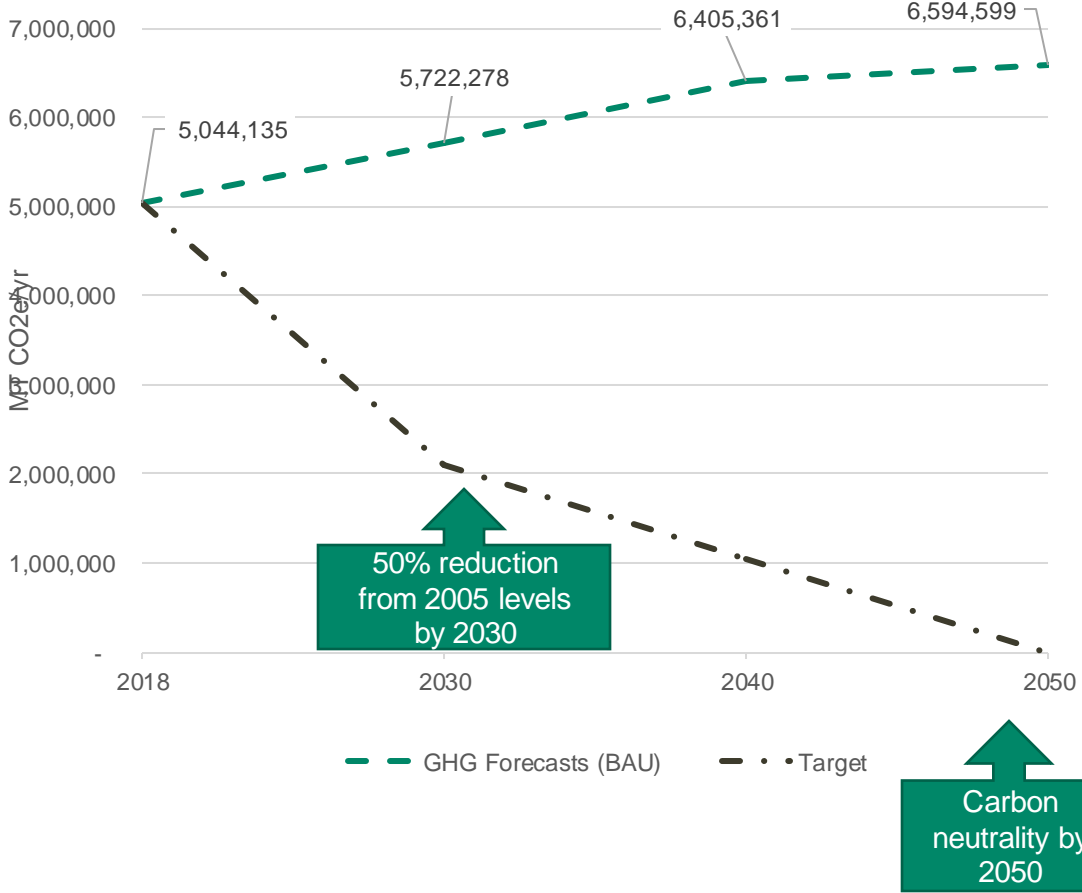
# 2018 GHG Emissions Inventory



# Emissions “Business as Usual” Forecasting

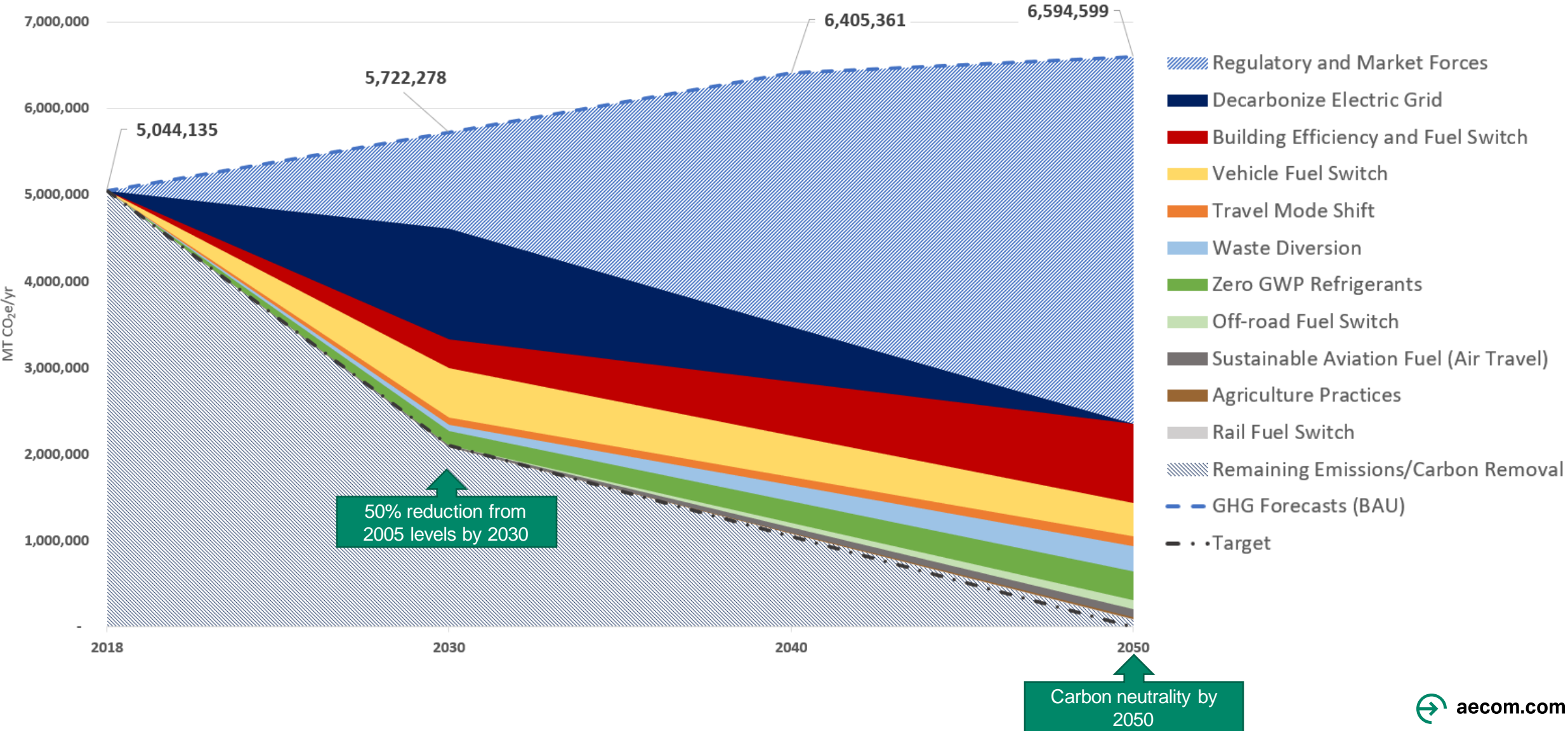
Emissions Source	Growth Indicator
Residential electricity and natural gas	Households from PWC Planning Office (constant electricity emissions factor)
Commercial electricity and natural gas	Non-residential square footage from PWC Planning Office/AECOM projections for employees and Digital Gateway square footage (constant electricity emissions factor)
On-road transportation	Vehicle miles traveled from PWC Transportation Division and emissions factors from MWCOG MOVES model
Aviation travel	Airport enplanement forecasts from the Washington-Baltimore Regional Air Passenger Origin/Destination Forecast Update
Rail transportation	Average weekday transit trips from MWCOG Transportation Demand Model
Wastewater treatment, waste generation, refrigerants	Resident population from PWC Planning Office
Agriculture	Acres of farmland from MWCOG What Our Region Grows Report
Fuel oil, LPG, off-road vehicles	No growth

30% increase in emissions from 2018 to 2050





# GHG Reduction Scenario



## Final 2030 GHG Reduction Scenario

Strategy	% of Total 2030 Reductions
<b>92% clean electricity</b>	<b>57%</b>
<b>50% of passenger and medium-duty vehicles are ZEV</b>	<b>24%</b>
<b>40% of HVAC/water heaters are highly efficient and electric</b>	<b>8%</b>
57% HFCs replaced with zero GWP alternatives	4%
5% mode shift from passenger vehicles to active/public transport	2%
60% waste diversion rate	2%
100% high-efficiency lighting and appliances	1%
15% zero emissions off-road equipment	1%
20% reduction in aviation emissions	<1%
10% reduction in agriculture emissions	<1%

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## Limiting Factors to Achieving GHG Mitigation Goals

The strategies represent potential technological pathways for the County to reach the 2030 target, but they are extremely ambitious and the County may have limited influence over their success.

Feasible County-led action alone cannot produce all reductions required due to limited jurisdiction and authority or influence.

The ability to achieve these strategies will rely on support from market factors and state and national level regulation. The plan will need to be transparent about the County's limitations and highlight where external action is needed.



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# **Review CESMP Draft Actions & Feedback**



# Development of Initial List of Draft Actions

## Vulnerability Assessment

Climate Hazards

Assets



38 Adaptation Actions

## GHG Analysis

Inventory

Reduction Scenario

Gaps Analysis



40 GHG Mitigation Actions

# Feedback on Draft CESMP GHG Mitigation Actions

New Mitigation Actions	Removed Actions / Actions that Need Clarification
<ol style="list-style-type: none"> <li>1. Implement a mandatory energy benchmarking program for PWC County government facilities.</li> <li>2. Encourage use of all-electric systems and equipment in new buildings and retrofits County-wide.</li> <li>3. Establish streamlined permitting for solar installations.</li> <li>4. Promote the use of micromobility options such as e-bikes and e-scooters through enhanced infrastructure and incentives.</li> <li>5. Adopt a PWC County government energy policy that outlines operational and purchasing requirements that increase energy efficiency.</li> <li>6. Adopt a zero-emissions off-road vehicles and equipment policy that requires low- or zero-emissions replacements.</li> <li>7. Implement a voluntary program to increase reforestation of lands throughout the County.</li> </ol>	<p>REMOVED:</p> <ol style="list-style-type: none"> <li>1. County staff advocate for a low-carbon building code and vote on energy code updates. Advocate for quicker adoption of the IECC code in Virginia.</li> <li>2. Require building owners to bring building energy efficiency in line with current adopted code when there are alterations, renovations, or additions.</li> </ol> <p>CLARIFICATIONS:</p> <ul style="list-style-type: none"> <li>• Carbon Offsets <ul style="list-style-type: none"> <li>• Best practice is to not purchase carbon offsets for interim target compliance. Offsets should only be used for net zero target compliance/target yet (SBTi, ISO). Will be discussed in "Remaining Emissions" section of the CESMP.</li> </ul> </li> <li>• Keep both actions or remove one: <ul style="list-style-type: none"> <li>• Action 4: "Develop additional solar incentives with input from stakeholders such as the Residential Solar Task Force. Incentives can include financial discounts, streamlined permitting, or waived fees."</li> <li>• Action 4.1: "Establish streamlined permitting for solar installations."</li> </ul> </li> <li>• Motorized micromobility action clarification: <ul style="list-style-type: none"> <li>• Suggestion for "action focused on incentivizing use of e-bikes as a mode shift strategy. This could involve building more bike paths as well as potential cost rebates for purchase of e-bikes"</li> <li>• Should the action focus be on incentives for private purchasing of e-bike/scooters or should it include incentives to promote the use of existing micromobility services in the County?</li> </ul> </li> </ul>

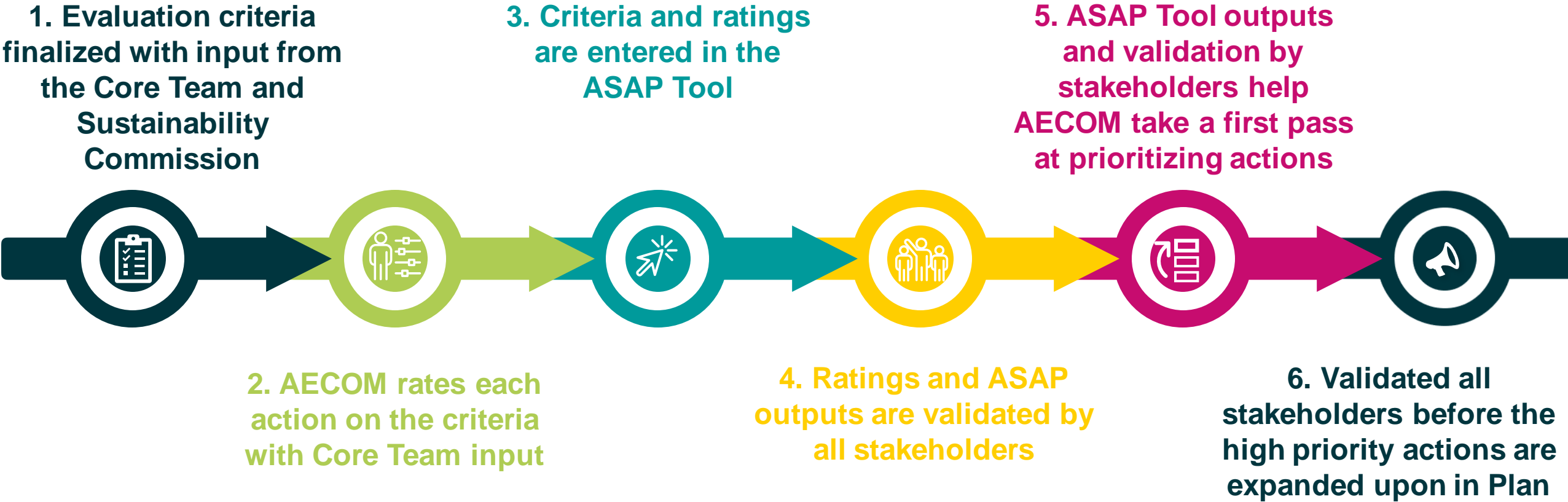
# Feedback on Draft CESMP Climate Adaptation Actions

New Adaptation Actions	12 Removed Actions – Examples
Develop stormwater system modeling focused on areas with existing flooding issues and are outside the mapped FEMA floodplain.	2 Conduct focused vulnerability assessment on sea level rise and storm surge within the coastal flood risk area areas of the county to determine at-risk structures and infrastructure. Evaluate future land use planning in areas with high-risk for permanent inundation by sea level rise.
Investigate the potential for creating micro grids within the County to provide stable energy supply during times of extreme cold weather.	7 Increase preparedness education about heat-related health issues for healthcare providers and the public.
	8 Expand or enhance early warning systems and emergency preparedness messaging.
	9 Identify options for effective post-event emergency relief considering future conditions hazards and facilitate public reporting of incidents and problem areas.
	12 Work to increase Community Rating System class (currently 7) to increase resilience and increase flood insurance discount for residents.
	14 Create new cooling center locations where community members can stay during times of extreme heat. Can be existing locations such as libraries or other public buildings. Choose locations that are accessible to socially vulnerable populations. Advertise and add features to emergency alert system to notify community members of cooling centers.
	32 Identify locations of Safe Rooms. Expand public access to safe rooms and increase community awareness.

# CESMP Action Evaluation & Prioritization Process



# CESMP Action Prioritization Process



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# Evaluation Criteria

Category	Definition
Primary Benefits	An estimate of GHG reduction and climate hazard risk reduction resulting from the actions (note: these two evaluation criteria will be included in the analysis)
Co-Benefits	Benefits generated by climate actions beyond the primary benefits of emissions reduction and risk reduction
Feasibility	How easy or difficult it will be to implement the action

# ASAP Tool



Step 1:  
Emissions and Climate Hazard Context

Step 2:  
Action Development

Step 3:  
Initial Screening

Step 4:  
Action Refinement

Step 5:  
Criteria Selection & Weighting

Step 6:  
Action Rating

Step 7:  
Final Prioritisation

Action ID	Action Title	Emissions Reduction				
		Emissions Source Category(ies)	Percent of Total Emissions Addressed	Extent	Reduction Potential	Uptake Potential
	<i>i</i> <a href="#">Clear All Column Filters</a>					
A	Ordinance: Require renewable energy systems in new non-residential development	Stationary Energy-Commercial and institutional buildings and facilities	9%	0-19%	40%-59%	80%-100%
B	Incentive: Low interest solar loan program	Electric Grid - Scope 2	21%	80%-100%	80%-100%	0-19%

Action ID	Action Title	Risk Reduction			
		Climate Hazard Category(ies)	Hazard	Coverage	Effectiveness
	<i>i</i> <a href="#">Clear All Column Filters</a>				
S	Extend/Upgrade Existing Seawalls	Coastal Flooding	29%	80%-100%	80%-100%
T	Construct Living Shoreline/Berm	Coastal Flooding	29%	0-19%	40%-59%

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Action ID	Action Title	Health and Wellbeing	Environment	Economic Prosperity	Inclusivity and Civil Society		Authority	Support	Financing and Funding	Technology
		Air Quality	Habitat	Cost of Living	Stakeholder Engagement	Social Justice	City Authority	Political Acceptability	Funding Source Secured/Identified	Technology/Market Readiness
	<input type="button" value="Clear All Column Filters"/>									
A	Ordinance: Require renewable energy systems in new non-residential development	Neutral	Neutral	Somewhat Positive	Neutral	Neutral	Yes, but would require amending existing policy	Very Politically Challenging	No funding secured/identified	Ready with Support
B	Incentive: Low interest solar loan program	Neutral	Neutral	Somewhat Positive	Somewhat Positive	Very Positive	Yes, under existing policy	Politically Popular	Identified	Market Ready
C	Program: Community Solar	Neutral	Neutral	Neutral	Very Positive	Somewhat Positive	Yes, but would require new policy	Neutral or Unclear	Partially Secured	Market Ready



# ASAP Tool

Step 1:  
Emissions and Climate Hazard Context

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Action Development

Step 3:  
Initial Screening

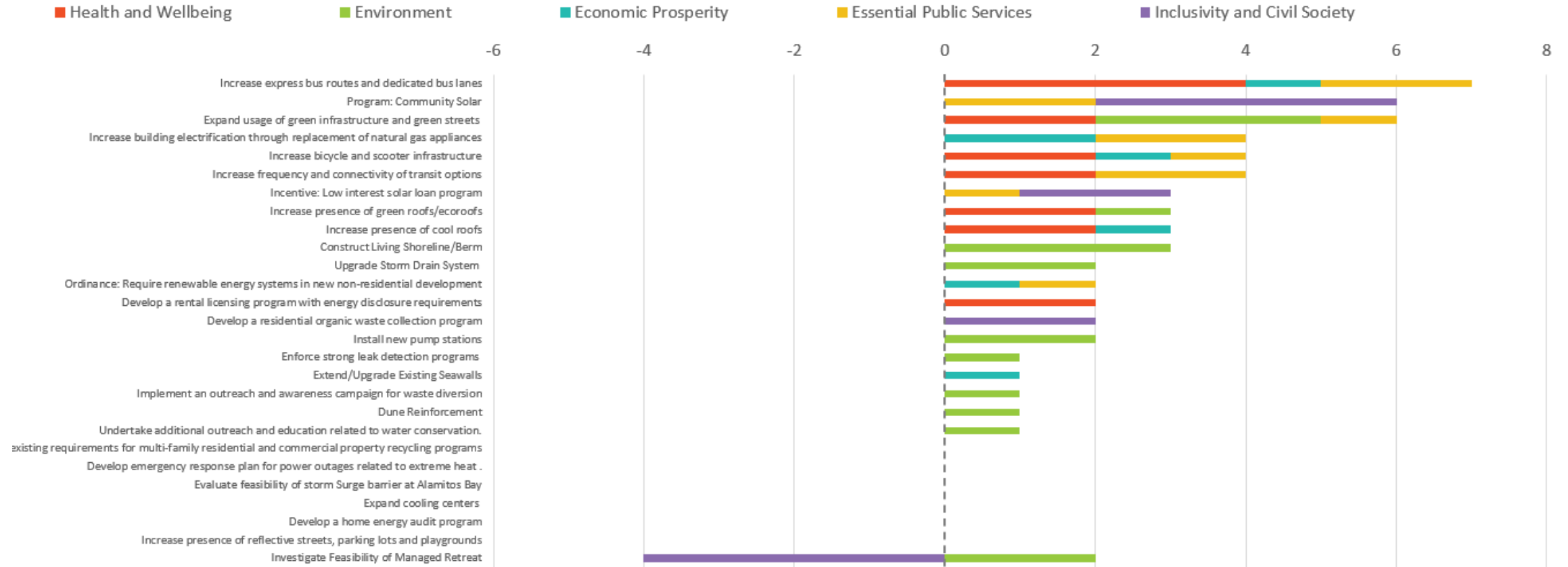
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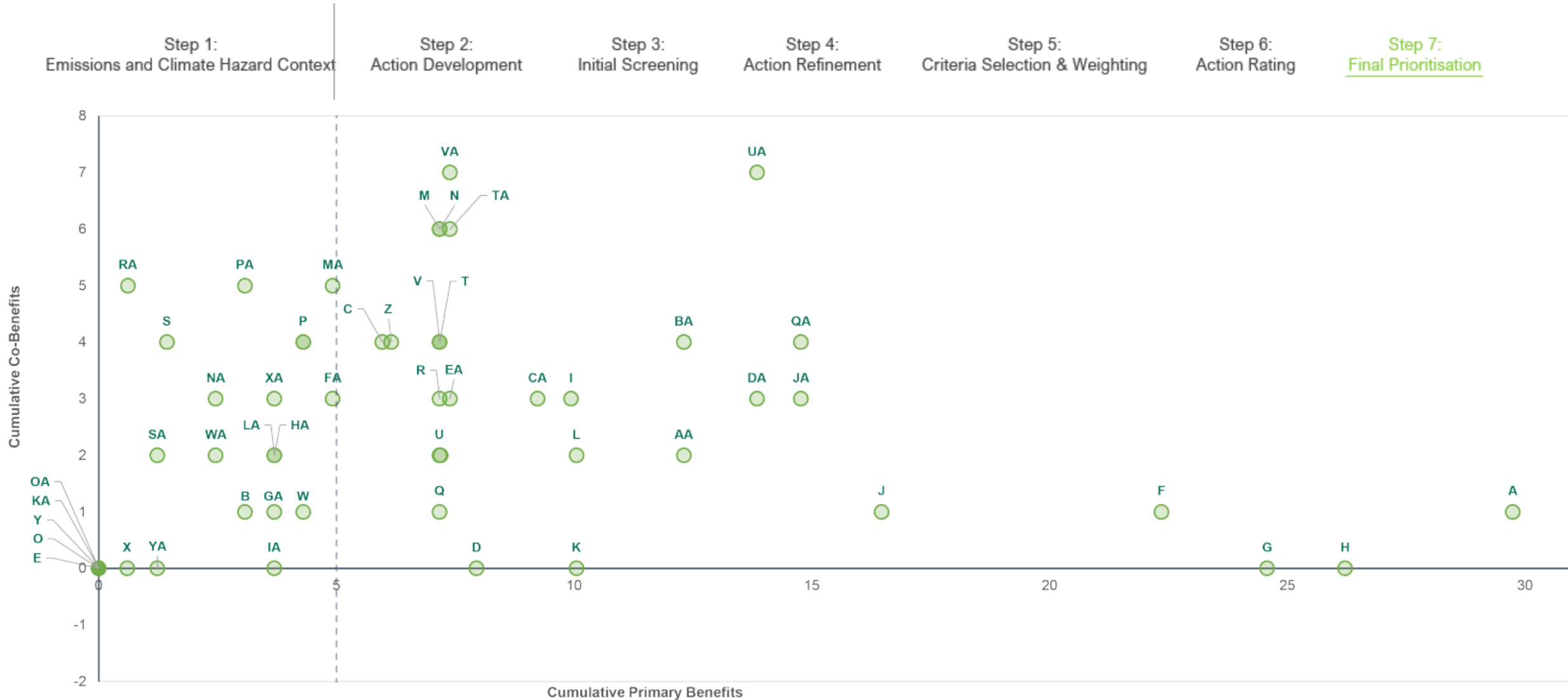
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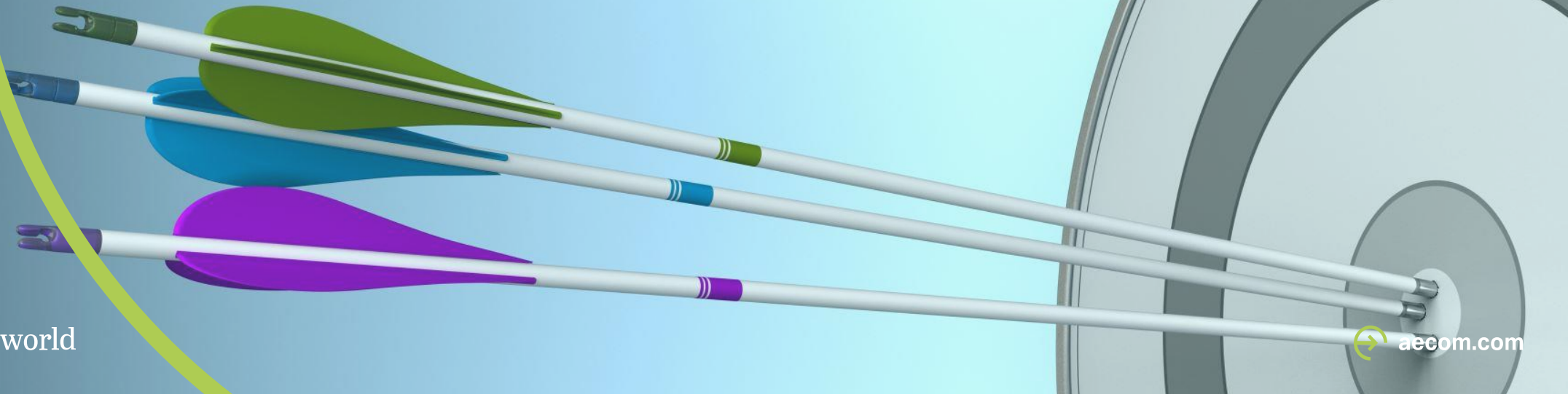
## Co-benefits Criteria Score



# ASAP Tool



# CESMP Action Evaluation Criteria



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# Evaluation Criteria

The Core Team and Commission were tasked with:

- Selecting up to 8 co-benefit and feasibility criteria or suggesting new criteria.
- Determining if definitions should be modified.
- Identifying if any weights should be applied.

Category	Definition
Primary Benefits	An estimate of GHG reduction and climate hazard risk reduction resulting from the actions (note: these two evaluation criteria will be included in the analysis)
Co-Benefits	Benefits generated by climate actions beyond the primary benefits of emissions reduction and risk reduction
Feasibility	How easy or difficult it will be to implement the action

# Draft Evaluation Criteria

Co-Benefits	
<b>Racial Equity &amp; Social Justice</b>	Impact on environmental or economic disparities such as disproportionate levels of air quality, access to transit, flood risk, energy burden etc.
<b>Air Quality and Public Health</b>	Impact on life expectancy or incidents of diseases or deaths attributed to air or water pollution, poor sanitation, or lack of access to nutrients.
<b>Economic Prosperity</b>	Impact on the employment rate, access to quality jobs (full-time versus temporary; high-paying versus low-paying), income and social mobility, and/or total number of jobs.
<b>Environmental Stewardship</b>	Impact on the creation, preservation, or restoration of natural environments.
<b>Resource Conservation</b>	Increase resource conservation through water conservation, material consumption and waste reduction, and natural environment conservation, creation, or regeneration.
<b>Local Employment/Green Jobs</b>	Impact on the employment rate and/or total number of jobs.
<b>Cost of Living</b>	Impact on upfront costs and/or savings (e.g., utility costs, travel costs, etc.) to residents.

Feasibility	
<b>County Authority</b>	Does the County have the legal authority to implement this action or would it need to be implemented by another entity, such as the national government, a utility or agency outside of the County, or the private sector?
<b>Funding Source Identified or Secured</b>	Has full or partial public funding for this action been secured, or has a potential funding source been identified?
<b>Implementation Capacity</b>	Does the County have the appropriate internal resources (non-financial) to implement and/or a plan to increase resources to implement?
<b>Private Investment</b>	Beyond any public funding that is currently secured or identified, how much additional private capital would be required to implement the action (capital expenditure)?
<b>Alignment with County Policy</b>	Is the action aligned with existing County policy? For example, does it further the stated goals of the County's Strategic Plan?
<b>Alignment with Regional/State/National Policy</b>	Does the action align with or promote regional, state, or national policies and priorities?
<b>Public Support</b>	Is the behavior or technology change encouraged by this action favored or disfavored based on public opinion?



# Post-Core Team Review

Co-Benefit	
<b>Organizational Diversity, Equity and Inclusion</b>	Impact on environmental or economic disparities such as disproportionate levels of air quality, access to transit, flood risk, energy burden etc.
<b>Cost Savings</b> <i>New Core Team Suggestion</i>	An initial investment that lowers recurring or annual costs paid for by County taxpayer money such that cost savings could be used to fund additional GHG reduction and hazard risk reduction programs.
<b>Resource Conservation</b>	Impact on natural resources, such as water, raw materials, and the natural environment.
<b>Lead by Example</b> <i>New Core Team Suggestion</i>	Action clearly demonstrates leadership in the promotion of the sustainable consumption of energy and natural resources (per Strategic Plan Objective SG-2) by way of an outreach initiative, educational tool, or cutting-edge technology that the general population will be directly impacted by or visually observe in everyday affairs.

Feasibility	
<b>County Authority</b>	Does the County have the legal authority to implement this action or would it need to be implemented by another entity, such as the national government, a utility or agency outside of the County, or the private sector?
<b>Funding Source Identified or Secured</b>	Has full or partial public funding for this action been secured, or has a potential funding source been identified?
<b>Implementation Capacity</b>	Does the County have the appropriate internal resources (non-financial) to implement and/or a plan to increase resources to implement?
<b>Cost to the County</b>	What is the magnitude of upfront and operational costs to the County from the implementation year to 2030? Example cost buckets: 0-100K, 10k-500k, 500k-\$1M+

# Stakeholders Engagement

How will the stakeholders be  
involved in the planning process?

# Upcoming Engagement

## 04 Climate Action Plan

Create PWC's CAP that sets forth a roadmap for meeting the County's climate goals and implementing prioritized actions.

## 03 Prioritize Efforts

Leverage an action evaluation framework to prioritize high impact opportunities to meet the County's climate goals.

# Plan Approach

Developing Prince William County's Climate Action Plan

## 01 Existing Effort Review

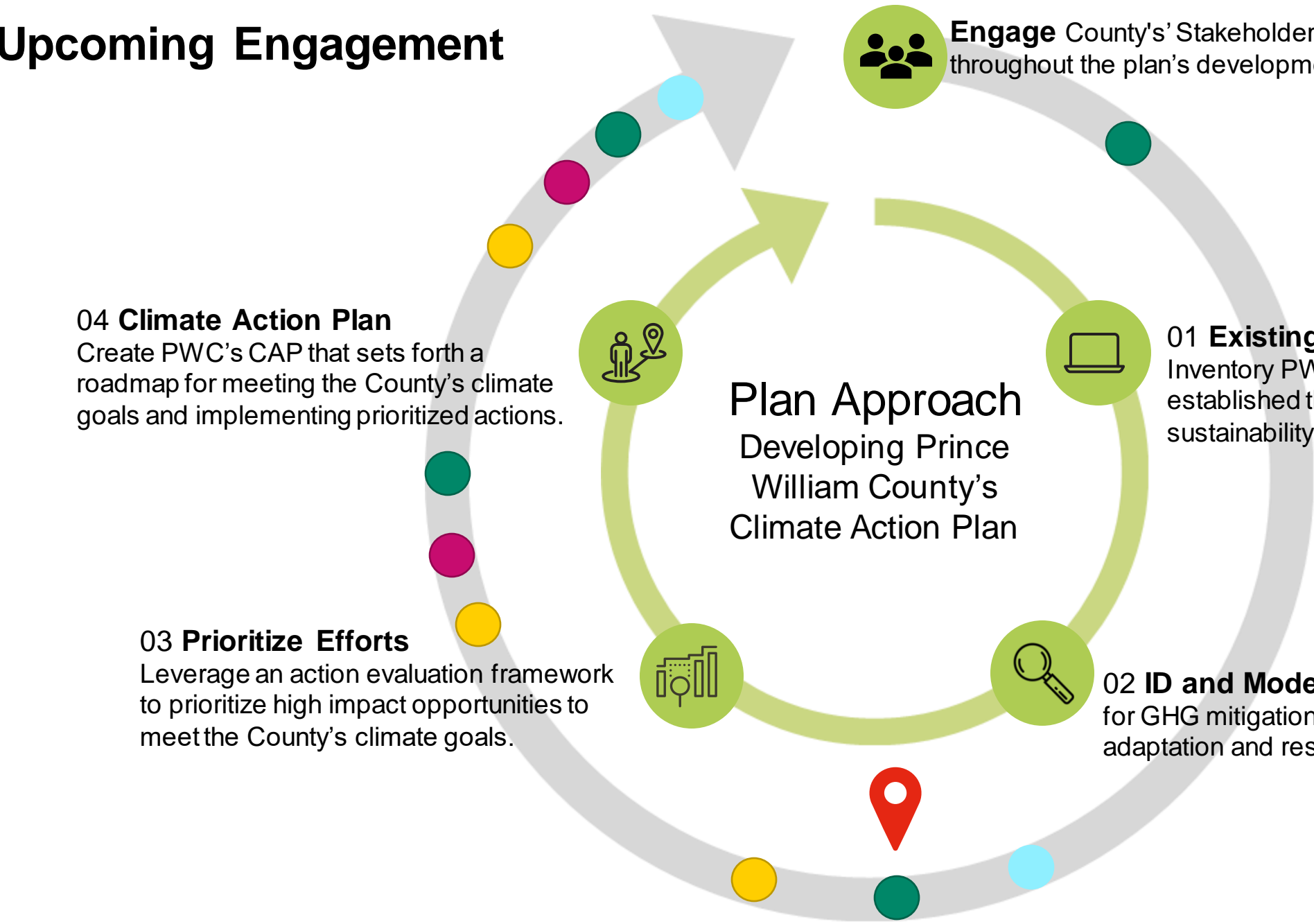
Inventory PWC's goals and actions established through existing climate and sustainability plans, policies, and efforts.

## 02 ID and Model Opportunities

for GHG mitigation and climate change adaptation and resiliency.

**Engage** County's Stakeholders throughout the plan's development.

- Board
- Commission
- Townhalls
- Workgroups
- Core Team



# Workgroups

## 1 Building Efficiency and Decarbonization

- Building Trades (HVAC, electrician, plumbers)
- Builders
- Solar Installers
- Landlords/Property Managers
- Tenants' rights organizations
- Virginia PACE Authority
- Utility representative (Dominion, NOVEC, PW Service Authority)
- Virginia Public Utilities Commission
- Residential Solar Task Force
- Schools/Universities/Colleges
  - Prince William Public Schools
  - NVCC
  - George Mason
- Relevant elected officials/public authorities (with a stake in utilities, buildings, regulations)
- Economic Development Rep
- Data Center Coalition
- Citizens Climate Lobby
- Commercial Development Review Committee
- NAIOP (Commercial Real Estate Development Association)
- NVBIA (Northern Virginia Building Industry Associations)

## 2 Zero Emissions Transportation and Land Use Efficiency

- Public transit operators
  - WMATA and VRE
  - Omniride/PRTC
- Large fleet operators (companies)
- Active transportation groups (e.g., biking)
- EVSE technicians
- Developers
- Relevant elected officials (with a stake in the transportation and land use sectors)
- Private transportation businesses
- Schools/Universities/Colleges
- Trails and Blueways Council
- Civic Associations
  - Lake Ridge Occoquan Coles Civic Association
  - Woodbridge Potomac Communities Civic Association
  - Mid County Civic Association of Prince William
- Prince William Conservation Alliance
- Northern Virginia Transportation Authority
- Northern Virginia Regional Commission

## 3 Climate Adaptation and Resiliency for Vulnerable Population

- Equity groups
- Green organizations
- Youth/student lead groups
- Communities on the coasts
- Community Partners in Equity and Inclusion
- Senior citizen advocacy
- Veteran advocacy
- Cooperative Council Administers for homeless populations
- Townships (Regarding heat island effect)
- VOICE
- Faith Alliance and Climate Solutions
- Social Services
- Streetlight Ministries