

CECAP Energy Framework

NOTE: The content in the “actions” sections beginning on page 4 is the product of the Working Group Energy subgroup, and has not been revised to reflect policies or programs that already may exist to address the action.

Background

ICF and MWCOG are supporting Fairfax County as they work towards the creation of the County’s Community Energy and Climate Action Plan (CECAP). CECAP will focus on actions that community members can take to address climate. Working Group members have already made progress toward the plan by establishing greenhouse gas (GHG) reduction goals including a long-term goal and a pending interim year goal. The goals established and pending from the previous meetings are:

Long-term goal: Carbon neutrality by 2050, with at least 87% coming from emissions reductions from a 2005 base year.

Interim goal (pending): 50% reduction by 2030 from a 2005 base year.

As Working Group and community meetings progress, we will continue to develop the plan and finalize all goals for CECAP.

Purpose of this Document

The purpose of this document is to provide a framework for the Energy strategies that contribute to the CECAP. Strategies were discussed in the December and January working group meetings. This framework builds on the “Discussion Starters” document and has been updated based on ideas and discussions provided by the working group. Below, ICF has outlined sector specific ideas based on ICF’s prior plans and feedback received through CECAP stakeholder engagement and public outreach. CECAP stakeholders have been split into two groups with the goal of facilitating discussions. The two groups are:

- An energy group focusing on efficiency, renewables, generation, and supply. This group is tightly focused on energy issues with minor consideration of external variables.
- A transportation, land use policy, and waste and solid water group. This group has a more diverse focus.

Setting the Stage

As a next step, sector-specific subgroups of the CECAP Working Group will meet determine and prioritize the strategies that Fairfax County will use to reach its goals. ICF will be providing an initial set of *Impact Discussion Starters* and a *Prioritization Matrix* to frame impacts. These documents are intended to support discussion and help guide and inform stakeholder priorities. In upcoming meetings, members will use this document, along with the *Impact Discussion Starters*, and *Prioritization Matrix* to guide priorities and refine specific strategies, actions, and implementation for inclusion in the plan.

Language used throughout the framework documents

As the framework for CECAP has evolved, certain terms have taken on specific meaning. A list of defined terms is outlined below:

Sector: An area of emissions focus or an economic sector which generates carbon emissions from its energy use or economic activity.

Strategy: A broader set of actions or set of sub-sector work that can be modeled to understand emissions reductions.

Action: A project or specific technology that impacts greenhouse gas emissions within a strategy or sector.

Implementation: Programs or policies that support realization of actions.

Within the Implementation section of each strategy, we have categorized each specific implementation methods to indicate where the ability to impact change might exist. Within each strategy, implementation items are divided based on the following categories.

Category 1: Implementation programs and policies currently available to County: County measures and voluntary programs that the county can do right now.

Category 2: Implementation programs and policies that might become available to the County in the future: County programs and policies that the County might someday be able to do with state enabling legislation. Items in this section is work that the County and its stakeholders can advocate for at the state level.

Category 3: Implementation programs and policies that need Regional, State or Federal

Action: State and Federal measures and programs that the County will likely have the authority to do on its own. Items in this section is work that the County and its stakeholders can advocate for the state, regional or federal to do to support County goals.

Connecting to Fairfax Values

ICF has been working to connect strategies and actions to Fairfax County values. [One Fairfax](#) is a framework—or “lens”—that will be used to consider equity in decision-making and in the development and delivery of future policies, programs, and services. In this planning process, it will help county to look intentionally, comprehensively, and systematically at barriers that may be creating gaps in opportunity. Through the CECAP process, opportunities exist to ensure that ICF will work to create a plan that incorporates social and racial equity, economic opportunities, and health and environmental

justice impacts. In our upcoming meetings we will continue this discussion with the support of the initial framework provided in the *Impacts Discussion Starter* and *Prioritization Matrix*.

Social and Racial Equity: Strategies shall have connections to social and racial equity in alignment with the One Fairfax policy.

Economic Opportunity: Strategies shall contain an economic screen to understand the affordability of the measures and how they might create economic opportunities for the County. Costs and/or savings will be provided for each strategy later in the CECAP process.

Health and Environmental Justice: Strategies will also reflect health and environmental justice issues relevant to County residents and businesses. Pollutant reductions will be provided for each strategy later in the CECAP process.

CECEP Framework for Sectors and Strategies

Buildings and Energy Efficiency

Strategy #1: Increase energy efficiency and conservation in existing buildings

Strategy #2: Pursue beneficial electrification in existing buildings

Strategy #3: Implement green building standards for new buildings

Energy Supply

Strategy #4: Increase renewable energy in grid mix

Strategy #5: Increase production of onsite renewable energy

Strategy #6: Increase energy supply from renewable natural gas (RNG), hydrogen, and power-to-gas

Transportation

Strategy #7: Increase electric vehicle (EV) adoption

Strategy #8: Support efficient land use, active transportation, public transportation, and transportation demand management (TDM) to reduce vehicle miles traveled

Strategy #9: Increase fuel economy and use of low carbon fuels for transportation

Waste

Strategy #10: Reduce the amount of waste generated and divert waste from landfills and incinerators

Strategy #11: Responsibly manage all waste generated including collected residential and commercial waste, wastewater and other items.

Forestry and Land Use

Strategy #12: Support preservation, restoration, and expansion of Fairfax County's natural systems and public spaces

Buildings and Energy Efficiency

Strategy #1: Increase energy efficiency and conservation in existing buildings

Actions:

- **Action 1a:** Increase energy efficiency in Residential buildings:
 - 1) Upgrade lighting to LED throughout
 - 2) Weatherize, insulate, replace windows, and explore other building envelope improvements
 - 3) Upgrade Residential buildings with smart thermostats and install high-efficiency HVAC systems and other high-efficiency appliances in existing Residential buildings. Audit and improve monitoring and evaluation activity within residential buildings to reduce energy consumption.
 - 4) Upgrade facilities with geothermal exchange heating and cooling systems.
- **Action 1b:** Increase energy efficiency in Commercial buildings:
 - 1) Upgrade lighting to LED throughout
 - 2) Weatherize, insulate, replace windows, and explore other building envelope improvements
 - 3) Upgrade Commercial building control systems and install high-efficiency HVAC systems, motor systems, air compressors, materials handling equipment, process improvements, operational reviews and improvements (e.g., reducing operating hours for specific equipment, outreach and training) in existing Commercial buildings. Audit and improve monitoring and evaluation activity within commercial buildings to reduce energy consumption.
 - 4) Upgrade facilities with geothermal exchange heating and cooling systems.
- **Action 1c:** Upgrade Local Government existing buildings and streetlights. Upgrade building control systems, and install high-efficiency HVAC systems, motor systems, air compressors, materials handling equipment, process improvements, operational reviews, and improvements (e.g., reducing operating hours for specific equipment, outreach, and training). Retrofit government-owned streetlights to LEDs.
- **Action 1d:** Develop and expand district energy, and CHP systems for campuses and large developments
- **Action 1e:** Develop and/or expand gas and electricity efficiency, load management programs, demand response capabilities both with and without battery storage.
- **Emerging Technologies:** examples include microgrid systems, advanced refrigerants, fuel cells, façade controls, etc..

Implementation:

Category 1:

- Implementation of the [County Operational Energy Strategy](#)
- Incentive programs
 - Existing Residential and Commercial incentive programs include Virginia's property tax exemption for energy efficient buildings and WarmWise Home Savings Program.
 - New programs could be established by the County (i.e., grants, rebates, and tax credits). Examples include high performance building density zoning bonuses, permit streamlining, and property tax incentives. Audit programs, accelerated permitting or review for certain technologies or programs.
 - Economic Development incentives
- Enforcement and verification of energy codes

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- Encourage and allow use of [stretch codes](#) in local development projects
- Develop County code enforcement officer training and expand enforcement of building codes.
- Financing tools
 - Use of existing public/private partnerships for loan provision or other [financing tools](#), such as the Virginia SAVES Green Community Programs and Commercial Property Assessed Clean Energy (C-PACE)
 - Green Bank
- Business Growth
 - Incubation of startups, contractors and vendors to provide services to energy efficiency.
 - Partnerships with existing businesses to provide bulk services to homes and businesses (ESCO, technology providers, etc)
 - Job training programs (leverage Community Colleges, trade unions, apprenticeships)
- Educational and Outreach programs
 - Public Education events- by neighborhood, HOA, schools, libraries on a variety of subjects (technologies, financing, audits)
 - Contest, competitions and awards for energy efficiency. Can be showcases for homes and businesses, or performance related.
 - Educational videos, websites and information
 - School programming and youth education
 - Tenant engagement programs
 - Auditing equipment checkouts at library
- Technology Pilots in government buildings or for new developments

Category 2:

- Support ability to establish building energy performance programs
 - Energy benchmarking disclosure programs
 - Audits, benchmarking, energy disclosure and other real estate point of sale initiatives that encourage energy efficiency
 - Building energy retuning programs
 - Energy efficiency retrofit requirements
 - Residential and Commercial energy use disclosure at Time of Sale
 - Lighting and HVAC time of use regulations
- Support ability to establish new financing tools
 - Establishment of a local green bank or financing program to facilitate local projects

Category 3:

- Support updates to a more stringent building codes
- Support new or expanded state-level incentive programs
- Support development and expansion of utility-sponsored programs through Virginia's Grid Transformation and Security Act of 2018 (GTSA) and Virginia Clean Economy Act (VCEA) and use of RGGI funding
- Technology mandates (PV ready, electric water heaters/stove/etc)
- Support new federal and state financing tools

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- Advocate for Residential Property Assessed Clean Energy (R-PACE) to be passed at the state level
- Support for State and Federal Carbon fees, taxes and related programs

Buildings and Energy Efficiency

Strategy #2: Pursue beneficial electrification in existing buildings

Actions:

- **Action 2a:** Retrofit existing Residential buildings through heat pumps, split systems, ground source heat pumps (geothermal) and other cost-effective electrification technologies
- **Action 2b:** Retrofit existing Commercial buildings through heat pumps, VRF systems, and hybrid (electricity/ gas) furnaces
- **Action 2c:** Reduce the use of high GWP refrigerants
- **Emerging Technologies:** examples include: Hybrid, dual fuel and next generation heat pumps

Implementation:

- **Category 1: (see Building Strategy 1 for full list of program types)**
 - Incentive programs
 - Financing tools
 - Business Growth
 - Educational and Outreach programs
 - Technology Pilots

Category 2:

- Support local ability in implement [Building electrification](#) programs and requirements

Category 3:

- Support State and Federal rules on next generation refrigerants and refrigerant management systems
- Support State and Federal utility programs focused on beneficial electrification

Buildings and Energy Efficiency

Strategy #3: Implement green building standards for new buildings

Actions:

- **Action 3a:** Increase building code stringency for Residential and Commercial buildings
- **Action 3b:** Encourage new Residential and Commercial construction to be all-electric
- **Action 3c:** Encourage green building principles that align with natural systems such as passive strategies, biophilic design principles, green roofs and green spaces.
- **Action 4d:** Encourage reuse of existing buildings rather than teardown of older buildings using holistic design approaches and adaptive solutions.
- **Emerging Technologies:**

Implementation:

Category 1:

- Incentive programs (**see Building Strategy 1 for full list of program types**)
 - Pursue adaptive reuse of buildings and infrastructure
- Energy codes
 - Education of code officials on code enforcement
- Continue to lead by example within County buildings through [Fairfax's Green Building policies](#)
- Promote green Leasing models

Category 2:

- Support local Energy code adoption.
- Support ability to adopt LEED building standards, Net Zero Building policies or other green building policies
- Support ability to make energy modeling requirements for new buildings
- Support ability to establish municipal impact fees or escrows to ensure compliance with CECAP.

Category 3:

- Support statewide adoption of more stringent building codes
- Support new green building programs at state:
 - Updates to siting and permitting regulations to set GHG emission requirements for new Residential and Commercial buildings

Energy Supply

Strategy #4: Increase renewable energy in grid mix

Actions:

- **Action 4a:** Expand large offsite grid renewable energy in region including Solar, on and off-shore wind, hydroelectric and other emerging technologies.
- **Action 4b:** Expand grid storage technologies that support growth of renewable electricity on the grid.
- **Action 4c:** Encourage continued operation of existing nuclear electricity production in the region.
- **Emerging Technologies:**

Implementation:

Category 1:

- Support purchase of renewable energy projects and products by County government operations, residents and businesses through PPAs, and REC purchases
- Support growth of existing “opt in” Community Choice Aggregation programs to gain members and purchase renewable electricity.

Category 2:

- Support changes to Virginia’s Community Choice Aggregation policies to allow for “opt out” renewable electricity procurement on behalf of residents and businesses.

Category 3:

- Support continued participation in RGGI and other carbon electricity pricing schemes
- Support grid mix requirements set forth by the Virginia Clean Economy Act (VCEA)
- Support accelerated grid transformation that goes beyond the renewable energy requirements set forth by the VCEA
- Support updates to regional transmission grid projects that allow for expanded renewable energy.

Energy Supply

Strategy #5: Increase production of onsite renewable energy

Actions:

- **Action 5a:** Install Solar PV on existing buildings
- **Action 5b:** Encourage solar PV or solar PV ready in all new construction
- **Action 5c:** Encourage Community Solar projects in the County
- **Action 5d:** Encourage battery storage projects in existing buildings
- **Emerging Technologies:**

Implementation:

Category 1:

- Pursue incentives such as tax credits or grants for installing onsite renewables (including solar photovoltaic cells)
- Continue to pursue programs that lower soft costs of solar PV by streamlining permitting, lowering permit fees, and maintaining by-right zoning
- Support community solar projects by leveraging County land, buildings and schools.
- Support community solar projects by promoting to potential subscribers.

Category 3:

- Support policies at the state, regional and federal level that facilitate connections between onsite renewable energy installations and the strengthen the regional electricity grid.
- Consider and explore opportunities to expand retail electricity supplier competition as a pathway for expanded renewable energy.

Energy Supply

Strategy #6: Increase energy supply from renewable natural gas (RNG), hydrogen, and power-to-gas

Actions:

- **Actions 6a:** Expand supply and use of renewable natural gas, hydrogen, and power-to-gas opportunities. Connect with curtailment of renewable electricity sources.
- **Emerging Technologies:**

Implementation:

Category 1:

- Encourage pilot and demonstration projects that accelerate development of low carbon fuels. Leverage City assets for pilots.
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Category 3:

- Support accelerated decarbonization of natural gas supply through a gas renewable portfolio standard or other state level/federal policies
- Support policies for “green hydrogen” (hydrogen produced through electrolysis of water using renewably-sourced electricity) and power-to-gas (P2G) technologies to increase carbon-neutral energy generation at the state and federal level.
- Consider and explore opportunities to support expanded RNG, hydrogen and power-to-gas through expanded retail natural supplier competition.