

## Energy and the Built Environment

### Draft List of GHG Emission Mitigation Strategies - Version 2

**Format:**

Category - Description
1. Strategy <ul style="list-style-type: none"> <li>• Implementation Action               <ul style="list-style-type: none"> <li>- Tools</li> </ul> </li> </ul>

#### Location Efficiency - Site new facilities to maximize energy and transportation efficiencies.

1. All COG members direct new development to Activity Centers.
  - Update comprehensive plans to include energy and transportation efficiencies
  - Utilize economic development policies to foster green economies and green jobs
    - Regional Activity Centers
    - Eco-districts
    - Location efficient mortgages

#### New Buildings Design and Construction - Improve new building standards and incentives.

2. All new buildings by 2030 are designed to be net zero
3. All COG member jurisdictions adopt IgCC or equivalent building code/energy performance standard.
  - Adopt Architecture 2030 goal
  - Participate in the Living Building Challenge
  - Provide Net Zero or "off grid" Building Incentives
    - Passive House Standard
    - Energy Star
    - Green building bonus density programs

#### Existing Buildings Renovation and Retro-commissioning - Improve energy performance of existing buildings through renovations and retro-commissioning.

4. By 2030, existing buildings 30% more efficient compared to 2010 base
  - Adopt Architecture 2030 goal
  - Increase adoption of Energy Performance Contracts
  - Adopt requirements for energy improvements during building renovations.
  - Adopt PACE
  - Adopt benchmarking requirements
  - Adopt energy disclosure requirements
  - Implement programs to serve low-income residents and support affordability
    - Building benchmarking
    - PACE
    - Green Bank and Green Financing partnerships
    - Energy Savings Performance Contracting
    - Convert HVAC Systems
    - Fuel Switching
    - On-bill financing

**Building Operations and Maintenance** - Improve energy performance of existing buildings through building operations and occupancy behavior.

5. Achieve 20 percent reduction in energy consumption by 2030 through operations improvement and occupant actions.
  - Adopt benchmarking requirements
  - Adopt energy disclosure requirements
  - Adopt green leasing requirements
  - Implement Green Purchasing Programs
    - EPA Portfolio Manager
    - Energy Dashboards
    - Energy efficient appliances, HVAC systems

**Public and Private Built Infrastructure** - Improve the energy performance of public and private built infrastructure.

6. Achieve 5 percent reduction in energy consumption by improving efficiency of public and private infrastructure by 2025
7. Transit and highway agencies, and airports achieve \_\_\_\_ % efficiency improvement by \_\_\_\_
8. All water and wastewater utilities cover 30% of native load using on-site generation
9. Water utilities reduce energy consumption \_\_\_\_% by \_\_\_\_
  - Implement outdoor lighting replacement programs
  - Implement grid modernization programs
  - Install on-site renewable power systems at industrial and transit sites
    - Convert street lights and other outdoor lights to LED
    - Energy Grid 2.0 – explore possibilities for improved grid management to increase efficiency, customer participation and demand flexibility with state regulators, PJM, utilities
    - Solar + storage for critical facilities / low emissions public purpose microgrids
    - Urban heat island reduction – tree planting, cool roofs, cool pavements, green streets
    - Replace all outdoor, tunnel, and station lighting with high efficiency products
    - Increase alternative energy generation in all industrial enterprises, including drinking water & waste water utilities
    - Install renewable energy generation (hydro turbines) inside water pipes
    - Water utilities deploy waste heat recovery in sewer system
    - Decrease the leakage rate of the water distribution system

**Energy Source and Supply** - Improve the energy performance of energy generation, including purchase of electricity and natural gas, fuels, and renewables.

10. 20 percent reduction in emissions from energy generation, transmission, and distribution by 2025.
11. Increase Renewable Portfolio Standards (RPSs) to 40% by 2030
12. Increase Solar PV to 50,000 installed systems by 2030
13. Increase Solar PV capacity to 500 MW by 2025
14. Reduce methane leaks from natural gas pipelines. Achieve 20 % reduction by 2025.
  - Full implementation of the federal Clean Power Plan
  - Phase out coal use at the local coal plants by 2030

- Invest in expanding natural gas supply infrastructure to existing plants
- Existing nuclear plants near the region install additional units
- Increase on-site renewable generation
- Increase renewable/green power purchases
- Increase efficiency of power plants
  - Solar
  - Biogas CHP
  - Fuel cells
  - Invest in microgrids
  - EV charging infrastructure connected to solar, and V2G
  - Incentives for residential solar + batteries/EVs
  - Encourage Thermal RECS (TRECs)
  - Explore viability of carbon sequestration at coal plants in the region

**Resource Conservation and Management** - Reduce the carbon footprint of the region's supply chain and resource consumption.

15. Increase the recycling rate of the region to 75%.
16. Divert 100% of organic waste by 2040
17. Netzero Waste by 2050
18. Divert construction/demolition waste
  - Reduce reuse and recycle
  - Water reuse and conservation
  - Green purchasing

**Awareness and Education** - Increase the ability of residents in the region to conserve energy and reduce emissions.

19. 10 percent decrease in energy consumption per capita by 2020
  - Raise awareness – education/engagement
  - Motivation – incentives
  - Culture of ownership – creating
  - Action – Awareness to action
    - Energy education initiatives/programs to address behavior and promote conservation
    - Community energy challenges with businesses, HOA's, neighborhoods
    - Encourage/incentivize new energy efficiency program ideas, such as in-home displays linked with smart meters, dynamic/TOU pricing, disaggregation by appliance
    - Promote green power purchase