MEMORANDUM

To: Energy/Built Environment Sector Multi-Sector Working Group

From: Lauren Pederson, Bill Prindle, Parker Crowe, ICF International

Date: April 9, 2015

Re: Proposed Energy and Built Environment Subgroup Strategies

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The purpose of this memorandum is to present ICF's qualitative evaluation of greenhouse gas (GHG) reduction strategies developed by the Energy and Built Environment Subgroup of the Multi-Sector Working group (MSWG). This memorandum serves as one of ICF's deliverables under Task 2 of this project.

The Energy and Built Environment Strategies are presented in the following tables as the strategy and description of each strategy according to their implementation actions. The qualitative evaluation of the strategies are attached. Strategies and implementation hierarchy are based on the March 24, 2015 Subgroup meeting. The range of reductions for each strategy may vary based on accounting for incremental actions of COG members; total impacts of federal, state, and local players; cost considerations; and implementation feasibility, for example.

Energy and Built Environment Strategy Groupings

Strategy	Measure Description (including possible Implementation Actions)
I. Existing Buildings	
EBE-1: Achieve an annual reduction in energy and water consumption in existing buildings (Nominal working group target set at 2% reduction per year,30% total by 2030)	• Implement continuous commissioning and monitoring, leveraging utility AMI data and related utility service offerings. • Increase rainwater harvesting and other re-use technologies, manage stormwater, low maintenance natural landscaping. • Improve water conservation in buildings and sites, reduce water consumption. • Adopt Architecture 2030 goal, adapted for existing buildings. • Increase adoption of Energy Performance Contracts, especially for public and institutional buildings.

	• Adopt new building code-related requirements for energy improvements during renovations. • Implement programs to serve low-income residents and support affordability. • Adopt benchmarking and disclosure requirements. • Adopt green leasing requirements. • Occupant sustainability programs; green concierge.
II. Location Efficiency	
EBE-2: Encourage development near activity centers (Nominal working group target set at 10% increase in the proportion of new development built in Activity Centers by 2030.)(Cross-referenced with Land Use strategies (L-2); primary assessment to be conducted by Land Use subgroup)	• Update comprehensive plans to include energy and transportation efficiencies as a factor in public facility siting decisions. • Utilize economic- development policies to foster green economies and green jobs. • Tying development review to GHG performance (MDE strategy): locating new development in activity centers could be linked to a GHG credit or bonus (Montgomery Co. is working on such an approach).
III. New Buildings	
EBE-3: Improve new building energy performance (Nominal working group target set at 100% new buildings are designed to be net zero energy on annual basis by 2050; 100% of new buildings are designed to ENERGY STAR standards by 2030; 50% of new buildings reach net zero energy by 2040.)	• On-site energy systems provide more co-benefits. • Expand green power purchasing; to be binding long-term utility “green tariff” policies tied to meter address or other actions may be needed.
EBE-4: Increase use of WaterSense fixtures (Nominal working group target set at 100% of new buildings use WaterSense fixtures by 2030 to reduce energy needs of water and wastewater)	• Increase rainwater harvesting and other re-use technologies, manage stormwater, low maintenance natural landscaping. • Improve water conservation in buildings and sites, reduce water consumption. • Create building code-related policies to mandate WaterSense performance levels in applicable fixtures.
EBE-5: Adopt updated building codes and energy performance standards (Nominal working group target set at 100% compliance with most recently adopted IGCC or equivalent building code/energy performance standard by 2020)	• Adopt Architecture 2030 goal. • Participate in the Living Building Challenge. • Provide Net Zero or “off grid” building incentives. • Develop building code compliance efforts, including utility programs. • Work within the limits of state/local pre-emption on building codes.

IV. Public and Private Infrastructure	
EBE-6: Achieve targeted reductions by improving Infrastructure efficiency (Nominal working group target set at 1% per year (35%) reduction in energy consumption by improving efficiency of public and private infrastructure by 2050)	• Reduce energy waste from transmission and distribution of energy. • Reduce energy use by water and wastewater systems by reducing leaks, onsite generation, and process improvements 30% by 2030. • Implement outdoor lighting replacement programs. • Implement grid modernization programs. • Install on-site renewable power systems at industrial and transit sites.
V. Energy Source and Supply	
EBE-7: Achieve targeted reductions in power sector emissions (Nominal working group target set at 30% reduction in emissions from energy generation by 2030)	• Increase state Renewable Portfolio Standards (RPSs) to 40% by 2030. • Increase non-utility Solar PV capacity to 500 MW by 2030. • Increase energy storage capacity by X percent by 20XX. • Allow District of Columbia GHG successes to be leveraged in Maryland's Clean Power Plan. • Phase out coal use at the local coal plants by 2030. • Expand natural gas supply infrastructure to existing plants. • Explore the possibility of installing additional units at existing nuclear plants near the region. • Increase on-site renewable generation. • Increase renewable/green power purchases. • Increase efficiency of power plants. • Publicly-provided Renewable Energy Incentives. • Provide PACE financing or other financing option. • Support cooperative purchasing for residential and commercial solar purchasing. • Support aggregate green power purchasing.
EBE-8: Achieve targeted reductions in reduce natural gas pipeline leaks (Nominal working group target set at 20% reduction in methane leaks from natural gas pipelines by 2030)	• Support utility commission action on cost recovery.
VI. Resource Recovery, Conservation and Management	
EBE-9: Achieve targeted reduction in municipal solid waste (Nominal working group target set at achieving Net Zero Waste by 2050)	• Increase the recycling rate of the region to 75%. • Increase reuse of construction /demolition waste by 20% by 2030. • Divert 100% of organic waste by 2040. • Implement Green Purchasing and

	Procurement Programs. • Increase use of waste to energy plants.
VII. Non-road Engines	
EBE-10: Reduce emissions from non-road engines (Nominal working group target set at 2% per year (30%) reduction in greenhouse gas emissions from non-road sources by 2030) (Cross-reference with Strategy T-4, conduct assessment on the Transportation Strategy)	• Increase market penetration of energy efficient alternatives for small engines including back-up generators, construction equipment, agriculture, lawn and garden equipment, construction equipment, commercial and industrial equipment, and recreational equipment.
VIII. Awareness and Education	
EBE-11: Educate and motivate public through community engagement (Move education to action - Create measurable results through community energy engagement)	• Educate on costs and benefits. • Increase motivation through incentives. • Create a culture of responsibility.