BEPS GHG Study

January 20th, 2023

DC Environmental Network

DEPARTMENT OF ENERGY & ENVIRONMENT

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GOVERNMENT OF THE DISTRICT OF COLUMBIA

MURIEL BOWSER, MAYOR

STUDY FRAMEWORK

DOEE consulted with IMT, the BEPS Task Force, and agency partners to expand upon the existing analysis framework and incorporate qualitative evaluation of various policy packages. The study is broken into 5 parts:

1. Discussion of components of a Building Performance Standard (BPS) policy (BEPS is a type of BPS);

2. Description of policy packages considered in this study;

3. Technical analysis estimating the energy and GHG savings of each policy package;

4. Evaluation criteria DOEE intends to use to grade the policy packages; and

5. DOEE's policy and statutory recommendations.

COMPONENTS OF A BPS: OVERVIEW

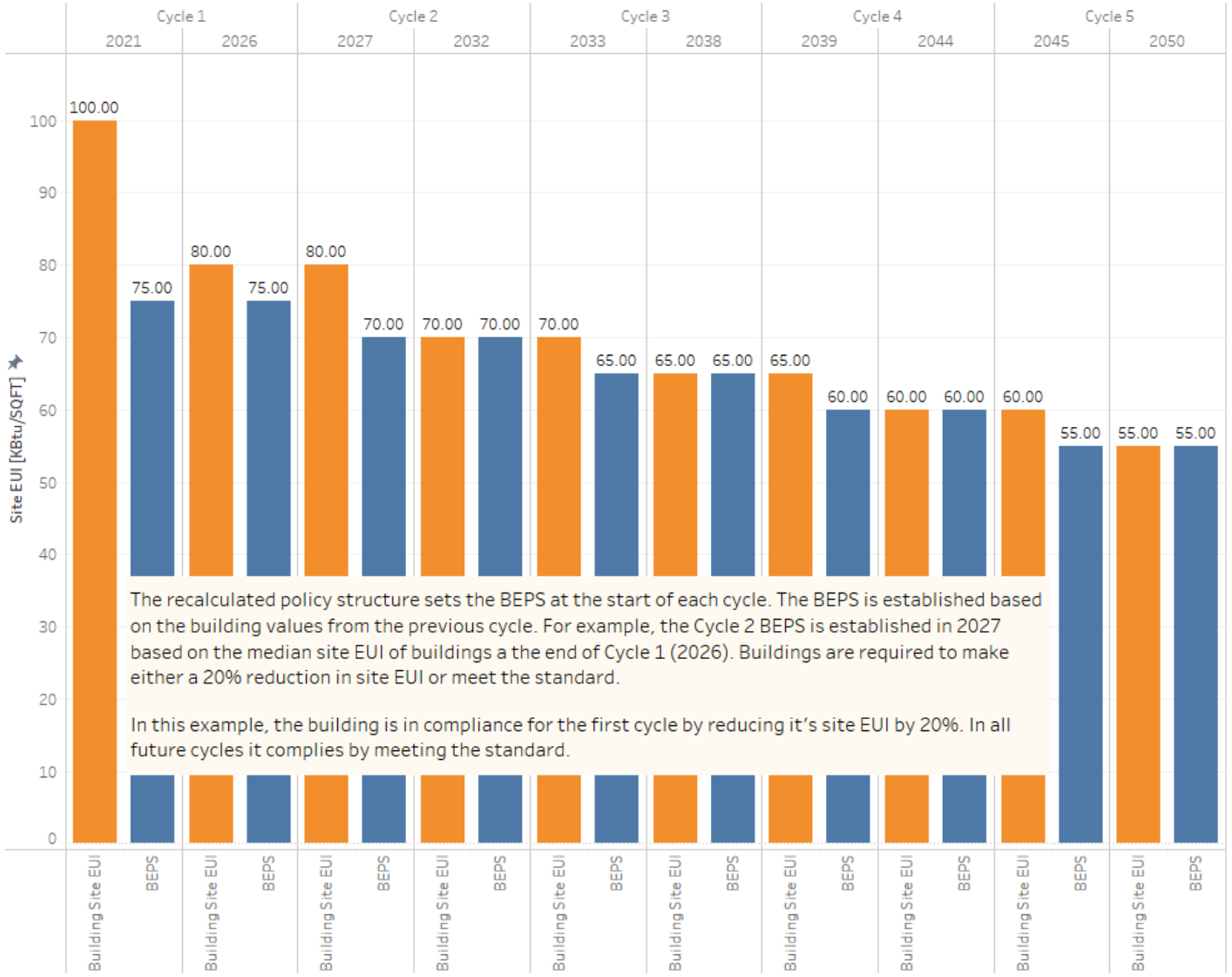
While the goals of a BPS are always similar (reduce energy consumption and/or carbon emissions in existing buildings), no two BPS policies are the same. BPS policies can be broken down into three components :

1. **Policy Structure** – the guiding framework for the BPS, which sets up how the standards are calculated and what compliance pathways are available.

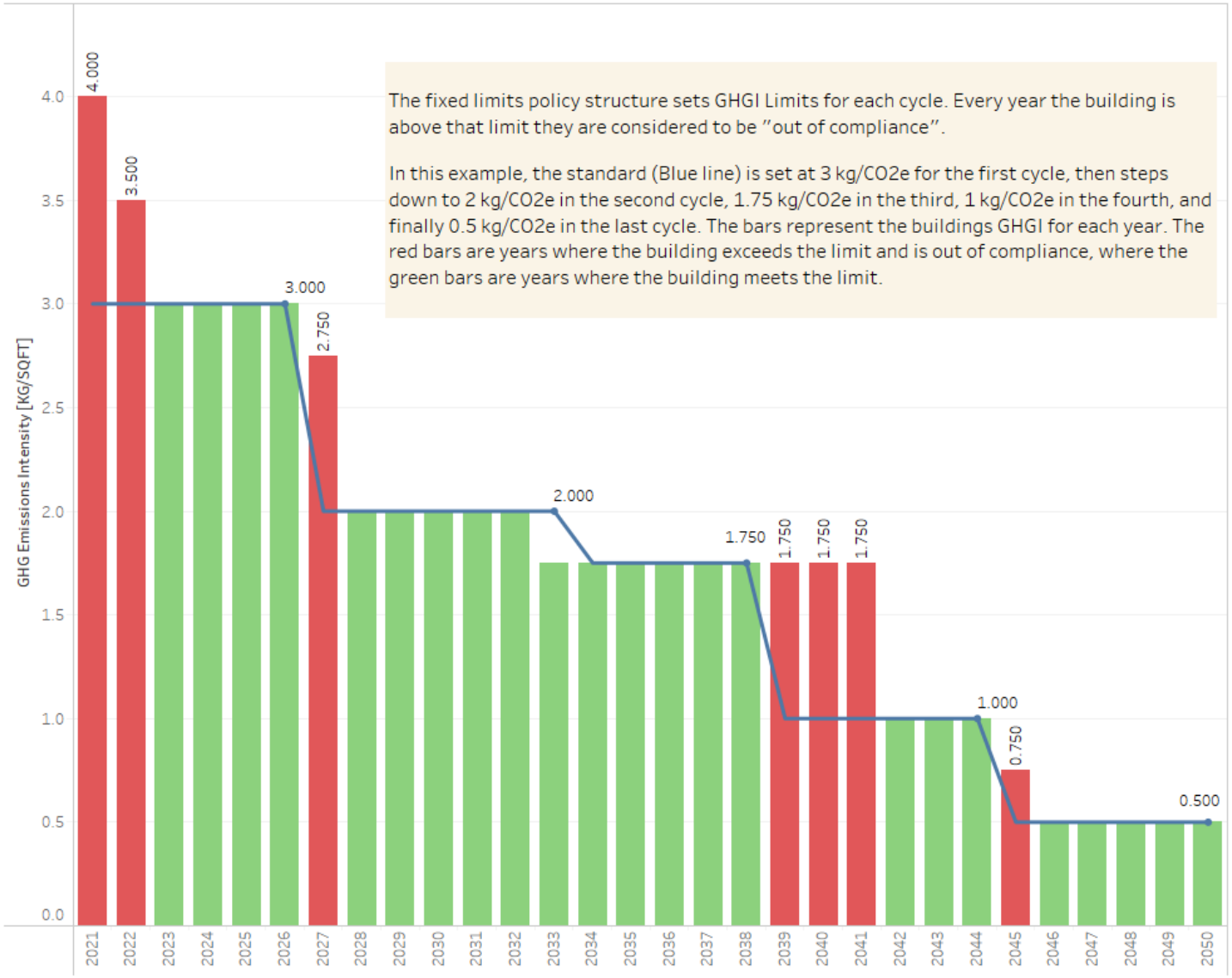
2. **Metric(s)** – the measurements used to define the standards and evaluate compliance.

3. **Compliance Pathways** – the requirements a building must meet to demonstrate compliance.

COMPONENTS OF A BPS: POLICY STRUCTURE



COMPONENTS OF A BPS: POLICY STRUCTURE CONT.



COMPONENTS OF A BPS: POLICY STRUCTURE CONT.

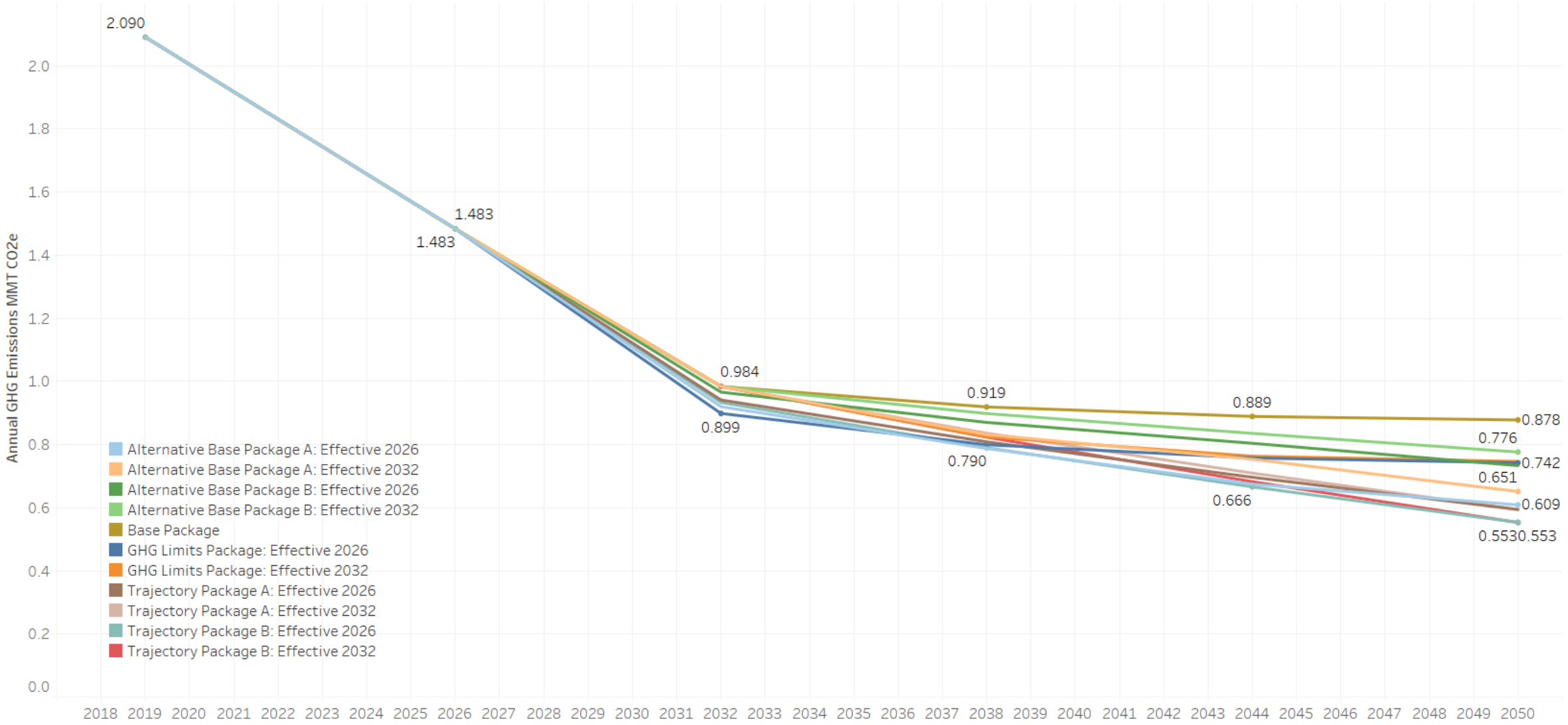
BPS POLICY PACKAGES CONSIDERED

Policy Package	Description	Policy Structure	Metric(s)	Compliance Pathways
Base Package	The current BEPS policy that is implemented in DC	Recalculated	• ENERGY STAR Score/Source EUI for standard and some evaluation • Site EUI for evaluation	• Performance (Reduction from baseline & Standard Target*) • Prescriptive • Alternative
Alternative Base Package A: Removal of Standard Target Pathway	The current BEPS policy that is implemented in DC but with the removal of the standard target performance compliance pathway	Recalculated	• ENERGY STAR Score/Source EUI for standard and some evaluation • Site EUI for evaluation	• Performance (Reduction from baseline) • Prescriptive • Alternative
Alternative Base Package B: Gradual Increase of Strictness of Standards	The current BEPS policy that is implemented in DC but each cycle the standards will be established at marginally stricter percentiles	Recalculated	• ENERGY STAR Score/Source EUI for standard and some evaluation • Site EUI for evaluation	• Performance (Reduction from baseline & Standard Target*) • Prescriptive • Alternative
GHG Limits Package	Sets fixed GHG limits as standards by property type in six-year increments until 2050	Fixed Limits	• GHG Intensity	• Performance (Standard Target) • Alternative
Trajectory Package A: Site EUI Targets Only	Sets long-term 2050 site EUI targets by property type and establish interim building specific targets that must be met every six years	Trajectory	• Site EUI	• Performance (Standard Target) • Alternative
Trajectory Package B: Site EUI targets and on-site GHG Intensity targets	Sets long-term 2050 site EUI and on-site GHG Intensity targets by property type and establish interim building specific targets that must be met every six years	Trajectory	• Site EUI • On-site GHG Intensity	• Performance (Standard Target) • Alternative

TECHNICAL ANALYSIS: OUTPUTS & OBSERVATIONS

Policy Package	Effective Date	2050 Annual Building GHG Emissions Million Metric Ton (MMT) CO_2e	Cumulative Avoided Emissions by 2045 compared to base package (model normalized to CFDC) (MMT CO_2e)
Base Package	2021	0.878	N/A
Alternative Base Package A	2026	0.609	3.574
	2032	0.651	1.601
Alternative Base Package B	2026	0.733	1.304
	2032	0.776	0.6131
GHG limits Package	2026	0.741	2.825
	2032	0.747	1.815
Trajectory Package A	2026	0.594	2.632
	2032	0.594	1.870
Trajectory Package B	2026	0.553	3.128
	2032	0.553	2.225

TECHNICAL ANALYSIS: OUTPUTS & OBSERVATIONS



POLICY PACKAGE EVALUATION OVERVIEW

DOEE consulted with several stakeholders to develop evaluation criteria. Both IMT and the BEPS Task Force were consulted to help DOEE design a framework for evaluating to evaluate the policy packages. Additionally, DOEE reviewed public comments made during the BEPS rulemaking process to see if any feedback was applicable to future changes to BEPS.

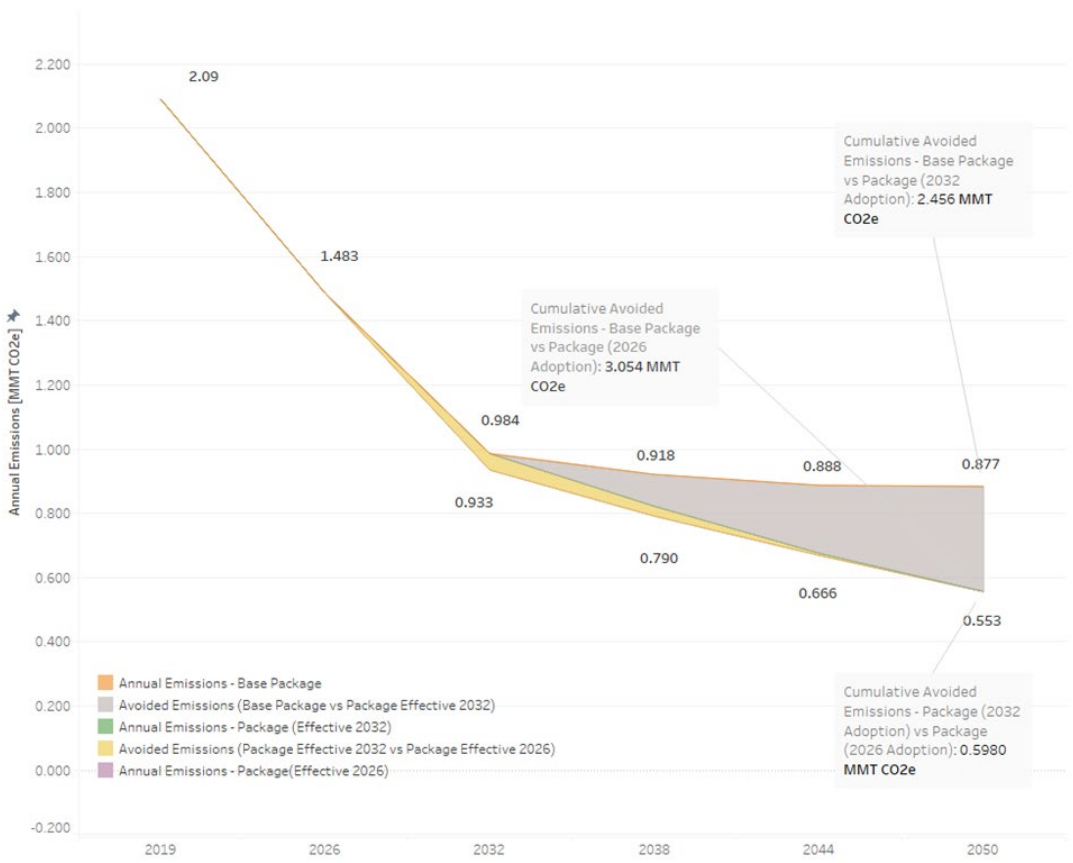
1. **Align with goals/commitments:** The policy package should align with DC's 2030 climate goals and 2045 carbon neutrality goal.
2. **Social and racial equity:** The policy should include consideration for social and racial equity, avoid causing additional harm and, if possible, increase equity.
3. **Regulatory fairness:** The policy package should have similar requirements across the regulated community (i.e., building owners should feel they are equally impacted as owners of other buildings or other building types). This also includes normalization methodology).
4. **Jobs and economic growth**: The policy package should inspire long-term investments that spur job growth in the District.
5. **Maximize certainty:** Long-term investments made by building owners should be paired with long-term guarantees of compliance.
6. **Transparency:** Building owners should have visibility into their compliance requirements and a clear understanding of what it will take to comply.
7. **Drive early action:** The policy package should provide a structure that incentivizes early action by building owners.
8. **Accommodate building life cycle events:** The policy package should allow building owners the flexibility to make improvements at the most cost-effective point in a building's lifecycle.
9. **Simplicity**: The policy package should be easy for building owners and affected stakeholders to understand.
10. **Ease of compliance/ implementation**: The policy package should minimize the effort required to demonstrate compliance (e.g., paperwork) and to implement the measures necessary for compliance.

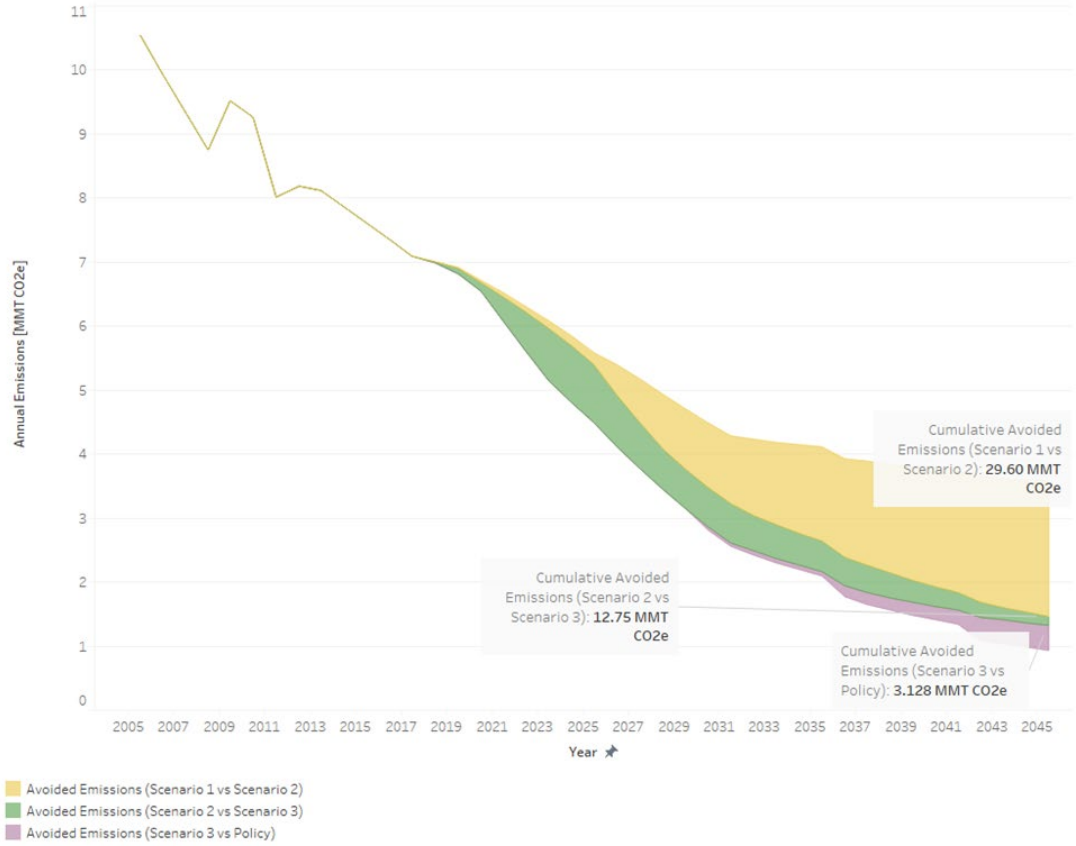
POLICY PACKAGE EVALUATION CONT

Policy package:	Base Package	Alternative Base Package A	Alternative Base Package B	GHG Limits Package	Trajectory Package A	Trajectory Package B
Align with goals/commitments	No	No	No	Yes	No	Yes
Social and racial equity*	N/A	N/A	N/A	N/A	N/A	N/A
Regulatory fairness	Yes	No	Yes	Yes	Yes	Yes
Jobs and economic growth	Yes	Yes	Yes	No	Yes	Yes
Maximize certainty	No	No	No	No	Yes	Yes
Transparency	Yes	Yes	Yes	Yes	Yes	Yes
Drive early action	No	No	No	Yes	Yes	Yes
Accommodate building life cycle events	No	No	No	No	Yes	Yes
Simplicity	No	No	No	No	Yes	Yes
Ease of compliance/ implementation	No	Yes	No	No	Yes	Yes
Regional Consistency	No	No	No	No	Yes	Yes
Promotes Electrification	Yes	Yes	Yes	No	Yes	Yes

TECHNICAL ANALYSIS: TRAJECTORY PACKAGE B

Policy Package	Description	Policy Structure	Metric(s)	Compliance Pathways
Trajectory Package B: Site EUI targets and on-site GHG Intensity targets	Sets long-term 2050 site EUI and on-site GHG Intensity targets by property type and establish interim building specific targets that must be met every six years	Trajectory	• Site EUI • On-site GHG Intensity	• Performance (Standard Target) • Alternative





TECHNICAL ANALYSIS: TRAJECTORY PACKAGE B

Policy Package	Description	Policy Structure	Metric(s)	Compliance Pathways
Trajectory Package B: Site EUI targets and on-site GHG Intensity targets	Sets long-term 2050 site EUI and on-site GHG Intensity targets by property type and establish interim building specific targets that must be met every six years	Trajectory	• Site EUI • On-site GHG Intensity	• Performance (Standard Target) • Alternative

% Site EUI Reduction Rounded (bin)	2032	2038	2044	2050
0.00%	132	132	132	132
1.00%	28	27	25	24
2.00%	45	42	43	41
3.00%	58	49	42	37
4.00%	54	55	51	50
5.00%	74	66	46	39
6.00%	85	71	66	52
7.00%	223	216	64	61
8.00%	105	62	203	49
9.00%	101	96	66	196
10.00%	124	86	71	43
11.00%	276	82	76	64
12.00%	111	110	55	57
13.00%	105	249	85	55
14.00%	73	78	77	45
15.00%	51	54	220	58
16.00%	18	82	64	59
17.00%	18	53	53	56
18.00%	17	34	36	202
19.00%	10	13	64	52
20% or more	6	57	175	342

Count of % Site EUI Reduction Rounded
6 342

Site EUI Reduction (bin)	2032	2038	2044	2050
-20 or less	40	35	29	11
-19	2	5	4	2
-18	5	4	7	14
-17	9	7	2	6
-16	9	8	10	2
-15	8	10	10	14
-14	15	11	8	5
-13	20	21	16	12
-12	24	20	25	19
-11	59	57	53	27
-10	72	72	57	67
-9	75	71	76	90
-8	88	96	98	95
-7	302	299	144	138
-6	131	136	299	325
-5	131	135	144	150
-4	298	297	301	306
-3	128	129	130	130
-2	115	118	118	118
-1	76	76	76	76
0	107	107	107	107

Count of Site EUI Reduction
2 325

POLICY PACKAGE RECOMENDATIONS

Based on the results of the technical analysis and review of the policy evaluation DOEE recommends that BPS be modified to align with that Trajectory Package B effective in 2032.

- It saves the most energy and avoids the most emissions over time;
- Meets most of the evaluation criteria;
- Buildings owners will have long-term targets tied to a specific policy goal that building owners can use to plan around lifecycle events (like capitalization plans);
- It will also send a clear market signal to phase out fossil fuels in the District's building stock while ensuring electrification is done with energy efficiency in mind;
- Long-term goal is set for each building, owners have an off-ramp to meet the target early.

However, DOEE does not recommend implementing these changes until after the first compliance cycle has concluded and a robust evaluation of the program, coupled with stakeholder engagement, has been conducted.

SATUTORY RECOMMENDATIONS

- **Policy Structure:** Give DOEE authority to set a long-term standard by property type and then establish interim standards for each building based on a linear reduction from their baseline to the standard.
- **Metrics:** Give DOEE the authority to set the standards based on-site EUI and on-site GHG emissions and to designate the appropriate normalization methodology for each building.
- **Compliance Pathways:** Modify pathways to align with trajectory approach
- **Delays:** Give DOEE the authority to grant more than a three-year delay
- **Public engagement:** The CEDC Act should be amended before April 1, 2027, to require DOEE to issue an additional report after the first BEPS cycle of BEPS is completed to study how DOEE should set the 2050 standards with input from the public and the BEPS Task Force.
- **Campuses**: The provision in the CEDC Act for post-secondary educational institutions and hospitals with multiple buildings in a single location that are owned by a single entity (college/university and hospital campuses) should be revised to align it with the trajectory policy structure.
- **Updates to Benchmarking Requirements**: The CEDC Act should be amended to require that owners of district energy systems (e.g., Hot Water, Steam, Chilled Water) report additional information so that DOEE can properly assess the GHG factor of each system and assess compliance with on-site GHGI decarbonization.

DEPARTMENT OF ENERGY & ENVIRONMENT

Contact the Building Performance and Enforcement Branch:

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Email: building.performance@dc.gov