

BEPSDC Task Force

January 21, 2020



@DOEE_DC
#BEPSSDC

*** DEPARTMENT
OF ENERGY &
ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

WE ARE
WASHINGTON
DC GOVERNMENT OF THE
DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

AGENDA

1. Administrative Items
2. Review Items from Previous Meeting
3. Proposed Technical Amendments to CEDC
4. Performance Pathway
5. Other Compliance Pathways
6. Announcements

ROLE OF TASK FORCE

- Advise DOEE on creation of an implementation plan for the Building Energy Performance Program;
- Recommend amendments to proposed regulations issued by DOEE; and
- Recommend complementary programs or policies.
- Rule of Thumb: Focus on 95% for initial meetings, 5% issues moved to Bike Rack
- If topic needs in-depth technical discussion, anyone can make the suggestion to move it to a sub-committee

MEETING FLOW

- Administrative Items
- Review topics from previous meeting for possible decision points
- Introduce new topics and technical analysis
- Open discussion of each topic
- Discuss need for additional analysis or research on current topics
- Discuss next meeting's topics and ideas for pre-analysis
- Review Bike Rack

DECISION POINT 1A: INITIALLY GROUP BUILDINGS BY PORTFOLIO MANAGER PROPERTY TYPES (SCENARIO 2)?

Section 301(b)(1)(A): No later than January 1, 2021, and every 5 years thereafter, DOEE shall establish property types and building energy performance standards for each property type, or an equivalent metric for buildings that do not receive an ENERGY STAR score.

<u>Scenario 1</u>	<u>Scenario 2</u>	<u>Scenario 3</u>
<p>DOEE will establish standards for 4 major property types in the District:</p> <ul style="list-style-type: none">• Office• K-12• Multifamily• Hotel <p>All other buildings will be grouped into an “Other” category</p>	<p>DOEE will establish standards for all Energy Star Portfolio Manager building type definitions and define all standards for all building types available in Portfolio Manager where sufficient local District data is available.</p>	<p>DOEE will start by classifying buildings by EPA Portfolio Manager property types and then sub-divide buildings based on property use details (i.e. Multifamily will be broken into low-rise, mid-rise, and high-rise groupings; K-12 school will be broken into elementary/middle school and high school). Then DOEE will establish standards for each cohort.</p>

DECISION POINT 1B: GROUP BUILDINGS BY MODEL TYPE AND NATIONAL MEDIAN REFERENCE GROUP?

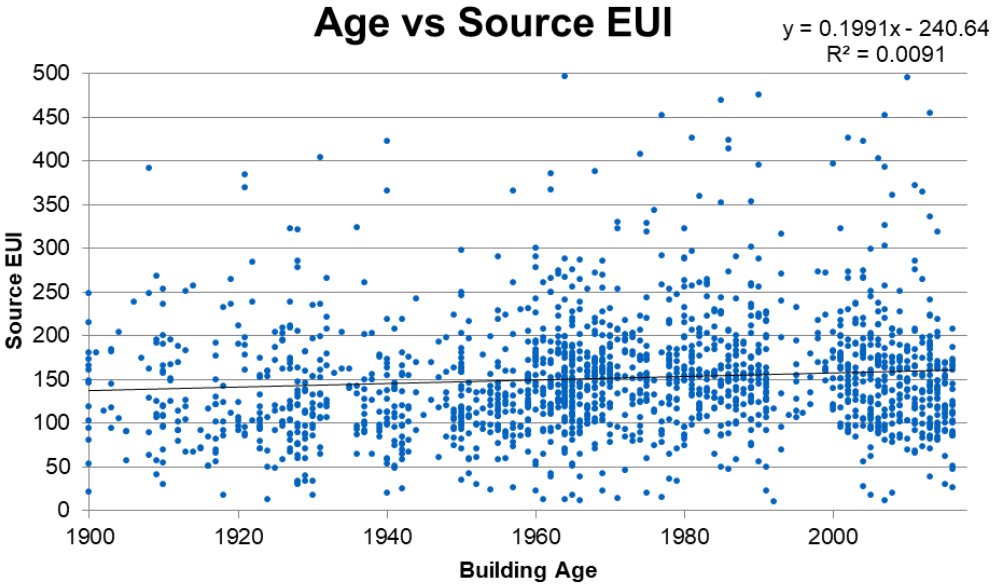
- 1. ENERGY STAR Property Type** - Initial property types will be based on the Primary Property Type Portfolio Manager Calculated in the [District Benchmarking Disclosure](#) (Scenario 2)
- 2. ENERGY STAR Scoring Model** - Combine property types with smaller numbers by grouping all property types with [same scoring model](#) together (to maintain integrity of ENERGY STAR Score)
- 3. National Median Group** - Properties without an ENERGY STAR Score will then be grouped by “Reference Data Source – Peer Group Comparison” field in [EPA Portfolio Manager National Median Technical Reference](#).

CATEGORIZING PROPERTY TYPES DOWN TO LEVEL 3

Level of Categorization	Property Type Name	Building Count	District Median Source EUI	Natl Median Source EUI
Level 2 - Scoring Model	Multifamily Housing	665	111.6	118.1
Level 2 - Scoring Model	Office/Bank/Financial Office/Courthouse	529	160.8	116.4
Level 2 - Scoring Model	K-12 School	133	144.7	104.4
Level 2 - Scoring Model	Hotel	105	187.4	146.7
Level 3 - National Median	PBA - 91, Other	39	236.7	89.3
BEPS Carve Out	College/University	34	193.5	180.6
Level 2 - Scoring Model	Residence Hall/Dormitory/Barracks	29	131.8	107.5
Level 3 - National Median	PBA PLUS - 16, Fire station/police station	27	185.7	124.9
Level 2 - Scoring Model	Retail Store/Wholesale Club/Supercenter/Supermarket/Grocery Store	20	400.7	444.0
Level 2 - Scoring Model	Non-Refrigerated Warehouse/Dist. Center/Refrigerated Warehouse	19	117.7	52.9
Level 2 - Scoring Model	Worship Facility	17	142.3	58.4
BEPS Carve Out	Hospital/Healthcare	13	371.8	206.7
Level 3 - National Median	PBA PLUS - 23, Library	12	190.7	143.6
Level 3 - National Median	PBA PLUS - 24, Recreation	12	250.6	112.0
Level 3 - National Median	PBA - 18, Lodging	11	147.7	143.6
Level 3 - National Median	PBA - 5, Non-refrigerated warehouse (Self-Storage Facility)	11	29.5	47.8
Level 2 - Scoring Model	Medical Office	10	171.8	121.7
Level 2 - Scoring Model	Senior Care Community	10	248.3	213.2
Level 3 - National Median	PBA - 13, Public assembly	8	216.2	112.0
Level 3 - National Median	PBA PLUS - 25, Social/meeting	8	206.0	109.6
Level 3 - National Median	PBA - 23, Strip shopping mall	5	147.3	228.8
Level 3 - National Median	PBA - 14, Education	4	132.9	110.4
Level 3 - National Median	PBA - 26, Service	3	199.3	96.9
Level 3 - National Median	CB ECS combination - 6, Mall	2	127.8	225.3
Level 3 - National Median	AWWA – Water Treatment Plant (Drinking Water Treat. & Distribution)	2	1392.2	5.9
Level 3 - National Median	PBA - 24, Enclosed mall	2	379.7	170.7
Level 3 - National Median	PBA - 4, Laboratory	1	265.3	318.2
Level 3 - National Median	PBA PLUS - 33, Restaurant/cafe/tertia	1	248.4	573.7

DECISION POINT 2: SUBDIVISION BY BUILDING AGE DOESN'T MATTER AND SHOULD NOT HAVE A SEPARATE STANDARD?

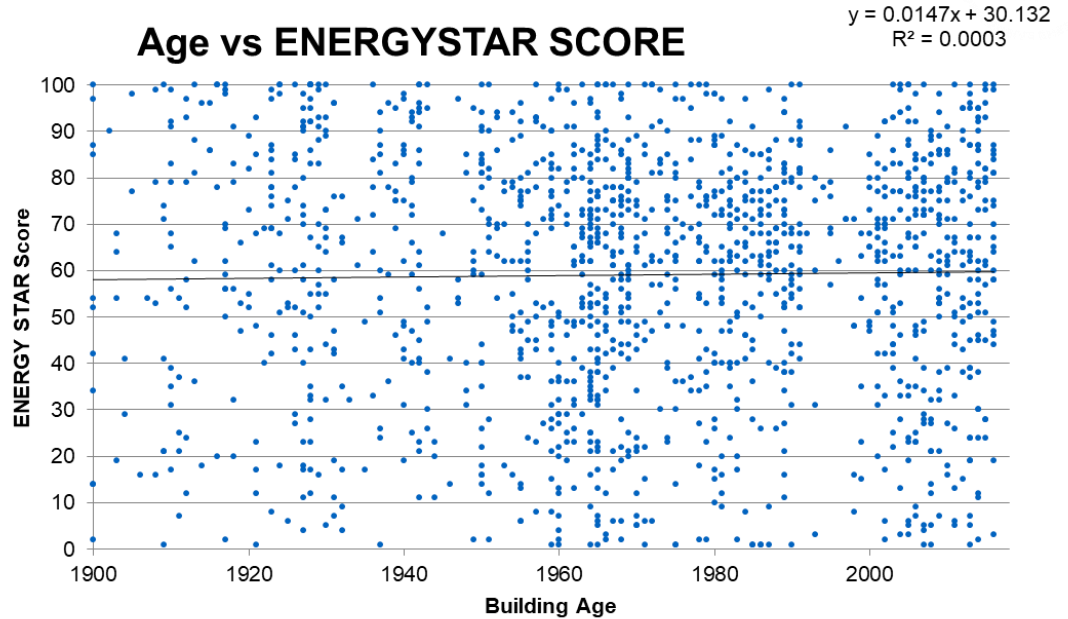
Benchmarking Data shows no statistically significant trend when examining Building Age to Source EUI. This means that the age of a building is not an indicator of whether or not a building will have a low or high EUI.



Year Built	1900 - 1909	1910 - 1919	1920 - 1929	1930 - 1939	1940 - 1949	1950 - 1959	1960 - 1969	1970 - 1979	1980 - 1989	1990 - 1999	2000 - 2009	2010 - 2017
Count	43	62	124	76	85	149	294	153	209	82	234	170
Mean Source EUI	159.3	125.6	162.3	157.8	134.9	146.6	162.7	166.6	178.8	175.1	177.0	151.2
Median Source EUI	131.7	115.3	111.7	134.3	119.8	121.8	149.8	156.1	156.7	156.9	158.6	138.8

DECISION POINT 2 (cont.)

Benchmarking Data shows no statistically significant trend when examining Building Age to Energy Star Score. This means that the age of a building is not an indicator of whether or not a building will have a low or high score.



Year Built	1900 - 1909	1910 - 1919	1920 - 1929	1930 - 1939	1940 - 1949	1950 - 1959	1960 - 1969	1970 - 1979	1980 - 1989	1990 - 1999	2000 - 2009	2010 - 2017
Count	43	62	124	76	85	149	294	153	209	82	234	170
Mean ENERGY STAR SCORE	56	64	64	59	61	59	55	59	59	62	58	60
Median ENERGY STAR SCORE	54	65	69	64	61	64	59	63	64	66.5	64	64

DECISION POINT 3: SHOULD NATIONAL MEDIAN BE THE LOWEST STANDARD SET?

Property Grouping	Count	District Median ES Score	District Median Source EUI	National Median Source EUI
K-12 School	133	39	144.7	104.4
Hotel	105	48	187.4	146.7
Fire station/police station	27		185.7	124.9
Warehouses/Dist. Center	19	35	117.7	52.9
Worship Facility	17	23	142.3	58.4
Library	12		190.7	143.6
Recreation	12		250.6	112.0
Senior Care Community	10	43	248.3	213.2
Public assembly	8		216.2	112.0
Social/meeting	8		206.0	109.6

*Property types in this chart fall below the national median based on 2018 data.

EMERGENCY LEGISLATIVE AMENDMENTS TO CEDC ACT

1. Correcting language – “All” buildings instead of only those with a “verified ENERGY STAR score” will be subject to BEPS Requirements
2. DOE will establish the BEPS standard every 6 years - Add gap year for data collection before setting next standard
3. BEPS begins 2027 for buildings 25k+ and 2033 for buildings 10k+

TITLE III. BUILDING ENERGY PERFORMANCE STANDARDS AND BENCHMARKING

Sec. 301 . Establishment of a Building Energy Performance Standard Program.

(a) This section shall apply to:

- (1) Beginning January 1, 2021, all privately-owned buildings with at least 50,000 square feet of gross floor area and all District-owned or District instrumentality-owned buildings with at least 10,000 square feet of gross floor area;
- (2) Beginning January 1, 2021, all privately-owned buildings with at least 25,000 square feet of gross floor area; and
- (3) Beginning January 1, 2026, all privately-owned buildings with at least 10,000 square feet of gross floor area....

(b)(1)(A) No later than January 1, 2021, and every 5 years thereafter, DOEE shall establish property types and building energy performance standards for each property type, or an equivalent metric for buildings that do not receive an ENERGY STAR score....

(c) All buildings with a verified ENERGY STAR score below the building energy performance standard for its property type shall have 5 years from the date of the performance standards established pursuant to paragraph (b)(1)(A) to meet the building energy performance requirements established by DOEE.

TITLE III. BUILDING ENERGY PERFORMANCE STANDARDS AND BENCHMARKING (AMENDMENTS)

Sec. 301 . Establishment of a Building Energy Performance Standard Program.

(a) This section shall apply to:

- (1) Beginning January 1, 2021, all privately-owned buildings with at least 50,000 square feet of gross floor area and all District-owned or District instrumentality-owned buildings with at least 10,000 square feet of gross floor area;
- (2) Beginning January 1, 2027, all privately-owned buildings with at least 25,000 square feet of gross floor area; and
- (3) Beginning January 1, 2033, all privately-owned buildings with at least 10,000 square feet of gross floor area....

(b)(1)(A) No later than January 1, 2021, and every 6 years thereafter, DOEE shall establish property types and building energy performance standards for each property type, or an equivalent metric for buildings that do not receive an ENERGY STAR score....

(c) All buildings ~~with a verified ENERGY STAR score~~ below the building energy performance standard for its property type, established pursuant to paragraph (b)(1) and (2) shall have 5 years from the date of the performance standards are established to meet the building energy performance requirements established by DOEE.

PROPOSED SCHEDULE

- December 10 – Setting the Stage
- January 7 – Property Types, Equivalent Metric
- January 21 – Performance Path, Other Pathways
- February 4 – Exemption Criteria and Process, Penalties and Enforcement
- February 18 – Campus Standard, Other Items?

PATHWAY LANGUAGE FROM CEDC ACT

(d) DOEE shall establish multiple compliance pathways for buildings to meet the building energy performance requirements, including:

(1) A performance pathway, which shall require a building to demonstrate a greater than 20% decrease in normalized site energy use intensity averaged over the last 2 years of the 5-year compliance cycle, as compared to the normalized site energy use intensity averaged over the 2 years preceding the first year of the 5-year compliance cycle; and;

(2) A prescriptive pathway for buildings to achieve compliance by implementing cost-effective energy efficiency measures with savings comparable to the performance pathway; and

(3) Other compliance pathways established by DOEE.

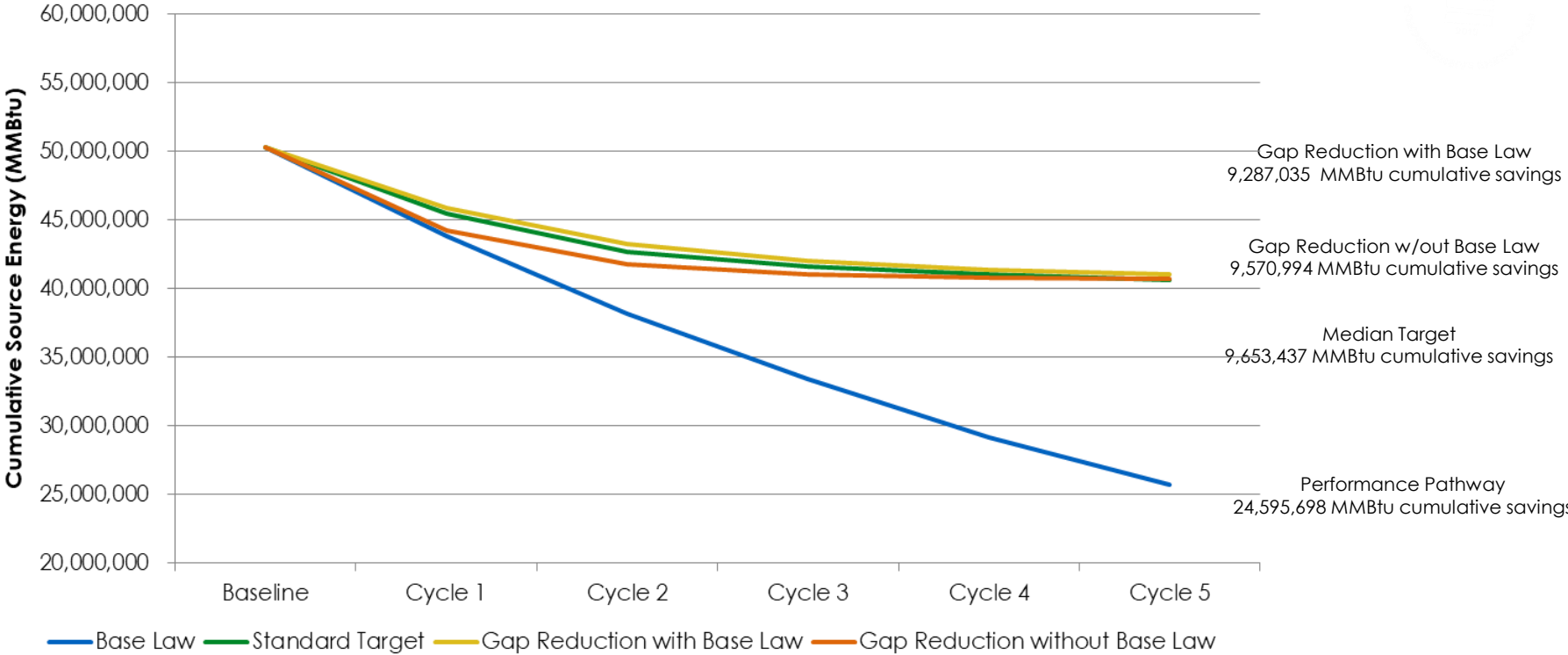
PATHWAY FEEDBACK FROM WG

- **Flexibility** – to choose which pathway and change their mind during the cycle; to accept potentially delayed compliance for those who are pursuing deeper, more intensive strategies; to have the prescriptive path evolve each cycle – is key to encouraging people to comply and do more
- **Certainty** - for the first pathway, it is important to establish pathways before the first cycle and leave it static. Leave flexibility to adopt innovative things for 2nd cycle and beyond.
- **Fairness** – for buildings that are close to the standard (if the standard is high, 20% reduction or following a prescriptive path may be quite difficult (ex. a 67 in the 68 office group)

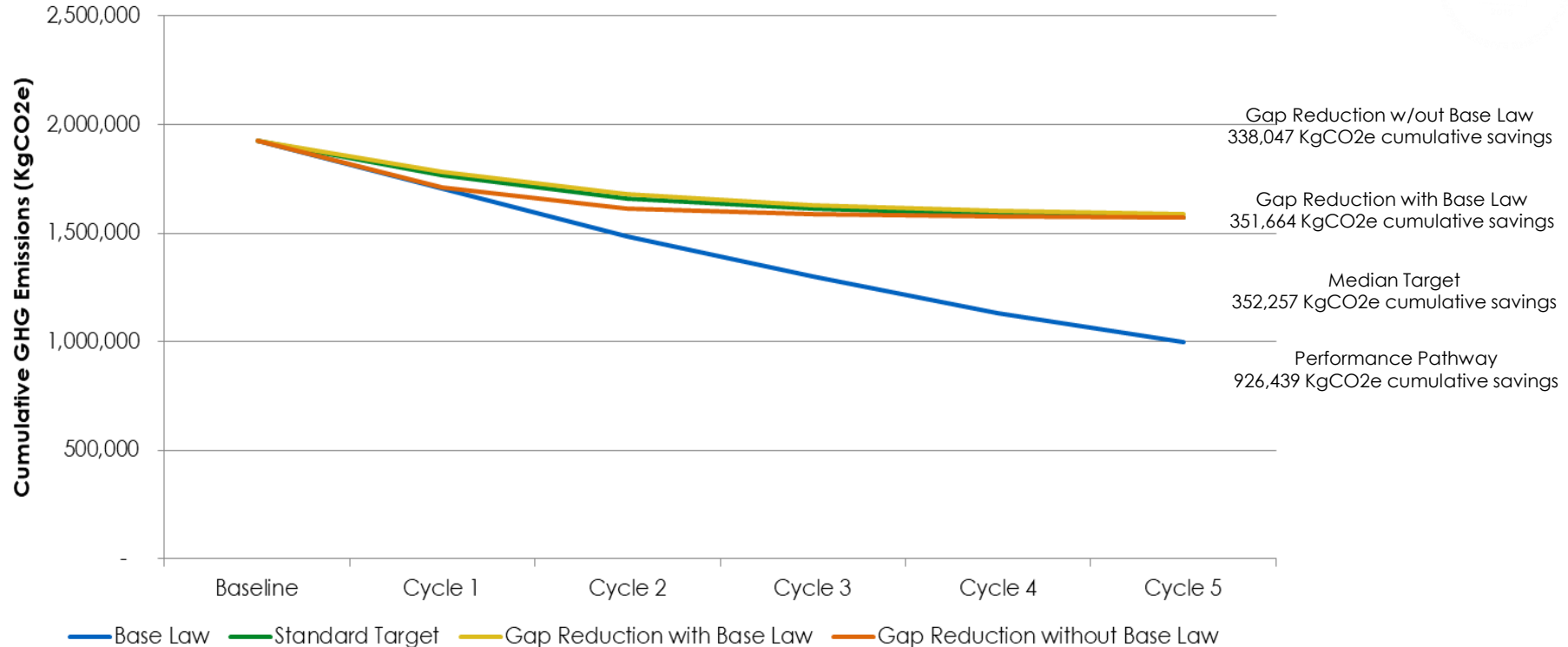
MODELED SCENARIOS

- **Performance Compliance Pathway**
 - Buildings that do not meet the standard must reduce Site EUI by 20%
- **Median Target Compliance Pathway**
 - Buildings that do not meet the standard must reduce Site EUI by 20% or reduce Source EUI to meet standard
- **Gap Reduction with Performance Compliance Pathway**
 - Buildings that do not meet the standard must reduce Site EUI by 20% or reduce the gap between Source EUI and standard by x% (We assumed 70% for this exercise)
- **Gap Reduction removing Performance Compliance Pathway**
 - Buildings that do not meet the standard must reduce the gap between Source EUI and standard by x% (We assumed 70% for this exercise) ** requires amendment to law

BEPS PATHWAY ENERGY SAVINGS COMPARISON



BEPS PATHWAY GHG SAVINGS COMPARISON



ALTERNATIVE CERTIFICATIONS AS A COMPLIANCE PATH?

Certified Energy Star Score
LEED Gold or Platinum O&M
3-4 Green Globes O&M
Living Building, Petal, or Net Zero Energy Certifications
Completing ASHRAE Level II Audit Recommendations

Ideas from Seattle's alternative compliance paths for their Building Tune-up requirement

ALTERNATIVE CERTIFICATIONS FEEDBACK FROM WG

- LEED Gold or Platinum but modifying the credit list for DC specific (MoCo does something similar to this)
- Make sure that the energy components of each of these are emphasized, there are ways to get certification for some (Petal) that don't include energy.
- Green Communities will be more stringent in 2020 for affordable housing
- Green Globes points can come from everywhere, that certification program isn't equivalent to the others
- Building operators: are doing LEED, ENERGY STAR, and ASHRAE II audits, aren't doing the others
- Alt Compliance pathways seem like a lot of extra work than just the normal prescriptive pathway

OTHER COMPLIANCE PATH IDEAS

- Prescriptive paths for particular property types
- Deep retrofits in exchange for extended compliance
- Tradable allowances? Within one owner's portfolio or DC-wide?

NEXT TASK FORCE MEETING

February 4 – Fines and Enforcement, Exemption Criteria/Process

- Possible decision points for beginning of next meeting:
 - Should we include Median Target Pathway, Gap Reduction or neither
 - Should we allow alternative certification options as a way to satisfy compliance?
 - Should DOEE research other compliance options like extended compliance and tradable compliance?
- What kind of analysis do we need to prepare for Fines and Enforcement discussion?
- What kind of analysis do we need to prepare for Exemption Criteria/Process discussion?

BIKE RACK

- Concern for a property type group that has only one building owner represented (ex. DGS and public service spaces)
- Concern about age of building and groupings
- Equity and analysis based on unavailable data – other compliance paths? Exceptions?
- Look at metrics for compliance pathways; short term vs. long term goals
- Public building portfolio and issues;
- Ratcheting down in size will add more buildings to the list that will increase the number of building who have to use the equivalent metric
- In the 2nd cycle, do the smaller sq. ft. buildings get put into the same group as larger buildings?
- District energy systems
- Possibility for tradable allowances? Within a portfolio or DC-wide? Maybe energy efficiency credits (like stormwater?)
- Affordable housing requirements – review existing reqts. and match

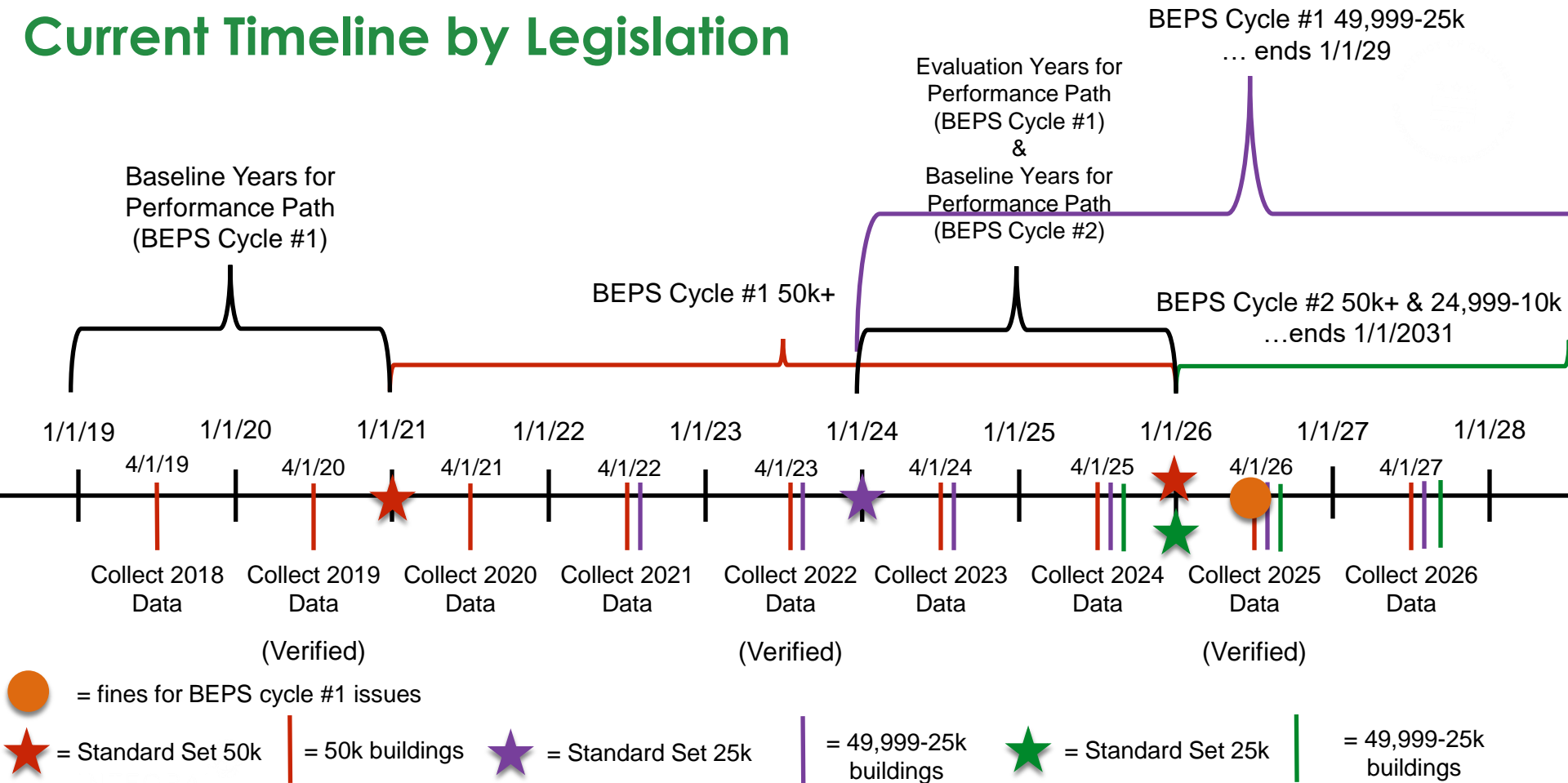


ANNOUNCEMENTS



SUPPORTING SLIDES

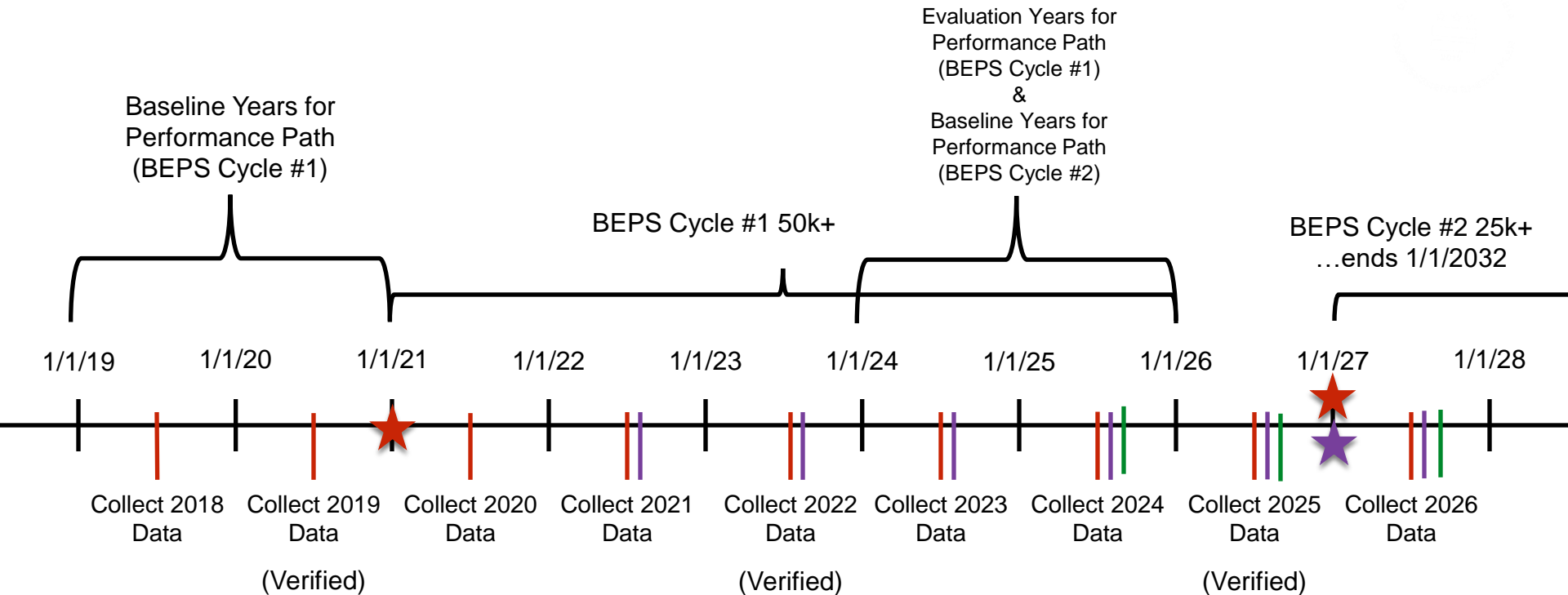
Current Timeline by Legislation



Orange circle = fines for BEPS cycle #1 issues

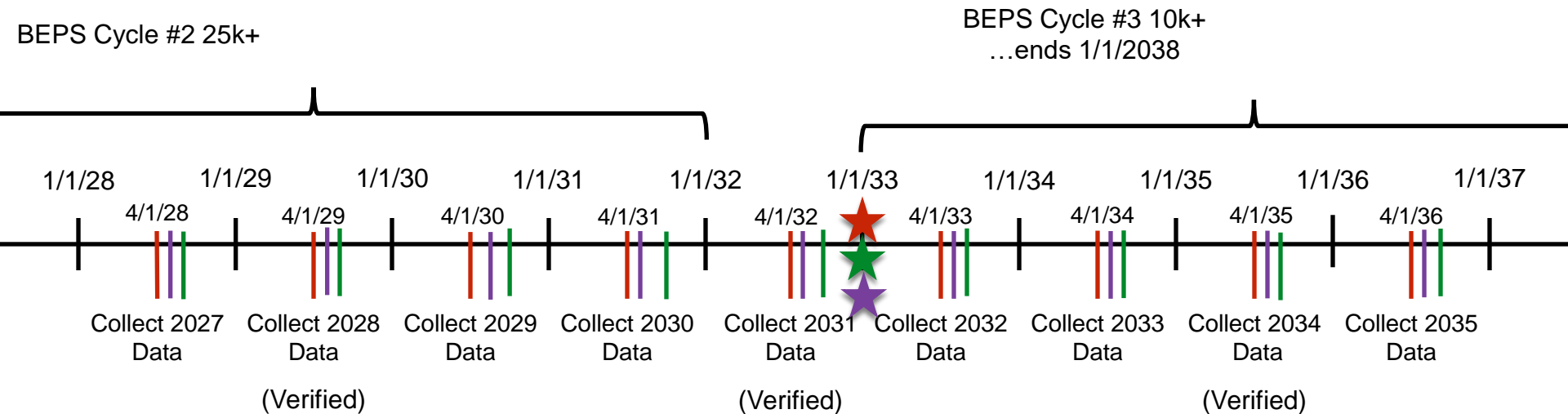
Red star = Standard Set 50k | Vertical line = 50k buildings | Purple star = Standard Set 25k | Vertical line = 49,999-25k buildings | Green star = Standard Set 25k | Vertical line = 49,999-25k buildings

Revised Timeline with Amendments (part 1)



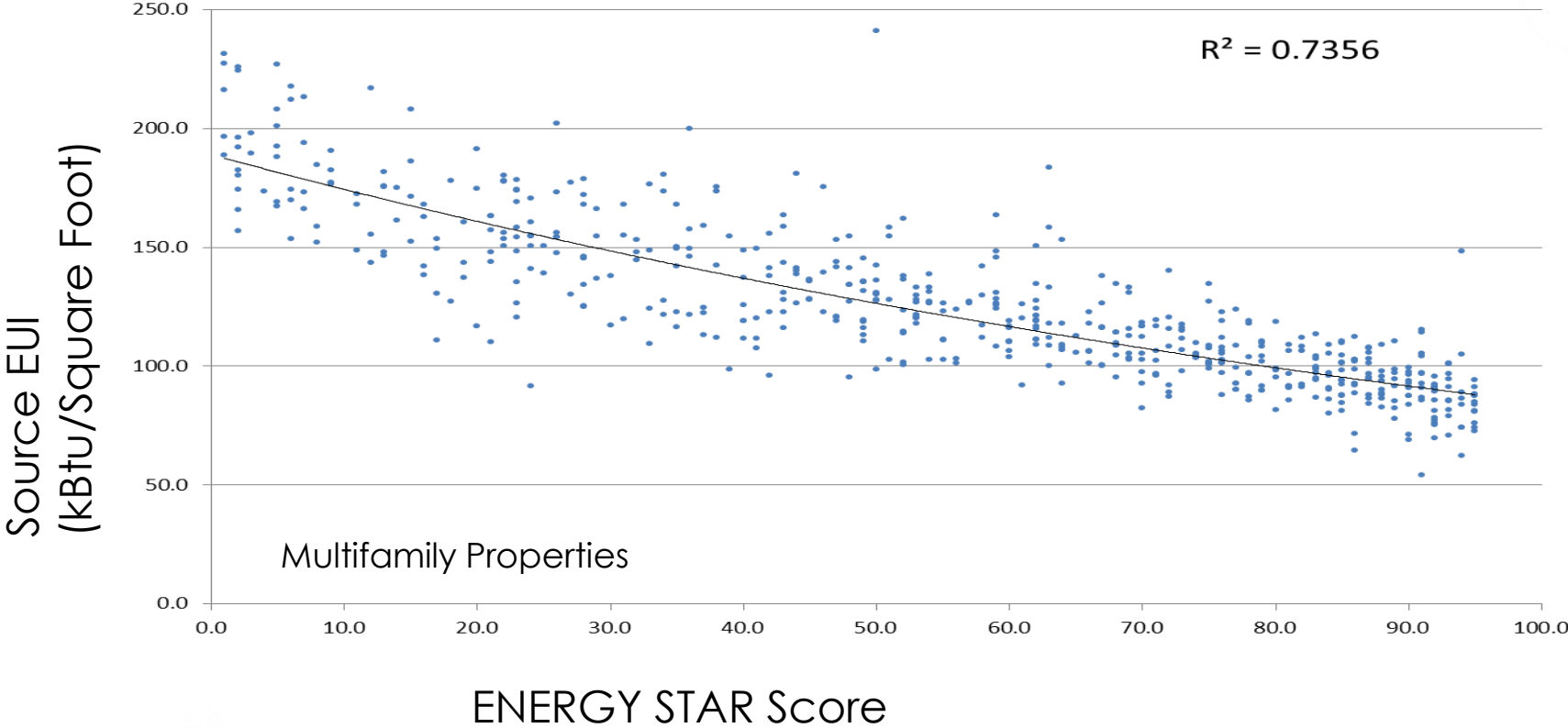
★ = Standard Set 50k
 | = 50k buildings
 ★ = Standard Set 25k
 | = 49,999-25k buildings
 ★ = Standard Set 25k
 | = 49,999-25k buildings

Revised Timeline with Amendment (part 2)



★ = Standard Set 50k | = 50k buildings ★ = Standard Set 25k | = 49,999-25k buildings ★ = Standard Set 25k | = 49,999-25k buildings

SOURCE EUI VS ENERGY STAR SCORE



$R^2 = 0.7356$

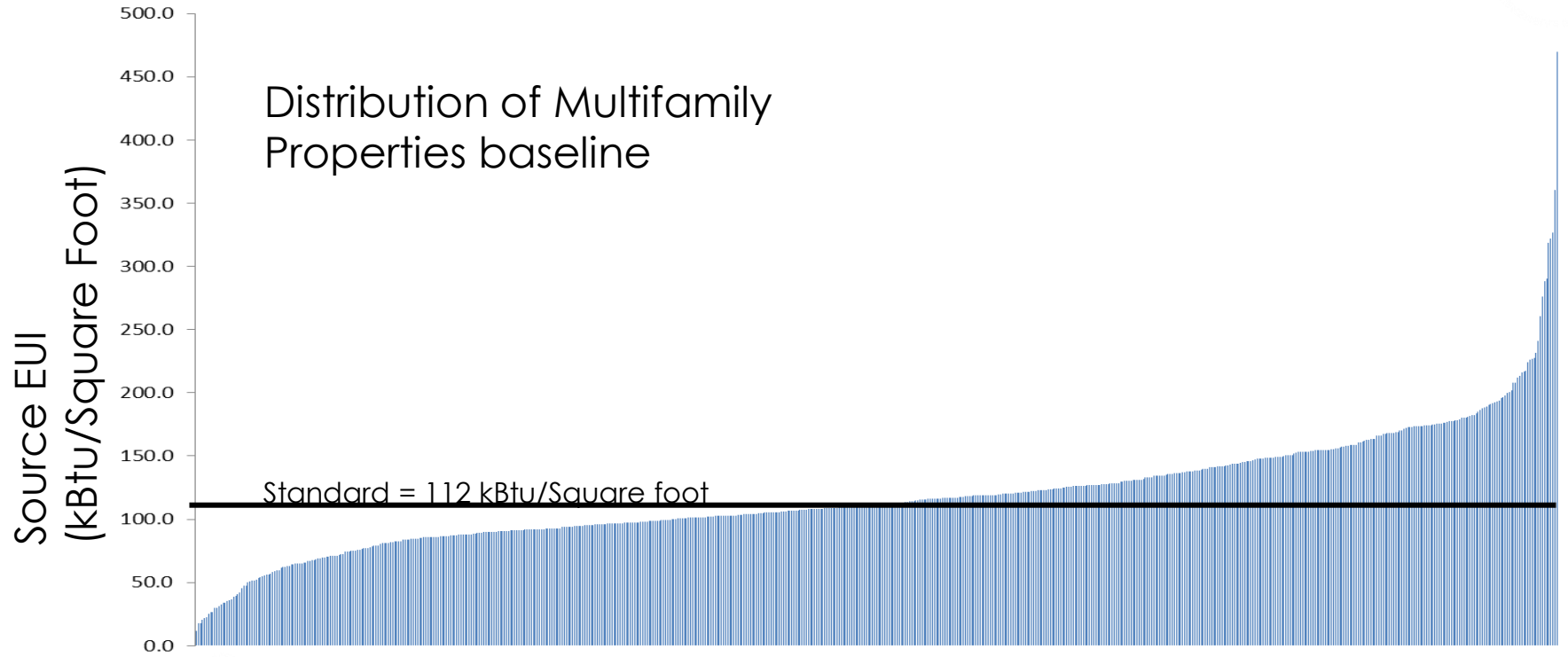
Multifamily Properties



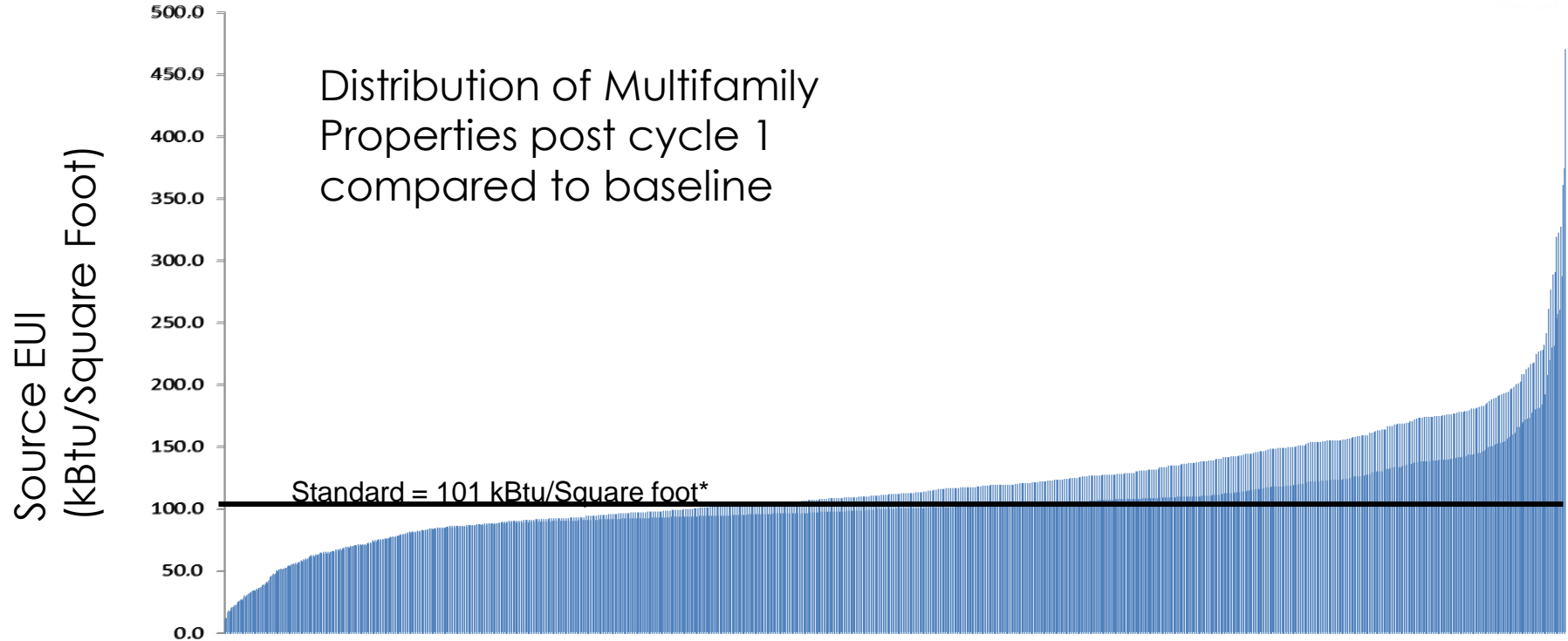
MEDIAN SOURCE EUI BY PROPERTY TYPE

Property Type	Pathway	Baseline	End Cycle 1	End Cycle 2	End Cycle 3	End Cycle 4	End Cycle 5
Office	Base Law	161	145	128	113	100	88
	Standard Target	161	159	156	155	155	155
	Gap Reduction with Base Law	161	161	158	157	157	156
	Gap Reduction without Base Law	161	161	158	157	157	156
Multifamily Housing	Base Law	112	101	89	79	70	61
	Standard Target	112	110	108	106	106	106
	Gap Reduction with Base Law	112	112	109	108	108	108
	Gap Reduction without Base Law	112	112	109	108	108	108
K-12 School	Base Law	144	128	112	98	86	77
	Standard Target	144	140	136	133	133	133
	Gap Reduction with Base Law	144	143	139	137	136	135
	Gap Reduction without Base Law	144	143	139	137	136	135
Hotel	Base Law	187	170	151	133	117	104
	Standard Target	187	186	181	180	180	180
	Gap Reduction with Base Law	187	187	183	182	181	181
	Gap Reduction without Base Law	187	187	183	182	181	181
Hospital (General Medical & Surgical)	Base Law	456	405	377	324	283	254
	Standard Target	456	426	404	399	397	397
	Gap Reduction with Base Law	456	427	411	404	400	398
	Gap Reduction without Base Law	456	435	415	405	401	399
College/University	Base Law	193	177	152	138	119	106
	Standard Target	193	192	190	189	189	189
	Gap Reduction with Base Law	193	192	190	190	189	189
	Gap Reduction without Base Law	193	192	190	190	189	189

PERFORMANCE PATHWAY DISTRIBUTION BASELINE



PERFORMANCE PATHWAY DISTRIBUTION CYCLE 1



* - Standard becomes is slightly more aggressive due to new more efficient buildings

PERFORMANCE PATHWAY DISTRIBUTION CYCLE 5

