

Memorandum

To Arlington County
From Buro Happold
Copied to Seneca, NBBJ, and JBG SMITH
Subject PenPlace ENERGY STAR Target Finder

Date Tuesday, 17 November, 2021
Job no 044811

This memo outlines the approach undertaken by PenPlace to show compliance with the Arlington County Green Building Incentive Policy FAR 0.55 threshold requirement of an ENERGY STAR score of 90.

1.0 Compliance

The PenPlace Towers 1, 2, and 3 are currently projected with EUIs of **36, 33, and 33 kBtu/ft²/year**, respectively. This corresponds with **ENERGY STAR Scores of 91, 93, and 92**. Figure 1 below details this performance compared against a reference case with an ENERGY STAR Target Finder score of 90, and against a "Median Property" as defined by ENERGY STAR. These scores exceed the required Target Finder score threshold of 90, and Buro Happold recommends maintaining this design contingency to ensure the target is met and exceeded as we approach 100% Construction Documentation and into operation.

2.0 Approach

The ENERGY STAR Target Finder helps architects and engineers assess the performance of commercial building designs by comparing the estimated energy use of the proposed building against actual energy consumption of real buildings collected by nationally representative surveys, such as DOE's Commercial Buildings Energy Consumption Survey (CBECS). The Target Finder provides the ability to compare against a specified target ENERGY STAR score as well as the national median performance. Please note that the ENERGY STAR Target Finder is a *source* energy calculator which accounts for the estimated carbon emissions equivalent of on-site energy consumption.

The PenPlace Towers are input into the Target Finder predominantly as Office Use.

3.0 Next Steps

Additional considerations that will be incorporated during the Construction Documentation phase include:

- Receptacle energy modelled in office spaces to be refined to account for measured energy use available from precedent projects. This is likely to reduce projected annual energy consumption on site.
- The on-site photovoltaic array's impact on each Tower's ENERGY STAR Target Finder score has been conservatively excluded from this assessment.
- The off-site photovoltaic array's impact on the project's source energy will be explored as part of the project's energy efficiency targets.
- An appropriate methodology for analysing HMC within the Target Finder framework is to be coordinated with the county.

Metrics Comparison for Your Design and/or Target

Metric	Design Project	Design Target*	Median Property*
ENERGY STAR score (1-100)	91	90	50
Source EUI (kBtu/ft ²)	101.1	107.4	220.7
Site EUI (kBtu/ft ²)	36.1	38.4	78.8
Source Energy Use (kBtu)	117,207,400.8	124,530,384.1	255,796,114.9
Site Energy Use (kBtu)	41,859,786.0	44,475,142.5	91,355,766.3
Energy Cost (\$)	613,420.39	651,746.28	1,338,742.77
Total GHG Emissions (Metric Tons CO ₂ e)	3,779.2	4,015.3	8,247.7

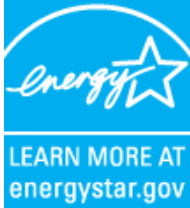
Metrics Comparison for Your Design and/or Target

Metric	Design Project	Design Target*	Median Property*
ENERGY STAR score (1-100)	93	90	50
Source EUI (kBtu/ft ²)	93.7	106.6	218.9
Site EUI (kBtu/ft ²)	33.4	38.1	78.2
Source Energy Use (kBtu)	111,172,353.6	126,492,363.2	259,826,188.7
Site Energy Use (kBtu)	39,704,412.0	45,175,849.4	92,795,078.5
Energy Cost (\$)	581,834.96	662,014.14	1,359,834.41
Total GHG Emissions (Metric Tons CO ₂ e)	3,584.6	4,078.5	8,377.7

Metrics Comparison for Your Design and/or Target

Metric	Design Project	Design Target*	Median Property*
ENERGY STAR score (1-100)	92	90	50
Source EUI (kBtu/ft ²)	92.1	102.1	209.7
Site EUI (kBtu/ft ²)	32.9	36.5	74.9
Source Energy Use (kBtu)	124,493,113.9	137,951,881.2	283,365,023.8
Site Energy Use (kBtu)	44,461,826.4	49,268,534.9	101,201,806.4
Energy Cost (\$)	651,550.64	721,989.13	1,483,026.98
Total GHG Emissions (Metric Tons CO ₂ e)	4,014.1	4,448.0	9,136.7

Figure 1 - ENERGY STAR Target Finder Results for PenPlace Towers 1, 2, and 3



ENERGY STAR[®] Statement of Energy Design Intent (SEDI)¹

91

Primary Property Type: Office
 Gross Floor Area (ft²): 1,158,997
 Estimated Date of Certification of Occupancy: _____

Date Generated: November 16, 2021

ENERGY STAR[®]
 Design Score²

1. This form is required when applying for Designed to Earn the ENERGY STAR recognition. It was generated from ENERGY STAR Portfolio Manager.
2. The ENERGY STAR 1 – 100 Score is based on total annual Source Energy. To be eligible for Designed to Earn the ENERGY STAR recognition you must score at least 75.

Property & Contact Information for Design Project

Property Address _____, Virginia 22202	Project Architect _____ (____)____-____	Owner Contact _____ (____)____-____
Property ID: 18426177	Architect Of Record _____ _____ (____)____-____	Property Owner _____ (____)____-____

Estimated Design Energy

Fuel Type	Usage	Energy Rate (\$/Unit)
Electric - Grid	41,859,801.82 kBtu (thousand Btu)	\$ 0.05/kWh (thousand Watt-hours)

Estimated Design Use Details

★ This Use Detail is used to calculate the 1-100 ENERGY STAR Score.

Office	
★ Weekly Operating Hours	65 ← default value
★ Number of Workers on Main Shift	4,167
★ Percent That Can Be Cooled	50 % or more ← default value
★ Number of Computers	3,625
Percent That Can Be Heated	50 % or more ← default value
★ Gross Floor Area	1,158,997 Sq. Ft.

Design Energy and Emission Results

Metric	Design Project	Median Property	Estimated Savings
ENERGY STAR Score (1-100)	91	50	N/A
Energy Reduction (from Median)(%)	-54.2	0	N/A
Source Energy Use Intensity (kBtu/ft ² /yr)	101	220	119
Site Energy Use Intensity (kBtu/ft ² /yr)	36	78	42
Source Energy Use (kBtu/yr)	117,207,400	255,796,114	138,588,714
Site Energy Use (kBtu/yr)	41,859,786	91,355,766	49,495,980
Energy Costs (\$)	613,420	1,338,742	725,322
Total GHG Emissions (Metric Tons CO ₂ e)	3,779	8,247	4,468

PP Tower 1

Designed to Earn the ENERGY STAR: Application Checklist

This section is only required if you are using this document to apply for Designed to Earn the ENERGY STAR. All design projects that achieve an EPA energy performance score of 75 or higher are eligible for this certification.

- 1) Does your [property type](#) match the function or use of a property that's eligibility to receive an ENERGY STAR design score? Yes No/Not Sure

If you are not sure your project is eligible for an ENERGY STAR design score, please describe the property's major functions or use:

- 2) Is the design project at least 95% complete with construction documents? Yes No

If no, please explain:

- 3) Is the property currently unoccupied and not yet generating energy bills? Yes No

- 4) Do energy calculations account for the whole building intended operations and all energy sources? Yes No

- 5) Is the Architect of Record (AOR) applying for ENERGY STAR partnership? Yes No

- 6) Was the design record created in the owner's Portfolio Manager account? Yes No

- 7) Are you seeking other qualifications for this design project? Yes No

If so, please select all that apply:

- AIA 2030 Commitment
- Architecture 2030 Challenge
- Federal, State or Local Disclosure Ordinance
- Green Globes
- LEED
- Other, please indicate: _____

PP Tower 1
Professional Verification

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Verifying Professional

,
(____)____ - _____



**Verifying Professional Stamp
(if applicable)**

Note: When applying for the ENERGY STAR Designed to Earn, the signature of the Verifying Professional must match the stamp.

I agree to adhere to the ENERGY STAR Identity Guidelines when using the Designed to Earn the ENERGY STAR recognition graphic in association with this project.

Architect of Record Acknowledgement

As the Architect of Record representative, I confirm that the information on this SEDI is true and accurate to the best of my knowledge. It is our best estimate for all energy use of specified systems and processes but does not guarantee the operational performance of this building. Instead, this project has been specified to achieve Designed to Earn the ENERGY STAR recognition in an effort to assist the Owner/Developer in meeting their operational performance goal for the building to earn ENERGY STAR certification.

Signature: _____

Date: _____

Building Owner/Developer Acknowledgement

As the Building Owner/Developer representative, I concur that this project be nominated for Designed to Earn the ENERGY STAR recognition. Our organization understands the importance of measuring actual energy use in Portfolio Manager after receiving the Certificate of Occupancy to verify that this property is performing as intended. We understand that once the building earns an ENERGY STAR score of 75 or higher, it may be eligible for ENERGY STAR certification.

Signature: _____

Date: _____



LEARN MORE AT
energystar.gov

ENERGY STAR[®] Statement of Energy Design Intent (SEDI)¹

93

ENERGY STAR[®]
Design Score²

Primary Property Type: Office
Gross Floor Area (ft²): 1,187,093
Estimated Date of Certification of Occupancy: _____

Date Generated: November 16, 2021

1. This form is required when applying for Designed to Earn the ENERGY STAR recognition. It was generated from ENERGY STAR Portfolio Manager.

2. The ENERGY STAR 1 – 100 Score is based on total annual Source Energy. To be eligible for Designed to Earn the ENERGY STAR recognition you must score at least 75.

Property & Contact Information for Design Project

Property Address _____, Virginia 22202	Project Architect _____ (____)____-____	Owner Contact _____ (____)____-____
Property ID: 18426189	Architect Of Record _____ _____ (____)____-____	Property Owner _____ (____)____-____

Estimated Design Energy

Fuel Type	Usage	Energy Rate (\$/Unit)
Electric - Grid	39,704,430.13 kBtu (thousand Btu)	\$ 0.05/kWh (thousand Watt-hours)

Estimated Design Use Details

★ This Use Detail is used to calculate the 1-100 ENERGY STAR Score.

Office	
★ Weekly Operating Hours	65 ← default value
★ Number of Workers on Main Shift	4,167
★ Percent That Can Be Cooled	50 % or more ← default value
★ Number of Computers	3,625
Percent That Can Be Heated	50 % or more ← default value
★ Gross Floor Area	1,187,093 Sq. Ft.

Design Energy and Emission Results

Metric	Design Project	Median Property	Estimated Savings
ENERGY STAR Score (1-100)	93	50	N/A
Energy Reduction (from Median)(%)	-57.2	0	N/A
Source Energy Use Intensity (kBtu/ft ² /yr)	93	218	125
Site Energy Use Intensity (kBtu/ft ² /yr)	33	78	45
Source Energy Use (kBtu/yr)	111,172,353	259,825,969	148,653,616
Site Energy Use (kBtu/yr)	39,704,412	92,795,000	53,090,588
Energy Costs (\$)	581,834	1,359,833	777,999
Total GHG Emissions (Metric Tons CO ₂ e)	3,584	8,377	4,793

This section is only required if you are using this document to apply for Designed to Earn the ENERGY STAR. All design projects that achieve an EPA energy performance score of 75 or higher are eligible for this certification.

- 1) Does your [property type](#) match the function or use of a property that's eligibility to receive an ENERGY STAR design score? Yes No/Not Sure

If you are not sure your project is eligible for an ENERGY STAR design score, please describe the property's major functions or use:

- 2) Is the design project at least 95% complete with construction documents? Yes No

If no, please explain:

- 3) Is the property currently unoccupied and not yet generating energy bills? Yes No

- 4) Do energy calculations account for the whole building intended operations and all energy sources? Yes No

- 5) Is the Architect of Record (AOR) applying for ENERGY STAR partnership? Yes No

- 6) Was the design record created in the owner's Portfolio Manager account? Yes No

- 7) Are you seeking other qualifications for this design project? Yes No

If so, please select all that apply:

- AIA 2030 Commitment
- Architecture 2030 Challenge
- Federal, State or Local Disclosure Ordinance
- Green Globes
- LEED
- Other, please indicate: _____

PP Tower 2
Professional Verification

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Verifying Professional

,
(____)____ - _____



**Verifying Professional Stamp
(if applicable)**

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I agree to adhere to the ENERGY STAR Identity Guidelines when using the Designed to Earn the ENERGY STAR recognition graphic in association with this project.

Architect of Record Acknowledgement

As the Architect of Record representative, I confirm that the information on this SEDI is true and accurate to the best of my knowledge. It is our best estimate for all energy use of specified systems and processes but does not guarantee the operational performance of this building. Instead, this project has been specified to achieve Designed to Earn the ENERGY STAR recognition in an effort to assist the Owner/Developer in meeting their operational performance goal for the building to earn ENERGY STAR certification.

Signature: _____

Date: _____

Building Owner/Developer Acknowledgement

As the Building Owner/Developer representative, I concur that this project be nominated for Designed to Earn the ENERGY STAR recognition. Our organization understands the importance of measuring actual energy use in Portfolio Manager after receiving the Certificate of Occupancy to verify that this property is performing as intended. We understand that once the building earns an ENERGY STAR score of 75 or higher, it may be eligible for ENERGY STAR certification.

Signature: _____

Date: _____



ENERGY STAR[®] Statement of Energy Design Intent (SEDI)¹

PP Tower 3

LEARN MORE AT
energystar.gov

92

Primary Property Type: Office
Gross Floor Area (ft²): 1,351,206
Estimated Date of Certification of Occupancy: _____

Date Generated: November 16, 2021

ENERGY STAR[®]
Design Score²

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Property & Contact Information for Design Project

Property Address PP Tower 3 _____, Virginia 22202	Project Architect _____ (____)____-____	Owner Contact _____ (____)____-____
Property ID: 18426219	Architect Of Record _____ _____ (____)____-____	Property Owner _____ (____)____-____

Estimated Design Energy

Fuel Type	Usage	Energy Rate (\$/Unit)
Electric - Grid	44,461,815 kBtu (thousand Btu)	\$ 0.05/kWh (thousand Watt-hours)

Estimated Design Use Details

★ This Use Detail is used to calculate the 1-100 ENERGY STAR Score.

Office	
★ Weekly Operating Hours	65 ← default value
★ Number of Workers on Main Shift	4,167
★ Percent That Can Be Cooled	50 % or more ← default value
★ Number of Computers	3,625
Percent That Can Be Heated	50 % or more ← default value
★ Gross Floor Area	1,351,206 Sq. Ft.

Design Energy and Emission Results

Metric	Design Project	Median Property	Estimated Savings
ENERGY STAR Score (1-100)	92	50	N/A
Energy Reduction (from Median)(%)	-56.1	0	N/A
Source Energy Use Intensity (kBtu/ft ² /yr)	92	209	117
Site Energy Use Intensity (kBtu/ft ² /yr)	32	74	42
Source Energy Use (kBtu/yr)	124,493,113	283,365,023	158,871,910
Site Energy Use (kBtu/yr)	44,461,826	101,201,806	56,739,980
Energy Costs (\$)	651,550	1,483,026	831,476
Total GHG Emissions (Metric Tons CO ₂ e)	4,014	9,136	5,122

PP Tower 3

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- 6) Was the design record created in the owner's Portfolio Manager account? Yes No

- 7) Are you seeking other qualifications for this design project? Yes No

If so, please select all that apply:

- AIA 2030 Commitment
- Architecture 2030 Challenge
- Federal, State or Local Disclosure Ordinance
- Green Globes
- LEED
- Other, please indicate: _____

PP Tower 3
Professional Verification

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Verifying Professional

,
(____)____ - _____



**Verifying Professional Stamp
(if applicable)**

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