

# CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS MAINTENANCE FACILITY DESIGN CRITERIA

July 11, 2022

PGAL



# DESIGN CRITERIA FOR NORMAL MUNICIPAL FACILITIES

- Some Resiliency to Natural Disasters
- Energy Efficient Design
- Efficient Space Layouts
- Space Standards
- Security Features
- Regional Materials
- Native Plantings

# ADDITIONAL DESIGN CRITERIA FOR CRITICAL MUNICIPAL FACILITIES

- Maximum Resiliency to Natural Disasters
- Physical Barriers on Site
- Security Fencing
- Redundant Energy Sources
- Emergency Generator
- Higher Finish Floor Elevations for Flood Prevention
- Highest Level of Security Features



# SUSTAINABILITY TASK FORCE PROPOSED PRIORITIES

Platinum LEED Certification

Reducing Energy Use

Increasing Renewable Energy Use

Diverting/Recycling Construction Waste

Benchmark Water Use, Waste,  
Materials and Greenhouse Gas Emissions

Transitioning to Electric Fleet

Promote Sustainable Landscaping

Decrease Stormwater Runoff

Assess Reopening of Recycle Express

# SUSTAINABILITY STANDARDS



# LEED



**CERTIFIED**  
40-49 points



**SILVER**  
50-59 points



**GOLD**  
60-79 points



**PLATINUM**  
80+ points



# RATING SYSTEMS WITHIN LEED

## LEED for Building Design + Construction

- > New Construction and Major Renovation
- > Core and Shell Development
- > Schools
- > Retail
- > Data Centers
- > Warehouses and Distribution Centers
- > Hospitality
- > Healthcare

## LEED for Interior Design + Construction

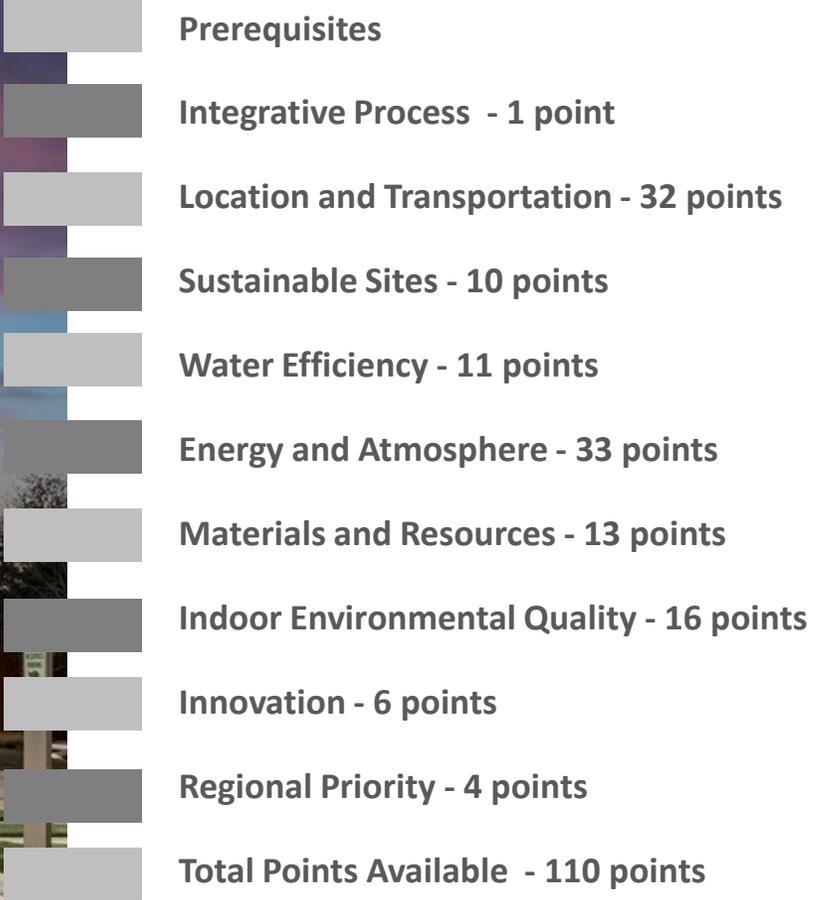
## LEED Building Operations + Maintenance

## LEED for Neighborhood Development

## LEED for Homes



# LEED CATAGORIES – V4 + V4.1 NEW CONSTRUCTION



# SUSTAINABILITY LEVELS



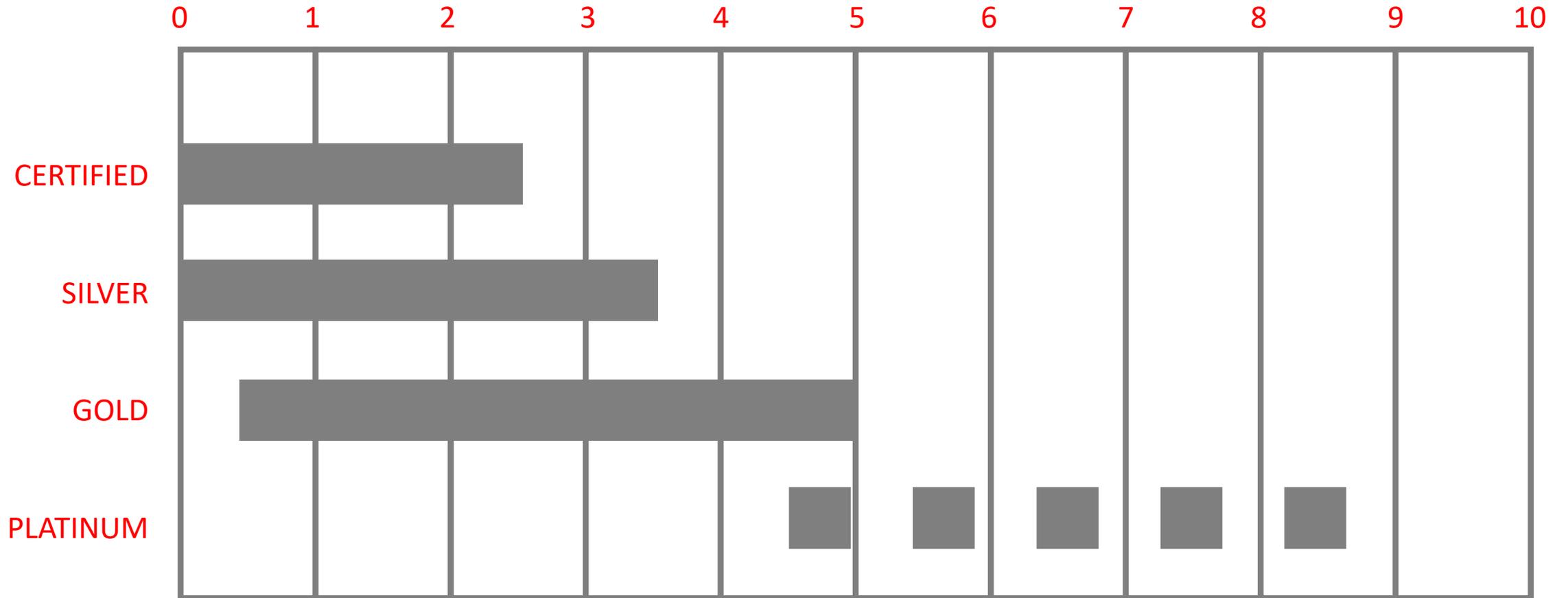
**CERTIFIED 40 – 49 Points**

**SILVER 50 – 59 Points**

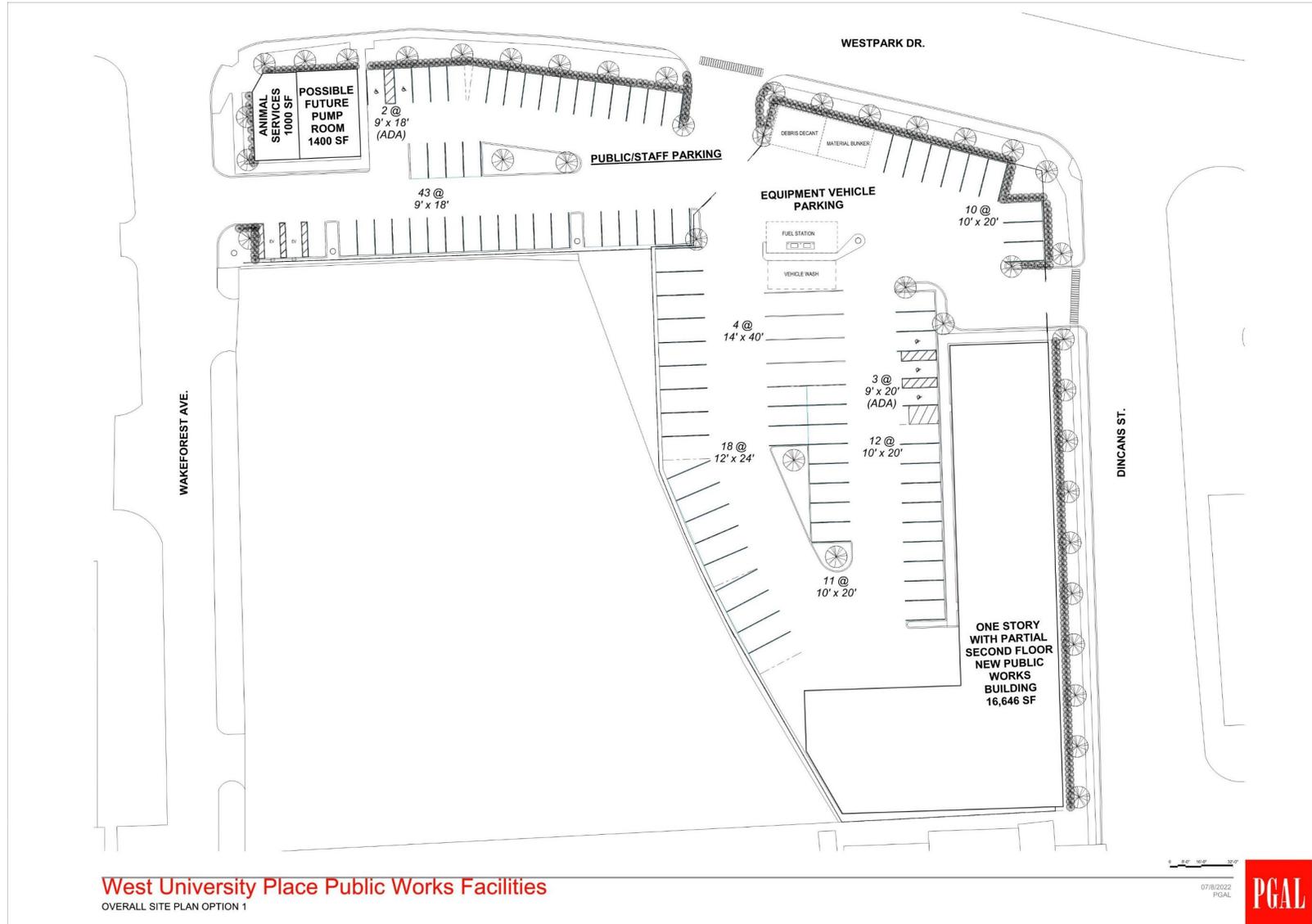
**GOLD 60 – 79 Points**

**PLATINUM 80+ Points**

**FIGURE 1. TYPICAL INCREMENTAL PERCENTAGE CAPITAL COST OF MEETING LEAD**



# POSSIBLE SITE PLAN





## CURRENT SITE AND PROGRAM ADVANTAGES

This site is previously developed and does not fit the requirements of preserving sensitive lands.

Site is located in an urban environment with dense and diverse uses. This promotes a vibrant and livable community.

This site already has access to quality transit. 3 bus lines run within a ¼ mile of the site.

This project will participate in a Demand Response program which calls for decreased energy usage during peak times reducing the strain on the energy grid.

***RESULTS IN 6 POINTS BEING EARNED***



## POINTS NOT ATTENABLE CURRENT SITE + PROGRAM

Not located within a LEED neighborhood

Not located on a brownfield or in an economically disadvantaged community

Although this site is in an urban environment- its is not in a highly dense- can only achieve some points

Program does not allow for preserving habitat or open space as required by LEED (30% or more)

Site is constricted for rainwater management- Clay soils unlikely to allow natural percolation as required by newer versions of LEED. Not enough Green areas for rainwater re-use- would need to greatly reduce parking.

No plan to reuse the existing building structure

***RESULTS IN 13 POINTS NOT ACHIEVABLE***



# LOCATION AND TRANSPORTATION

16 points possible  
5 not attainable  
2 unlikely  
9 pursued at different levels



- Protect sensitive lands
- Develop in dense and diverse area
- Access to Transit

7/16



- Provide bicycle facilities
- Provide Electrical Vehicle charging stations

9/16



- No further points pursued in this category

9/16



- No further points pursued in this category

9/16



# SUSTAINABLE SITES

10 points possible  
6 not attainable  
4 pursued at different levels



- Perform an in-depth site assessment
- Reduce the heat island affect through roof and paving selections

3/10



- No further points pursued in this category

3/10



- Reduce exterior light pollution

4/10



- No further points pursued in this category

4/10



# WATER EFFICIENCY

11 points possible  
2 not attainable  
2 unlikely  
7 pursued at different levels



- Eliminate outdoor irrigation
- Reduce indoor water by 35%

6/11



- Reduce indoor water by 40%

7/11



- No further points pursued in this category

7/11



- No further points pursued in this category

7/11



# ENERGY EFFICIENCY

33 points possible  
8 unlikely  
25 pursued at different levels



- Reduce energy by 30%
- Provide Fundamental Commissioning
- Participate in Demand Response
- Use enhanced refrigerant

9/33



- Provide Enhanced Commissioning

12/33



- Reduce energy by 40%
- Add monitored-based commissioning

14/33



- Reduce energy by 50%
- Solar panels for a minimum of 5% of building energy
- Provide Envelope commissioning
- Renewable Energy Credits for 100% of the building's energy for 5 years

25/33



# MATERIALS + RESOURCES

13 points possible  
2 not attainable  
11 pursued at different levels



- 5% environmental impact reduction
- Environment Product Declarations
- 15% (costs) to be sourced from raw materials
- Recycle during demolition and construction

7/13



- 10% environmental impact reduction

8/13



- No further points pursued in this category

8/13



- 5 different materials with compliant embodied carbon plan
- 30% (costs) to be sourced from raw materials

11/13



# INDOOR ENVIRONMENTAL QUALITY

16 points possible  
16 pursued at different levels



- Enhanced indoor air quality
- Low-emitting interior materials
- Building flush out
- Interior shade devices + 40% spatial daylight
- Quality views for 75% of regularly occupied spaces

9/16



- No further points pursued in this category

9/16



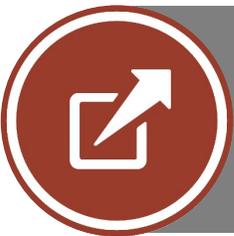
- Individual thermal controls
- Light fixtures with glare control
- 75% spatial daylight
- Advanced acoustical control to occupied spaces

14/16



- Advanced air filters and higher ventilation
- Additional carbon dioxide monitors
- Advanced interior work lighting

16/16



# INNOVATION

6 points possible  
6 pursued at different levels



- Engage and work with a LEED accredited professional

1/6



- Administer occupant survey
- Use of all LED lights
- Engage in Green Building Education

4/6



- Ensure ergonomic workstation
- Advanced filters to prevent airborne disease

6/6



- No further points pursued in this category

6/6



# REGIONAL PRIORITY (bonus points)

4 points possible  
4 pursued at different levels



- Access to Quality Transit
- Outdoor Water Use Reduction

2/4



- No further points pursued in this category

2/4



- No further points pursued in this category

2/4



- Optimize Energy Performance
- Material Ingredients

4/4



# LEED SCORECARD - CERTIFIED

Y	?	N			
1			Credit	Integrative Process	1

7	2	5	Location and Transportation	16	
		NA	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
	1	1	Credit	High Priority Site and Equitable Development	2
3		2	Credit	Surrounding Density and Diverse Uses	5
3		2	Credit	Access to Quality Transit	5
			Credit	Bicycle Facilities	1
	1		Credit	Reduced Parking Footprint	1
			Credit	Electric Vehicles	1

3	0	6	Sustainable Sites	10	
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Protect or Restore Habitat	2
	1		Credit	Open Space	1
		3	Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
			Credit	Light Pollution Reduction	1

6	2	0	Water Efficiency- V4	11	
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
3			Credit	Indoor Water Use Reduction	6
	2		Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

9	8	0	Energy and Atmosphere- V4	33	
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
			Credit	Enhanced Commissioning	6
6	8		Credit	Optimize Energy Performance	18
			Credit	Advanced Energy Metering	1
2			Credit	Demand Response	2
			Credit	Renewable Energy	3
1			Credit	Enhanced Refrigerant Management	1
			Credit	Green Power and Carbon Offsets	2

7	0	2	Materials and Resources	13	
Y			Prereq	Storage and Collection of Recyclables	Required
2		2	Credit	Building Life-Cycle Impact Reduction	5
1			Credit	Environmental Product Declarations	2
1			Credit	Sourcing of Raw Materials	2
1			Credit	Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

9	0	0	Indoor Environmental Quality	16	
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
2			Credit	Indoor Air Quality Assessment	2
			Credit	Thermal Comfort	1
			Credit	Interior Lighting	2
1			Credit	Daylight	3
1			Credit	Quality Views	1
			Credit	Acoustic Performance	1

1	0	0	Innovation	6	
			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

2	0	0	Regional Priority	4	
1			Credit	Regional Priority: Access to Quality Transit	1
1			Credit	Regional Priority: Outdoor Water Use Reduction	1
			Credit	Regional Priority:	1
			Credit	Regional Priority:	1

<b>45</b>	<b>12</b>	<b>13</b>	<b>TOTALS</b>	Possible Points:	<b>110</b>
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Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

**TARGET 45 POINTS**



# LEED PROJECTED COSTS - CERTIFIED

• Design Costs	
• LEED Consulting	\$25,000
• Fundamental Commissioning	\$20,000
• Energy Modeling	<u>\$15,000</u>
• Total	\$60,000
• Estimated Construction Costs	
• Construction Premium	<u>\$50,000</u>
<b>TOTAL DESIGN + EST CONSTRUCTION COST</b>	<b>\$110,000*</b>

\*COST ESTIMATE IN TODAY'S DOLLARS



# LEED PROJECTED COSTS - SILVER

9	2	5	Location and Transportation	16
		NA	Credit LEED for Neighborhood Development Location	16
1			Credit Sensitive Land Protection	1
	1	1	Credit High Priority Site and Equitable Development	2
3		2	Credit Surrounding Density and Diverse Uses	5
3		2	Credit Access to Quality Transit	5
1			Credit Bicycle Facilities	1
	1		Credit Reduced Parking Footprint	1
1			Credit Electric Vehicles	1

3	0	6	Sustainable Sites	10
Y			Prereq Construction Activity Pollution Prevention	Required
1			Credit Site Assessment	1
		2	Credit Protect or Restore Habitat	2
		1	Credit Open Space	1
		3	Credit Rainwater Management	3
2			Credit Heat Island Reduction	2
			Credit Light Pollution Reduction	1

7	0	0	Water Efficiency- V4	11
Y			Prereq Outdoor Water Use Reduction	Required
Y			Prereq Indoor Water Use Reduction	Required
Y			Prereq Building-Level Water Metering	Required
2			Credit Outdoor Water Use Reduction	2
4			Credit Indoor Water Use Reduction	6
			Credit Cooling Tower Water Use	2
1			Credit Water Metering	1

12	8	0	Energy and Atmosphere- V4	33
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Building-Level Energy Metering	Required
Y			Prereq Fundamental Refrigerant Management	Required
3			Credit Enhanced Commissioning	6
6	8		Credit Optimize Energy Performance	18
			Credit Advanced Energy Metering	1
2			Credit Demand Response	2
			Credit Renewable Energy	3
1			Credit Enhanced Refrigerant Management	1
			Credit Green Power and Carbon Offsets	2

8	0	2	Materials and Resources	13
Y			Prereq Storage and Collection of Recyclables	Required
3		2	Credit Building Life-Cycle Impact Reduction	5
1			Credit Environmental Product Declarations	2
1			Credit Sourcing of Raw Materials	2
1			Credit Material Ingredients	2
2			Credit Construction and Demolition Waste Management	2

9	0	0	Indoor Environmental Quality	16
Y			Prereq Minimum Indoor Air Quality Performance	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
1			Credit Enhanced Indoor Air Quality Strategies	2
3			Credit Low-Emitting Materials	3
1			Credit Construction Indoor Air Quality Management Plan	1
2			Credit Indoor Air Quality Assessment	2
			Credit Thermal Comfort	1
			Credit Interior Lighting	2
1			Credit Daylight	3
1			Credit Quality Views	1
			Credit Acoustic Performance	1

4	0	0	Innovation	6
3			Credit Innovation	5
1			Credit LEED Accredited Professional	1

2	0	0	Regional Priority	4
1			Credit Regional Priority: Access to Quality Transit	1
1			Credit Regional Priority: Outdoor Water Use Reduction	1
			Credit Regional Priority:	1
			Credit Regional Priority:	1

<b>55</b>	<b>10</b>	<b>13</b>	<b>TOTALS</b>	Possible Points:	<b>110</b>
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Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

**TARGET 55 POINTS**



# LEED PROJECTED COSTS - SILVER

- Design Costs

• LEED Consulting	\$35,000
• Fundamental Commissioning	\$20,000
• Enhanced Commissioning	\$16,000
• Energy Modeling	<u>\$15,000</u>
• Total	\$86,000

- Estimated Construction Costs

• Construction Premium	<u>\$80,000</u>
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**TOTAL DESIGN + EST CONSTRUCTION COST \$166,000\***

\*COST ESTIMATE IN TODAY'S DOLLARS



# LEED SCORECARD- GOLD

9	2	5	Location and Transportation	16
		NA	Credit LEED for Neighborhood Development Location	16
1			Credit Sensitive Land Protection	1
	1	1	Credit High Priority Site and Equitable Development	2
3		2	Credit Surrounding Density and Diverse Uses	5
3		2	Credit Access to Quality Transit	5
1			Credit Bicycle Facilities	1
	1		Credit Reduced Parking Footprint	1
1			Credit Electric Vehicles	1

4	0	6	Sustainable Sites	10
Y			Prereq Construction Activity Pollution Prevention	Required
1			Credit Site Assessment	1
		2	Credit Protect or Restore Habitat	2
		1	Credit Open Space	1
		3	Credit Rainwater Management	3
2			Credit Heat Island Reduction	2
1			Credit Light Pollution Reduction	1

7	0	0	Water Efficiency- V4	11
Y			Prereq Outdoor Water Use Reduction	Required
Y			Prereq Indoor Water Use Reduction	Required
Y			Prereq Building-Level Water Metering	Required
2			Credit Outdoor Water Use Reduction	2
4			Credit Indoor Water Use Reduction	6
			Credit Cooling Tower Water Use	2
1			Credit Water Metering	1

14	8	0	Energy and Atmosphere- V4	33
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Building-Level Energy Metering	Required
Y			Prereq Fundamental Refrigerant Management	Required
4			Credit Enhanced Commissioning	6
7	8		Credit Optimize Energy Performance	18
			Credit Advanced Energy Metering	1
2			Credit Demand Response	2
			Credit Renewable Energy	3
1			Credit Enhanced Refrigerant Management	1
			Credit Green Power and Carbon Offsets	2

8	0	2	Materials and Resources	13
Y			Prereq Storage and Collection of Recyclables	Required
3		2	Credit Building Life-Cycle Impact Reduction	5
1			Credit Environmental Product Declarations	2
1			Credit Sourcing of Raw Materials	2
1			Credit Material Ingredients	2
2			Credit Construction and Demolition Waste Management	2

14	0	0	Indoor Environmental Quality	16
Y			Prereq Minimum Indoor Air Quality Performance	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
1			Credit Enhanced Indoor Air Quality Strategies	2
3			Credit Low-Emitting Materials	3
1			Credit Construction Indoor Air Quality Management Plan	1
2			Credit Indoor Air Quality Assessment	2
1			Credit Thermal Comfort	1
1			Credit Interior Lighting	2
3			Credit Daylight	3
1			Credit Quality Views	1
1			Credit Acoustic Performance	1

6	0	0	Innovation	6
5			Credit Innovation	5
1			Credit LEED Accredited Professional	1

2	0	0	Regional Priority	4
1			Credit Regional Priority: Access to Quality Transit	1
1			Credit Regional Priority: Outdoor Water Use Reduction	1
			Credit Regional Priority:	1
			Credit Regional Priority:	1

<b>65</b>	<b>10</b>	<b>13</b>	<b>TOTALS</b>	Possible Points:	<b>110</b>
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Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

**TARGET 65 POINTS**



# LEED PROJECTED COSTS - GOLD

- Design Costs

• LEED Consulting	\$45,000
• Fundamental Commissioning	\$20,000
• Enhanced Commissioning	\$16,000
• Energy Modeling	<u>\$15,000</u>
• Total	\$96,000

- Estimated Construction Costs

• Construction Premium	<u>\$100,000</u>
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**TOTAL DESIGN + EST CONSTRUCTION COST \$196,000\***

\*COST ESTIMATE IN TODAY'S DOLLARS



# LEED SCORECARD - PLATINUM

9	2	5	Location and Transportation	16
		NA	Credit LEED for Neighborhood Development Location	16
1			Credit Sensitive Land Protection	1
	1	1	Credit High Priority Site and Equitable Development	2
3		2	Credit Surrounding Density and Diverse Uses	5
3		2	Credit Access to Quality Transit	5
1			Credit Bicycle Facilities	1
	1		Credit Reduced Parking Footprint	1
1			Credit Electric Vehicles	1

4	0	6	Sustainable Sites	10
Y			Prereq Construction Activity Pollution Prevention	Required
1			Credit Site Assessment	1
		2	Credit Protect or Restore Habitat	2
		1	Credit Open Space	1
		3	Credit Rainwater Management	3
2			Credit Heat Island Reduction	2
1			Credit Light Pollution Reduction	1

7	4	0	Water Efficiency- V4	11
Y			Prereq Outdoor Water Use Reduction	Required
Y			Prereq Indoor Water Use Reduction	Required
Y			Prereq Building-Level Water Metering	Required
2			Credit Outdoor Water Use Reduction	2
4	2		Credit Indoor Water Use Reduction	6
	2		Credit Cooling Tower Water Use	2
1			Credit Water Metering	1

25	8	0	Energy and Atmosphere- V4	33
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Building-Level Energy Metering	Required
Y			Prereq Fundamental Refrigerant Management	Required
6			Credit Enhanced Commissioning	6
10	8		Credit Optimize Energy Performance	18
1			Credit Advanced Energy Metering	1
2			Credit Demand Response	2
3			Credit Renewable Energy	3
1			Credit Enhanced Refrigerant Management	1
2			Credit Green Power and Carbon Offsets	2

11	0	2	Materials and Resources	13
Y			Prereq Storage and Collection of Recyclables	Required
3		2	Credit Building Life-Cycle Impact Reduction	5
2			Credit Environmental Product Declarations	2
2			Credit Sourcing of Raw Materials	2
2			Credit Material Ingredients	2
2			Credit Construction and Demolition Waste Management	2

16	0	0	Indoor Environmental Quality	16
Y			Prereq Minimum Indoor Air Quality Performance	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
2			Credit Enhanced Indoor Air Quality Strategies	2
3			Credit Low-Emitting Materials	3
1			Credit Construction Indoor Air Quality Management Plan	1
2			Credit Indoor Air Quality Assessment	2
1			Credit Thermal Comfort	1
2			Credit Interior Lighting	2
3			Credit Daylight	3
1			Credit Quality Views	1
1			Credit Acoustic Performance	1

6	0	0	Innovation	6
5			Credit Innovation	5
1			Credit LEED Accredited Professional	1

4	0	0	Regional Priority	4
1			Credit Regional Priority: Access to Quality Transit	1
1			Credit Regional Priority: Outdoor Water Use Reduction	1
1			Credit Regional Priority: Optimize Energy Performance	1
1			Credit Regional Priority: Material Ingredients	1

**83 14 13 TOTALS** Possible Points: **110**

**Certified:** 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

**TARGET 83 POINTS**



# LEED PROJECTED COSTS - PLATINUM

- Design Costs

• LEED Consulting	\$60,000
• Fundamental Commissioning	\$20,000
• Enhanced Commissioning	\$16,000
• Energy Modeling	<u>\$25,000</u>
• Total	\$121,000

- Estimated Construction Costs

• Construction Premium	<u>\$350,000</u>
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**TOTAL DESIGN + EST CONSTRUCTION COST \$471,000\***

\*COST ESTIMATE IN TODAY'S DOLLARS

# DESIGN CRITERA FOR WEST UNIVERSITY PUBLIC WORKS FACILITES

- What are the Priorities for Sustainability
- What are the Operational Realities
- Options for Consideration
  - Design sustainable building without pursuing LEED Certification
  - Design LEED Certified Building with 45 targeted points (est cost \$110K)
  - Design LEED Silver Building with 55 targeted points (est cost \$166K)
  - Design LEED Gold Building with 65 targeted points (est cost \$196K)
  - Design LEED Platinum Building with 83 targeted points (est cost \$471K)\*

\*LEED Platinum may not be achievable in the current market

# CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS MAINTENANCE FACILITY DESIGN CRITERIA

July 11, 2022

PGAL

