

RECEIVED

2020 JAN 30 PM 3:22

CITY SECRETARY
DALLAS, TEXAS

City of Dallas

1500 Marilla Street, Room 6ES
Dallas, Texas 75201



Environment and Sustainability Committee

February 3, 2020

9:00 AM

2019 CITY COUNCIL APPOINTMENTS

COUNCIL COMMITTEE	
ECONOMIC DEVELOPMENT Atkins (C), Blewett (VC), Gates, McGough, Narvaez, Resendez, West	ENVIRONMENT AND SUSTAINABILITY Narvaez (C), Atkins (VC), Blackmon, Blewett, Gates
GOVERNMENT PERFORMANCE AND FINANCIAL MANAGEMENT Gates (C), Mendelsohn (VC), Arnold, Bazaldua, Kleinman, Narvaez, Thomas	HOUSING AND HOMELESSNESS SOLUTIONS West (C), Thomas (VC), Arnold, Blackmon, Kleinman, Mendelsohn, Resendez
PUBLIC SAFETY McGough (C), Arnold (VC), Bazaldua, Blewett, Medrano, Mendelsohn, Thomas	QUALITY OF LIFE, ARTS, AND CULTURE Arnold (C), Gates (VC), Atkins, Narvaez, West
TRANSPORTATION AND INFRASTRUCTURE Kleinman (C), Medrano, (VC), Atkins, Bazaldua, Blewett, McGough, West	WORKFORCE, EDUCATION, AND EQUITY Thomas (C), Resendez (VC), Blackmon, Kleinman, Medrano
AD HOC JUDICIAL NOMINATING COMMITTEE McGough (C), Blewett, Mendelsohn, Narvaez, West	AD HOC ADMINISTRATIVE AFFAIRS Kleinman (C), Arnold, Atkins, Gates, Resendez

(C) – Chair, (VC) – Vice Chair, (L) – Liaison

Handgun Prohibition Notice for Meetings of Governmental Entities

"Pursuant to Section [30.06](#), Penal Code (trespass by license holder with a concealed handgun), a person licensed under Subchapter H, Chapter 411, Government Code (handgun licensing law), may not enter this property with a concealed handgun."

"De acuerdo con la sección [30.06](#) del código penal (ingreso sin autorización de un titular de una licencia con una pistola oculta), una persona con licencia según el subcapítulo h, capítulo 411, código del gobierno (ley sobre licencias para portar pistolas), no puede ingresar a esta propiedad con una pistola oculta."

"Pursuant to Section [30.07](#), Penal Code (trespass by license holder with an openly carried handgun), a person licensed under Subchapter H, Chapter 411, Government Code (handgun licensing law), may not enter this property with a handgun that is carried openly."

"De acuerdo con la sección [30.07](#) del código penal (ingreso sin autorización de un titular de una licencia con una pistola a la vista), una persona con licencia según el subcapítulo h, capítulo 411, código del gobierno (ley sobre licencias para portar pistolas), no puede ingresar a esta propiedad con una pistola a la vista."

Note: A quorum of the Dallas City Council may attend this Council Committee meeting.

Call to Order**MINUTES**

1. [20-253](#) Approval of the January 6, 2020 Environmental and Sustainability Committee Minutes

Attachments: [Minutes](#)

BRIEFING ITEMS

- A. [20-254](#) Green Buildings, Sustainable Building Strategies in Dallas
 [Zaida Basora, Executive Director, American Institute of Architects (AIA)]

Attachments: [Presentation](#)

- B. [20-255](#) CECAP: Resilient and Energy Efficient Buildings powered by Sustainable, Renewable, Energy
 [James McGuire, Director, Director, Office of Environmental Quality & Sustainability
 Errick Thompson, Director, Building Services Department, and Susan Alvarez, Assistant Director, Office of Environmental Quality & Sustainability]

Attachments: [Presentation](#)

ADJOURNMENT

EXECUTIVE SESSION NOTICE

A closed executive session may be held if the discussion of any of the above agenda items concerns one of the following:

1. seeking the advice of its attorney about pending or contemplated litigation, settlement offers, or any matter in which the duty of the attorney to the City Council under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with the Texas Open Meetings Act. [Tex. Govt. Code §551.071]
2. deliberating the purchase, exchange, lease, or value of real property if deliberation in an open meeting would have a detrimental effect on the position of the city in negotiations with a third person. [Tex. Govt. Code §551.072]
3. deliberating a negotiated contract for a prospective gift or donation to the city if deliberation in an open meeting would have a detrimental effect on the position of the city in negotiations with a third person. [Tex. Govt. Code §551.073]
4. deliberating the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee; or to hear a complaint or charge against an officer or employee unless the officer or employee who is the subject of the deliberation or hearing requests a public hearing. [Tex. Govt. Code §551.074]
5. deliberating the deployment, or specific occasions for implementation, of security personnel or devices. [Tex. Govt. Code §551.076]
6. discussing or deliberating commercial or financial information that the city has received from a business prospect that the city seeks to have locate, stay or expand in or near the city and with which the city is conducting economic development negotiations; or deliberating the offer of a financial or other incentive to a business prospect. [Tex Govt. Code §551.087]
7. deliberating security assessments or deployments relating to information resources technology, network security information, or the deployment or specific occasions for implementations of security personnel, critical infrastructure, or security devices. [Tex Govt. Code §551.089]



City of Dallas

1500 Marilla Street
Dallas, Texas 75201

Agenda Information Sheet

File #: 20-253

Item #: 1.

Approval of the January 6, 2020 Environmental and Sustainability Committee Minutes

Environment and Sustainability Committee

Meeting Record

The Environment and Sustainability Committee meetings are recorded. Agenda materials are available online at www.dallascityhall.com. Recordings may be reviewed/copied by contacting the Environment and Sustainability Committee Coordinator at 214-670-3246.

Meeting Date: January 6, 2020

Convened: 9:06 a.m.

Adjourned: 11:14 a.m.

Committee Members Present:

Omar Narvaez, Chair
Tennell Atkins, Vice Chair
Paula Blackmon
David Blewett
Jennifer S. Gates

Committee Members Absent:

N/A

Other Council Members Present:

Councilmember Lee M. Kleinman

Presenters:

Liz Cedillo-Pereira, Chief of Equity & Inclusion
James McGuire, Director, Office of Environmental Quality & Sustainability
Susan Alvarez, Assistant Director, Office of Environmental Quality & Sustainability
Terry Lowery, Director, Dallas Water Utilities
Holly R. Holt-Torres, Water Conservation Manager
Megan H. Toofan, Water Conservation Coordinator

AGENDA

Call to Order (9:06 a.m.)

1. Approval of the December 2, 2019 Meeting Minutes

Presenter(s): Omar Narvaez, Chair

Action Taken/Committee Recommendation(s): A motion was made to approve the minutes for the December 2, 2019 Environment and Sustainability Committee meeting.

Motion made by: Paula Blackmon

Item passed unanimously: X

Item failed unanimously:

Motion seconded by: Tennell Atkins

Item passed on a divided vote:

Item failed on a divided vote:

2. CECAP Update: Leadership from Dallas

Presenter(s): James McGuire, Director, Office of Environmental Quality & Sustainability

Action Taken/Committee Recommendation(s): Mr. McGuire presented an overview of the Comprehensive Environmental & Climate Action Plan (CECAP) and OEQS efforts that have positioned Dallas to be a leader on the local, regional, and nation levels. Mr. McGuire further described the numerous reasons Cities need to lead the way on climate change. Mr. McGuire emphasized the Mayors direction on the CECAP and described the local actions that have been completed in the last year. Mr. McGuire introduced the new regional integration of sustainability efforts (RISE) regional group and discussed the City's role. On the national level Mr. McGuire described the City's participation in the Climate Mayors association and Mayor Johnson seat on the steering committee. Chair Omar Narvaez praised CECAP's engagement efforts in other languages. Information only.

3. CECAP: Protecting Water Resources and Communities from Flood & Drought

Presenter(s): Susan Alvarez, Assistant Director, Office of Environmental Quality & Sustainability

Action Taken/Committee Recommendation(s): Ms. Alvarez outlined efforts by CECAP to protect water resources and prepare for more frequent flooding and longer periods of droughts. She reviewed the impacts of the 2015 drought in North Texas and subsequent flooding events. Ms. Alvarez described the benefits of nature-based green infrastructure strategies. The DWU “one water concept” was highlighted and reviewed comments received from community outreach efforts. Additionally, Ms. Alvarez discussed the goals and proposed actions that protect neighborhoods from flooding and increasing water resilience efforts while conserving and Dallas Water resources. Information only.

4. Dallas Water Utilities: Conserving & Protecting Water Resources

Presenter(s): Terry Lowery, Director, Dallas Water Utilities

Action Taken/Committee Recommendation(s): Ms. Lowery presented an overview of how Dallas Water Utilities is helping conserve and protect water resources. Ms. Lowery discussed how Dallas has been diversifying its water supplies over three different river basins to help compensate for the evaporation due to climate change. Ms. Lowery also talked about how water conservation and loss reduction program will impact water supplies. Flood protection and drought contingency plans were also discussed. Ms. Lowery concluded with an explanation of how the one water approach will help build greater resilience and reliability into Dallas water systems. Council Member Atkins asked about drought restrictions not placed on suburbs. Ms. Lowery explained the variations in drought solutions. Councilmember Gates inquired about flood plain evaluations. Councilmember Blackmon asked about White Rock Lake’s status, and whether it is recreational or flood control. Ms. Lowery relayed that White Rock Lake is indeed recreational. Information only.

5. City of Dallas Water Conservation: Creating a Water Efficient Future

Presenter(s): Holly R. Holt-Torres, Water Conservation Manager and Megan H. Toffan, Water Conservation Coordinator

Action Taken/Committee Recommendation(s): Ms. Holt-Torres discussed DWU’s history of conserving water and how the three-pronged approach is helping to build a successful program. Ms. Holt-Torres described how water conservation is saving millions of gallons of water annually, delaying the need to develop expensive future water supplies, and extending the life of existing water supplies. Ms. Holt-Torres talked about upcoming programs which include growing ICI program and developing irrigation system rebate. Ms. Toffan discussed how water conservation data is helping ensure equity in engaging residents that qualify for programs. Customer profiling and predictive marketing is helping to better understand customers to provide better communication and incentives. Councilmember Blackmon asked about stipulations related to sharing water with surrounding cities and associated water savings.

A motion was made to correct the council item from #27 to #34 and to support the item on the City Council Agenda on January 8, 2020.

Motion made by: Paula Blackmon

Item passed unanimously: X

Item failed unanimously:

Motion seconded by: Tennell Atkins

Item passed on a divided vote:

Item failed on a divided vote:

6. 25th Waterwise Landscape Tour Awards Ceremony

Presenter(s): Holly R. Holt-Torres, Water Conservation Manager

Action Taken/Committee Recommendation(s): Terry Lowery provided a brief history of the Waterwise Landscape Tour. James McGuire thanked staff and provided a recap of the 2019 event. Holly Holt emceed the awards ceremony and announced the winners and showcased some of the features of their gardens from the slide show. Best Small Garden winner, Karen Blesen, Best Large Garden winner, Donna Turman, and Best of Show Garden, Ron and Suzy Rentz were all in attendance. Councilmembers Blewett and Blackmon acknowledged the efforts of gardeners from their respective districts. Information only.

Adjourn (11:14 a.m.)

APPROVED BY:

**Omar Narvaez, Chair
Environment and Sustainability Committee**

ATTESTED BY:

**Yolanda Ramirez, Coordinator
Environment and Sustainability Committee**



City of Dallas

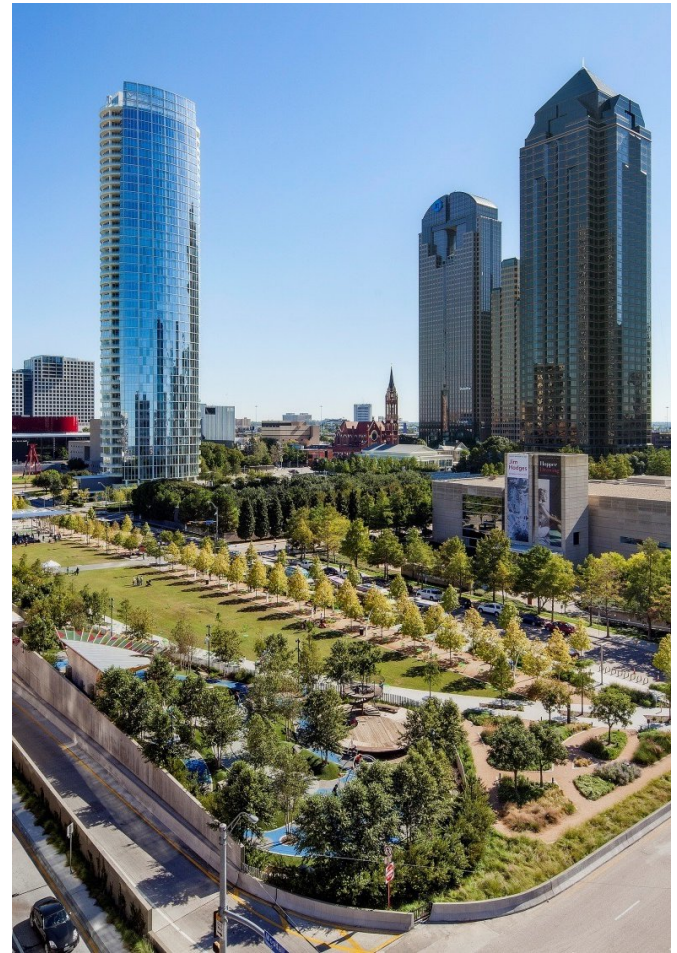
1500 Marilla Street
Dallas, Texas 75201

Agenda Information Sheet

File #: 20-254

Item #: A.

Green Buildings, Sustainable Building Strategies in Dallas
[Zaida Basora, Executive Director, American Institute of Architects (AIA)]



Dallas, Texas:

A Case Study in Municipal Sustainability Leadership

Presented by: Zaida Basora, FAIA, LEED AP BD+C

Drivers of Sustainability

- Global, federal, local government environmental mandates
- Deregulation in Texas
- Rising fuel and energy prices
- Need for conservation of natural resources
- Climate Change
- Better building through green building technical practices
- Sound business development strategies- Green building is cost-effective



Global CO₂ Emissions by Sector

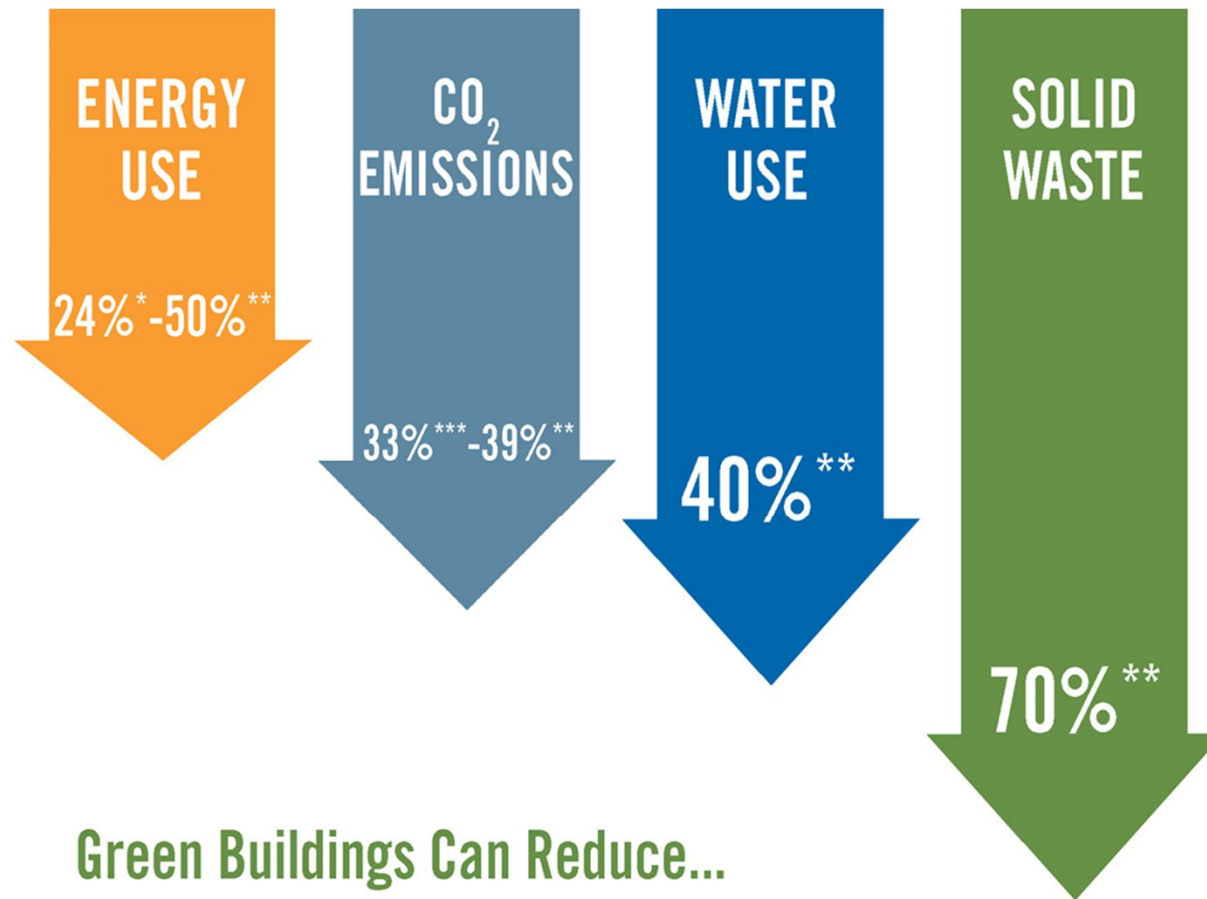
- #1. Buildings
- #2. Transportation
- #3. Industry

Source: Energy Information Administration (2006). Emissions of Greenhouse Gases in the United States.



55 % of Green House Gases

Why Dallas Adopted LEED



Green Buildings Can Reduce...

* Turner, C. & Frankel, M. (2008). Energy performance of LEED for New Construction buildings: Final report.

** Kats, G. (2003). The Costs and Financial Benefits of Green Building: A Report to California's Sustainable Building Task Force.

*** GSA Public Buildings Service (2008). Assessing green building performance: A post occupancy evaluation of 12 GSA buildings.

Why Dallas Adopted LEED

LEED facilitates positive results for the environment, occupant health and financial return

LEED allows a way to:

Measure and compare “green” facilities

Promote whole-building, integrated design processes

Lower life-cycle costs, such as energy and operating costs

Why Dallas Adopted LEED

LEED ENABLES INCREASED EFFICIENCY AND REDUCED RESOURCE NEEDS

LEED is the most widely used green building rating system in the world, and for good reason.

Available for virtually all building, community, and home project types, LEED provides a framework to create highly efficient, cost saving green buildings. LEED projects must meet a set of rigorous criteria in a flexible system of prerequisites and optional credits that, when combined, set building projects on the path to excellence in resource efficiency and overall resilience.

Why Dallas Adopted LEED

IN 2003:

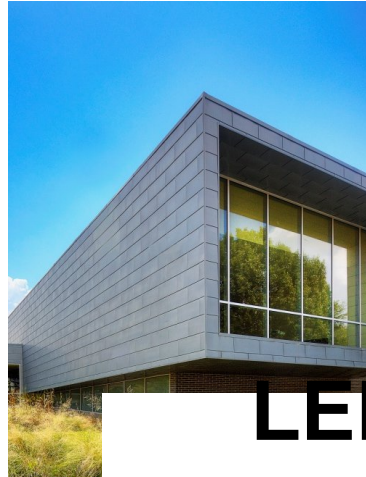
The City was prepared to pay initial higher cost in exchange for higher return on building maintenance and operation costs

...AND

DALLAS WANTED TO PRACTICE LEADERSHIP
BY EXAMPLE

Municipal Green Building Program

- Adopted on January 22, 2003 – all municipal projects over 10,000 s.f. to be LEED Silver Certified
- To date the City of Dallas has over 40 LEED certified buildings, including 2 LEED Platinum and 2 LEED EB Silver



**LEED Silver Minimum
Policy**

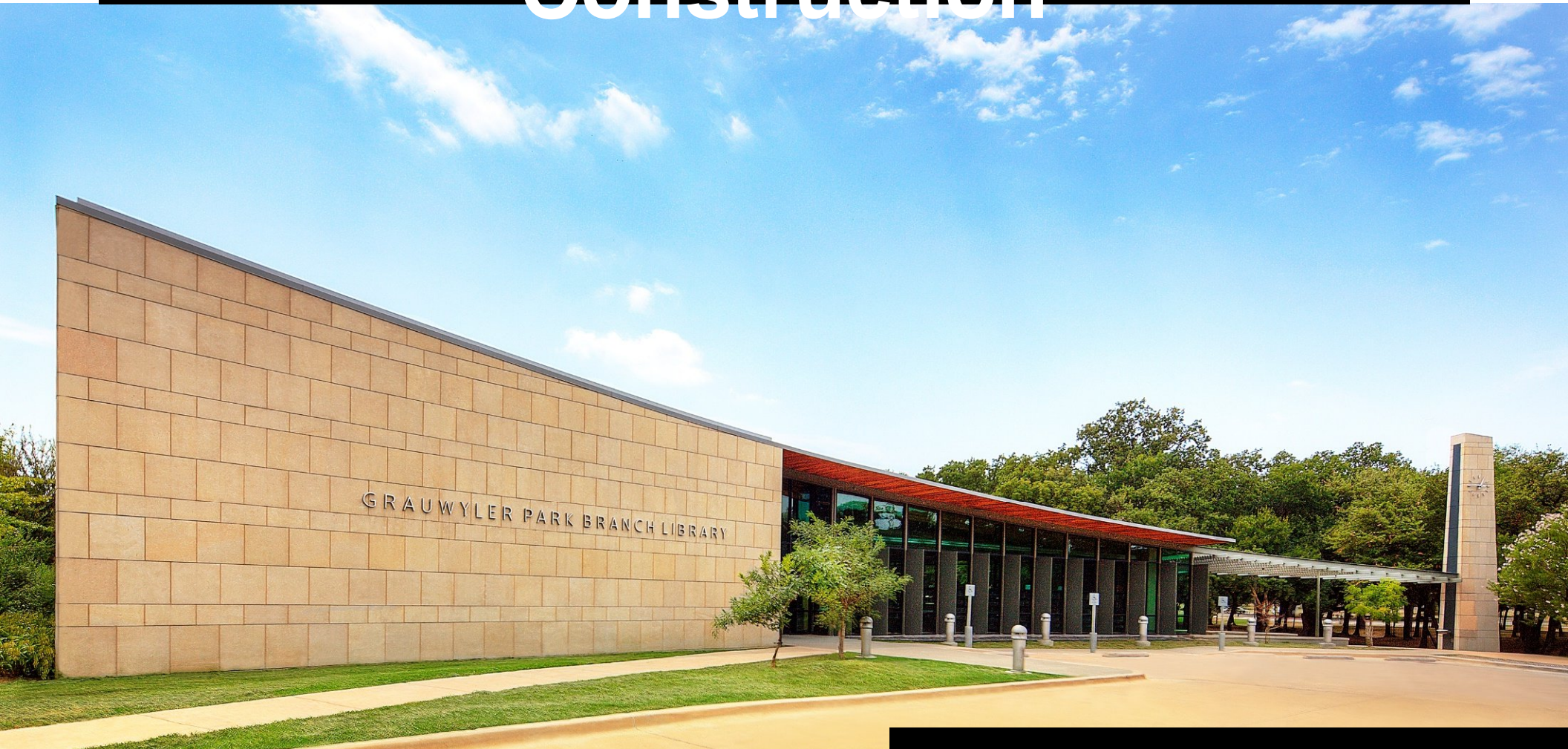
Sustainable Design & Construction



Grauwylers Park Branch Library ~ LEED SILVER

Community Facilities

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction

Grauwyler Park Branch Library



Project Info:

Architect Oglesky Greene Architects
Civil Engineer Jaster Quintanilla
MEP Engineer Floresca Basharkah Partners
Commissioning Agent Supersymmetry USA, Inc.
Landscape Architect Caye Cook & Associates
Project Manager Pankaj Shah, NCARB
Program Manager David Trevino, AIA
Assistant Director Zaida Basora, AIA
Director David Dylkala, PE

Site Size: 85,000 s.f.
Location: 2146 Gilford Street
Square Footage: 12,500 s.f.

The Grauwyler Park Branch Library, at only 12,500 s.f., is to be Dallas' smallest programmed new branch facility. The site, hemmed in by setbacks, a utility easement, and a city park, determined the footprint of the building. The residual layout is compact, efficient, and simple. The common public portion opens up to the wooded park and the "back of house" areas zone to the street edges. Parking is shared with the park and connected to its trails. The library acts as a gateway between the two, integrating its community and the park. Primary structure consists of exposed wood decking and glu-lam / cable trusses. Decking extends to shade areas of full height glazing and vertical metal sunscreens block low afternoon sunlight. Opaque walls are clad primarily in native limestone with a mix of composite (Trespa) panels. Roofing is white EDPM. Project will be LEED "silver" rated.

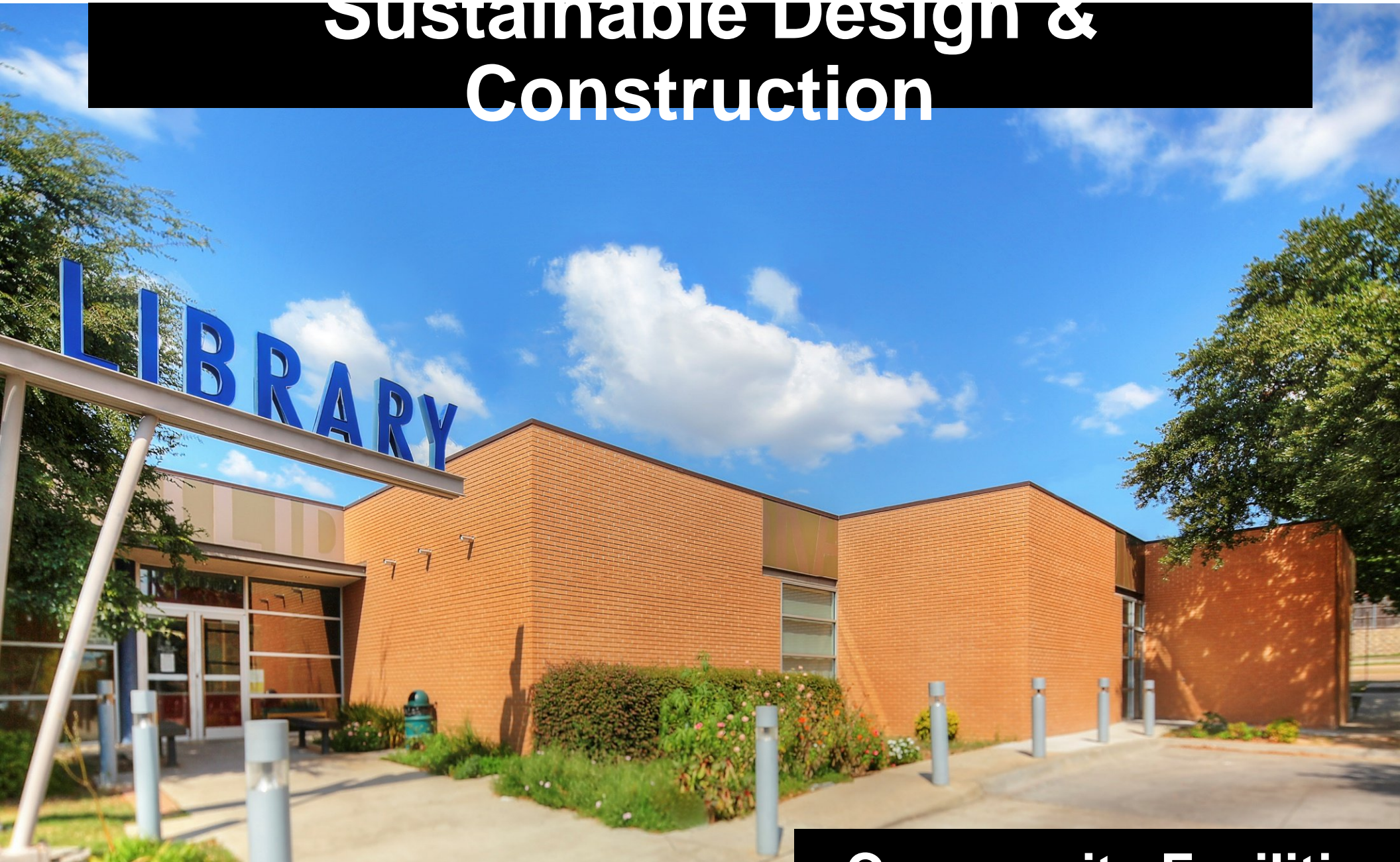


LEED Points

- Sustainable Sites**
 - 1. Credit 4.1 Alternative Transportation, Public Transportation Access
 - 2. Credit 4.2 Alternative Transportation, Bicycle Storage & Changing Rooms
 - 3. Credit 4.3 Alternative Transportation, Alternative Fuel Vehicles
 - 4. Credit 7.2 Landscape & Exterior Design to Reduce Heat Islands, Roof.
 - 5. Credit 8 Light Pollution Reduction
- Water Efficiency**
 - 6. Credit 1.1 Water Efficient Landscaping, Reduce by 50%
 - 7. Credit 3.1 Water Use Reduction, 20% Reduction
- Energy & Atmosphere**
 - 8-13. Credit 1 Optimize Energy Performance
 - 14. Credit 3 Additional Commissioning
 - 15. Credit 4 Ozone Depletion
 - 16. Credit 5 Measurement & Verification
- Materials & Resources**
 - 17. Credit 2.1 Construction Waste Management, Divert 50%
 - 18. Credit 2.2 Construction Waste Management, Divert 75%
 - 19. Credit 4.1 Recycled Content, Specify 5% (post-consumer + 1/2 post-industrial)
 - 20. Credit 4.2 Recycled Content, Specify 5% (post-consumer + 1/2 post-industrial)
 - 21. Credit 5.1 Local/Regional Materials, 20% Manufactured Locally
 - 22. Credit 5.2 Local/Regional Materials, of 20% above, 50% Harvested Locally
 - 23. Credit 7 Certified Wood
- Indoor Environmental Quality**
 - 24. Credit 1 Carbon Dioxide Monitoring
 - 25. Credit 2 Ventilation Effectiveness
 - 26. Credit 3.1 Construction IAQ Management Plan, During Construction
 - 27. Credit 3.2 Construction IAQ Management Plan, Before Occupancy
 - 28. Credit 4.1
 - 29. Credit 4.2
 - 30. Credit 4.3
 - 31. Credit 4.4
 - 32. Credit 5
 - 33. Credit 7.1
 - 34. Credit 7.2 Thermal Comfort, Permanent Monitoring System
 - 35. Credit 8.1 Daylight & Views, Daylight 75% of Spaces
- Innovation & Design Process**
 - 36. Credit 1.1 Innovation in Design
 - 37. Credit 2 LEED Accredited Professional

Community Facilities

Sustainable Design & Construction



Audelia Branch Library

Community Facilities

Sustainable Design & Construction

The image shows the exterior of the Bachman Branch Library at dusk. The building features a large, curved glass facade that reflects the twilight sky and the interior lights. A wide, covered walkway with a flat roof supported by slender columns runs along the side of the building. The interior is visible through the glass, showing bookshelves and warm lighting. The foreground is a well-maintained green lawn. The sky is a deep blue, and the overall atmosphere is modern and sustainable.

Community Facilities

Bachman Branch Library ~ LEED SILVER

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Lochwood Branch Library ~ LEED SILVER

Sustainable Design & Construction



Community Facilities

Prairie Creek Branch Library ~ LEED PLATINUM

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Pleasant Grove Branch Library

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Fire Station 10 ~ LEED GOLD

Sustainable Design & Construction



Community Facilities

Fire Station 32 ~ LEED GOLD

Sustainable Design & Construction



Dallas Fire Station No. 32

4262 N. Jim Miller Rd. Dallas, TX 75227

Site Area: 42,000 Sq. Ft.
Floor Area: 12,604 Sq. Ft.
Building Height: 26'-10"
Budget: \$4,000,000

Mayor: Mike Rawlings
Council Member District 5: Rick Callahan
Fire Chief: Louie Bright, III
Assistant Chief: Harold Holland
Lieutenant: Brent Wilson

Director: Rick Galceran, P. E.
Assistant Director: Zaida Basora, FAIA, LEED AP BD+C
Program Manager: Gary K. Mueller, AIA, LEED AP
Project Manager: Martha F. Welch, RA, LEED AP

Architect: Brown Reynolds Watford Architects, Inc.
Contractor: Core Construction Services of Texas, Inc.
Public Art: Graphic Content Inc., Art Garcia



The new Dallas Fire Station No. 32 is a contemporary replacement facility for the existing station built in 1951 located on the same site. The existing fire station facility will be retired and later demolished once the construction of the new station is complete. The new four-bay station will feature a Battalion Chief's office, dedicated fitness room, living quarters for twelve fire fighters plus two officers, and secure fire department parking.

The new facility was designed to exceed the Dallas Green Building Program by incorporating building products with recycled content, diverting more than 50% of all construction, demolition, and land clearing debris from landfills. In addition, the utilization of geothermal wells, which helps reduce strain on the HVAC system while also providing sufficient heating for the apparatus bays.

The emergence of the projecting roof towards Jim Miller Road allows for a more welcoming facade, and helps shield the occupants from the harsh western sunlight. The brick materiality of the building evokes the traditional neighborhoods of the 1950s. The clerestory windows above the apparatus bays allow ample natural light inside during the day, while providing an ambient glow during the night. The ultimate goal for this project is to provide a cost-effective, durable, low maintenance, LEED gold-certified building with an architectural image that creates a symbol of protection for the community.



Fire Station 32~ LEED GOLD

Leadership in Energy and Environmental Design (LEED) Credits

Sustainable Site

SS Proq. 1.0	Construction Activity Pollution Prevention
SS 1.0	Site Selection
SS 2.0	Development Density & Community Connectivity
SS 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms
SS 4.3	Alternative Transportation, Low-Emitting and Fuel - Efficient Vehicles
SS 4.4	Alternative Transportation, Parking Capacity
SS 5.2	Site Development, Maximize Open Space
SS 7.1	Heat Island Effect, Non-Roof
SS 7.2	Heat Island Effect, Roof
SS 8.0	Light Pollution Reduction

Water Efficiency

WE 1.1	Water Efficient Landscaping, Reduce by 50%
WE 1.2	Water Efficient Landscaping, No Irrigation
WE 3.1	Water Use Reduction, 20% Reduction
WE 3.2	Water Use Reduction, 30% Reduction

Energy & Atmosphere

EA Proq. 1.0	Fundamental Commissioning of the Building Energy Systems
EA Proq. 2.0	Minimum Energy Performance
EA Proq. 3.0	Fundamental Refrigerant Management
EA 1.0	Optimize Energy Performance
EA 4.0	Enhanced Refrigerant Management
EA 5.0	Measurement & Verification
EA 6.0	Green Power

Materials & Resources

MR Proq. 1.0	Storage & Collection of Recyclables
MR 2.1	Construction Waste Management, Divert 50% from Disposal
MR 2.2	Construction Waste Management, Divert 75% from Disposal
MR 4.1	Recycled Content, 10% (post-consumer + 1% pre-consumer)
MR 4.2	Recycled Content, 20% (post-consumer + 1% pre-consumer)
MR 5.1	Regional Materials, 10% Extracted, Processed & Manuf. Regionally
MR 5.2	Regional Materials, 20% Extracted, Processed & Manuf. Regionally

Indoor Environmental Quality

EQ Proq. 1.0	Minimum IAQ Performance
EQ Proq. 2.0	Environmental Tobacco Smoke (ETS) Control
EQ 1.0	Outdoor Air Delivery Monitoring
EQ 3.1	Construction IAQ Management Plan, During Construction
EQ 3.2	Construction IAQ Management Plan, Before Occupancy
EQ 4.1	Low-Emitting Materials, Adhesives & Sealants
EQ 4.2	Low-Emitting Materials, Paints & Coatings
EQ 4.4	Low-Emitting Materials, Composite Wood & Agritiber Products
EQ 6.1	Controllability of Systems, Lighting
EQ 6.2	Controllability of Systems, Thermal Comfort
EQ 7.1	Thermal Comfort, Design
EQ 7.2	Thermal Comfort, Verification
EQ 8.2	Daylighting & Views, Views for 90% of Spaces

Innovation and Design

ID 1.1	
ID 1.2	
ID 1.3	
ID 1.4	
ID 2.0	

Community Facilities

46 Total Estimated LEED Credits

Sustainable Design & Construction



FIRE STATION 33
CITY OF DALLAS
2540 SOUTH VERNON AVENUE

33

Community Facilities

Fire Station 33 ~ LEED SILVER

Sustainable Design & Construction



Community Facilities

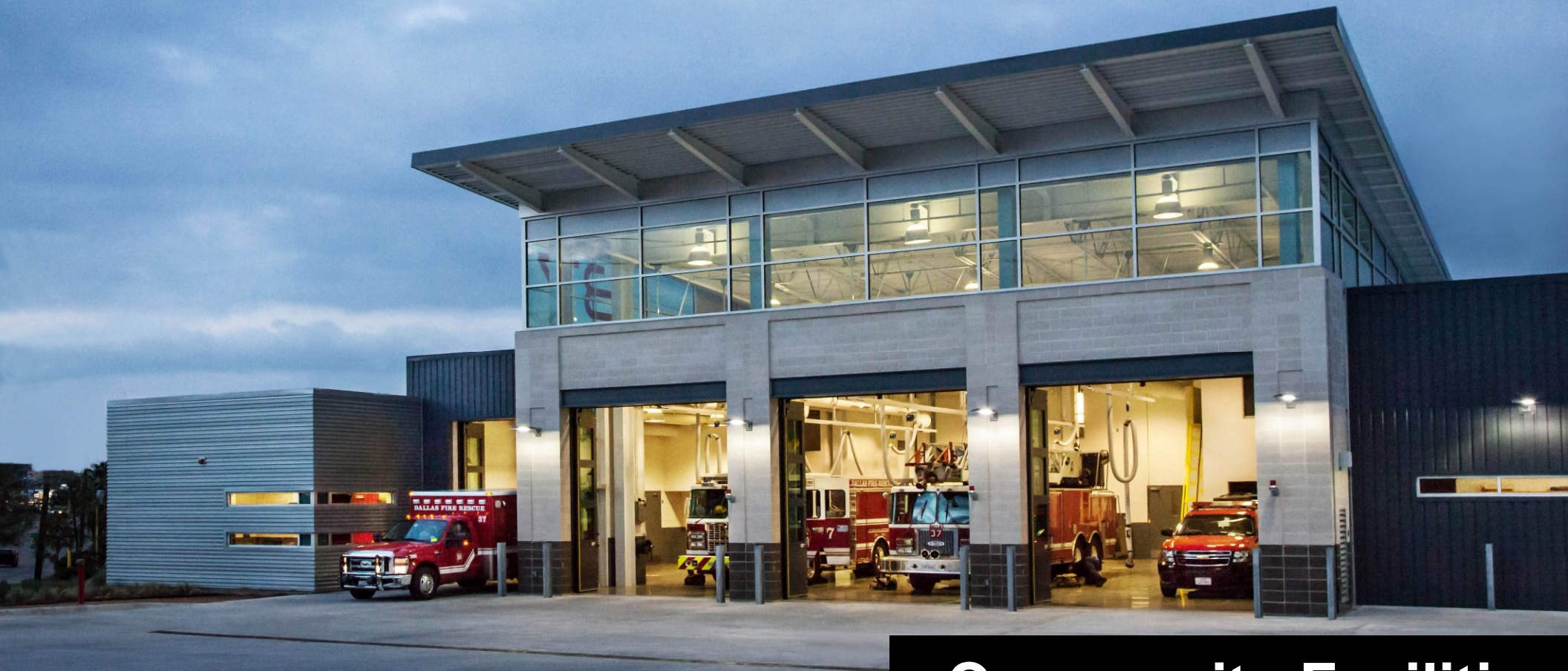
Sustainable Design & Construction



Community Facilities

Fire Station 34

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction

 Fire



Community Facilities

Fire Station 38 ~ LEED SILVER

Sustainable Design & Construction



Fire Station 39

Community Facilities

Sustainable Design & Construction



Community Facilities

Fire Station 40 ~ LEED SILVER

Sustainable Design & Construction



Community Facilities

Fire Station 42 ~ LEED GOLD

Sustainable Design & Construction

FIRE STATION 6



Fire Station 6 is a 12,000 sf replacement for an existing fire station, targeted to achieve LEED Platinum (as opposed to the required Gold) as well as City of Dallas goals for integrated Stormwater Management (iSWM) and the 2030 Challenge for carbon neutrality. The standard fire station program includes apparatus bays, offices, and living facilities for fire personnel.

While Fire Station 6 is a municipal facility that will not often be visited by the public, it houses some of our most revered public servants. DSGN assessed what would provide the most comfort and quiet for the firefighters' sleeping quarters, the best functional flow of personnel to gathering areas and equipment, and the most efficient way to get fire rescue vehicles in and out of the station. The result is the inclusion of drive-through apparatus bays that will allow fire-rescue vehicles to flow in and out of the station with ease. A tree-shaded private courtyard with grilling and dining facilities is nestled between the separated sleeping and office wings of the station to improve the quality of life of the firefighters awaiting the next call. The apparatus are celebrated by being housed in a glass "jewel box" that glows in a display of civic pride. The landscape will be returned to natural prairie and will flow to an adjacent park - as well as to planned park areas fronting the soon-to-be-developed S.M. Wright Boulevard. A fully integrated BIM model was used for architectural, structural, and MEP drawing interface to enable early detection of conflicts.

LOCATION

DALLAS, TEXAS

RECOGNITION

2012 FIERO HONOR AWARD FOR
DESIGN IN PROGRESS

DATE OF COMPLETION

2015

PROJECT BUDGET

\$0.2M (TARGETED LEED PLATINUM
AND CARBON NEUTRAL)

FINAL CONSTRUCTION COSTS

\$3,427,756 AT 90% CONSTRUCTION
DOCUMENT ESTIMATE

CLIENT

CITY OF DALLAS

PRINCIPAL-IN-CHARGE

ROBERT L. MECKFESSEL,
FAIA, LEED AP BD+C

PROJECT MANAGER / ARCHITECT

BETH BRANT, AIA, LEED AP BD+C



Community Facilities

Fire Station 6~ LEED PLATINUM

Sustainable Design & Construction



Community Facilities

Fire Station 50 ~ LEED GOLD

Sustainable Design & Construction

PERKINS
+ WILL

Fire Station 50
City of Dallas
Dallas Fire-Rescue
Dallas, Texas

ERKINS
+ WILL

Fire Station 50
City of Dallas
Dallas Fire-Rescue
Dallas, Texas



Area Analysis

Site: 1.02 Acres
Building: 12,315 square feet

Project Team

Owner
City of Dallas

Occupant

Dallas Fire-Rescue

Architect

Perkins+Will

Program Specialist

TCA Architecture and Planning

Consultants

JQ - Structural Engineer
B&H - MEP Engineer
Pacheco Koch - Civil Engineer
Environs Group - Landscape Architect
AIR Engineering & Testing - Commissioning Agent

Design-Build Contractor
Core Construction

Dallas' new Fire Station 50 is located adjacent to the northwest corner of Walton Walker (Loop 12) and Keeneland Parkway at 841 S. Walton Walker Blvd. This new 12,000 sf facility is a one-story, multiple company station designed for 15 firefighters per shift, with 2 full-bays, and 2 half-bays. This project is being completed using the design-build method of delivery through the use of BIM. Sustainable principles were incorporated throughout the design and is currently pending LEED Gold certification.

Fire Station 50 takes its design cue by responding to the frontage it has with Walton Walker Freeway. The majority of passer-byes will view this facility at freeway speeds, predominantly traveling from north to south. As such, it was important that the station announces itself to the freeway with an appropriate civic scale while maintaining the iconic aspects that depict a fire station. This "freeway architecture" borrows from the tradition of Route 66 with large, animated super-graphics capable of identification during the 1-2 seconds of afforded view. A feeling of embedded movement is displayed with a racing, italic font and "floating" signage that is always changing and moving with the sun. The large sweeping roof gesture creates a front to the building while resolving the conflict of having the bay doors, the traditional front, facing north - a necessity attributed to the tight site. Iconic "fire-engine red" metal panels outline the apparatus bay to highlight the operational, and most recognizable portion of the station, and turn the corner to visually connect it with the station frontage.



Proposed LEED Credits Sustainable Sites

- SS CR 1 Site Selection
- SS CR 2 Development Density & Community Connectivity
- SS CR 4.1 Alternative Transportation, Public Transportation
- SS CR 4.2 Alternative Transportation, Bicycle Storage & Changing Rooms
- SS CR 4.3 Alternative Transportation, Low-Emitting & Fuel Efficient Vehicles
- SS CR 4.4 Alternative Transportation, Parking Capacity
- SS CR 7.1 Heat Island Effect, Non-Roof
- SS CR 7.2 Heat Island Effect, Roof
- SS CR 8 Light Pollution Reduction

Water Efficiency

- WE CR 1.1 Water Efficient Landscaping, Reduce by 50%
- WE CR 3.1 Water Use Reduction, 20% Reduction
- WE CR 3.2 Water Use Reduction, 30% Reduction

Energy & Atmosphere

- EA CR 1.5 Optimize Energy Performance, (24.5%)
- EA CR 3 Enhanced Commissioning
- EA CR 5 Measurement & Verification
- EA CR 6 Green Power

Materials & Resources

- MR CR 2.1 Construction Waste Management, Divert 50%
- MR CR 2.2 Construction Waste Management, Divert 75%
- MR CR 4.1 Recycled Content, 10% (post-consumer + 1/2 pre-consumer)
- MR CR 4.2 Recycled Content, 20% (post-consumer + 1/2 pre-consumer)
- MR CR 5.1 Regional Materials, 10% Extracted, Processed & Manufactured

- MR CR 5.2 Regional Materials, 20% Extracted, Processed & Manufactured
- MR CR 7 Certified Wood

Indoor Environmental Quality

- IEQ CR 1 Outdoor Air Delivery Monitoring
- IEQ CR 3.1 Construction IAQ Management Plan, During Construction
- IEQ CR 3.2 Construction IAQ Management Plan, Before Occupancy
- IEQ CR 4.1 Low-Emitting Materials, Adhesives & Sealants
- IEQ CR 4.2 Low-Emitting Materials, Paints & Coatings
- IEQ CR 4.3 Low-Emitting Materials, Carpet Systems
- IEQ CR 4.4 Low-Emitting Materials, Composite Wood & Agrifiber Products
- IEQ CR 5 Indoor Chemical & Pollutant Source Control
- IEQ CR 6.1 Controllability of Systems, Lighting
- IEQ CR 6.2 Controllability of Systems, Thermal Comfort
- IEQ CR 7.1 Thermal Comfort, Design
- IEQ CR 7.2 Thermal Comfort, Verification
- IEQ CR 8.1 Daylight & Views, Daylight 75% of Spaces
- IEQ CR 8.2 Daylight & Views, Views for 90% of Spaces

Innovation & Design Process

- ID CR 1.1 Innovation in Design: Exemplary MRC5 Regional Materials
- ID CR 1.2 Innovation in Design: Exemplary MRC4 Recycled Content
- ID CR 1.3 Innovation in Design: Low Mercury Lamps
- ID CR 1.4 Innovation in Design: Exemplary SSc7.1 - 100% high albedo
- ID CR 2 LEED Accredited Professional

Fire Station 50 ~ LEED GOLD

Community Facilities

Sustainable Design & Construction

CITY OF DALLAS FIRE STATION NO. 27



LEED Gold Registered

SITE .43 Acres

BUILDING 23,600 square feet

PROJECT TEAM

Owner: City of Dallas

Occupant: Dallas Fire-Rescue

Architect: Perkins+Will

Program Specialist: TCA Architecture and Planning

Consultants:

JQ – Structural Engineer

B&H – MEP Engineer

Pacheco Koch – Civil Engineer

David T. Retzsch Design – Landscape Architect

FPA – Commissioning Agent

Public Artist: Rex Kare Studio

Contractor: Bartlett Cocke

The design for the new City of Dallas Fire Station intends to re-establish a civic presence.

The new facility for 15 fire personnel per shift, will represent the most advanced design of all the City of Dallas' new fire stations. Responding to an urban site that was too small to accommodate the program and required parking, a vertical solution was developed. Below grade is a secure parking garage for 18 personnel vehicles. The ground level contains the main living areas and the pull-through apparatus bays, while the second level houses isolated sleeping quarters and an innovative fitness room suspended

over the apparatus bays. The layout was carefully orchestrated to keep the response time to under 60 seconds.

The design intends to re-establish a proper civic presence for the firehouse. Volumetric separation between the people-places and the machine-spaces is created by a glazed atrium. Defined by a 2-story high "story wall," this atrium brings natural daylight deep into the building and celebrates the history and legacy of firefighting in the service of community.

The fire station is LEED Gold registered, employing sustainable design strategies such as solar panels, a storm water collection cistern, and high performance glazing, lighting and HVAC system.

FIRE STATION 27 /



Proposed LEED Credits

Sustainable Sites

- SS CR 1 Site Selection
- SS CR 2 Development Density & Community Connectivity
- SS CR 4.1 Alternative Transportation, Public Transportation Access
- SS CR 4.2 Alternative Transportation, Bicycle Storage & Changing Rooms
- SS CR 4.3 Alternative Transportation, Low-Emitting & Fuel Efficient Vehicles
- SS CR 4.4 Alternative Transportation, Parking Capacity
- SS CR 6.1 Stormwater Design, Quantity Control
- SS CR 7.1 Heat Island Effect, Non-Roof
- SS CR 7.2 Heat Island Effect, Roof
- SS CR 8 Light Pollution Reduction

Water Efficiency

- WE CR 1.1 Water Efficient Landscaping, Reduce by 50%
- WE CR 2 Innovative Wastewater Technologies
- WE CR 3.1 & 3.2 Water Use Reduction, 30% Reduction

Energy & Atmosphere

- EA CR 1 Optimize Energy Performance
- EA CR 2 On-Site Renewable Energy
- EA CR 3 Enhanced Commissioning
- EA CR 5 Measurement & Verification
- EA CR 6 Green Power

Materials & Resources

- MR CR 2.1 & 2.2 Recycled Content, 20% (post-consumer + 1/2 pre-consumer)
- MR CR 4.1 & 4.2 Regional Materials, 20% Extracted, Processed & Manufactured Regionally
- MR CR 5.1 & 5.2 Certified Wood
- MR CR 7

Indoor Environmental Quality

- IEQ CR 1 Outdoor Air Delivery Monitoring
- IEQ CR 3.1 Construction IAQ Management Plan, During Construction
- IEQ CR 3.2 Construction IAQ Management Plan, Before Occupancy
- IEQ CR 4.1 Low-Emitting Materials, Adhesives & Sealants
- IEQ CR 4.2 Low-Emitting Materials, Paints & Coatings
- IEQ CR 4.3 Low-Emitting Materials, Carpet Systems
- IEQ CR 4.4 Low-Emitting Materials, Composite Wood & Agrifiber Products
- IEQ CR 5 Indoor Chemical & Pollutant Source Control
- IEQ CR 6.1 Controllability of Systems, Lighting
- IEQ CR 6.2 Controllability of Systems, Thermal Comfort
- IEQ CR 7.1 Thermal Comfort, Design
- IEQ CR 7.2 Thermal Comfort, Verification

Innovation & Design Process

- ID CR 1.1 Innovation in Design: Exemplary 55c7.1 Heat Island Effect, Non-Roof
- ID CR 1.2 Innovation in Design: Exemplary MRc7 Certified Wood
- ID CR 1.3 Innovation in Design: Exemplary EAc6 Green Power
- ID CR 2 LEED Accredited Professional

Community Facilities

Fire Station 27 ~ LEED GOLD

Sustainable Design & Construction



CITY OF DALLAS FIRE-RESCUE DEPARTMENT FIRE STATION NO. 44



Architect: McAfee³ Architects, Inc.

Consultants:

JQ - Civil Engineer
JQ - Structural Engineer
M.E.P. Consulting - MEP Engineer
Caye Cook and Associates - Landscape Architect
FPA - Commissioning Agent

Public Artist: Dan Brooks

Contractor: RWC

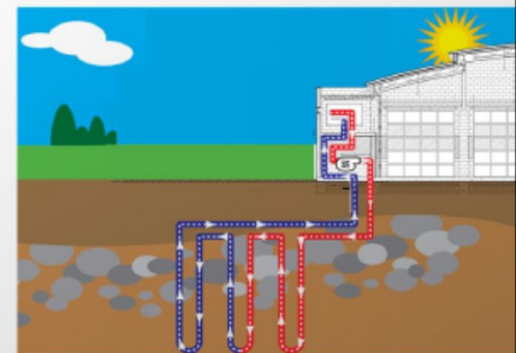
This facility is a 12,000 sq. ft. replacement facility for the existing station structure built in 1959 located in east Dallas. This new station includes two full (70') and two half (40') apparatus bays, with living quarters to accommodate fifteen firefighters per shift. Because we looked at various options that reflected the best design solutions for Fire Station No. 44, the process brought about a unique design solution. The following are the key ingredients to an innovative design. The orientation of the building to allow for day lighting opportunities to the northeast, and northwest. The Northeast windows look out to the neighborhood and the Northwest looks onto the fair grounds. Patio areas and outdoor green space were created within the secure area for fire fighters to relax and exercise. Windows to the southeast and southwest have overhangs to reduce the amount of sun into the adjacent rooms. The facility on the site is placed in a location where the watch commander has the best control and visibility of the apparatus bay and front driveway, the Fitzhugh and Lagow Intersection, the fuel station, visitors and employee parking, and the dumpster enclosure. The facility is also accessible to visitors who come in for an emergency or just a blood pressure check. The site layout and visibly accessible circulation pattern provide customers with friendly directions and enhances public and fire fighter safety.

FIRE STATION NO. 44

GEO-THERMAL DESIGN

The Fire Station is served by a Geothermal Heat Pump System. That is, water cooled electric heat pumps. The water is cooled in summer and warmed in winter by circulating through vertical wells in the ground (about 300' deep). There are (2) well fields, with (1) pump/well field. The water cooled DX units operate more efficiently than air-cooled units. There are (5) such units serving the living quarters, fitness areas, corridors, kitchen, and study areas. The units are in mechanical rooms and the conditioned air is ducted to and from the spaces conditioned. Each of the heat pumps has outside air ducted to the return air for that unit.

The facility also has a natural gas-fired emergency generator on the mezzanine floor with exhaust out the northeast wall. The entire facility is protected by an automatic fire sprinkler system.



RAIN GARDEN

LANDSCAPING

The landscape and irrigation designs for the new City of Dallas Fire Station 44, Dallas, Texas were developed by using native and adapted low-water and medium-water plant species for planting beds, native turf grass lawn areas on the site, and providing a high efficiency irrigation system.

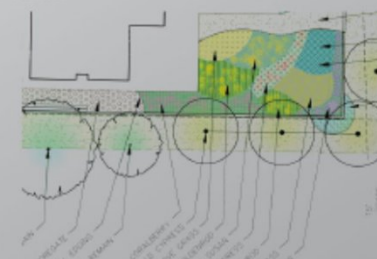
The use of native and hardy adapted plants was vital in creating an environment that was easily maintained, placed plants in a condition where there was limited competition for resources, and required less water than standard planting palettes. Plant materials selected (see list below) includes trees, shrubs, ornamental grasses, groundcover, and turfgrass. Aggregates are used for aesthetic and accessible concerns.

Five criteria were primarily used for the planting beds and landscape materials selection for the new construction:

- provide plants and landscape surfaces that require less maintenance
- provide plants that will survive in lower to moderate-water conditions and annual rainfall events
- provide plants that grow well with the different light exposures around the building
- provide native turfgrass areas that do not need irrigation or high maintenance once established, and
- provide decomposed granite pathways and aggregate for building base access areas to reduce irrigation needs.

IRRIGATION

A low-water use, high efficiency irrigation system was designed for the site using bubbler/drip irrigation for all planting beds and at trees and limiting rotary and sprays to establish turf areas. No permanent irrigation will be installed in the native turf grass areas around the site edges or in the weeping love grass beds. The system includes conventional irrigation pipe, valves, spray-type heads, bubbler heads, quick coupling valves, drip lines with filters, and an efficient water management automatic controller system for irrigation zones. The irrigation system used a "Hydrozone" design method to maximize water efficiency. Each specific plant type or group of plants was isolated for their specific water use needs and per orientation and location.



Sustainable Design & Construction



Community Facilities

South Central Police Station ~ LEED GOLD

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Highland Hills Branch Library ~ LEED GOLD

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction



Community Facilities

Justin Turveen © City of Dallas City Hall
Moody Performance Hall~ LEED PLATINUM

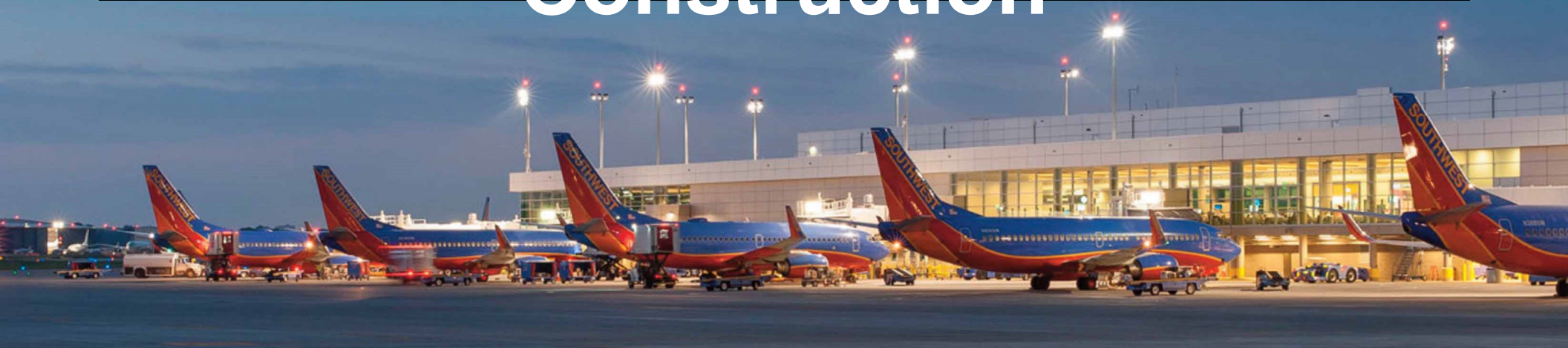
Sustainable Design & Construction



Community Facilities

The Bridge Homeless Assistance Center~ LEED SILVER

Sustainable Design & Construction



SIZE: 650,000 SF (NEW); 250,000 SF (RENOVATION)

The project incorporates several innovative environmentally friendly concepts. A new modern ticketing hall is used by all airlines. The bag claim hall has been expanded to accommodate future demand levels and the main lobby has been renovated and expanded. Three existing concourses have been replaced by one single concourse. The design maintains the basics for which Love Field is known, passenger convenience, operational efficiency and maintainability. (Source: Corgan.com website)

Community Facilities

Sustainable Design & Construction



Community Facilities

Sustainable Design & Construction

The DMA LEED Silver certification is based on a number of operational and maintenance practices that positively impact the project itself and the broader community:

Reduced Mercury in Lamps—A lamp purchasing policy targets 90% of all mercury containing lamps and achieves an average of 57% reduction in mercury levels measured in picograms per lumen-hour.

Heat Island Reduction—94% of parking areas are located under cover to minimize impact on microclimates, human and wildlife habitat.

Water Performance Measurement—Permanently installed water meters measure the total potable water consumption for the entire building and associated grounds to identify opportunities for water savings.

Optimize Energy Efficiency Performance—The building has demonstrated energy efficiency in the 24th percentile above the national median reducing environmental and economic impact associated with excessive energy use.

Sustainable Purchasing—A sustainable purchasing policy achieves over 97% of purchased products to comply with Environmental Preferable Purchasing (EPP) criteria.

Green Cleaning—A High-Performance Cleaning Program reduces the exposure of building occupants, visitors and staff to potentially hazardous contaminants.

Building Exterior and Hardscape Management Plan—The exterior hardscape management plan employs environmentally sensitive practices to help preserve surrounding ecological integrity.

Community Facilities



Sustainable Design & Construction

- Over 40 new sustainable city facilities
- Sustainable approach to existing building retrofits
- Implementation of energy management policy
- Public Works update in 2006 requiring minimum of LEED Gold
- Training city employees on sustainability
- Training of contractors on sustainable practices

Green Building Program

2018 GSA Study

HIGHER EFFICIENCY TRANSLATES TO DOLLARS SAVED

A 2018 GSA report examined 200 buildings over a three-year period and found that compared to legacy buildings, GSA's high-performing buildings show: 23% less energy use, 28% less water use, **23% less** building operating expenses, and a 9% decrease in waste generated. Many of the high-performing buildings in the GSA study are LEED-certified.



the result

- Dallas has changed in a significant way
- Dallas will continue to change in the years to come
- The collaborative innovations will continue



City of Dallas

1500 Marilla Street
Dallas, Texas 75201

Agenda Information Sheet

File #: 20-255

Item #: B.

CECAP: Resilient and Energy Efficient Buildings powered by Sustainable, Renewable, Energy
[James McGuire, Director, Director, Office of Environmental Quality & Sustainability
Errick Thompson, Director, Building Services Department, and Susan Alvarez, Assistant Director,
Office of Environmental Quality & Sustainability]

CECAP: Resilient and Energy Efficient Buildings Powered by Sustainable, Renewable, Energy

Environment & Sustainability Committee

**James McGuire, Director
Office of Environmental Quality &
Sustainability**

**Errick Thompson, Director
Building Services Department**

**Susan Alvarez, PE, CFM
Assistant Director
Office of Environmental Quality &
Sustainability**

February 3, 2020



City of Dallas

Overview

- Background
- Dallas Green Energy Policy
- Community Feedback
- Draft CECAP Building and Energy Objectives



Background

- Current electricity contract is 100% green energy through renewable energy credits (RECs)
- City of Dallas is highly ranked among U.S. Environmental Protection Agency's Green Power Partnership participants
 - #2 on top 30 Local Government List
 - Recipient of 2019 Excellence in Green Power Use Leadership Award from EPA



Dallas Green Energy Policy

- Requires 100% renewable energy use for municipal operations
- Set up energy management program
- Directs exploring feasibility of on- and off-site solar and renewable energy projects



Dallas Green Energy Policy

- Adopted by City Council in April 2019 and is the City's first energy policy
- Adopted in part to address climate risk
- Provides template for other governmental entities to transition to clean energy
- Does not apply to community energy use

DALLAS 2030 District

- The Dallas 2030 District national, public-private organization effort to reduce Central Business District energy and water use 50% by 2030 and promote transit.
- City facilities:
 - City Hall
 - Dallas Convention Center
 - J. Erik Jonsson Central Library
 - Meyerson Symphony Center
 - Dallas Museum of Art
 - And others....

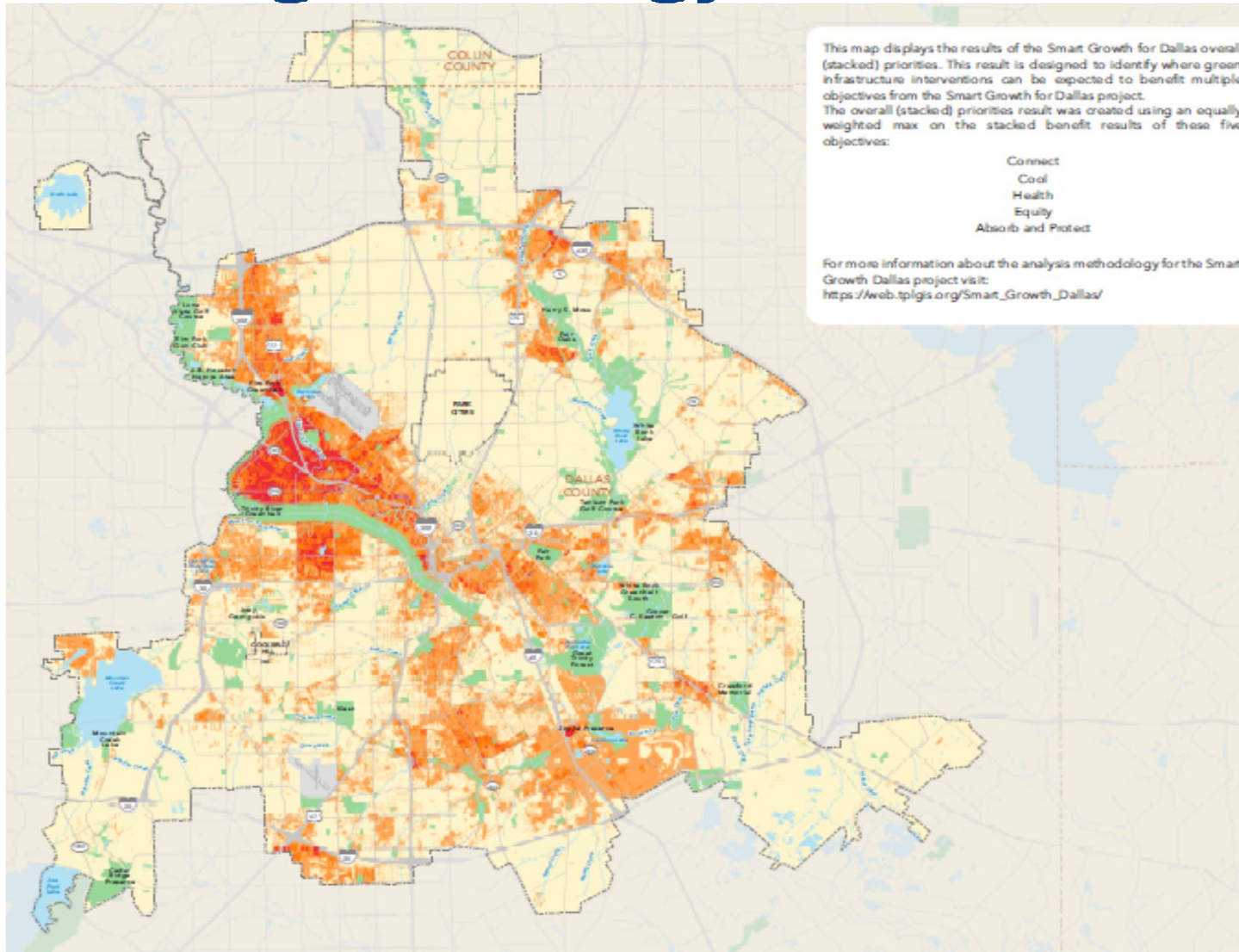


DALLAS
2030
DISTRICT®
6

Draft Plan Focus & Goals

- *Dallas uses renewable, reliable, and affordable **energy***
- *Dallas' **buildings** are energy efficient and resilient*
- Dallas communities have access to energy efficient, affordable **transportation** options
- Dallas is a **Zero-waste** community
- Dallas protects its **water** resources and its communities from flooding & drought
- All Dallas communities have access to healthy, local **food**
- All Dallas communities breathe clean **air**
- Dallas protects its **ecosystems** that in turn, protect public health

Buildings & Energy Under Climate Equity Lens



"Climate change affects all, but not all people are affected equally."

- Jacqueline Patterson, Director of the NAACP Environmental and Climate Justice Program

Ideas from Community Outreach Efforts

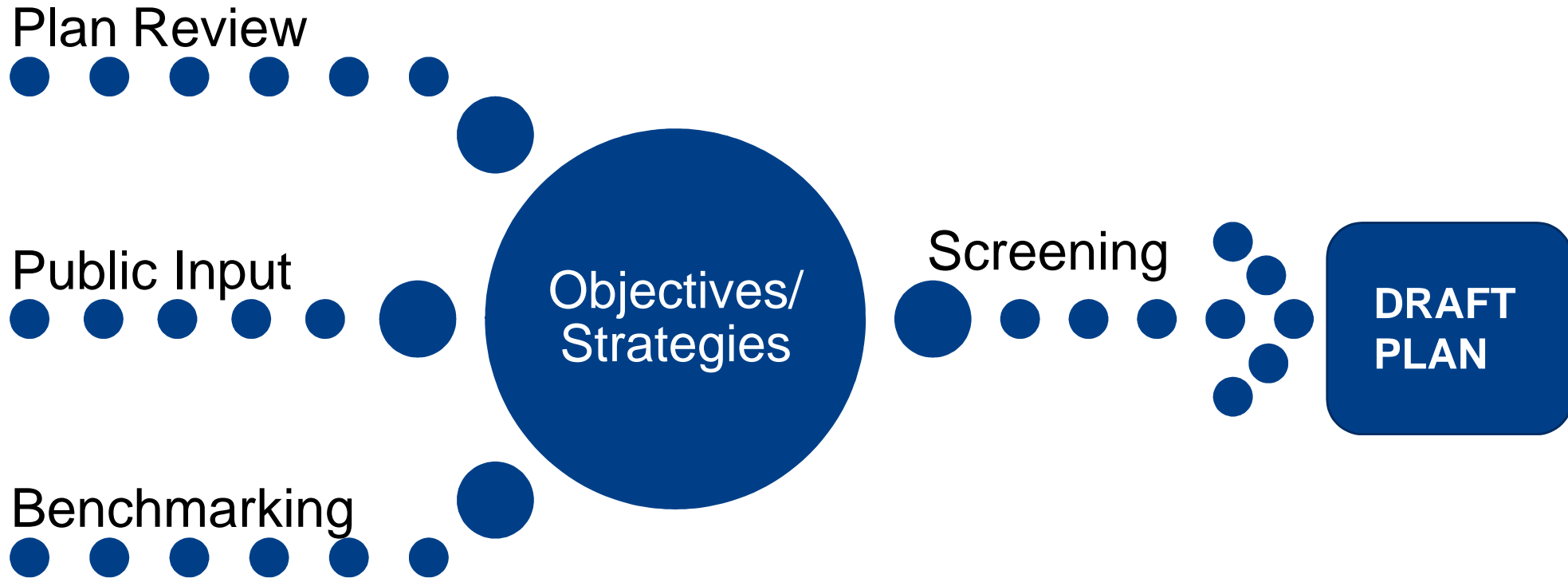
Energy

- Promote solar energy and renewables
- Implement stricter regulations
- Support tax incentives for energy efficiency
- Promote alternative financing or rebates for solar panels

Buildings

- Require new construction to meet high energy efficiency standards
- Promote rebate programs to upgrade homes to be more energy efficient
- Convert streetlights to LED light fixtures
- Improve building and lighting efficiency

Action Development Process



CECAP Energy Sector Objectives



- Maintain a high degree of reliability during extreme weather events.
- Encourage investment in, and greater use of, renewable energy.
- Ensure affordable access to renewable electricity.

Draft Energy Objectives + Actions

Maintain a high degree of reliability during extreme weather events

- Maintain a high degree of reliability in the electric delivery grid through cooperative actions between the City and Oncor.
- Evaluate the potential for the City invest in energy storage technologies for resilience and renewable energy development



12

Draft Energy Objectives + Actions

Encourage investment in, and greater use of, renewable energy

- Continue partnership with Oncor and other Public Utility Companies on renewable energy education
- Work with local community colleges to train local workforce focused on renewable energy technologies.
- Build a regional strategic partnership to promote renewable energy
- Continue to implement City's Green Energy policy



13

Draft Energy Objectives + Actions

Ensure affordable access to renewable electricity

- Extend partnership with Oncor, PACE, and other Public Utility Companies to provide further incentives for renewable energy.
- Establish and invest in renewable energy hubs
- Extend City efforts to develop more renewable energy projects on City facilities.



14

CECAP Building Sector Objectives



- Increase energy efficiency of existing buildings.
- Ensure that new buildings are constructed sustainably and are carbon neutral.
- Increase climate resilience for new and existing buildings through structural and operational improvements.

15

Draft Building Objectives + Actions

Increase energy efficiency of existing buildings/facilities

- Demonstrate leadership in developing a carbon neutrality plan for municipal operations.
- Maintain Level 3+ Airport Carbon Accreditation for DFW; achieve Level 3+ accreditation - Love Field; consider for Dallas Executive Airport
- Develop clear and comprehensive building energy efficiency educational program
- Implement a citywide building weatherization program with community organizations
- Identify new finance mechanisms to accelerate energy efficiency improvements
- Establish building electrification program to replace appliances/ systems with electric options
- Increase participation and scope of the Dallas Green Business Certification program
- Do a Better Buildings Challenge to take 2030 District goals beyond Downtown Dallas
- Establish a point-of-sale/point-of-lease home energy rating and disclosure educational program for single-family homes
- Implement a benchmarking and disclosure ordinance for commercial buildings

16

Draft Building Objectives + Actions

Ensure that new buildings are constructed sustainably and are carbon neutral

- Update the building code to require wiring for solar photovoltaics and electric vehicle charging infrastructure
- Evaluate and consider a Zero Net Energy (ZNE) code for all new buildings and substantial renovations by 2030.



17

Draft Building Objectives + Actions

Increase climate resilience for new and existing buildings through structural and operational improvements

- Establish urban greening factor for new developments to quantify project contributions to urban greening, reducing stormwater runoff and urban heat island impacts.
- Promote passive building design (e.g. orientation, shading devices) through the City's design standards.
- Evaluate potential city-owned properties for the creation of 'resilience hubs'.



18

Next Steps

- Deeper dive into focus and goals over next committee meetings
 - March 2nd - Urban Agriculture/ Zero Waste
 - April 6th - Review full Draft Plan
 - April 22nd - Council Resolution for CECAP Approval
- Draft Plan Review: February 3 - March 3, 2020

Questions and Comments

20



CECAP: Resilient and Energy Efficient Buildings Powered by Sustainable, Renewable, Energy

Environment & Sustainability Committee

**James McGuire, Director
Office of Environmental Quality &
Sustainability**

**Errick Thompson, Director
Building Services Department**

**Susan Alvarez, PE, CFM
Assistant Director
Office of Environmental Quality &
Sustainability**

February 3, 2020



City of Dallas