



GSA Public Buildings Service

Inflation Reduction Act

Low Embodied Carbon Pilot report

FOR EXTERNAL STAKEHOLDERS
December 2023

Climate and Infrastructure
Program Management Office

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01 Executive Summary

Executive Summary

Glass

- Limited manufacturers. Some Top 20% glass availability though Top 40% is more common. GSA anticipates development of additional glass environmental product declarations (EPDs).
- First low embodied carbon (LEC) glass purchase for the Lewis F. Powell, Jr. U.S. Courthouse (Richmond, VA) \$5.3 million.
- Awards for the Powell Courthouse Annex (Richmond, VA) and the Charles E. Whittaker U.S. Courthouse (Kansas City, MO) anticipated in December 2023.

Steel

- Generally available within all three global warming potential (GWP) categories (20%/40%/Better than Average). Market research continues.
- Award for Hamilton Custom House (New York, NY) anticipated in December 2023.

Concrete

- Sourcing concrete and cement with EPDs has been challenging in remote locations, notably along the Southern border in TX and at remote land ports of entry along the Northern border
- Continued market outreach is key. We're encouraging stakeholders to leverage [EPA's new EPD grants](#).
- Award for Hamilton Custom House (New York, NY) anticipated in December 2023.

Asphalt

- Similar geographical availability constraints as concrete.

Executive Summary

Project	City	State	Estimated LEC Award	Availability*			
				Asphalt	Concrete	Glass	Steel
Alexander Hamilton U.S. Custom House	New York	NY	December 2023	Yellow	Green	N/A	Yellow
Lewis F. Powell Jr. U.S. Courthouse	Richmond	VA	Partial award September, balance in December	N/A	N/A	Green	N/A
Patrick V. McNamara Garage	Detroit	MI	October 2024	N/A	Yellow	N/A	Yellow
Charles Evans Whittaker U.S. Courthouse	Kansas City	MO	December 2023	N/A	N/A	Green	Yellow
Kika De La Garza Land Port of Entry (LPOE)	Pharr	TX	May 2024	Yellow	Yellow	N/A	Yellow
Ysleta LPOE	El Paso	TX	March 2024	Yellow	Yellow	N/A	Yellow
World Trade Bridge LPOE	Laredo	TX	May 2024	Yellow	Yellow	N/A	Yellow
Dunseith LPOE	Dunseith	ND	Spring 2024	N/A	Yellow	Yellow	Yellow
HHS - FDA Lab	Lakewood	CO	March 2024	Green	Green	Green	Green
San Luis LPOE	San Luis	AZ	January 2024	Green	Yellow	Green	Green
DHS Cybersecurity & Infrastructure Security Agency (CISA)	Washington	DC	Spring 2024	Yellow	Yellow	Yellow	Yellow

*Availability is market availability. Level of compliance (20%/40%/Better than Average availability) may be impacted by project schedule and supply/demand at the time of need.

Green = Available, Yellow = TBD, Red = not available, N/A = not applicable for that project

02 LEC Pilot Recap

San Luis, AZ - Land Port of Entry

Estimated Total Project Cost (ETPC): \$290-\$315 million

Estimated IRA contribution:

- Low Embodied Carbon (LEC) materials: \$75-85 million
- Emerging and Sustainable Technology (E&ST): \$10-15 million
- High Performance Green Building (HPGB): \$5-8 million

Targeted building-level sustainability goals:

- Net Zero Energy
- All Electric
- Sustainable Building

Estimated Metric Tons of Carbon Dioxide Equivalent (MTCO₂e) avoided, from materials alone: 888

LEC Pilot report:

- 40% GWP glass & steel available
- Batch plant may be required for asphalt and concrete
- Asphalt and concrete EPD certification process may impact schedule
- Proposals for LEC material received November 27 and under review.



Existing LPOE/Site Plan



Concept for new LPOE

Lakewood, CO - New FDA lab

ETPC: \$175-\$200 million

Estimated IRA contribution:

- **LEC materials:** \$35-45 million
- **E&ST:** \$25-30 million
- **HPGB:** \$13-18 million

Targeted building-level sustainability goals:

- Net zero energy
- All electric
- Sustainable building

Estimated MTC02e avoided: 306

LEC Pilot report:

- 20% GWP asphalt available
- 20% GWP concrete available
- 20% GWP steel available
- 40% GWP glass available



Detroit, MI - Patrick V. McNamara FB Garage

ETPC: \$20-30 million

Estimated IRA contribution:

- **LEC materials:** \$15-\$20 million
- **E&ST:** \$1-\$3 million
- **HPGB:** \$0

Targeted building-level sustainability goals: N/A

Estimated MTCO₂e avoided: 81

LEC Pilot report:

- CM research indicates slight premium for both LEC steel and concrete
- An updated structural evaluation from mid-August revealed more structural degradation since 2017.



New York, NY - Alexander Hamilton Custom House

ETPC: \$65-75 million

Estimated IRA contribution:

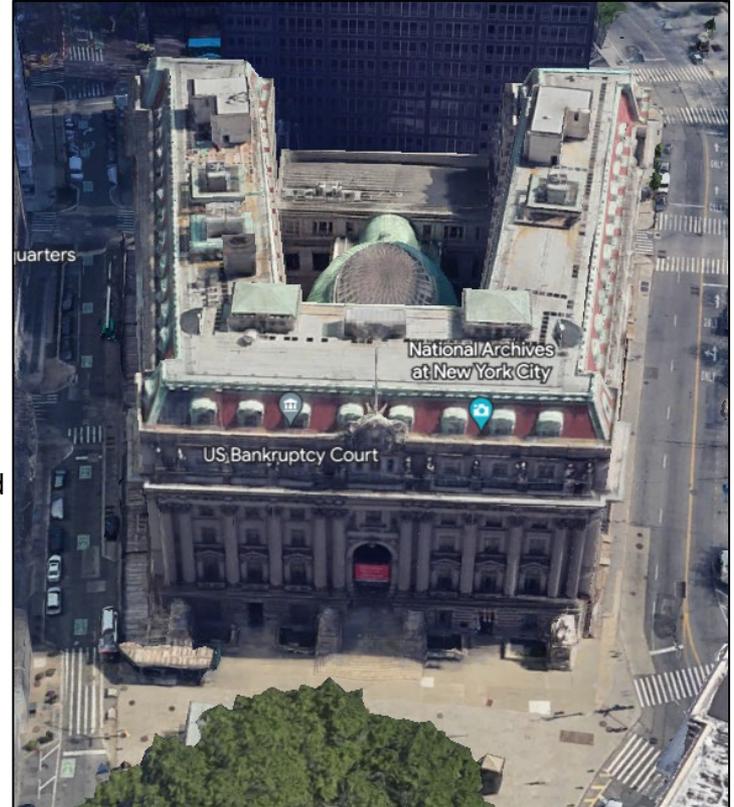
- **LEC materials:** \$8-\$12 million
- **E&ST:** \$0
- **HPGB:** \$0

Targeted building-level sustainability goals: N/A

Estimated MTCO_{2e} avoided: 39

LEC Pilot report:

- Available concrete is at 'better than average' GWP limits
- Steel available in at 'better than average' to top 40% GWP limits based on the varieties of steel to be used.
- Initial estimates reflect slight premium for LEC materials
- LEC award estimated in December 2023.



Dunseith, ND - Land Port of Entry

ETPC: \$70-\$100 million

Estimated IRA contribution:

- **LEC materials:** \$10-15 million
- **E&ST:** \$0.5-1 million
- **HPGB:** \$0

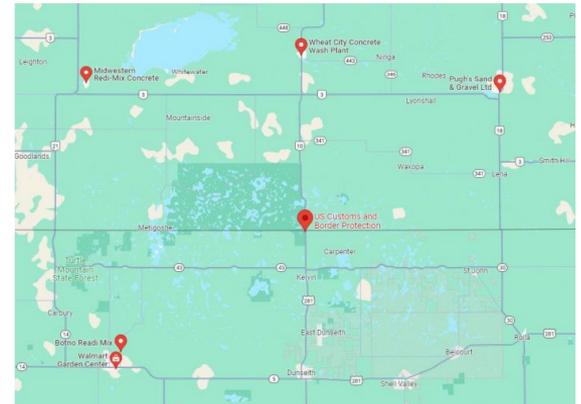
Targeted building-level sustainability goals:

- All electric
- Sustainable building

Estimated MTCO₂e avoided: 176

LEC Pilot report:

- IRA-compliant concrete currently unavailable. Potential for local plants in the US (1) and Canada (3) within 1 hour of project site to seek EPDs.
- 20% GWP glass available pending production and supply availability and contingent on ability to meet ballistic requirements.
- 20% GWP steel available pending production and supply availability.



Kansas City, MO - Charles E. Whittaker U.S. Courthouse

ETPC: \$110-\$125 million

Estimated IRA contribution:

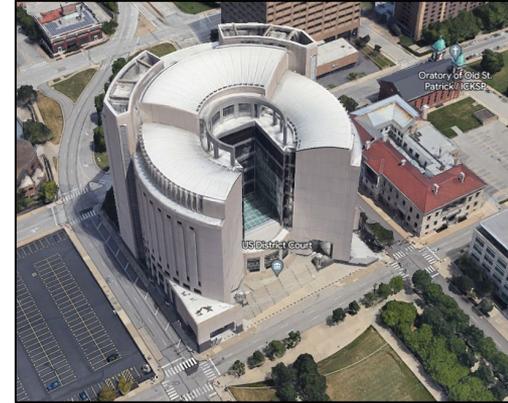
- LEC materials: \$105-\$115 million
- E&ST: \$0
- HPGB: \$0

Targeted building-level sustainability goals: N/A

Estimated MTCO2e avoided: 38

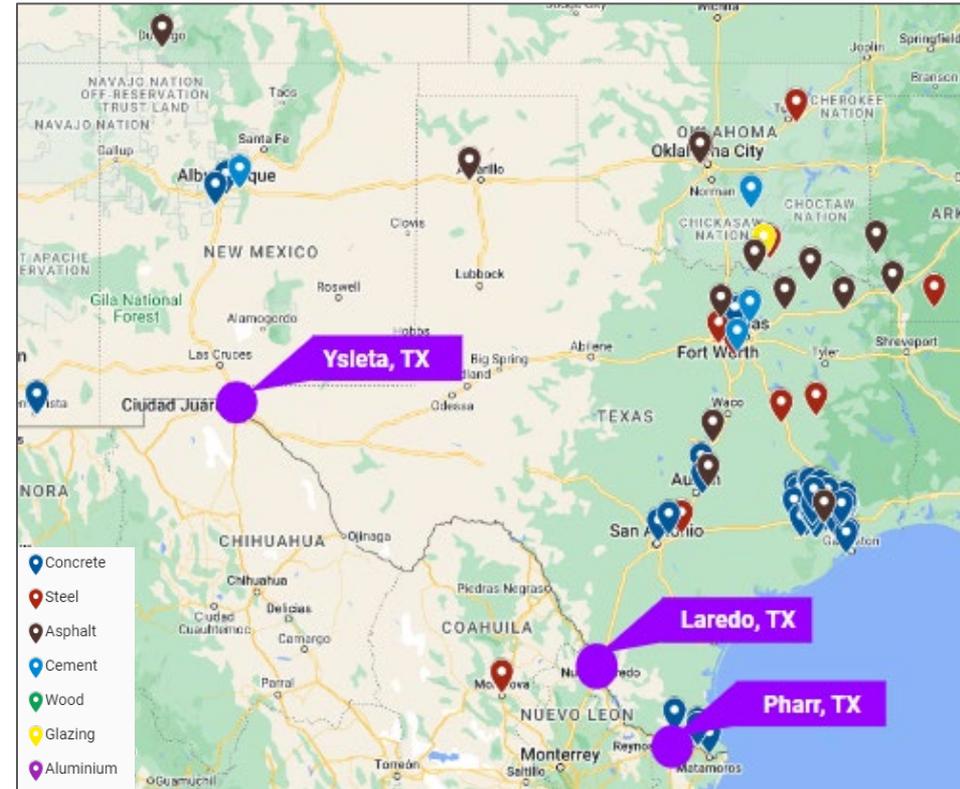
LEC Pilot report:

- 40% glass is currently available.
- LEC glass award estimated in December 2023.



Region 7 Three Land Port of Entry paving projects

- Limited interest in/availability of LEC materials
- June 23, 2023 Sources Sought
 - 11 responses
 - Limited experience
- August 2, 2023 Industry Day
 - 19 non-GSA attendees
 - 11 construction firms
 - 4 manufacturers/materials suppliers
 - 2 asphalt trade associations
 - 1 consultant, 1 non-specified
- An updated sources sought for Ysleta noted some increased interest with
 - 3 ready-mix manufacturers pursuing EPDs
 - 1 contractor with experience coordinating with their suppliers for EPDs.
- Consultation with the National Ready-Mix Association has indicated support to help TX firms obtain EPDs.



Region 7 - Three Land Port of Entry paving projects

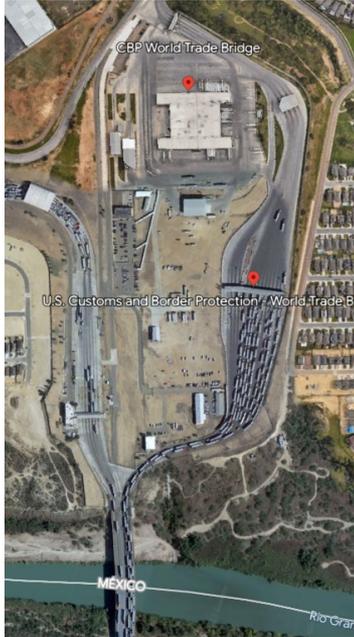
Laredo, TX - World Trade Bridge LPOE

ETPC: \$10-\$15 million

Estimated LEC:
\$10-\$15 million

Targeted building-level sustainability goals:
N/A

Estimated MTCO₂e avoided: 122



Pharr, TX - Kika de la Garza LPOE

ETPC: \$10-\$15 million

Estimated LEC materials:
\$10-\$15 million

Targeted building-level sustainability goals: N/A

Estimated MTCO₂e avoided: 157



Ysleta, TX LPOE

ETPC: \$10-\$15 million

Estimated LEC materials:
\$10-\$15 million

Targeted building-level sustainability goals: N/A

Estimated MTCO₂e avoided : 194



Richmond, VA - Lewis F. Powell, Jr. U.S. Courthouse

ETPC: \$20-30 million

Estimated IRA contribution:

- LEC materials: \$10-\$14million
 - \$5.3m actual for Powell
 - \$4-\$6m estimate for the Annex
- E&ST: \$0
- HPGB: \$0

Targeted building-level sustainability goals: N/A

Estimated MTCO₂e avoided: 3

LEC Pilot report:

- 40% glass available. Award for the Courthouse was executed September 18 for \$5.3m.
- Award for Annex anticipated in December 2023.
- Initially, 20% glass was thought available, but supplier could not meet GSA's functional requirements in line with the overall project schedule.
- Price for glass within 4% of the Independent Government Estimate.



Annex



Lewis F. Powell, Jr. USCT

Washington, DC - St. Elizabeths - CISA Headquarters

Estimated Total Project Cost: \$220-\$250 million

Estimated IRA contribution:

- LEC materials: \$110-\$115 million
- E&ST: \$0
- HPGB: \$25-\$30 million

Targeted building-level sustainability goals:

- Sustainable building

Estimated MTCO_{2e} avoided: 2,708

LEC Pilot report:

- Projecting 20% GWP asphalt, concrete, and steel available
- 40% GWP glass available
- Proposals received November 14, 2023. Source Selection process underway.
- Anticipated award Spring 2024



03 Glossary

Glossary/Reference

- [EPA's Interim Determination](#)
- **ETPC:** Estimated Total Project Cost
- **Estimated MTCO_{2e} avoided:** Embodied carbon reduction in metric tons of carbon dioxide equivalent (MTCO_{2e}) = (industry average global warming potential (GWP) (MTCO_{2e} per metric ton of material) - product-specific GWP (MTCO_{2e} per metric ton of material) x metric tons of qualifying material used. The MTCO_{2e} figures in this deck are from materials only and do not reflect anticipated reductions in operational emissions.
- **Building-Level Sustainability Goals:** GSA has identified three building-level sustainability goals:
 - **All-electric building:** All Electric is defined as a building that does not use fossil fuels under standard operations and is compliant with [Federal Building Performance Standard](#).
 - **Net-zero energy building:** Powers itself using on-site renewable energy. The official [definition](#) of a Zero Energy Building (ZEB) is “An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”
 - **Sustainable Building:** A building that meets requisite criteria of and qualifies under the current (2020) White House Council on Environmental Quality [Guiding Principles for Sustainable Federal Buildings](#).
 - Some projects are scoped primarily for use of low-embodied carbon materials and as such may not achieve building-level sustainability goals.

