

2019 Greenhouse Gas Emissions Inventory

**Environment & Sustainability
Committee
June 6, 2022**

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

Michael Young
Technical Project Manager
National Renewable Energy Lab



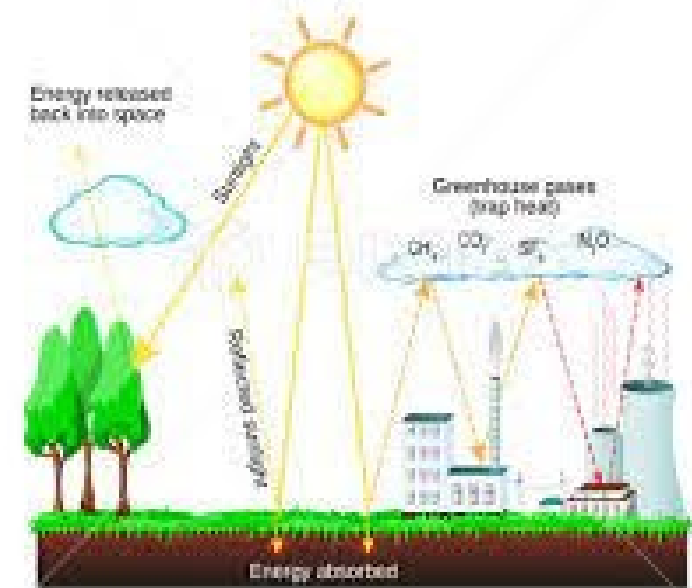
City of Dallas

GHG Emission Inventory Purpose



- Update the inventory completed in 2018, based on 2015 data
- 2019 data was selected as the most representative yearly data
- First regular update to support the CECAP
 - CECAP based on the 2015 data
 - Updating to 2019 data allows us to assess CECAP progress and to focus ongoing CECAP efforts
 - Updating helps assess progress towards the commitment to the goals of the Paris Climate Agreement

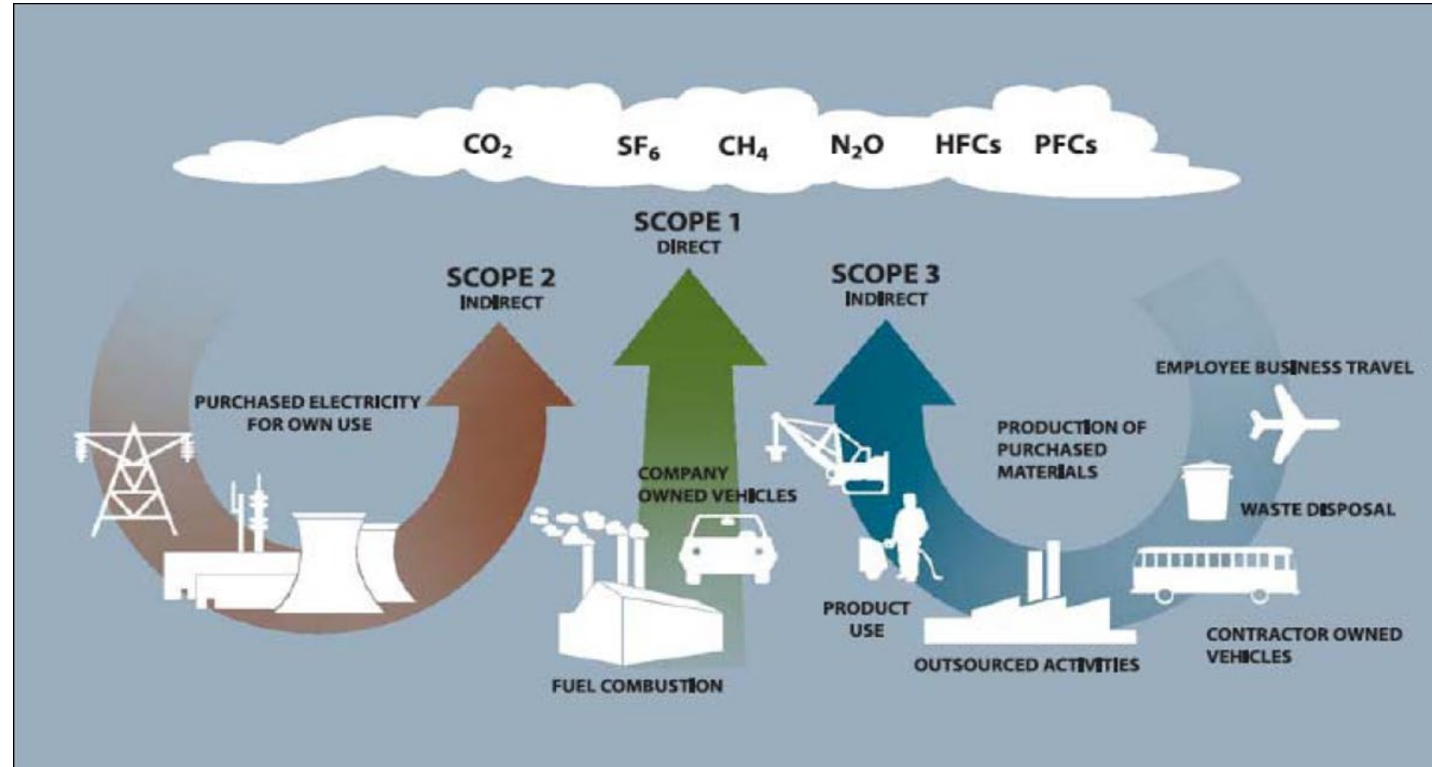
Greenhouse effect



Introduction and Overview of Terms



- Greenhouse Gas (GHG) emissions are expressed in units of ***Metric Tons of Carbon Dioxide Equivalent (MT CO₂e)***. Includes:
 - Carbon Dioxide (CO₂)
 - Methane (CH₄)
 - Nitrous Oxide (N₂O)
 - Fluorinated Gases (HFCs, PFCs, SF₆)



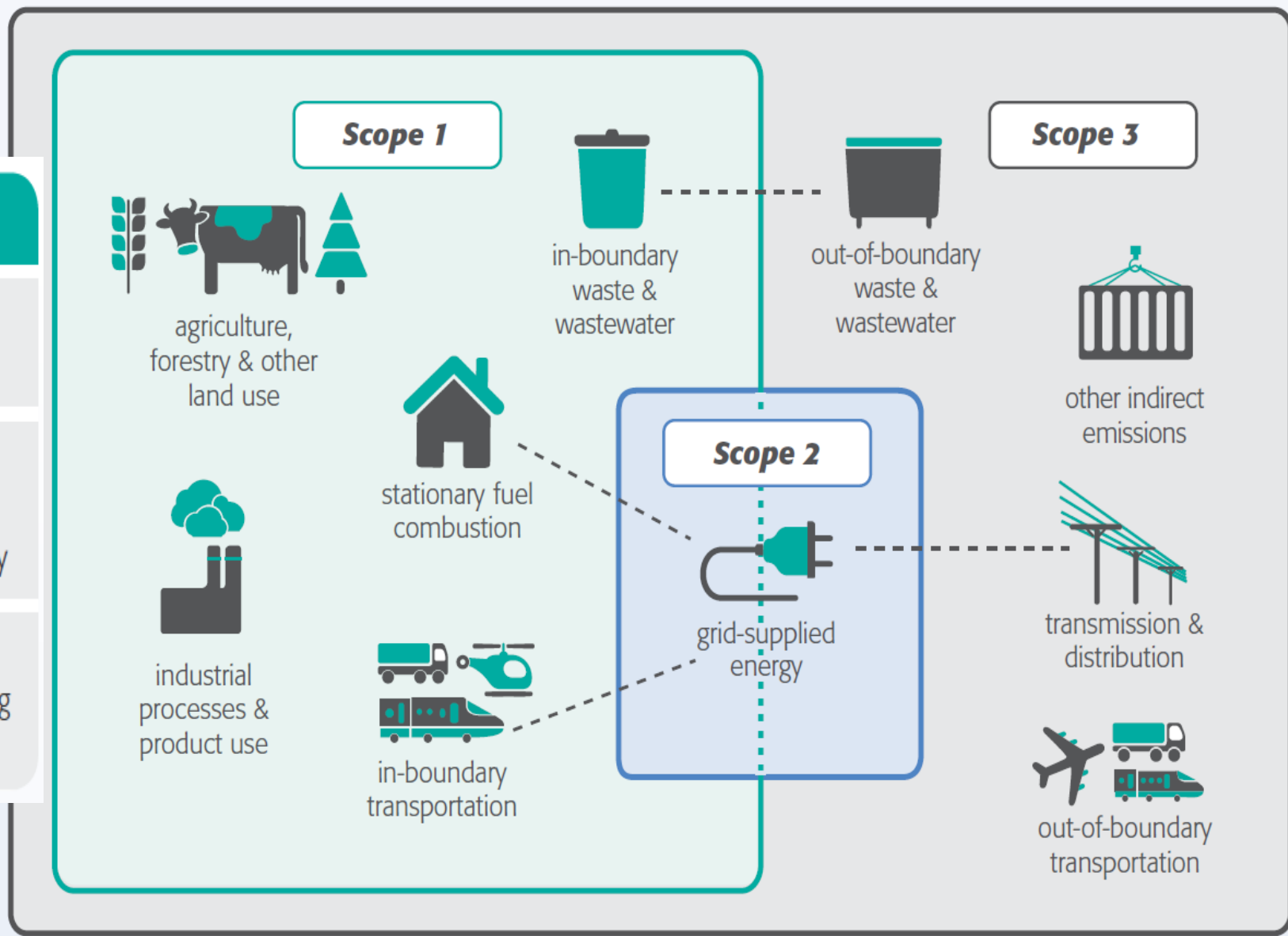
Source: WRI/WBCSD *GHG Protocol Corporate Standard*, Chapter 4 (2004).



Terminology



Scope	Definition
Scope 1	GHG emissions from sources located within the city boundary
Scope 2	GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the city boundary
Scope 3	All other GHG emissions that occur outside the city boundary as a result of activities taking place within the city boundary

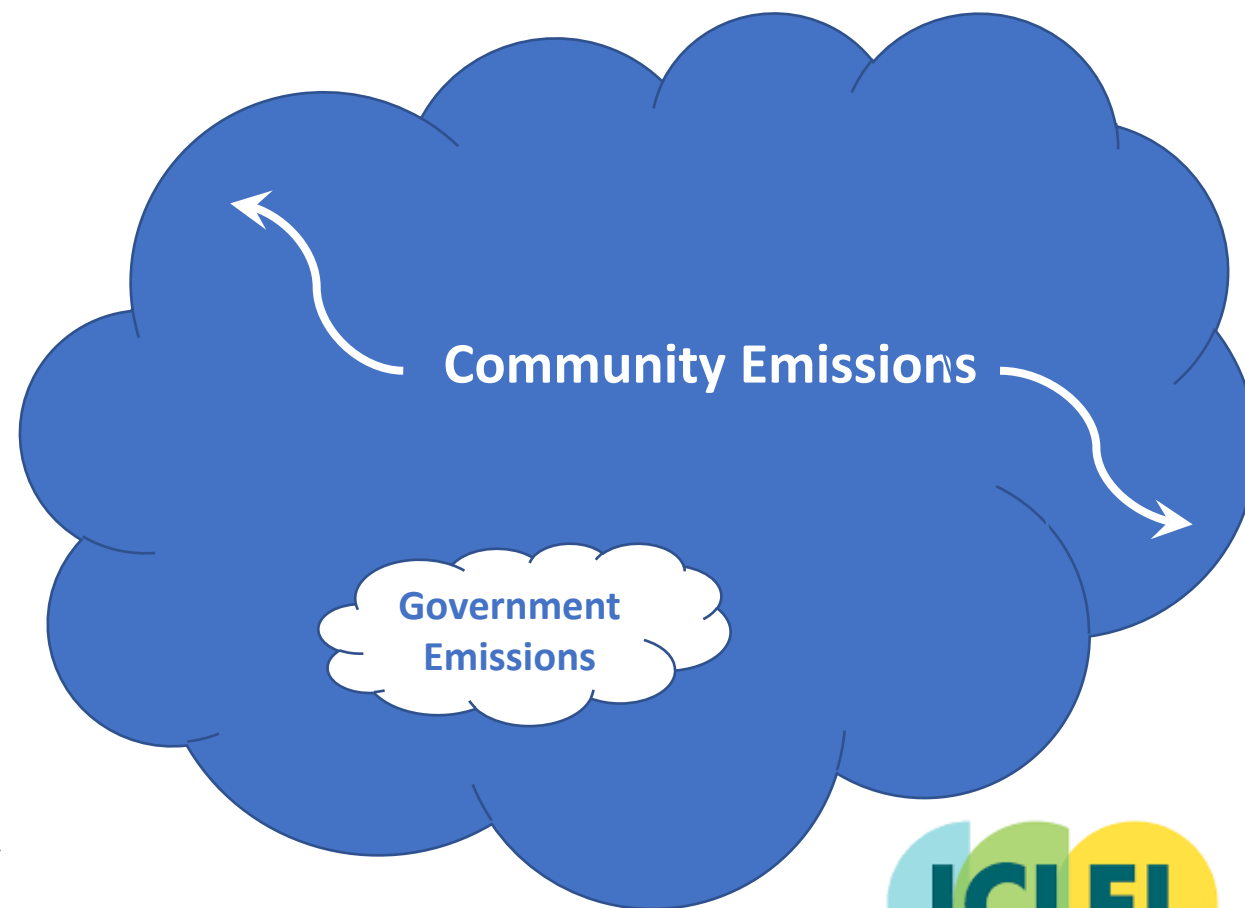


— Inventory boundary (including scopes 1, 2 and 3) — Geographic city boundary (including scope 1) — Grid-supplied energy from a regional grid (scope 2)

Methodology



- Emissions estimated using the Local Governments for Sustainability (ICLEI) and the Global Protocol for Community Scale Greenhouse Gas Emission (GPC) methods.
- ICLEI Clearpath accounting tool used to allow benchmarking with other cities
- Two GHG Emissions Inventories conducted as a part of this process:
 - **Community-Scale**
 - Emissions occurring as a result of activities and sources within the City of Dallas boundaries (also includes municipal emissions by the City of Dallas)
 - **Government-Scale** (Municipal emissions)
 - Emissions from sources owned/operated by the Dallas City Government





Dallas City Government Inventory



Summary of Government Emissions

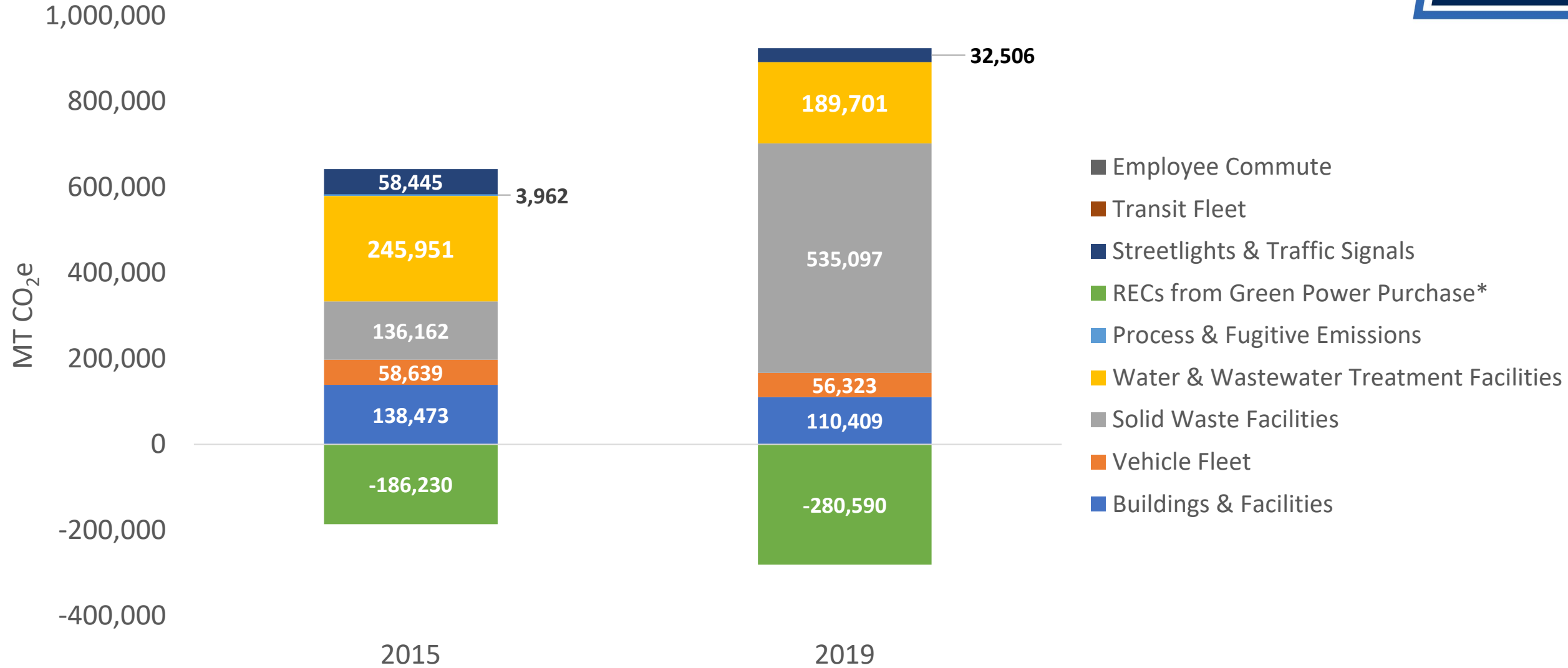


Scope	Sources/Sector	MT CO2e		% Change
		2015	2019	
Scope 1 - GHG Emissions from within City Facility Boundaries	Buildings & facilities, solid waste, fleet, water & wastewater, other process & fugitive emissions	212,959	599,090	181%
Scope 2 - GHG from Grid-supplied energy used for City facilities	Energy use for buildings & facilities, solid waste, fleet, water & wastewater, other process & fugitive emissions	428,673	324,946	-24%
	- Renewable Energy Credits	-186,230	-280,590	51%
	<i>Net Emissions, Scope 2:</i>	242,443	44,356	-82%
Scope 3 - other City-related emissions that occur outside of City Boundary	Employee commute & fugitive emissions	0	40,046	
Total (Gross)		641,632	964,082	50%
Total (Net)		455,402	683,492	50%



City of Dallas Government-Scale GHG Emissions Inventory

Comparison by Sector (Scope 1 & 2 Only)



DRAFT - PRELIMINARY DATA



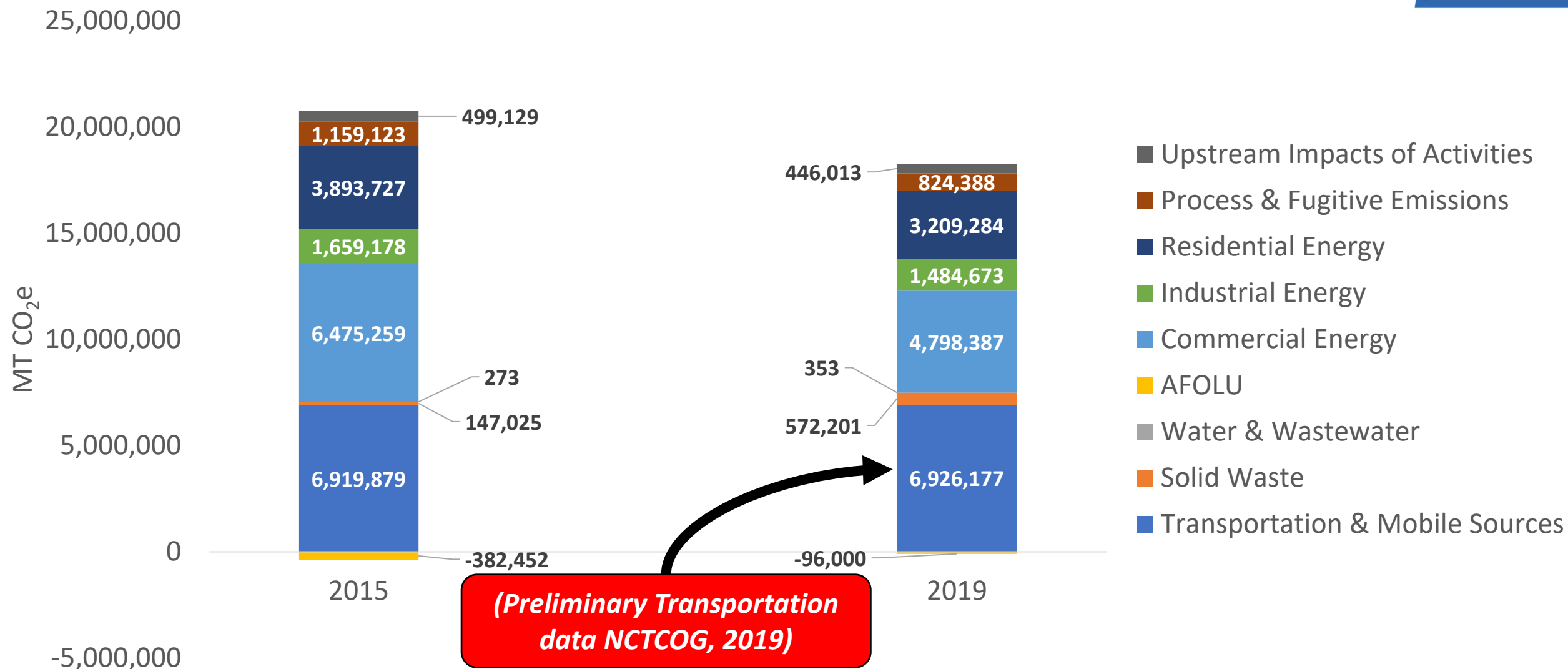
Dallas Community-Scale Inventory



City of Dallas Community-Scale Summary of GHG Emissions by Scope and Sector				
Scope	DRAFT - PRELIMINARY DATA Sector	MT CO ₂ e		% Change
		2015	2019	
Scope 1 (In-Boundary)	Residential Energy	742,489	769,878	+4%
	Commercial Energy	1,261,803	762,630	-40%
	Industrial Energy	345,001	467,343	+35%
	Transportation & Mobile Sources	6,779,889	3,230,549	-52%
	Solid Waste	140,488	538,129	+283%
	Water & Wastewater	273	353	+29%
	Process & Fugitive Emissions	1,159,123	824,388	-29%
	Subtotal: Scope 1 (Gross)	10,429,066	6,593,270	-38%
	AFOLU (Agriculture, Forestry, and Other Land Use Credits)	-382,452	-96,000	-75%
	Subtotal: Scope 1 (Net)	10,046,614	6,497,270	-37%
Scope 2 (Grid)	Residential Energy	3,151,238	2,439,406	-23%
	Commercial Energy	5,213,456	4,035,757	-23%
	Industrial Energy	1,314,177	1,017,330	-23%
	Transportation & Mobile Sources	69,738	30,505	-56%
	Subtotal: Scope 2	9,748,609	7,522,998	-23%
Scope 3 (Outside Boundaries)	Solid Waste	6,537	34,072	+421%
	Transportation & Mobile Sources	70,252	3,665,123	+5,117%
	Upstream Impacts of Activities	499,129	446,013	-11%
	Subtotal: Scope 3	575,918	4,145,208	+620%
Total (Gross)		20,753,593	18,261,476	+13%
Total (Net)		20,371,141	18,165,476	-12%

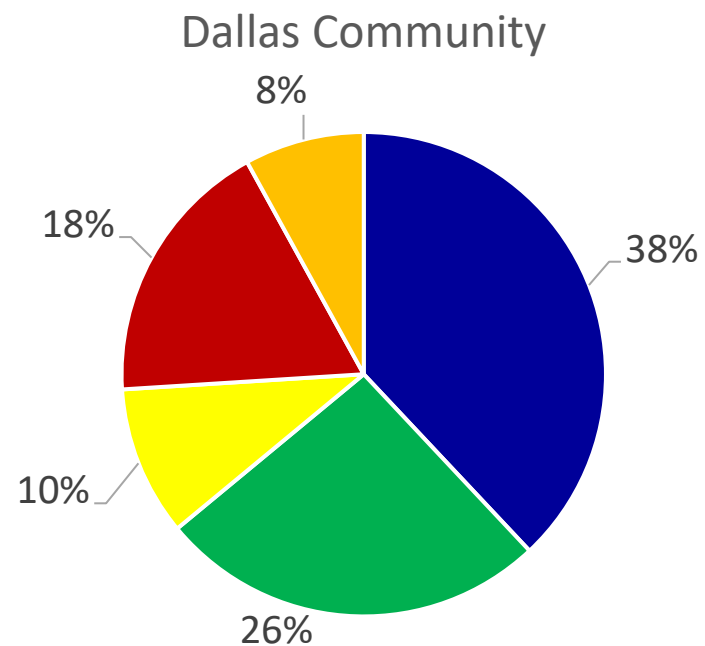
City of Dallas Community-Scale GHG Emissions Inventory

Comparison by Sector (Scope 1 & 2 Only)

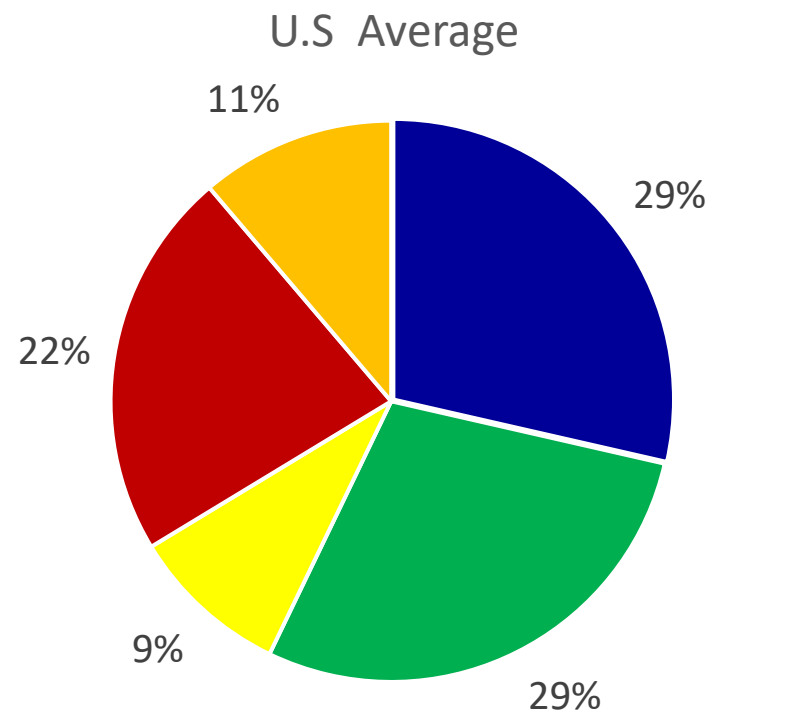




Dallas Community Emissions



- Transportation & Mobile Sources
- Industrial Energy

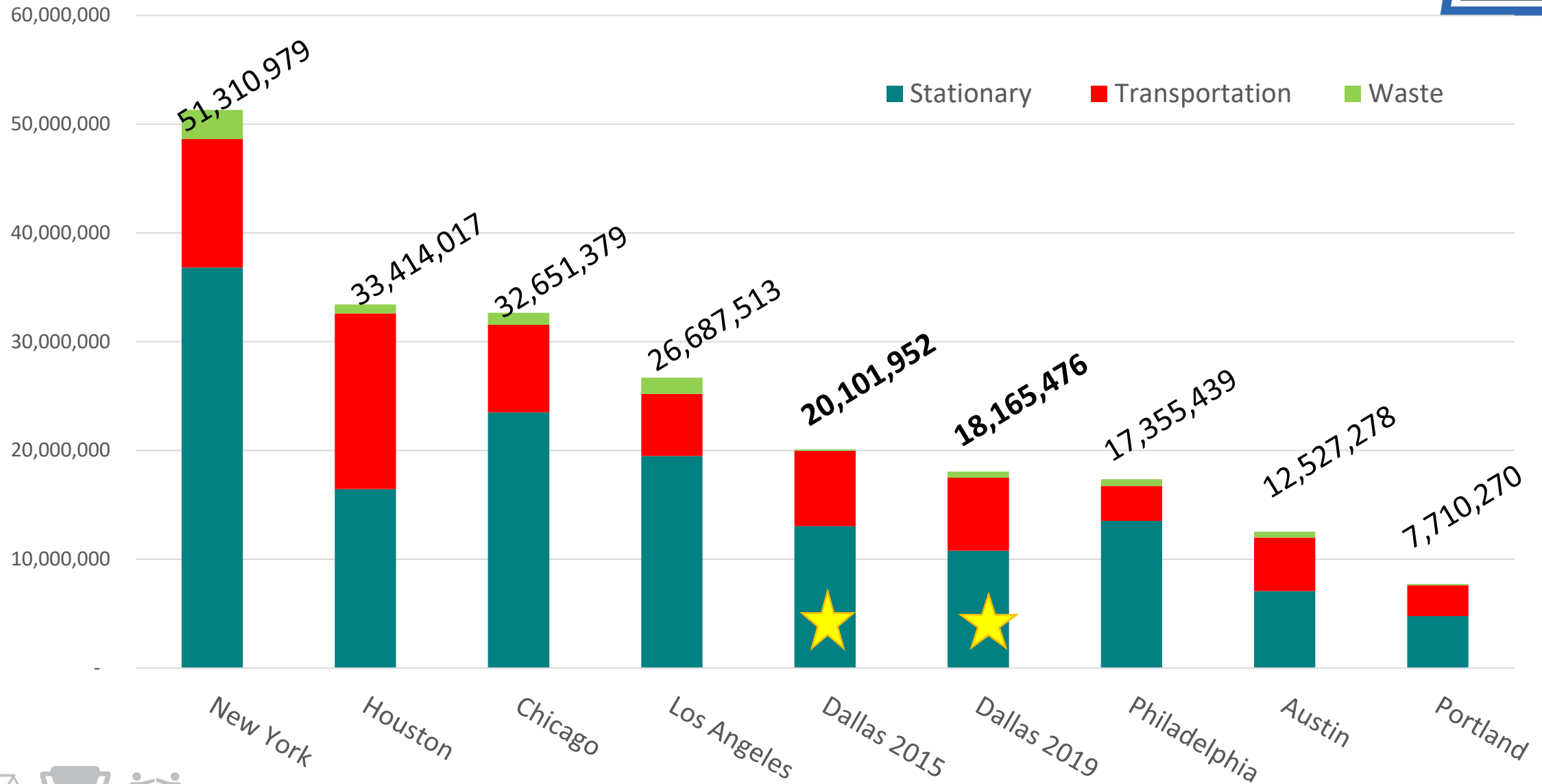


- Commercial Energy
- Residential Energy
- Other Emissions



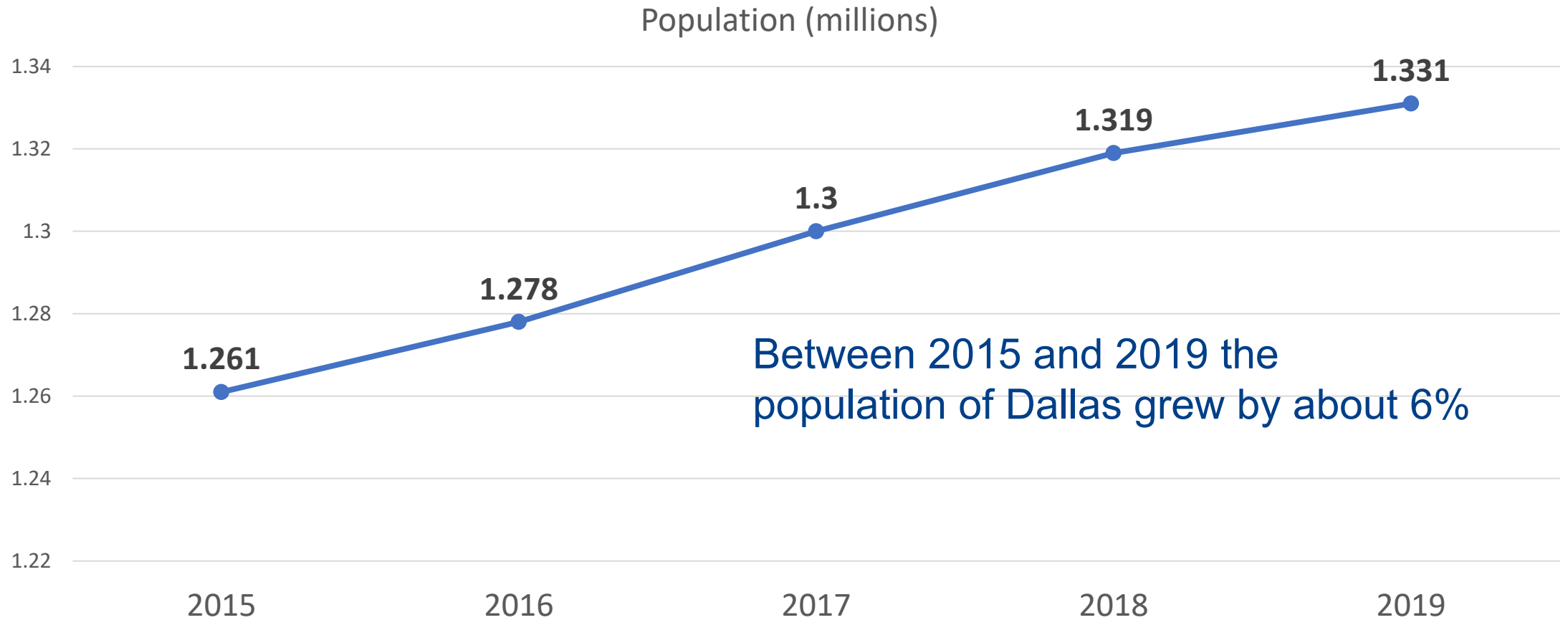
DRAFT - PRELIMINARY DATA

C40 City Comparison

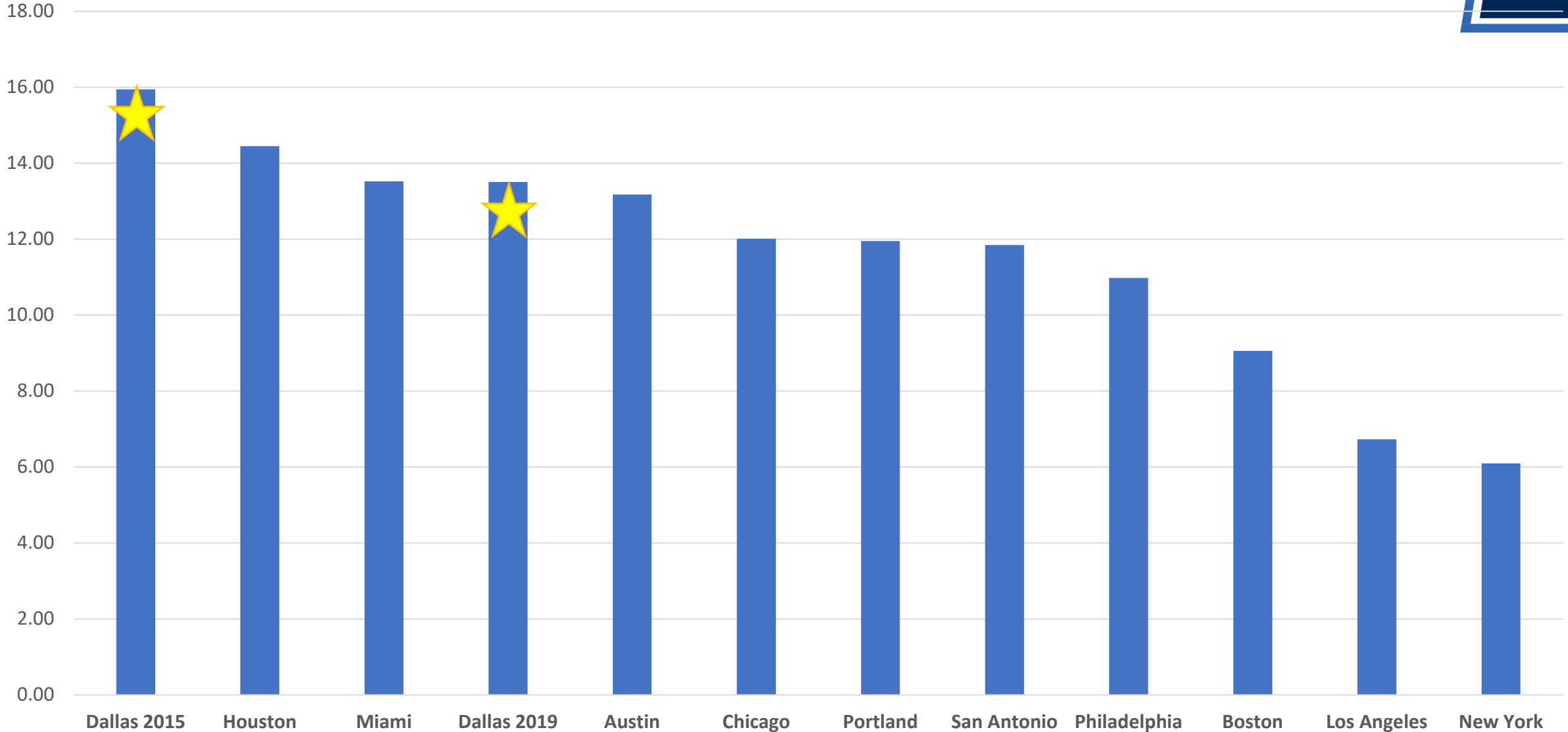


DRAFT - PRELIMINARY DATA

City of Dallas Population Growth



Greenhouse Gas (MT CO2e)/ Capita (2019)



Conclusions



- Community emissions are down even though population increased
 - *Population grew by 6% from 2015 to 2019, but community emissions decreased by 12%*
 - *In 2015 the per capita community emissions were 16.2 T/person*
 - *In 2019 the per capita community emissions were 13.5 T/person*
- Significant progress in key areas - Buildings and energy
- Community energy use is lower
- City electricity use is offset by Renewable Energy Credits
- Progress made in calculation methodology and data collection
- Working with NCTCOG on a regional inventory has been helpful



Next Steps

- Wrap loose ends
- Project trends
- Identify opportunities to further reduce emissions
- Assess alignment with CECAP goals
- Work with NCTCOG & Regional Partners towards regional inventory and air quality compliance improvements





QUESTIONS AND DISCUSSION

City Government Summary of GHG Emissions by Scope and Sector				
Scope	Sector	MT CO2e		% Change
		2015	2019	
Scope 1	Buildings & Facilities	14,599	8,289	-43%
	Solid Waste Facilities	135,486	534,477	+294%
	Vehicle Fleet	58,639	56,323	-4%
	Water & Wastewater Treatment Facilities	273	1	-100%
	Process & Fugitive Emissions	3,962	0	-100%
	Subtotal: Scope 1	212,959	599,090	+181%
Scope 2	Buildings & Facilities	123,874	102,120	-18%
	Solid Waste Facilities	676	620	-8%
	Streetlights & Traffic Signals	58,445	32,506	-44%
	Water & Wastewater Treatment Facilities	245,678	189,700	-23%
	Subtotal: Scope 2 (Gross)	428,673	324,946	-24%
	Renewable Energy Credits (RECs)*	-186,230	-280,590	+51%
	Subtotal: Scope 2 (Net)	242,443	44,356	-82%
Scope 3	Employee Commute	0	13,166	
	Process & Fugitive Emissions	0	360	
	Buildings & Facilities	0	26,520	
	Subtotal: Scope 3	0	40,046	
Total (Gross)		641,632	964,082	+50%
Total (Net)		455,402	683,492	+50%



2019 Greenhouse Gas Emissions Inventory

**Environment & Sustainability
Committee
June 6, 2022**

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

Michael Young
Technical Project Manager
National Renewable Energy Lab

