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To: Lilly Whalen, Community Development Director, City of Pinole
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CC: Misha Kaur, Senior Project Manager, Public Works, Administration & Engineering
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Date: 2/25/22

Subject: Executive Summary of the City of Pinole Community Greenhouse Gas Emissions (2017) Inventory Review and Reconciliation Memo

Please find attached a memorandum that provides review and reconciliation of the Greenhouse Gas (GHG) Emissions Community Inventory (Inventory), which was originally prepared by East Bay Energy Watch (EBEW) as part of a regional GHG emissions inventory. The updated and accurate Inventory provides the City with an essential foundation for climate action planning and provides the City with tools to reduce GHG in accordance with the City's and state's GHG reduction targets¹. The Inventory followed ICLEI Local Governments for Sustainability Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol) and includes current and accurate data sources and emission factors. The review and reconciliation of the Inventory included:

- Reviewed activity data, emission factors, and calculations associated with GHG emissions estimates in the 2017 Inventory
- Identified water, wastewater, waste, electricity transmission and distribution (T&D) loss, and natural gas methane leak sectors which were omitted in the Original 2017 Inventory
- Worked with City staff to obtain community-level activity data and emission factors related to waste, water, and wastewater, and obtained loss factors and emission factors for electricity T&D losses and methane leaks, and completed GHG emissions calculations for these sectors which were added to the Updated GHG emissions inventory
- Identified data source and emission factor improvement opportunities for the off-road sector, on-road transportation sector, and direct access electricity sector
- Updated GHG emissions calculations for off-road sector, on-road transportation sector, and direct access electricity sector using updated models and GHG emission factors

This purpose of this document is to provide an Executive Summary of the findings. Please note, we are scheduled on **March 10, 3pm** to discuss the Inventory memorandum and answer any questions. We will also discuss the next tasks that include the GHG forecast setting and target setting. As always, we are glad to discuss any questions before our March 10th meeting.

¹ On October 19, 2021, the City of Pinole's City Council adopted a resolution that declared a climate emergency and directed staff to develop a GHG inventory and Climate Action Plan (CAP) that align with the state's GHG reduction targets which include reducing GHG emissions 40% below 1990 levels by 2030, as established by Senate Bill 32, and strive to achieve carbon neutrality by 2045, as established by Executive Order B-55-18



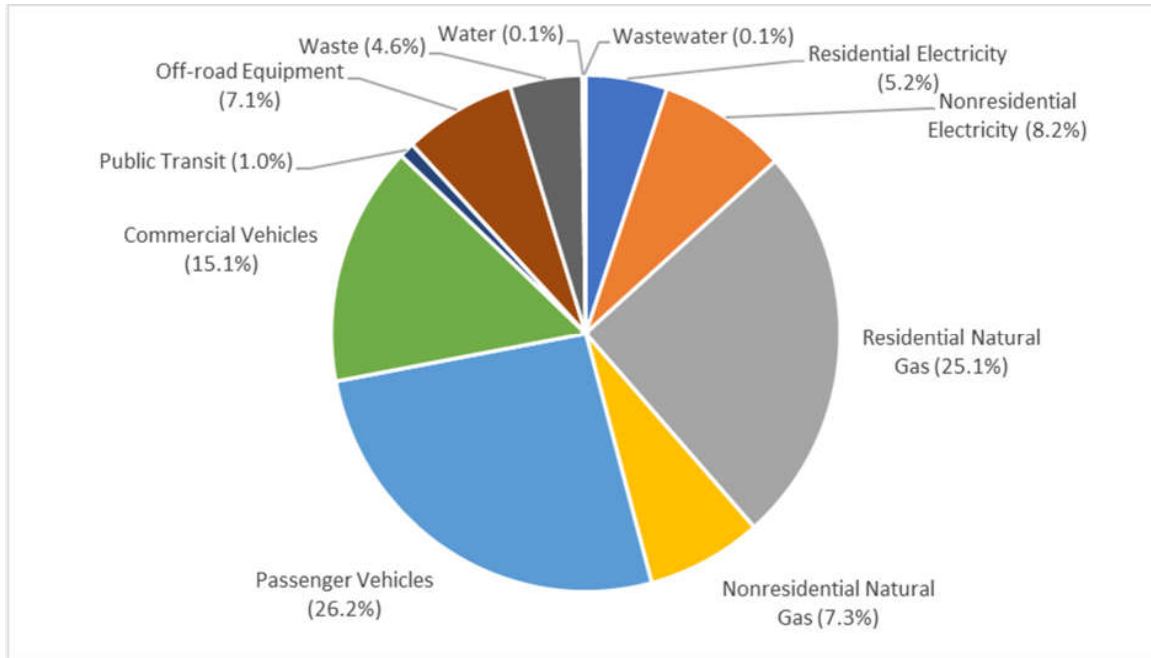
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On pages 5 through 13 of the attached memorandum, there is significant detail on the updated GHG emissions inventory methods. The Updated GHG Emissions Inventory is included below (from page 12) of the memorandum and provides good detail on the sources and quantities of GHG emissions.

Updated GHG Emissions Inventory Summary

The results for all GHG emissions sectors for the City of Pinole's Updated Inventory are summarized in Figure 1 and shown in detail in Table 14.

Figure 1 Updated Inventory GHG Emissions by Sector



Page 13 of the attached memorandum details the updated 2017 GHG Emissions Inventory by sector and is included on the following page.



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Table 14 Updated 2017 GHG Emissions Inventory

GHG Emissions Sector	GHG Emissions Subsector	Activity Data	Emission Factor	GHG Emissions (MT CO ₂ e)
Energy	Residential Electricity	37,223,051 kWh	0.000096 MT CO ₂ e/kWh	3,584
	Residential Electricity T&D	1,574,535 kWh	0.000096 MT CO ₂ e/kWh	152
	Nonresidential Electricity	32,504,490 kWh	0.000096 MT CO ₂ e/kWh	3,129
	Nonresidential Electricity T&D	1,374,940 kWh	0.000096 MT CO ₂ e/kWh	132
	Direct Access Electricity	10,593,229 kWh	0.000240 MT CO ₂ e/kWh	2,546
	Direct Access Electricity T&D	448,094 kWh	0.000240 MT CO ₂ e/kWh	108
	Residential Natural Gas	2,777,511 therms	0.00531 MT CO ₂ e/therm	14,750
	Residential Natural Gas Leaks	63,883 therms	0.053067 MT CO ₂ e/therm	3,390
	Nonresidential Natural Gas	810,175 therms	0.00531 MT CO ₂ e/therm	4,302
	Nonresidential Natural Gas Leaks	18,634 therms	0.053067 MT CO ₂ e/therm	989
Transportation	Passenger CVMT	50,541,560 miles	0.000374 MT CO ₂ e/mile	18,903
	Commercial CVMT	8,438,221 miles	0.001288 MT CO ₂ e/mile	10,868
	Bus CVMT	309,086 miles	0.001531 MT CO ₂ e/mile	473
	Passenger EVMT	190,196 kWh	0.000096 MT CO ₂ e/kWh	18
	Passenger EVMT T&D	8,045 kWh	0.000096 MT CO ₂ e/kWh	0.77
	Commercial EVMT	0 kWh	0.000096 MT CO ₂ e/kWh	0
	Bus EVMT	647 kWh	0.000096 MT CO ₂ e/kWh	0.06
	Bus EVMT T&D	27 kWh	0.000096 MT CO ₂ e/kWh	0.003
	BART	2,455,392 miles	0.000093 MT CO ₂ e/mile	228
	Off-road Diesel	357,578 gallons	MT CO ₂ e/gallon	3,092
	Off-road Gasoline	206,631 gallons	MT CO ₂ e/gallon	1,852
	Off-road Natural Gas	45,523 gallons	MT CO ₂ e/gallon	216
Waste	Landfill CH ₄	8,367 tons	N/A	3,163
	Process Emissions		N/A	137
Water	Water Conveyance, Treatment, and Distribution	57,398 kWh	0.000096	63
Wastewater	Digester Gas CH ₄	60,725 std cubic ft/day	N/A	0.59
	Digester Gas N ₂ O		N/A	1.10
	Denitrification Process N ₂ O	44,895 population served	N/A	40
	Effluent Discharge Fugitive N ₂ O	336 kg N/day	N/A	61
Total				72,198



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Table 15 provides the comparison of the Original 2017 Inventory and the Updated 2017 Inventory.

Table 15 Original 2017 Inventory versus Updated Inventory

GHG Emissions Sector	GHG Emissions Subsector	GHG Emissions (MT CO ₂ e)		Percent Change (%)	Summary of Reason for Change
		Inventory Update	Original 2017 Inventory		
Energy	Residential Electricity	3,735	3,605	3.6%	Adjusted to exclude GHG emissions from passenger EV charging and include GHG emissions from T&D losses
	Nonresidential Electricity	5,916	3,132	88.9%	Adjusted to include GHG emissions from direct access electricity and T&D losses
	Residential Natural Gas	18,140	14,750	23.0%	Adjusted to include GHG emissions from methane leaks
	Nonresidential Natural Gas	5,291	4,302	23.0%	Adjusted to include GHG emissions from methane leaks
Transportation	Passenger Vehicles	18,922	17,593	7.6%	Adjusted to use updated emission factors and include GHG emissions from passenger EV charging and T&D losses.
	Commercial Vehicles	10,868	10,862	0.1%	Adjusted to use updated emission factors and exclude GHG emissions from buses.
	Public Transit (buses and BART)	701	228	207.8%	Adjusted to include GHG emissions from buses and EV bus charging and T&D losses.
	Off-road Equipment	5,160	4,753	8.5%	Adjusted to use updated fuel usage data and emission factors.
Waste	Waste	3,300	N/A	N/A	Sector originally excluded from inventory and updated to be included.
Water and Wastewater	Water	63	N/A	N/A	Sector originally excluded from inventory and updated to be included.
	Wastewater	103	N/A	N/A	
Total		72,198	59,226	21.9%	N/A