TSE:9531



## FY2023 1Q Financial Results ended June, 2023

July 27, 2023





- Consolidated FY2023 1Q saw a YoY rise in both sales and profits, driven by an increase in city gas unit price due to resource costs adjustment, etc.
- Our consolidated forecast for FY2023 anticipates lower sales but higher profits versus the previous forecast. Factors include: a drop in Energy Solutions sales stemming from a decrease in city gas unit price due to resource costs adjustment; a fall in Overseas sales due to a decrease in unit sales prices; and profit on sales of investment securities.
- Work is still underway to divest the five subsidiaries (four projects) of our Australian subsidiary Tokyo Gas Australia Pty Ltd through a transfer of shares to MidOcean Energy Holdings Pty Ltd, a subsidiary of the USbased EIG Global Energy Partners, LLC. The impacts of this transfer are not included in the consolidated 1Q results and consolidated FY2023 forecast.



## FY2023 Consolidated Financial Results ended June, 2023

01



#### Highlights: Sales UP, Profit Up

(+/- indicate impact on profit, billion yen)

Net sales	+39.7	Increase in city gas unit price due to resource costs adjustment, etc.
Operating expenses	+2.0	Decrease in resource costs due to decrease in city gas and electricity sales volume, etc.
Operating profit	+41.7	Increase in gross margin from the change in city gas unit prices due to the impact from economic framework assumptions, etc.
Extraordinary profit/loss	+2.4	FY2023 2.4: (Extraordinary gain) Gain on sales of investment securities 2.4 FY2022 0

(Unity hillion yen)

		FY2023 1Q	FY2022 1Q	Change	%		
City gas sale	es volume (million m3, 45MJ)	2,466	2,857	-391	-13.7		
Electricity sales volume (million kWh)		5,262	7,429	-2,167	-29.2		
Net sales		649.6	609.9	39.7	6.5		
Operating ex	kpenses	556.7	558.7	-2.0	-0.4		
Operating p	rofit	92.9	51.2	41.7	81.6		
Segment pro income of su	ofit (operating profit + equity Ibsidiaries)	94.6	52.5	42.1	80.0		
Ordinary pro	ofit <sup>(1)</sup>	107.2	57.7	49.5	85.9		
Extraordina	ry profit/loss	2.4	0	2.4	_		
Profit attribu	utable to owners of parent	77.6	38.4	39.2	102.1		
	Temperature effect <sup>(2)</sup>	-2.0	0.2	-2.2			
(Adjustment items)	Sliding effect <sup>(3)</sup> (city gas + LNG sales)	49.7 (43.3+6.4)	21.5 (19.1+2.4)	28.2. (24.2+4.0)			
	Amortization of actuarial differences <sup>(4)</sup>	0.5	-1.0	1.5			
Adjusted or	linary profit (1)-((2)+(3)+(4))	59.0	37.0	22.0	59.5		

Economic framework	FY2	2023 1Q	FY2022 1Q
Exchange rate (¥/\$)		<b>137.49</b> (+7.76)	129.73
Crude oil price (\$/bbl)		<b>83 .99</b> (-26.66)	110.65
Avg. air temp (℃)		<b>19.5</b> (+0.5)	19.0
Pension assets			<b>2023 1Q</b> une 30, 2023 )
Investment yield (costs deducted)			0.82%
Year-end assets (billior	ı yen)		243.0

<Expected annual rate of return: 2%>

#### FY2023 1Q Results: Sales and Operating Profit/Loss by Business Segments

(unit : billion yen)

vs. FY2022 1Q

			Net s	ales*4			ofit aries)		
		FY2023 1Q Results	FY2022 1Q Results	Change	%	FY2023 1Q Results	FY2022 1Q Results	Change	%
(inclu	Energy solution*1 (including equity income of subsidiaries)		558.6	25.9	4.6	82.6	38.8	43.8	112.4
	City gas*2	385.0	331.9	53.1	16.0	67.1	28.6	38.5	134.2
	Electric Power	142.7	153.2	-10.5	-6.9	11.2	4.0	7.2	177.8
Netv	vork	84.1	88.6	-4.5	-5.1	-1.8	2.3	-4.1	_
Over	seas business	31.5	35.0	-3.5	-10.0	12.2	16.0	-3.8	-23.5
	(equity income of subsidiaries)			_		0.7	1.1	-0.4	-36.8
	an Development ing equity income of subsidiaries)	18.8	14.9	3.9	25.5	6.9	4.0	2.9	69.2
Adjus	stment*3	-69.3	-87.3	18.0		-5.2	-8.7	3.5	_
Cons	olidated	649.6	609.9	39.7	6.5	94.6	52.5	42.1	80.0
	(equity income of subsidiaries)					-1.6	1.3	0.3	20.2

\*1 Includes city gas (excl. Network), LPG, industrial gas, LNG sales, trading, electric power, engineering solutions, gas equipment, construction, and shipping, among others.

\*2 Includes city gas (excl. Network), LNG sales, and trading.

\*3 Adjustments in segment profits include mainly corporate expenses not allocated to the segments.

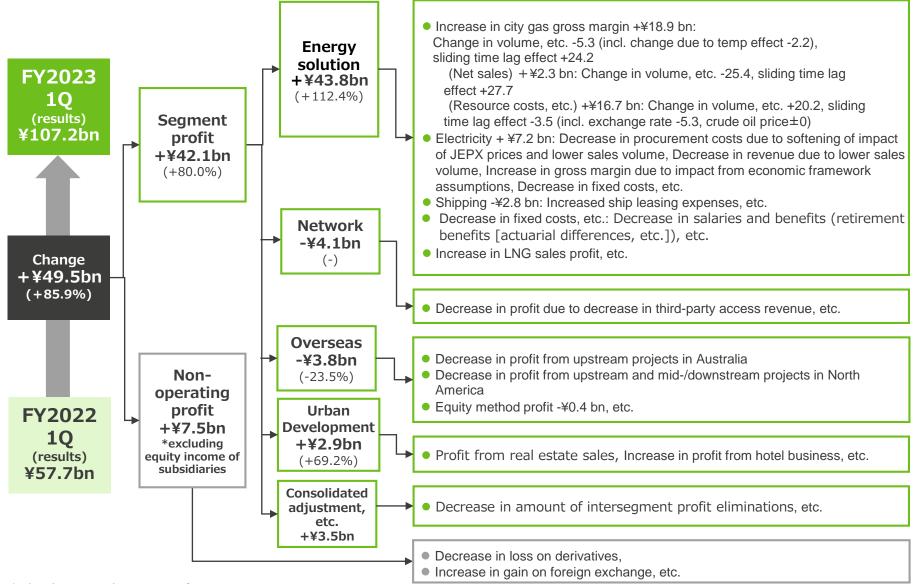
\*4 Segment sales include internal transactions made between business units.



#### FY2023 1Q Results : Ordinary Profit Analysis

vs. FY2022 1Q





\*+/- indicate contributions to profit.



#### FY2023 1Q Consolidated Gas Sales Volume / Number of Customers vs. FY2022 1Q

#### City Gas sales volume:

City Ga				(م ا				Average ten	perature				
	nil.m (-13.7%		( Unit : mi 3,000	i. m <i>)</i>		2,857				FY2023 1Q	FY2022 1Q	Change	
	g temperature effect 1mil.m <sup>*</sup> ,-1.4% <b>-45mil.m</b> <sup>*</sup> (-	6.90()		-		_,,	Desidentia	gas retail sales (10 thousanc		874.9	868.9	+6.0 (+0.7%)	
			2,500	2,4	466	657	Residentia	Number of cus	tomers			+12.7	
Temperature ef	fect -30	mil.m						(meters)		1,235.0	1,222.3	(+1.0%)	
Number of days	-6 ו	mil.m						(10 thousand					
Number of customers	4	mil.m	2 000	6	12			(thousands t)		631	316	+315 (+99.8%)	
Others	-13	mil.m	2,000	_		446		Average temp	erature (℃)	19.5	19.0	+0.5	
Commercia	l +30mil.m/(+	+6.8%)					Commerci		r of billed cust	omers for cit	v das rotai	sales	
Temperature effect	-10	mil.m		4	76				<ul><li>*1. Number of billed customers for city gas retail sales</li><li>*2. Number of meters installed for gas supply</li></ul>				
Number of days	s ±0	mil.m	1,500	-		-		Gas Sales Vo	olume , Gas v		l in-house Unit : mill		
Number of customers	±C	Dmil.m		1,	031	1,393				FY2023	FY2022	Change	
Others	+40	mil.m		of v	vhich,	of which,	Industrial	City and a		1Q	1Q	change	
■Industrial	<b>-362mil.m</b> (-2	26.0%)	1,000	7	ustrial '24 ower	– Industrial 710			les volume accounting	2,466	2,857	-391 (-13.7%)	
Industrial	+14	4mil.mª		gene	eration	Power generation			ne used in-				
Power generation	-376	5mil.m		3	07	683			house under tolling arrangement		478	539	-61 (-11.4%)
■ Wholesale	<b>-15mil.m</b> (	-3.9%)	500	_		-		LNG sale	s volume		205	+ 393	
Temperature e	ffect -1	mil.m					Wholesale	e (m <sup>3</sup> bas	sis)	788	395	(+99.8%)	
Others	-14 Decrease in who deman		0	3	46	361		Тс	tal	3,732	3,790	-58 (-1.5%)	
	Gernan		0	FY202	23 1Q	FY2022 1Q	)						
Number of c	ustomers for city	y gas ret	tail sales				•				*Each valu	e is rounded.	
2	017.3 2018.3 2	2019.3	2020.3	2021.3	2022.3	2022.6	2022.9 2	2022.12 2023	3.3 2023.	5			
Number 1, (Change)	026.9 1,020.9 (-) (-6.0) (	982.1 (-38.8)	912.9 (-69.2)	886.3 (-26.2)	868.8 (-17.5)	868.9 (+0.1)	867.2 (-1.7)	868.8 870 (+1.6) (+1					

Full deregulation of the retail market (2017.04)

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Number of customers(City Gas), LNG sales volume,

#### FY2023 1Q Consolidated Electricity Sales Volume / Number of Customers

#### **Electricity sales volume :** New electricity retail customers won by Tokyo Gas Cumulative (thousands) (Unit:mil.kWh) Quarter (thousands) -2,167mil. kWh 4,000 300 8,000 3,612 3,090 <sup>3,190</sup> 3,014 (-29.2%)7,429 3,500 2,71<sup>2</sup>7<sup>78</sup>,<sup>2,876<sup>2,934</sup> 2,522 2,457</sup> 250 7,000 Retail 3,000 Retailing sales +179 mil. kWh(+7.8%) Sales 2,283 200 -2,350 -2,345 mil. kWh(-45.6%) Wholesale etc. 6,000 2,500 2,225 5,262 2,000 150 5,000 1,500 100 4,000 2,462 1,000 50 Wholesale 3,000 500 etc. 5,145 0 0 19-30 2,000 2,800 1,000 Quarter(number of customers) Cumulative(number of customers) 0 FY2023 1Q FY2022 1Q \*Each value is rounded.

TOKYO GAS

vs. FY2022 1Q

02

## **FY2023 Full Year Forecast**



### Highlights: Sales Down, Profit Up (vs. Previous Forecast)

(+/- indicate impact on profit, billion yen)

	vs. Previous Forecast	
Net sales	-205.0	Decrease in city gas unit price due to resource costs adjustment, Decrease in Overseas sales due to a decrease in unit sales prices, etc.
Operating expenses	+205.0	Impact from the decrease in crude oil prices, etc.
Operating profit	±0	
Extraordinary profit/loss	+2.4	Forecast 2.4: (Extraordinary profit) gain on sale of investment securities 2.4 Previous Forecast 0

							(Unit: bi	lion yen)
		Forecast	Previous Forecast	Change	%	FY2022 Result	Change	%
City gas sale 45MJ)	s volume (million m3,	11,905	12,009	-104	-0.9	12,574	-669	-5.3
Electricity sa	les volume (million kWh)	26,730	28,789	-2,059	-7.2	34,445	-7,715	-22.4
Net sales		2,692.0	2,897.0	-205.0	-7.1	3,289.6	-597.6	-18.2
Operating ex	penses	2,542.0	2,747.0	-205.0	-7.5	2,868.1	-326.1	-11.4
Operating profit		150.0	150.0	0	—	421.4	-271.4	-64.4
Segment profit (operating profit + equity income of subsidiaries)		154.8	154.8	0	_	417.0	-262.2	-62.9
Ordinary pro	fit <sup>(1)</sup>	137.0	137.0	0		408.8	-271.8	-66.5
Extraordinar	y profit/loss	2.4	0	2.4		-1.3	3.7	—
Profit attribu	table to owners of parent	101.0	100.0	1.0	1.0	280.9	-179.9	-64.0
	Temperature effect <sup>(2)</sup>	-2.0	0	-2.0	—	-4.3	2.3	
Sliding effect <sup>(3)</sup> (Adjustment (city gas + LNG sales) items)		60.0 (46.0+ 14.0)	39.3 (31.6+ 7.7)	20.7 (144+ 6.3)	_	210.8 (187.2+ 23.6)	-150.8 (-141.2+ -9.6)	_
Amortization of actuarial differences <sup>(4)</sup>		2.3	2.3	0		-4.4	6.7	_
Adjusted ord ((2)+(3)+(4	linary profit (1)- ))	76.7	95.4	-18.7	-19.6	206.7	-130.0	-62.9

Economic framework	Forecast		FY2022 Results
Exchange rate (¥/\$)	<b>135.62</b> (+5.62)	130.00	135.50
Crude oil price (\$/bbl)	<b>81.00</b> (-9.00)	90.00	102.67
Avg. air temp (℃)	<b>16.4</b> (+0.1)	16.3	16.8

 $^{*2Q}$  \$80.00/bbl , \$135/\$

Pension	assets	FY2022	FY2021	FY2020
Investmen (costs dedu	,	-1.90%	0.37%	4.94%
<b>D</b> :	Annuity portion	0.809%	0.481%	0.318%
Discount rate	Lump- sum portion	0.373%	0.192%	0.075%
Year-end a (billion yen	00000	243.0	256.0	263.0

<Expected annual rate of return: 2%>

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#### FY2023 Consolidated Forecast Assets, Cash Flows, etc.



(Unit: billion yen, balance sheet figures are as of the corresponding t							
	FY2023 Forecast	FY2022 Results	Reference				
Total assets (a)	3,669.0	3,581.4	Increase in new capital expenditures, investments & financing, etc.				
Shareholders' equity (b)	1,543.0	1,558.4	Decrease from share buyback, and dividends Shareholders' equity = Net assets – minority interests				
Shareholders' equity ratio (b)/(a) Factoring in hybrid bonds/loans*1	<b>42.1%</b> 43.2%	43.5% 44.7%					
Interest-bearing debt (c) Hybrid bond/loan component	<b>1,419.0</b> 83.3	1,263.2 83.3					
D/E ratio (c)/(b) Factoring in hybrid bonds/loans*1	<b>0.92</b> 0.87	0.81 0.76					
Profit attributable to owners of parent (d)	101.0	280.9					
Profit per share (EPS, yen per share)	245.27	646.99					
Depreciation (e)	212.0	209.3					
Operating cash flow $(f) = (d) + (e)$	313.0	490.2	Net profit + Depreciation (including depreciation of long-term prepaid expenses)				
Capital Expenditure	280.0	213.2					
Investments and Financing (after offset)	56.1	31.3					
Total(g)	336.1	244.6					
Free cash flow (f) + (g)	-23.1	245.5					
ROA (d)/(a)	2.8%	8.3%	Net profit / Total assets (average of the amounts as of the end of the previous period and end of the current period)				
ROE (d)/(b)	6.5%	20.0%	Net profit / Shareholders' equity (average of the amounts as of the end of the previous period and end of the current period)				
WACC	<b>*</b> 2 <b>2.6%</b>	2.4%					
Total return ratio	Approx. <b>40%</b>	50.3%	[FY-N dividends + FY-(N+1) treasury stock purchased] / FY-N consolidated net profit				

\*1 Based on expected equity credit ratio of 50% for issued hybrid bonds and hybrid loans.

\*2 Items for WACC calculation (FY2023 forecast)

• Cost of interest-beating debt : forecast interest rate (0.61%, after tax)

Cost rate for shareholders' equity

• Risk free rate : 10-year JGB yield 0.69% • Market Risk premium : 6.5% •  $\beta$ : 0.67



#### **FY2023 Investments (Capex , Investments and financing)**

(Unit: billion yen)



			Forecast	Main Items	Previous Forecast	Change	%	FY2022 Results	Change	%
Сар	ital Expendi	ture								
	Energy solu	ition	98.5		98.5	0	_	74.7	23.8	31.8
		City gas*1	48.7	Production facilities : 5.8 Other Production facilities, etc. Service and maintenance facilities : 42.9 System related, etc.	48.7	0	-	25.5	23.2	91.1
		Electric Power	21.5	Domestic renewable power etc.	21.5	0	_	23.9	-2.4	-10.1
	Network		89.1	Distribution facilities: New demand development & stable supply-related, etc.	89.1	0	_	84.7	4.4	5.2
	Overseas		76.7	Upstream (Australia, North America), Global renewable power etc.	76.7	0	_	30.4	46.3	152.2
	Urban Deve	elopment	21.9	Real estate leasing business, building renovations, etc.	21.9	0	_	24.5	-2.6	-10.8
	Adjustment	:	-6.3		-6.3	0	_	-1.2	-5.1	_
		Sub Total	280.0		280.0	0	_	213.2	66.8	31.3
Inve	estments and	Fainacing(before offset)								
	Energy solu	ition	52.2		52.2	0	-	42.4	9.8	23.1
		City gas	0.1		0	0.1	-	0	0.1	
		Electric Power	1.5	Domestic renewable power etc.	0.4	1.1	275.0	33.3	-31.8	-95.4
	Network		0		0	0	—	0	0	—
	Overseas		4.5	Upstream (Australia), Mid/Downstream (Asia), Global renewable power etc.	4.5	0	-	1.8	2.7	150.0
	Urban Deve	elopment	0		0	0	_	2.2	-2.2	
		Sub Total	56.7		56.7	0	—	46.5	10.2	21.9
	ital Expenditu Incing(befor	ure +Investments and e offset)	336.7		336.7	0	-	259.7	77.0	29.6

\*1: Includes city gas and LNG sales/trading.





#### Reference: Breakdown of the Medium-Term Management Plan for FY 2023-2025

(Unit: billion yen)

	FY2023 Forecast	Main Items	Previous Forecast	FY2020-22 Results	FY2023-25 Plan
Growth investments	211.9	Overseas, Renewable power, Urban Development, etc.	211.9	475.8 Breakdown) portion for decarbonization related investments 195.9	650.0 Breakdown) portion for decarbonization related investments 230.0
Infrastructure investments	124.7	Distribution facilities, Service and maintenance facilities , etc.	124.7	361.2	350.0
Capital Expenditure +Investments and Financing (before offset)	336.7		336.7	837.1	1,000.0



#### FY2023 Full Year Forecast: Sales and Operating Profit/Loss by Business Segments

(unit : billion yen)

vs. Previous Forecast

		Net sales <sup>*4</sup>				Segment Profit(Operating profit + Equity income/loss of subsidiaries)			
		FY2023 Forecast	Previous Forecast	Change	%	FY2023 Forecast	Previous Forecast	Change	%
(inclu	<b>'gy solution</b> *1 uding equity income of liaries)	2,405.4	2,592.5	-187.1	-7.2	134.3	120.8	13.5	11.2
	City gas*2	1,431.1	1,502.6	<b>-</b> 71.5	-4.8	93.6	77.9	15.7	20.2
	Electric Power	652.2	766.7	-114.5	-14.9	20.2	22.4	-2.2	-10.0
Netv	vork	372.4	377.0	-4.6	-1.2	4.3	4.3	0	
Ove	rseas business	119.3	133.7	-14.4	-10.8	29.5	43.0	-13.5	-31.4
	(equity income of subsidiaries)					3.1	3.1	0	
	an Development ing equity income of subsidiaries)	82.1	82.1	0		14.6	14.6	0	
Adjustment*3		-287.2	-288.3	1.1	_	-27.9	-27.9	0	_
Cons	olidated	2,692.0	2,897.0	-205.0	-7.1	154.8	154.8	0	
	(equity income of subsidiaries)					4.8	4.8	0	

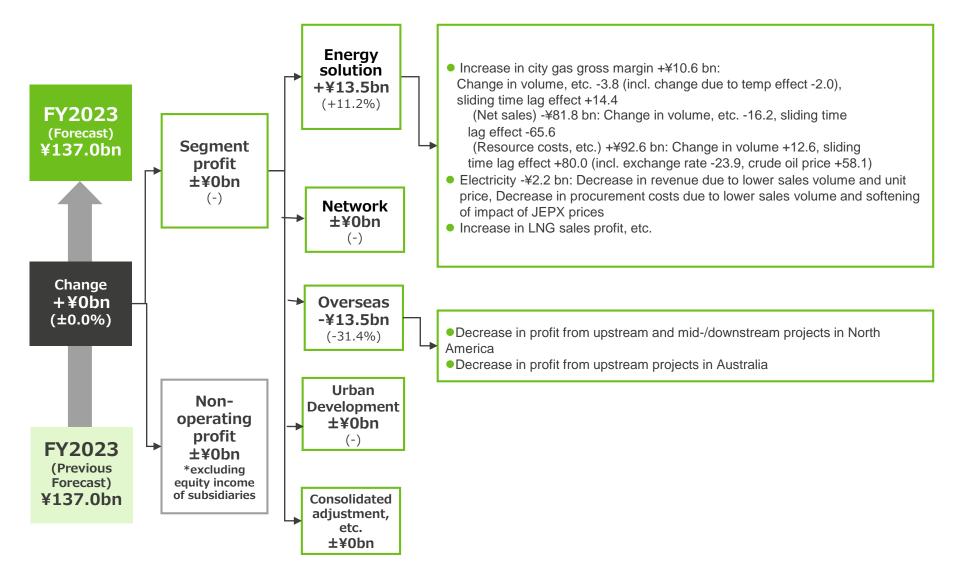
\*1 Includes city gas (excl. Network), LPG, industrial gas, LNG sales, trading, electric power, engineering solutions, gas equipment, construction, and shipping, among others.

\*2 Includes city gas (excl. Network), LNG sales, and trading.

\*3 Adjustments in segment profits include mainly corporate expenses not allocated to the segments.
 \*4 Segment sales include internal transactions made between business units.









#### FY2023 Full Year Forecast: Sales and Operating Profit/Loss by Business Segments

(unit : billion yen)

vs. FY2022

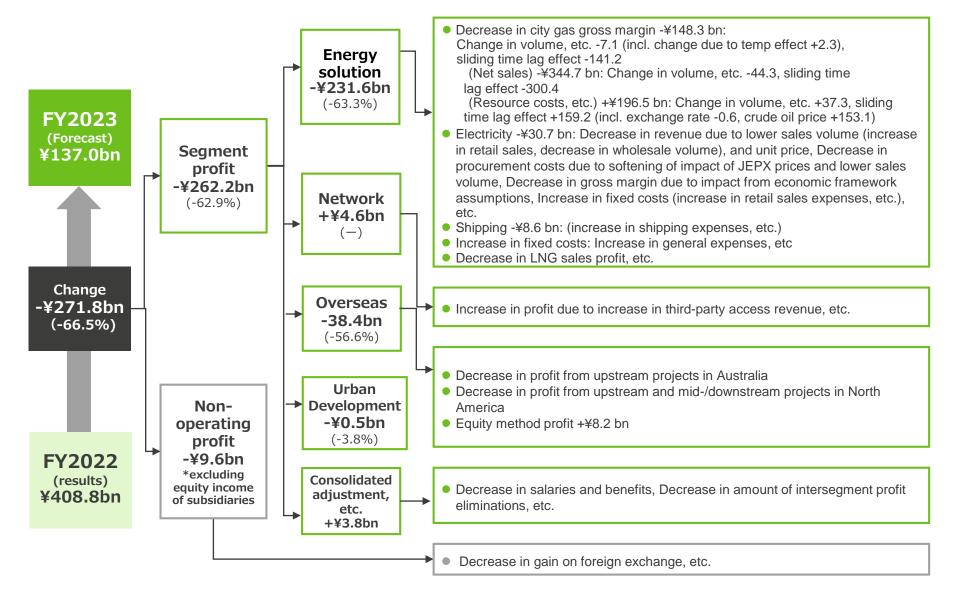
		Net sales *4				Segment Profit(Operating profit + Equity income/loss of subsidiaries)			
		FY2023 Forecast	FY2022 Results	Change	%	FY2023 Forecast	FY2022 Results	Change	%
(incl	gy solution*1 uding equity income of diaries)	2,405.4	3,031.1	-625.7	-20.6	134.3	365.9	-231.6	-63.3
	City gas <sup>*2</sup>	1,431.1	1,974.4	-543.3	-27.5	93.6	294.0	-200.4	-68.1
	Electric Power	652.2	855.9	-203.7	-23.8	20.2	50.9	-30.7	-60.3
Netv	vork	372.4	370.3	2.1	0.5	4.3	-0.3	4.6	
Ove	rseas business	119.3	159.9	-40.6	-25.4	29.5	67.9	-38.4	-56.6
	(equity income of subsidiaries)			_		3.1	-5.1	8.2	
	in Development ing equity income of subsidiaries)	82.1	62.6	19.5	31.0	14.6	15.1	-0.5	-3.8
Adju	stment*3	-287.2	-334.5	47.3		-27.9	-31.7	3.8	_
Cons	olidated	2,692.0	3,289.6	-597.6	-18.2	154.8	417.0	-262.2	-62.9
	(equity income of subsidiaries)					4.8	-4.4	9.2	

\*1 Includes city gas (excl. Network), LPG, industrial gas, LNG sales, trading, electric power, engineering solutions, gas equipment, construction, credit, information processing service, and shipping, among others.

- \*2 Includes city gas (excl. Network), LNG sales, and trading.
  \*3 Adjustments in segment profits include mainly corporate expenses not allocated to the segments
- \*4 Segment sales include internal transactions made between business units.





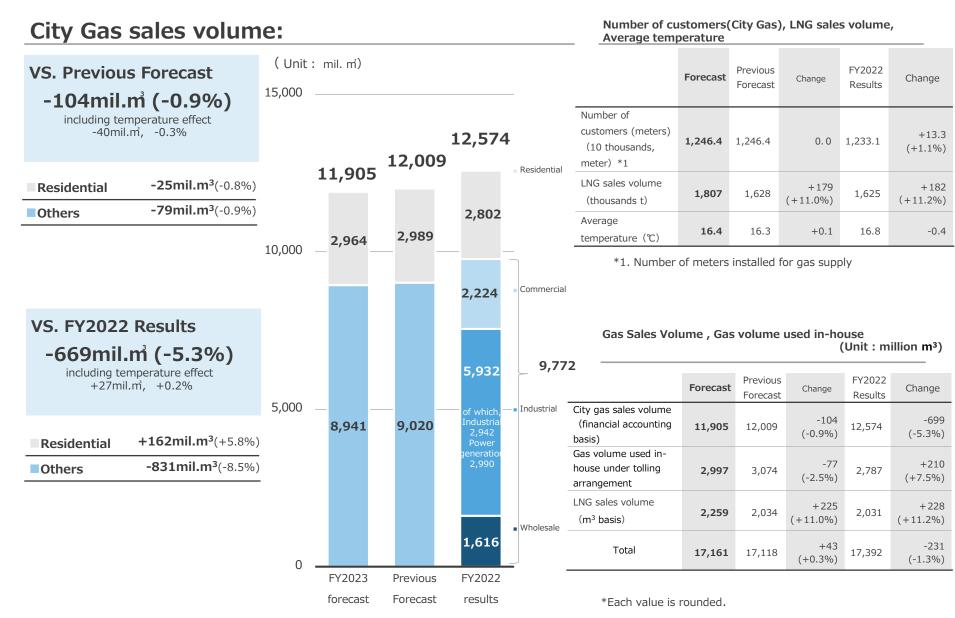


\*+/- indicate contributions to profit.



#### FY2023 Full Year Forecast Consolidated Gas Sales Volume/ Number of Customers

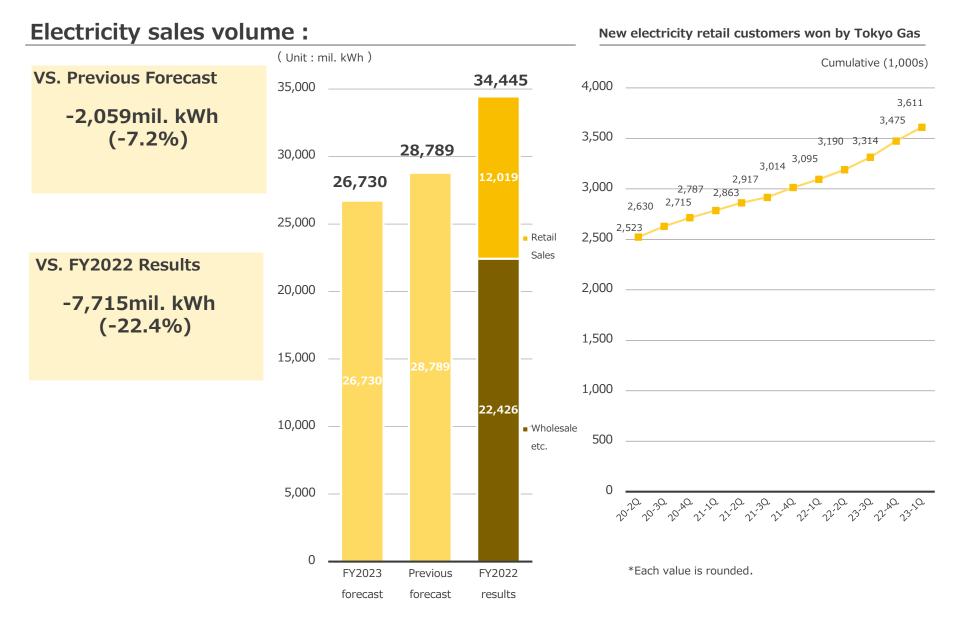




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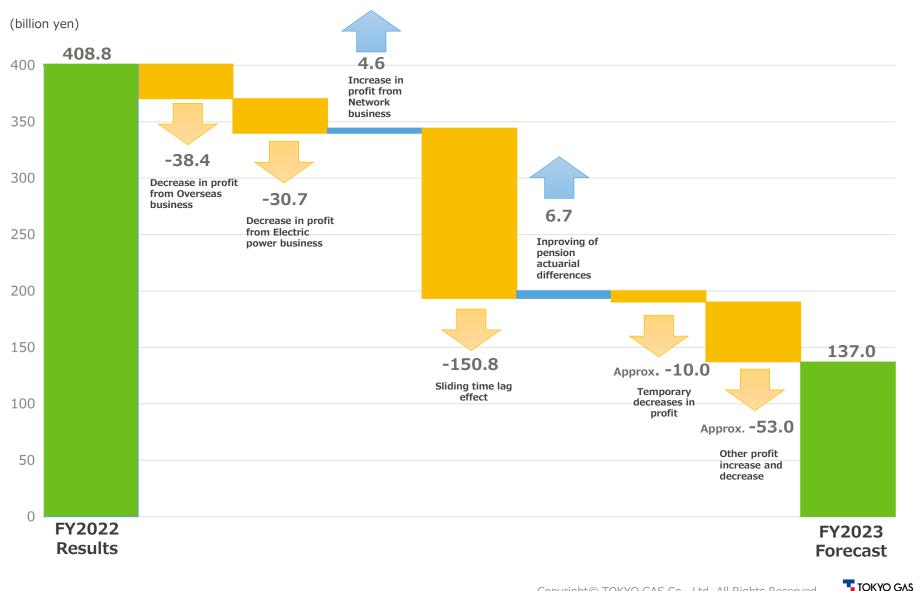




#### FY2023 Consolidated Forecast (Apr. 1, 2023 – Mar. 31, 2024)

vs. FY2022

#### Factors for Changes from FY2022 Ordinary profit



# **Reference Materials**

03





#### Impact of rising JCC (Japan Crude Cocktail Prices) by \$1/bbl

			Impact on earnings						
		2Q	2Q 3Q 4Q Full year						
	2Q	-0.1	-0.7	+1.0	+0.2				
	3Q		-0.1	-1.0	-1.1				
Period	4Q			-0.2	-0.2				
	Full year	-0.1	-0.8	-0.2	-1.1				

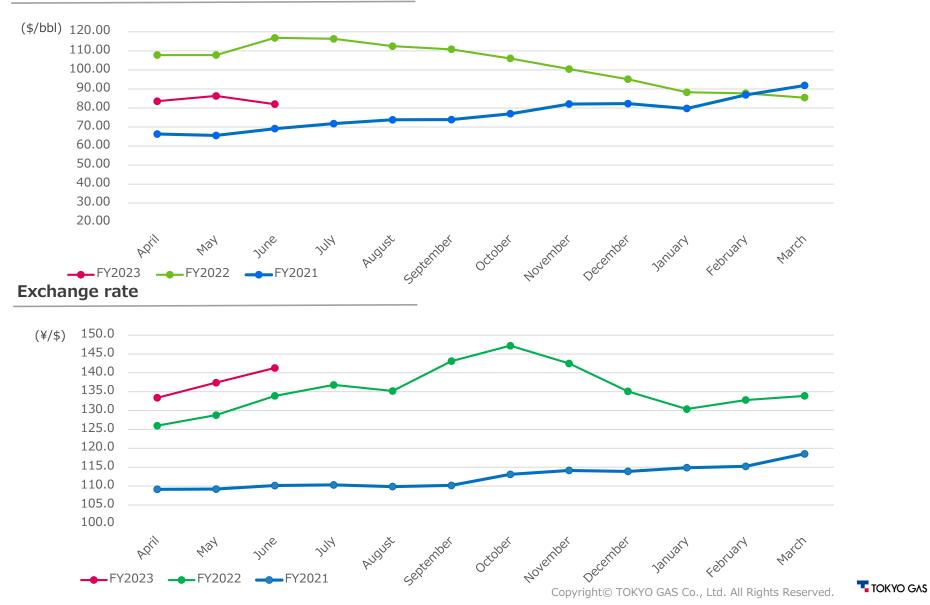
#### Impact of depreciation of the yen by ¥1/\$

			Impact on earnings						
		2Q	2Q 3Q 4Q Full year						
	2Q	-0.6	+0.5	+0.3	+0.2				
_	3Q		-0.7	+0.6	-0.1				
Period	4Q			-1.0	-1.0				
	Full year	-0.6	-0.2	-0.1	-0.9				

#### **Crude oil price · Exchange rate**

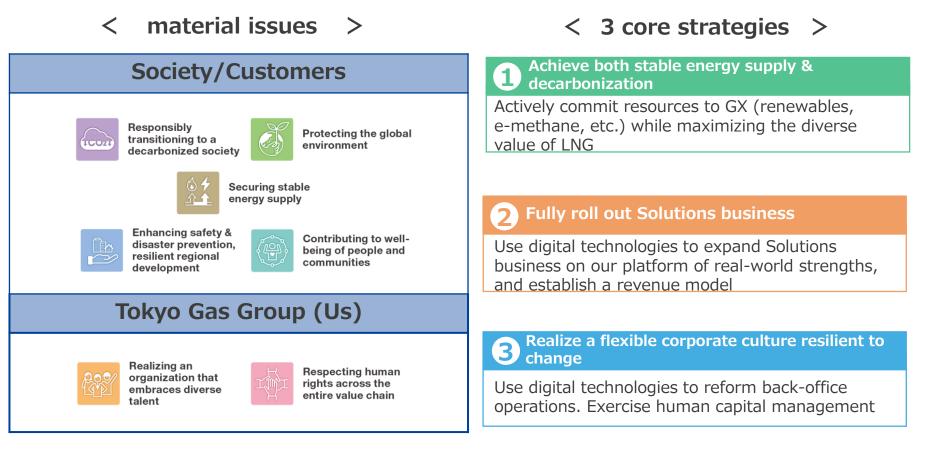


#### Crude oil price (Japan Crude Cocktail Prices)





Below are key initiatives of the 3 core strategies of the FY2023-2025 Mediumterm Management Plan, which are based on our material issues. The strategies are: "Achieve both stable energy supply & decarbonization," "Fully roll out Solutions business," and "Realize a flexible corporate culture resilient to change"







FY2023-202 Initiat	Material issues			
	Carbon-negative concrete used at Motomachi Elementary School in Yokohama (Apr. 13)			
Achieve both stable energy	Joint acquisition of solar power generation business in Okayama and Hyogo prefectures (Apr. 14)			
supply & decarbonization	Tokyo Gas Network and French gas pipeline operator GRDF establish mutual cooperation agreement for developing gas pipeline business (May 9) <sup>*1</sup>			
	Tokyo Gas Group's implementation of retail supply business for offsite corporate PPA (May 30)			
	Acquisition of real estate asset management company and entry into private REIT business (Apr. 3) <sup>*2</sup>			
	Signing of comprehensive partnership agreement for sustainable urban development in Aikawa Town (Apr. 14)			
Fully roll out	Action for further reduction of energy consumption and $CO_2$ emissions at Amu Plaza Kagoshima (Apr. 27) <sup>*3</sup>			
Solutions business				
	Summer Energy Saving Campaign 2023 demand response service (May 15)			
	Launch of Mirai Hopuratto, web media service for supporting post- retirement lifestyles (June 20)	(@)		
	Cross-industry effort to strengthen operating system of Kurashino Sasukatsu, starting with Summer 2023 campaign (June 23)			





FY2023-202 Initiat	Material issues		
Fully roll out	Signing of comprehensive partnership agreement for realizing carbon neutrality in Ota City (June 28)		
Solutions business	Signing of comprehensive partnership agreement for decarbonized urban development in Sakado City (June 28)		
	Notification of Resolution to Acquire of Treasury Shares (Apr. 26)	-	
Realize a flexible corporate culture	Nihon L'Oreal and Tokyo Gas Real Estate reach agreement on promoting building development that uses construction materials upcycled from scrapped cosmetic products (May 24) <sup>*2</sup>	- Es	
resilient to change	Notice of Shares Buyback (Progress Report) (June 7)	-	
	Tokyo Gas selected for "Noteworthy DX Companies 2023" (June 1)		

\*1 Press releases issued by Tokyo Gas Network
\*2 Press releases issued by Tokyo Gas Real Estate
\*3 Press releases issued by Tokyo Gas Engineering Solutions



## Key Topics in FY2023 1Q (Excerpted from Press Releases)

One of the three core strategies of the FY2023-2025 Medium-term Management Plan is **Achieve both stable energy supply & decarbonization**. Here is a look at a key initiative for advancing that strategy.

Tokyo Gas and its partners have developed Japan's first practical carbon-negative concrete that absorbs and fixes  $CO_2$  emitted during the use of city gas equipment (boilers). This technology is able to fix  $CO_2$ , similar to CCS (carbon capture & storage) technologies. Going forward, the Tokyo Gas Group will support customers by not only continuing to ensure the stable supply of energy, but also reducing carbon emissions through sophisticated use of  $CO_2$ , advancing the decarbonization of gas and electricity, and leveraging its expertise in emissions reduction to develop a steady stream of new solutions.

#### Carbon-negative concrete used at Motomachi Elementary School in Yokohama

Tokyo Gas Co., Ltd. (hereinafter, "Tokyo Gas"), KAJIMA CORPORATION (hereinafter, "Kajima"), NIPPON CONCRETE INDUSTRIES CO., LTD. (hereinafter, "Nippon Concrete"), and the City of Yokohama have used  $CO_2$ -SUICOM ( $^{*1}$  (hereinafter, "the product") for some of the foundation blocks of a solar power generation facility at Motomachi Elementary School in Yokohama. The product is a carbon-negative concrete block whose manufacturing process involves absorption and fixation of  $CO_2$  contained in low concentrations in gas emissions from the use of city gas equipment. This action is part of the Project for Introducing Renewable Energy at Municipal Facilities, <sup>\*2</sup> which was commissioned to Tokyo Gas by the City of Yokohama. The product is manufactured by Tokyo Gas, Kajima, and Nippon Concrete, and is Japan's first<sup>\*3</sup> such product to be developed in a practical form.

(kg/m<sup>3</sup>) 300 г

250

200

150

100

50

0

-50

271ka/m<sup>3</sup>

Concrete used for comparison

CO<sub>2</sub> reduction effect

-188kg/m<sup>3</sup>

CO<sub>2</sub> reduction from substitution of cement

-110kg/m<sup>3</sup>

The product is a foundation block made of unreinforced precast concrete.<sup>\*4</sup> After the concrete is cast at a Nippon Concrete plant, it goes to a Tokyo Gas facility for absorption and fixation of  $CO_2$  that is sourced from city gas equipment emissions while maintaining the exhaust heat and moisture at proper levels. Adding in the contribution of reduced cement use, the product lowers the amount of  $CO_2$  emissions associated with foundation blocks made from general concrete<sup>\*5</sup> by 298 kg/m<sup>3\*6</sup> and achieves a carbon-negative<sup>\*7</sup> result of -27 kg/m<sup>3</sup> (m<sup>3</sup> = cubic meter of foundation block).

Tokyo Gas, Kajima, and Nippon Concrete plan to continue pursuing development efforts aimed at realizing mass production of the product and lowering its cost.

\*1: CO<sub>2</sub>-SUICOM<sup>®</sup> is made of CO<sub>2</sub>-absorbing concrete developed by The Chugoku Electric Power Co.,Inc., KAJIMA, Denka Company Limited, and LANDES Co., Ltd. It reduces the amount of cement normally used by more than half by substituting it with γ-C2S (a special admixture made using by-products) and industrial by-products such as blast furnace slag. The concrete also fixes CO<sub>2</sub> during the manufacturing process. Because of these features, the concrete's CO<sub>2</sub> emissions level falls below net-zero. Tokyo Gas and Kajima have commenced manufacture of CO<sub>2</sub>-SUICOM<sup>®</sup> that uses CO<sub>2</sub> emitted by city gas equipment operation (<u>announced on July 7, 202</u>1).

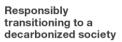
- \*2: PPA-based project launched in FY2021 to install solar power generation equipment at elementary and junior high schools (PPA project).
- https://www.city.yokohama.lg.jp/city-info/koho-kocho/press/ondan/2020/210317press.files/0317press.pdf
- \*3: According to a survey by Tokyo Gas, Kajima, and Nippon Concrete.
- \*4: Concrete produced in advance at a plant and used for applications such as solar power generation equipment foundation blocks and interlocking blocks, etc.
- \*5: Calculated for regular concrete mixed according to JIS Q 13315-4.

\*7: A state in which the amount of  $CO_2$  absorbed is more than the amount of  $CO_2$  released into the atmosphere.











Contributing to wellbeing of people and communities

Translation of April 13, 2023 press release

CO<sub>2</sub>-SUICOM blocks supporting solar panels at Motomachi Elementary School in Yokohama

<sup>\*6:</sup> Total of CO<sub>2</sub> reduction from substitution of cement and CO<sub>2</sub> absorbed by the product. The CO<sub>2</sub> reduction from substitution of cement was calculated based on the concrete used in the project. The CO<sub>2</sub> fixation value was derived through analysis that was based on previous research and used the TG-DTA system.

## **Overseas Projects**





Area	No	Country	Subject	Main Business	5	Participation year	
			Eagle Ford	Upstream	Shale gas	2016	
			TG Natural Resources	Upstream	Shale gas	2017	
	1	U.S.A	TGES America	Downstream	Energy Service	2015	
North America		0.5.A	Birdsboro Power Plant	Downstream	Natural gas power	2017	
North America			Aktina	Downstream	Solar power	2020	
_			Acario Ventures	Other	Open Innovation	2017	
		Mexico	Bajio	Downstream	Natural gas power	2004	
	2	MEXICO	Heolios EnTG	Downstream	Renewable venture(Solar · wind power generation)	2019	
	6	Malaysia	GAS MALASIA Bhd.	Downstream	City gas	1992	
_	3	Malaysia	GAS MALASIA ENERGY ADVANCE Sdn.Bhd.	Downstream	Energy Service	2014	
		Thailand	Bang bo	Downstream	Natural gas power	2016	
	4		GWHAMT	Downstream	Gas Supply	2018	
Southeast Asia-			One Bangkog	Downstream	District Cooling Solutions and power distribution	2020	
	6	Vietnam	PVGD	Downstream	CNG Supply	2017	
		Indonesia	PRA	Downstream	Gas Supply, Transfer	2017	
_	6	Indonesia	Super Energy	Downstream	Gas Supply, Transfer	2020	
	7	Philippines	FGEN LNG	Downstream	Construction, operation and maintenance of the LNG terminal	2020	
		Australia		Darwin	Upstream	Production, liquefaction and sales of LNG	2003
			Pluto	Upstream	Production, liquefaction and sales of LNG	2008	
Oceania	8		Gorgon	Upstream	Production, liquefaction and sales of LNG	2009	
			Queensland Curtis	Upstream	Production, liquefaction and sales of LNG	2011	
			Ichthys	Upstream	Production, liquefaction and sales of LNG	2012	
Europe	9	Denmark	TOWII Renewables	Downstream	Onshore wind power	2022	



# TOKYO GAS

#### < Cautionary Statement regarding Forward-looking Statements >

Statements made in this presentation with respect to Tokyo Gas's present plans, forecasts, strategies and beliefs, and other statements herein that are not expressions of historical fact are forward-looking statements about the future performance of the Company. As such, they are based on management's assumptions and opinions stemming from currently available information and therefore involve risks and uncertainties.

The Company's actual performance may greatly differ from these projections, due to these risks and uncertainties which include without limitation general economic conditions in Japan, crude oil prices, the weather, changes in the foreign exchange rate of the yen, rapid technological innovations and the Company's responses to the progress of deregulation.