



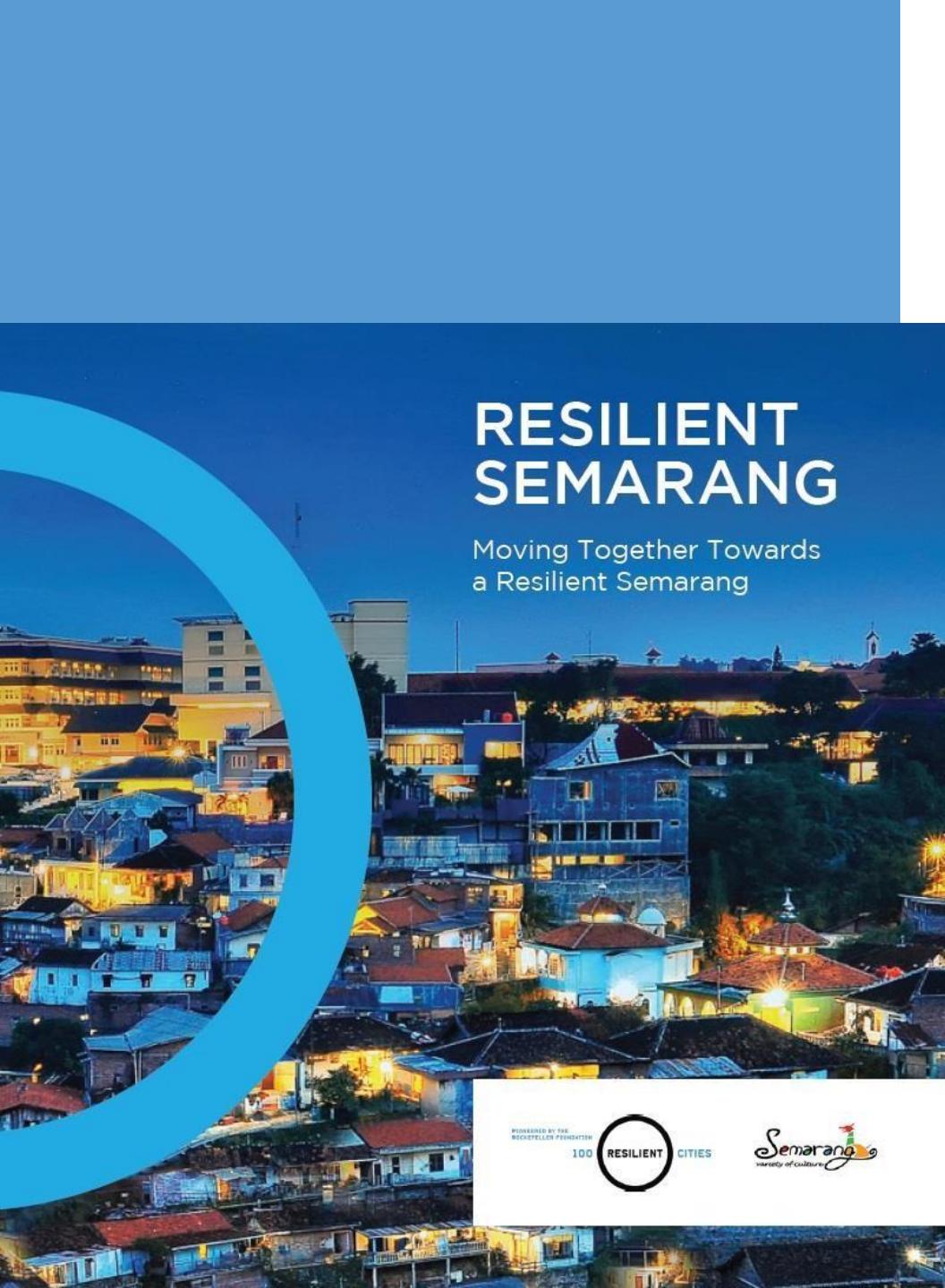
CNG CONVERTER PROGRAMME FOR BUS RAPID TRANSIT TRANS SEMARANG
FINANCING PROJECT
JOINT CREDIT MECHANISM (JCM) PROGRAMME

HEAD OF BLU UPTD TRANS SEMARANG
ADE BHAKTI ARIAWAN



Badan Layanan Umum Unit Pelaksana Teknis Dinas (BLU UPTD) Trans Semarang
Jl. Tambak Aji Raya No. 5, Ngaliyan , Semarang - Central Java, Indonesia Phone: (+6224) 86577898

STRATEGY RELEASE



Semarang launched the CRS document on May, 23rd 2016



100 RESILIENT CITIES

Phase 1

(December 2014- October 2015)

Preliminary Resilience Assessment
(PRA) + Discovery Resilience Areas



RESILIENT SEMARANG

PRELIMINARY RESILIENCE ASSESSMENT AND FOCUS AREA

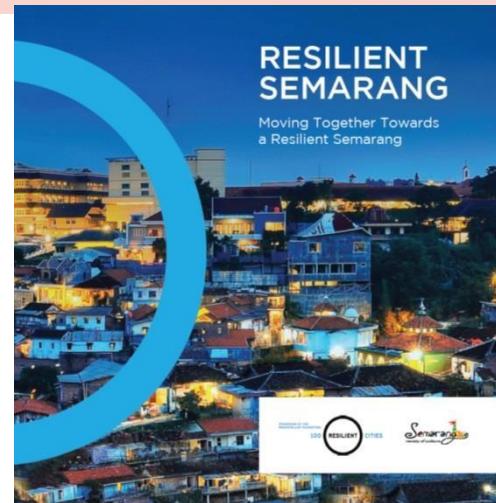


OCTOBER 2015

Phase 2

(Nov 2015- May 2016)

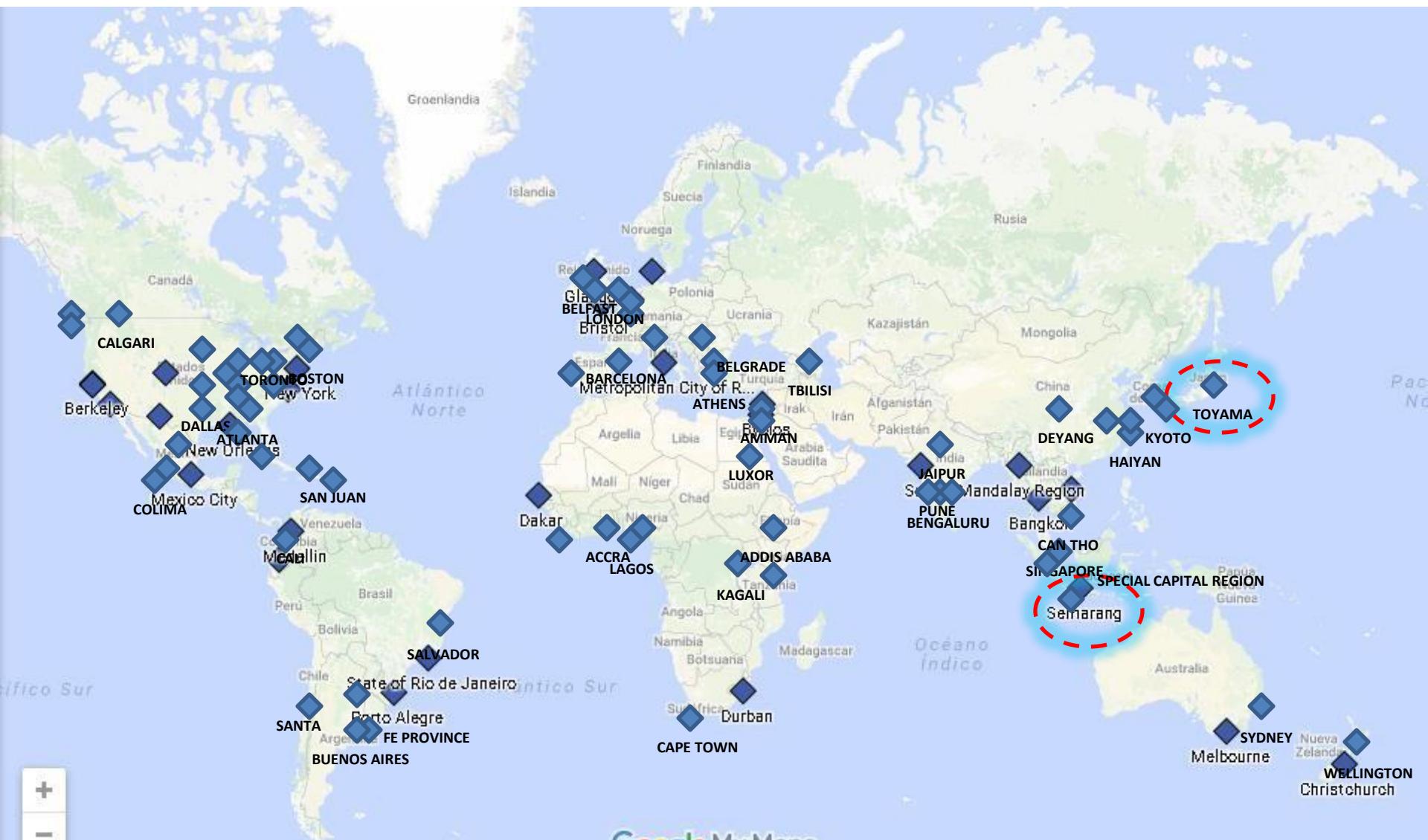
City Resilience Strategy



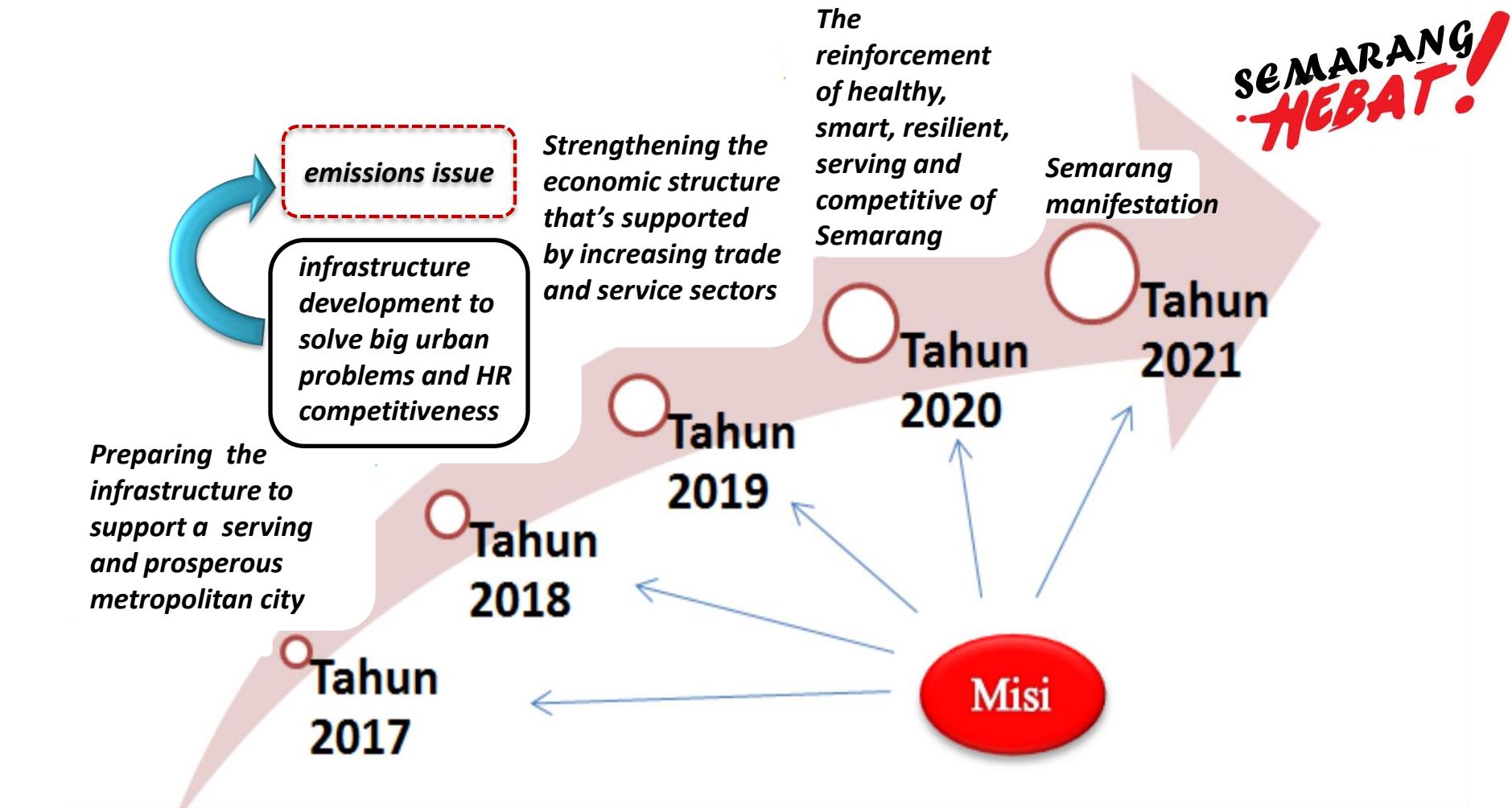
Phase 3

Implementation
in 2018

100 RESILIENT CITIES NETWORK

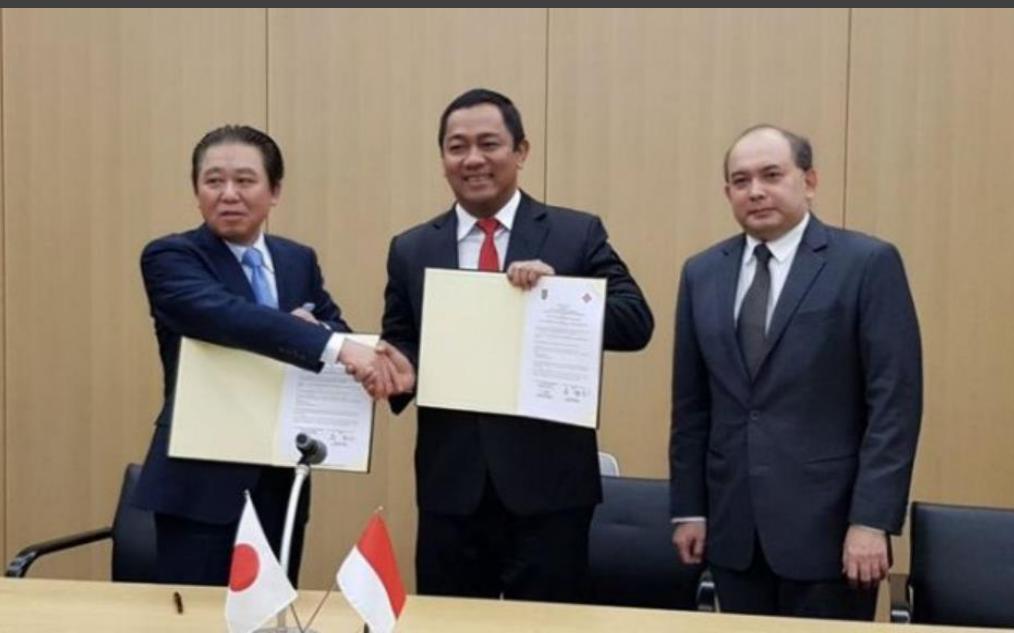


FOCUS Semarang City 2016-2021



Semarang – Toyama Collaboration Project

Letter of Intent (LoI). Signed by
Mayors on 14th December 2017.
Focusing on Renewable Energy and
Public Traffic Transportation



LETTER OF INTENT
BETWEEN
THE CITY GOVERNMENT OF SEMARANG
CENTRAL JAVA PROVINCE, THE REPUBLIC OF INDONESIA
AND
THE CITY GOVERNMENT OF TOYAMA, JAPAN
ON
THE ESTABLISHMENT OF ENVIRONMENTAL AND TRANSPORTATION

The City Government of Semarang, Central Java Province, the Republic of Indonesia and the City Government of Toyama, Japan; hereinafter referred as "the Parties";

Desiring to promote the favorable relations of partnership and cooperation between "the Parties";

Recognizing the importance of the principles of equality and mutual benefit;

Pursuant to the prevailing laws and regulations of their respective countries;
Do hereby declare their intention to establish partnership and cooperation in the following areas:

1. Renewable Energy
2. Public Traffic Transportation

The implementation of this cooperation will be based on agreed areas and shall be followed by the signing of Memorandum of Understanding that will be concluded in appropriate time by "the Parties".

Done in duplicate in Toyama City, Japan, on the 14th of December in the year of 2017 in 6 (six) sets of authentic copies, 2 (two) of each in Indonesian, Japan, and English. In case of divergences of interpretation of this Letter of Intent, the English text shall prevail.

For the City Government of Semarang,
Central Java Province
the Republic of Indonesia,

A handwritten signature in black ink, likely belonging to Hendrar Prihadi.

HENDRAR PRIHADI
MAYOR OF SEMARANG

For the City Government of Toyama,
Japan,

A handwritten signature in black ink, likely belonging to Masashi Mori.

MASASHI MORI
MAYOR OF TOYAMA

Milestones

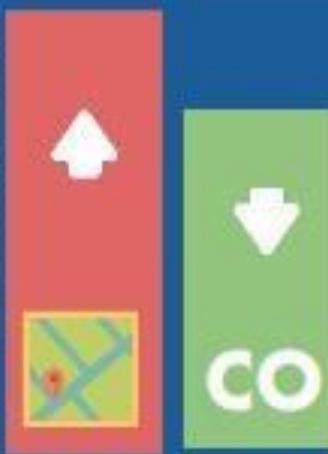
- 14th December 2017.
Signature of Letter of Intent in
Toyama, Japan
- August 2018. Business
Matching in Toyama, Japan
- 17th October 2018. Semarang
Business Forum
- 9th January 2019, Launching of
CNG Converter Programme
BRT Trans Semarang



Integrated Mobility



On going project



- Co-Benefit Study on Transportation (IGES)
- Preparation Study of Dedicated Lane of BRT Trans Semarang (ITDP)
- Traffic Safety Campaign and Promoting BRT Ridership fro School Student (IGES & Save The Children)
- The Installation of CNG Converter for BRT Trans Semarang (Toyama)



Oktuber 2017 : Penandatanganan Kerjasama ITDP dengan Pemerintah Kota Semarang



RENEWABLE ENERGY



On going Proposal



» Study and implementation plan on renewable energy development (micro hydro and wind power plant pilot project) – cooperation with POLINES

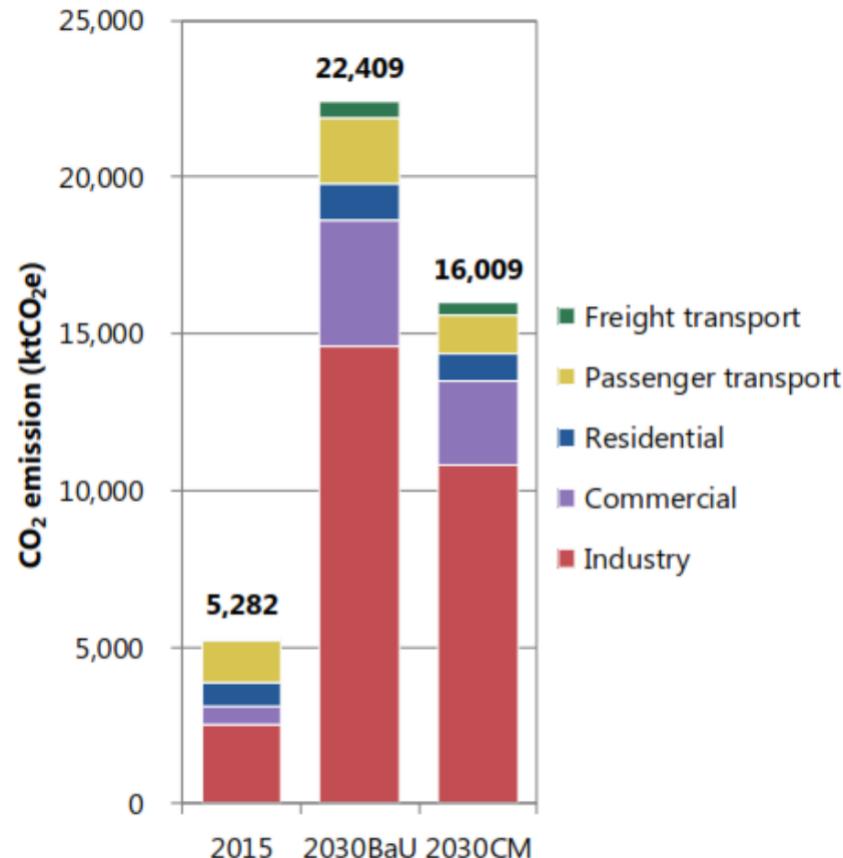


LOW CARBON SOCIETY SCENARIO SEMARANG 2030

Research Model



	Sector	Coal	Oil	Gas	Electricity	Total
2015	Industry	497.0	492.5	586.8	948.2	2,524.5
	Commercial	0.0	45.3	5.7	520.0	571.0
	Residential	0.0	173.5	0.3	574.2	748.0
	Passenger transport	0.0	1,350.7	0.0	0.0	1,350.7
	Freight transport	0.0	87.3	0.0	0.0	87.3
Total		497.0	2,149.3	592.7	2,042.5	5,281.5
2030	Industry	2,738.9	2,820.5	3,322.9	5,694.5	14,576.9
	Commercial	0.0	320.8	40.3	3,680.7	4,041.7
	Residential	0.0	272.4	0.4	901.5	1,174.4
	BaU	Passenger transport	0.0	2,093.0	0.0	2,093.0
	Freight transport	0.0	522.8	0.0	0.0	522.8
Total		2,738.9	6,029.5	3,363.7	10,276.8	22,408.9
2030	Industry	1,905.2	2,140.8	3,137.6	3,642.7	10,826.3
	Commercial	0.0	208.9	105.7	2,350.8	2,665.3
	Residential	0.0	272.4	0.4	588.8	861.7
	CM	Passenger transport	0.0	1,182.6	40.6	1,246.3
	Freight transport	0.0	409.7	0.0	0.0	409.7
Total		1,905.2	4,214.5	3,284.3	6,605.5	16,009.4



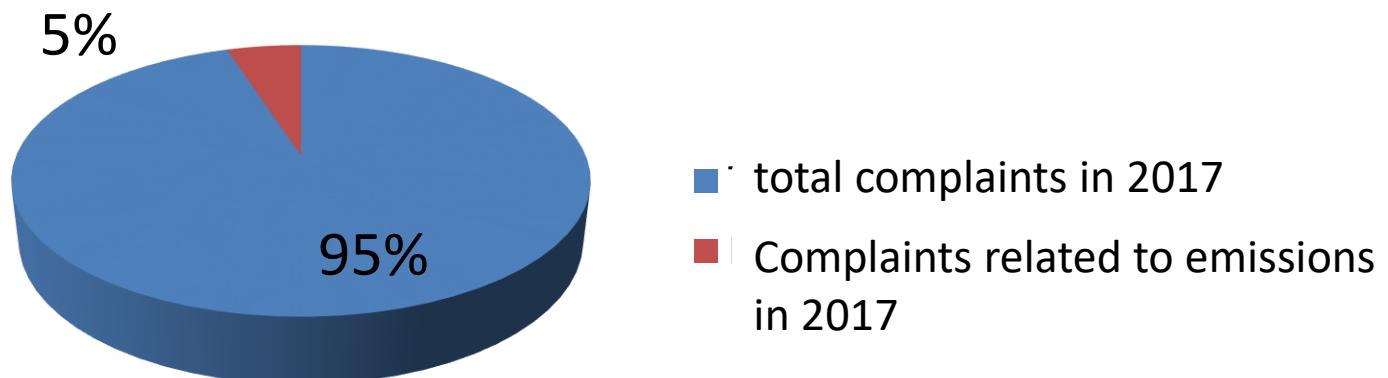
COMPARISON OF EMISSION COMPLAINTS WITH OVERALL COMPLAINTS IN 2017

- **Table of Complaints Regarding Emissions in 2017**

Complaints Related to Emissions	JAN	FEB	MAR	APR	MEI	JUN	JUL	AGT	SEP	OKT	NOV	DES	TOTAL
Emissions in 2017	0	1	3	1	3	5	4	6	6	3	0	3	35

- **Complaints Recapitulation Table in 2017**

Complaints Recapitulation in 2017	JAN	FEB	MAR	APR	MEI	JUN	JUL	AGT	SEP	OKT	NOP	DES	TOTAL
Complaints in 2017	16	26	42	38	81	22	114	57	64	82	70	58	670



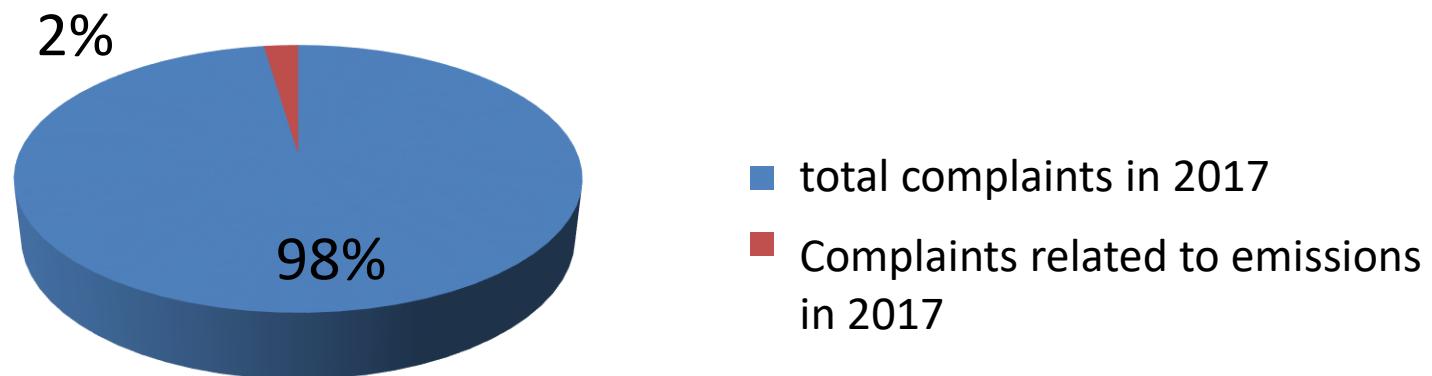
COMPARISON OF EMISSION COMPLAINTS WITH OVERALL COMPLAINTS IN 2018

- **Table of Complaints Regarding Emissions in 2018**

Complaints Related to Emissions	JAN	FEB	MAR	APR	MEI	JUN	JUL	AGT	SEP	OKT	NOV	DES	TOTAL
Emissions in 2018	3	0	2	1	0	0	4	0	3	2	2	1	18

- **Complaints Recapitulation Table in 2018**

Complaints Recapitulation in 2018	JAN	FEB	MAR	APR	MEI	JUN	JUL	AGT	SEP	OKT	NOP	DES	TOTAL
Complaints in 2018	83	105	80	55	43	52	79	41	68	54	57	39	756



GRAND LAUNCHING PROGRAM CONVERTER GA BRI TRANS SEMARANG



PJ Pro

#TerusBerbenah

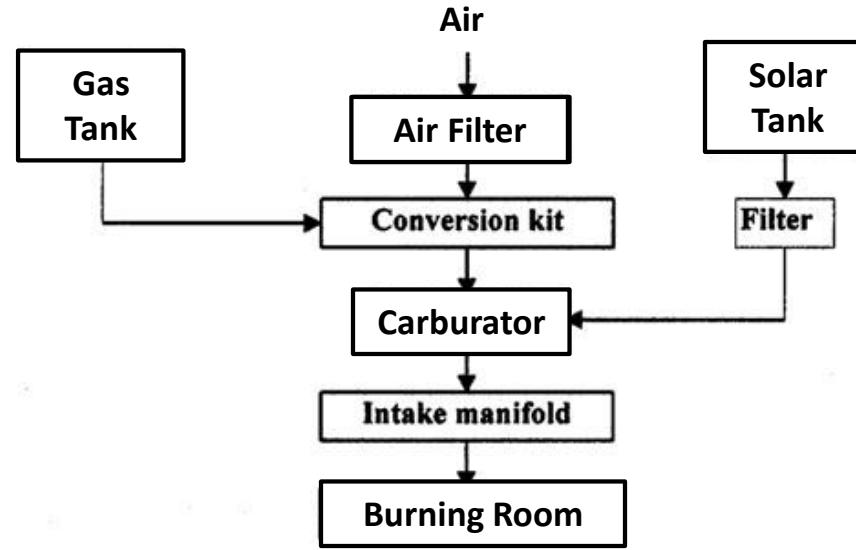
UTA
KAD
GELAMATAN
DI
AN

BG
BAKA



JOINT CREDIT MECHANISM (JCM)

- Installation of Gas Converter in 72 Trans Semarang Bus – Hybrid with Diesel
- 50 : 50 Budget scheme between Semarang and Toyama
- Total investment IDR 9,4 Billion or JPY 73 Million



JCM SUBSIDY

50%

SEMARANG

47 MEDIUM BUSES

IDR 4.7 billion

Competitive Bidding
refers to Presidential
Regulation No. 16/2018

100%

IDR 9,4 Billion
JPY 73 Million



50%

TOYAMA

25 BIG BUSES

IDR 4.7 billion

Done by :
-Hokusan
-Gazindo Raya

MECHANISM

EXISTING BUS (in 2018)

**Start with 72 government
buses**

BRT BUS SPECIFICATION

BIG BUS



BUS BRAND	HINO
CARROSERY	LAKSANA
BUS TYPE	RK8JSKA-NHJ/R260
YEAR OF PRODUCTION	2014
CYLINDER	7684
TOTAL	25

MEDIUM BUS



BUS BRAND	ISUZU
CARROSERY	LAKSANA
BUS TYPE	NRQ 71 EC E2-1 (XXI) (6.1)
YEAR OF PRODUCTION	2016
CYLINDER	4570
TOTAL	25

BRT BUS SPECIFICATION

MEDIUM BUS



BUS BRAND	HINO FB2WGLZEN/FB130
CARROSERY	LAKSANA
BUS TYPE	FB2 WGLZ EN/FB126
YEAR OF PRODUCTION	2016
CYLINDER	4009
TOTAL	7



BUS BRAND	MITSUBISHI
CARROSERY	NEW ARMADA
BUS TYPE	FE84G BC 4X2 MT
YEAR OF PRODUCTION	2015
CYLINDER	3908
TOTAL	8

MEDIUM BUS

BRT BUS SPECIFICATION

MEDIUM BUS



BUS BRAND	MITSUBISHI
CARROSERY	NEW ARMADA
BUS TYPE	COLT DIESEL FE84G BC (4X2) MT
YEAR OF PRODUCTION	2017
CYLINDER	3908
TOTAL	7

NEXT PROJECT

2019

- 28 MEDIUM BUSES (NEW BUS)
- 48 MICRO BUSES (NEW BUS)

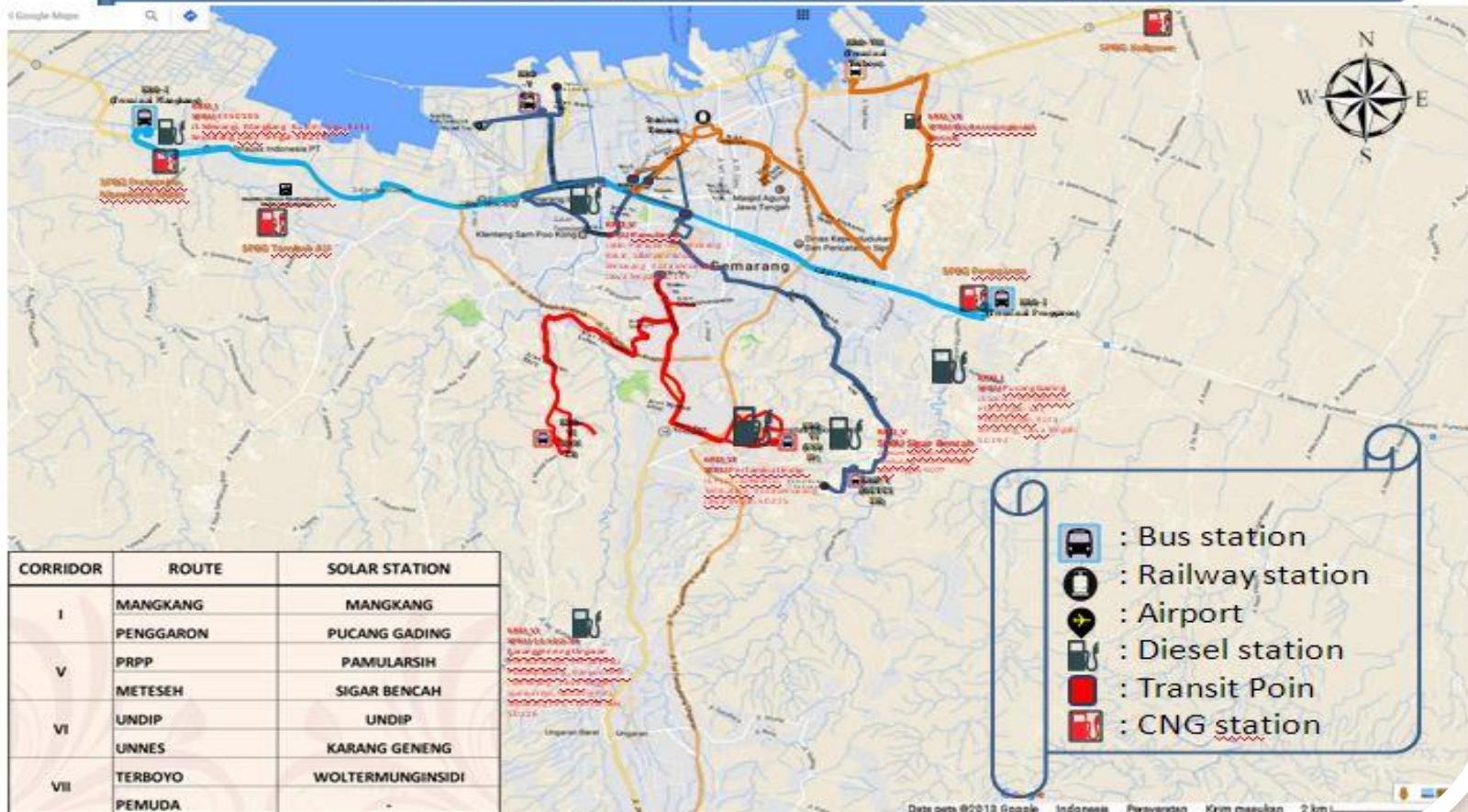
2020

- 71 MEDIUM BUSES (EXISTING BUS
CONSORTIUM)
- 50 MICRO BUSES (NEW BUS)

LESSONS LEARNED

AVAILABILITY OF CNG SUPPLY

DIESEL and CNG STATIONS



PERMEN ESDM



MENTERI ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA

KEPUTUSAN MENTERI ENERGI DAN SUMBER DAYA MINERAL

REPUBLIK INDONESIA

NOMOR : 1733 K/10/MEM/2018

TENTANG

PENUGASAN KEPADA PT PERTAMINA (PERSERO) DALAM
PENYEDIAAN DAN PENDISTRIBUSIAN BAHAN BAKAR GAS
UNTUK TRANSPORTASI JALAN

DENGAN RAHMAT TUHAN YANG MAHA ESA

MENTERI ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA,

- Menimbang :
- bahwa untuk mewujudkan sasaran kebijakan energi nasional dan terwujudnya diversifikasi energi sebagaimana dimaksud dalam Peraturan Pemerintah Nomor 79 Tahun 2014 tentang Kebijakan Energi Nasional melalui diversifikasi penggunaan bahan bakar minyak ke bahan bakar gas untuk transportasi jalan, perlu menyediakan dan mendistribusikan bahan bakar gas yang dilaksanakan oleh Badan Usaha Milik Negara melalui penugasan oleh Menteri;
 - bahwa PT Pertamina (Persero) layak ditunjuk sebagai Badan Usaha Milik Negara pelaksana penugasan penyediaan dan pendistribusian bahan bakar gas untuk transportasi jalan;

KESEBELAS

Pada saat Keputusan Menteri ini berlaku, Keputusan Menteri Energi dan Sumber Daya Mineral Nomor 2369/K.10/MEM/2017 tentang Penugasan Kepada PT Pertamina (Persero) dalam Penyediaan dan Pendistribusian Bahan Bakar Gas untuk Transportasi Jalan Tahun 2017, dicabut dan menyatakan tidak berlaku.

KEDUAELAS

Keputusan Menteri ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di Jakarta
pada tanggal 17 Februari 2018

MENTERI ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA,

JUNIASRI JONAN

Tanda tangan

- Menteri Koordinator Bidang Perekonomian
- Menteri Koordinator Bidang Kesejahteraan Rakyat
- Menteri Negara Badan Usaha Milik Negara
- Sekretaris Jenderal Kementerian Energi dan Sumber Daya Mineral
- Inspirator Jenderal Kementerian Energi dan Sumber Daya Mineral
- Direktur Jenderal Minyak dan Gas Bumi
- Kepala BKG, Migas
- Direktur Jenderal PT Pertamina (Persero)

Salinan ini sesuai dengan aslinya
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL
Ditulis di Jakarta, 17 Februari 2018



PERTAMINA GAS



Jakarta, 10 Juli 2018
No. 236 /G00000/2018-S0

Lampiran : 1 (satu) berkas
Perihal : Penugasan Penyambungan Pipa Pendukung Stasiun Pengisian Bahan Bakar Gas ("SPBG") Semarang ke PT Pertamina Gas ("Pertagas")

Yang terhormat,
President Director
PT Pertamina Gas
Gd. Oil Centre Lt. 2
Jl. M.H. Thamrin Kav. 55
Jakarta 10350

Mengacu:

- Keputusan Menteri Energi dan Sumber Daya Mineral ("ESDM") No. 1733 K/10/MEM/2018 tanggal 22 Maret 2018 tentang Penugasan Kepada PT Pertamina (Persero) dalam Penyediaan dan Pendistribusian Bahan Bakar Gas untuk Transportasi Jalan.
- Surat Direktur Utama PT Pertamina (Persero) ("Pertamina") kepada Menteri ESDM No. 163/C00000/2017-S0 tanggal 29 Maret 2017 perihal Pembangunan Pipa Pendukung Stasiun Pengisian Bahan Bakar Gas ("SPBG") Semarang.
- Surat Direktur Gas Pertamina kepada Direktur Jenderal Minyak dan Gas Bumi No. 125/L00000/2017-S0 tanggal 16 Juni 2017 perihal Pembangunan Pipa Pendukung Stasiun Pengisian Bahan Bakar Gas ("SPBG") Semarang.
- Notulen Rapat antara Pertamina dan Pertagas tanggal 28 Mei 2018 perihal Pembahasan Rencana Pemanfaatan Pipa SPBG untuk Utilisasi Pipa Gresem.

Pertamina mendapatkan penugasan dari Pemerintah c.q Kementerian ESDM untuk melanjutkan pembangunan pipa pendukung SPBG Semarang menggunakan Anggaran Biaya Investasi ("ABI") Pertamina. Dengan memperhatikan pembentukan Sub Holding Migas yang saat ini sedang berjalan, serta mempertimbangkan Rencana Kerja Anggaran Perusahaan ("RKAP") tahun 2019 dan Rencana Jangka Panjang Perusahaan ("RJPP") Pertagas yang sedang diajukan bahwa terdapat rencana pemanfaatan utilisasi gas dari Jawa Timur melalui pipa Gresik – Semarang dan pengembangan niaga gas di wilayah Jawa Tengah, maka Pertamina menugaskan Pertagas untuk dapat mengintegrasikan rencana tersebut dengan pembangunan pipa pendukung SPBG Pemerintah dengan tetap mengutamakan kaidah Pedoman Perencanaan Investasi.

Kantor Pusat
Jalan Medan Merdeka Timur 1A
Jakarta 10110 Indonesia
T +62 21 381 5111, +62 21 381 6111
F +62 21 384 6865, +62 21 384 3882
www.pertamina.com

SU - 006/2006

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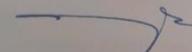
No. 236 /G00000/2018-S0



Sehubungan rencana di atas, diharapkan 3 (tiga) unit SPBG yang telah terbangun melalui dana Anggaran Pendapatan dan Belanja Negara ("APBN") dapat segera dioperasikan, sehingga dapat dimanfaatkan baik untuk pengembangan pasar Bahan Bakar Gas ("BBG") sektor transportasi maupun pasar BBG sektor industri (sesuai dengan aturan Peraturan Menteri ESDM No. 25 Tahun 2017 dan Pedoman Pelaksanaan Percepatan Pemanfaatan Bahan Bakar Gas untuk Transportasi Jalan) secara terintegrasi dengan bisnis gas pipa di Jawa Tengah dan sekitarnya. Adanya pembangunan pipa dan pengoperasian SPBG dimaksud, CNG sektor industri di wilayah Jawa Tengah berpotensi meningkatkan pendapatan yang diperoleh dari peningkatan volume penjualan sebesar sekitar ±30.35 BBTUD.

Demikian untuk dijadikan acuan, atas perhatian dan kerjasamanya diucapkan terima kasih.

— Direktur Perencanaan, Investasi dan Manajemen Risiko,

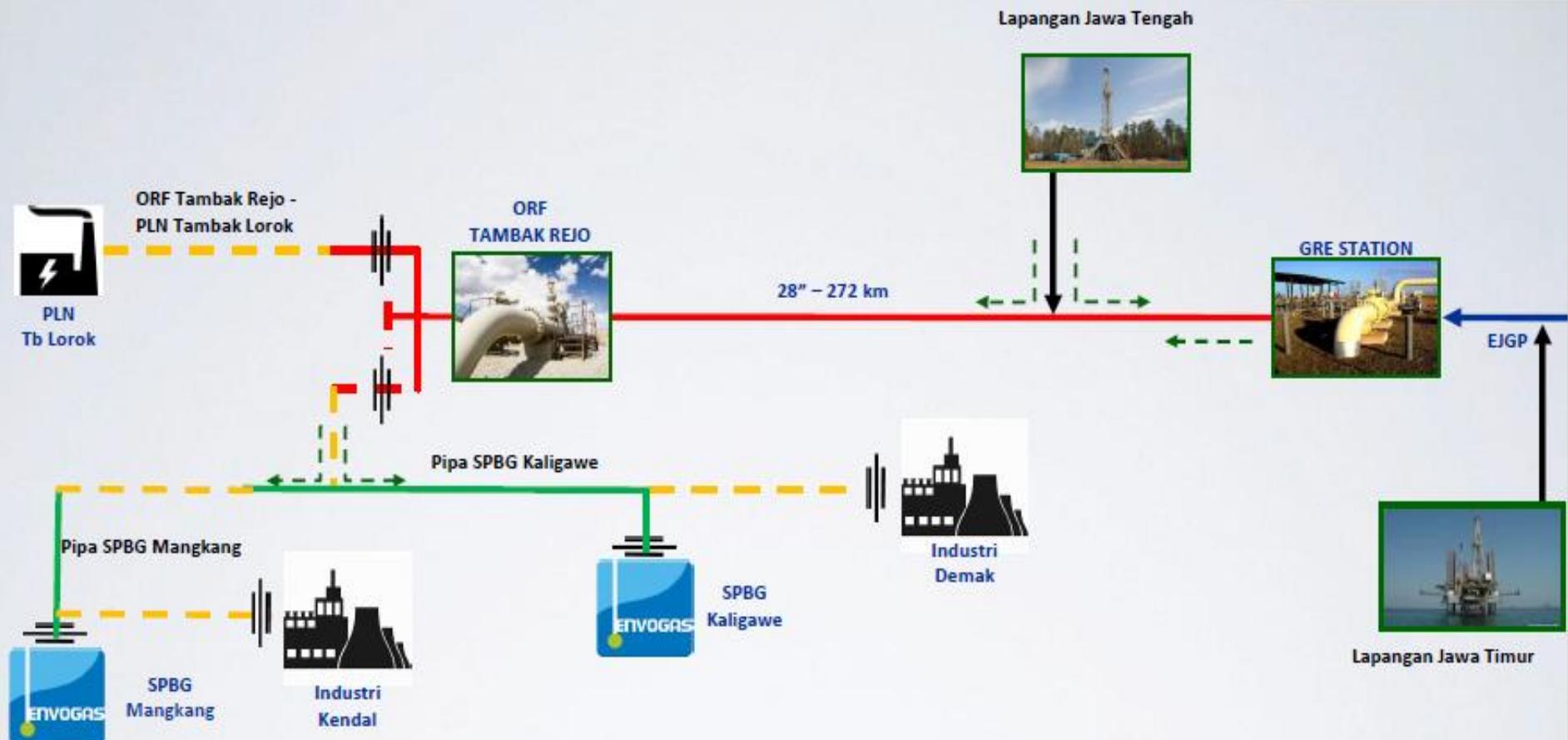

Gigih Prakoso

Tembusan:

- SVP Engineering, Operation & Technology Development PT Pertamina (Persero)
- President Director PT Pertagas Niaga

SU 008/2006

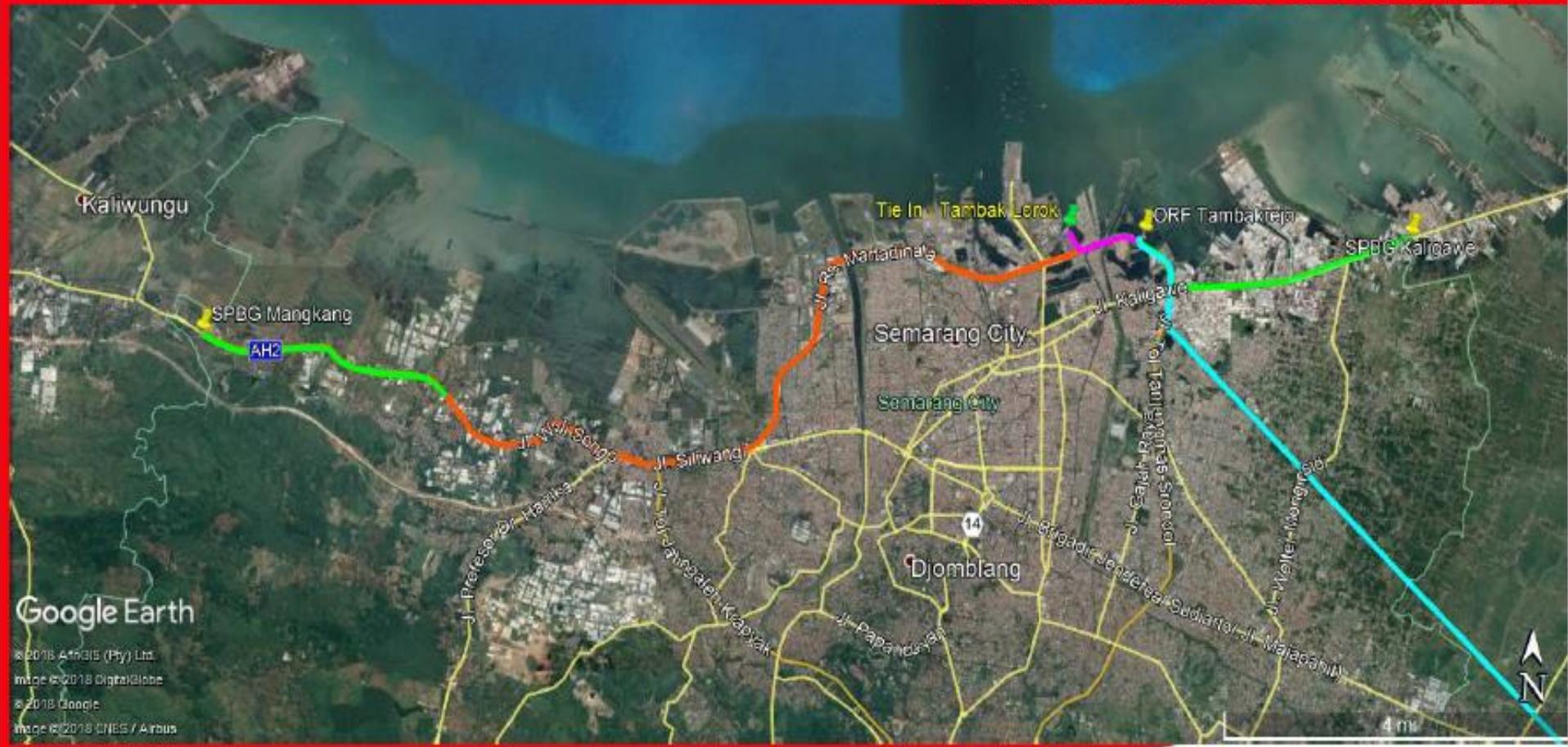
Penyediaan CNG Tahap II (Quartal I 2019) Menggunakan Stasiun Bahan Bakar Gas (SPBG)



Keterangan:

- Pipa EJGP Pertagas
- Rencana pasokan gas
- Pipa Gresik – Semarang Pertagas
- Pipa Pendukung SPBG Eksisting
- Rencana Pembangunan Pipa Pendukung SPBG

RENCANA JALUR PIPA



Pipa Transmisi Gresik Semarang sampai dengan ORF Tambakrejo

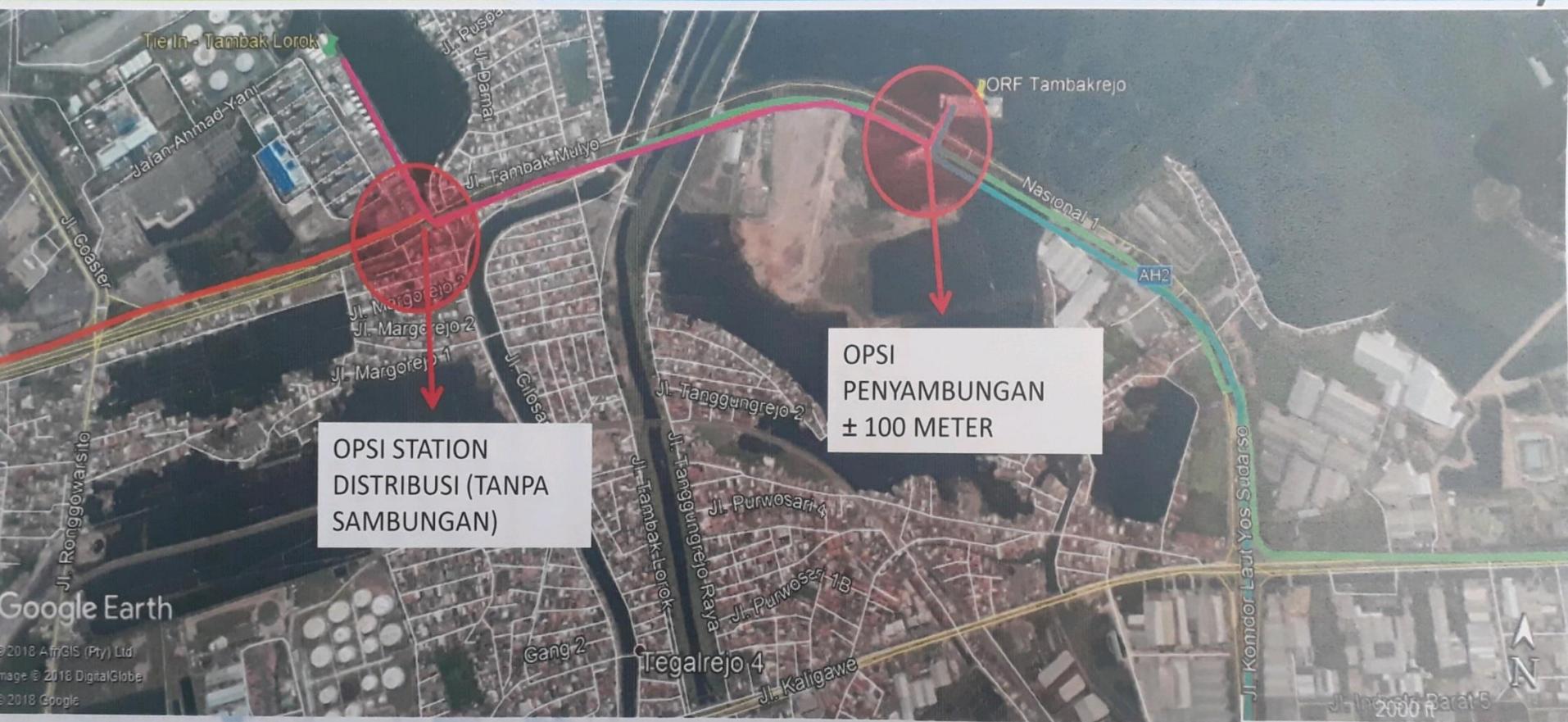
Pipa Pendukung SPBG Mangkang yang belum terbangun ± 15 Km

Pipa Pendukung SPBG Mangkang dan Kaligawe yang sudah terbangun

Rencana Pembangunan Pipa Distribusi dari ORF Tambakrejo ke Tambaklorok



RENCANA JALUR PIPA (ZOOM IN AREA TAMBAK LOROK)



- Pipa Transmisi Gresik Semarang sampai dengan ORF Tambakrejo
- Pipa Pendukung SPBG Mangkang yang belum terbangun ±15 Km
- Pipa Pendukung SPBG Kaligawe yang sudah terbangun
- Rencana Pembangunan Pipa Distribusi dari ORF Tambakrejo ke Tambaklorok

LESSONS LEARNED

PROJECT WILL BE EASIER IF THE CONVERTER TOOLS ARE INSTALLED ON NEW BUS (INSTALLED DURING THE BODY PROCESS)

INSTALATION



LESSONS LEARNED

OUR 72 BUSES ARE CONSISTS OF VARIOUS BRANDS AND CARROSERIES
 (IT NEEDS TIME TO DETERMINE THE LOCATION OF TUBES AND
 INSTALLATION PROCESS)

CORRIDOR	BUS BRAND	CARROSERY	BUS TYPE	YEAR OF PRODUCTION	CYLINDER (CC)	TOTAL BUS
KRD-1	HINO	LAKSANA	RK8JSKA-NHJ/R260	2014	7684	25
KRD-2	MITSUBISHI	NEW ARMADA	COLT DIESEL FE 84G BC 4X2	2014	3908	6
	MITSUBISHI	NEW ARMADA	COLT DIESEL FE 84G BC 4X2	2016	3908	8
	MITSUBISHI	NEW ARMADA	COLT DIESEL FE 84G BC 4X2	2017	3908	13
KRD-3	MITSUBISHI	NEW ARMADA	COLT DIESEL FE84G BC (4X2) MT	2012	3908	2
	MITSUBISHI	NEW ARMADA	COLT DIESEL FE84G BC (4X2) MT	2014	3908	8
	MITSUBISHI	NEW ARMADA	COLT DIESEL FE84G BC (4X2) MT	2016	3908	6
KRD-4	ISUZU	NEW ARMADA	NQR71 EC E2-1	2014	4570	3
	MITSUBISHI	NEW ARMADA	COLT DIESEL MT/FE84G BC 4X2	2012	3908	1
	MITSUBISHI	NEW ARMADA	COLT DIESEL MT/FE84G BC 4X2	2014	3908	14
	MITSUBISHI	NEW ARMADA	COLT DIESEL MT/FE84G BC 4X2	2015	3908	2
	MITSUBISHI	NEW ARMADA	COLT DIESEL MT/FE84G BC 4X2	2016	3908	6
KRD-5	ISUZU	LAKSANA	NQR 71 EC E2-1 (XX1) (6.1)	2016	4570	16
KRD-6	ISUZU	LAKSANA	NQR 71 EC E2-1 (XX1) (6.1)	2016	4570	1
	HINO FB2WGLZEN/FB130	LAKSANA	FB2 WGLZ EN/FB126	2016	4009	7
	MITSUBISHI	NEW ARMADA	FE84G BC 4X2 MT	2015	3908	8
KRD-7	ISUZU	LAKSANA	NQR 71 EC E2-1 (XX1) (6.1)	2016	3908	8
	MITSUBISHI	NEW ARMADA	COLT DIESEL FE84G BC (4X2) MT	2017	3908	7

NOTE : 72 BUSES THAT ARE CONVERTED INTO GAS ARE FROM CORRIDOR 1, 5, 6, 7



LESSONS LEARNED

THE PRICE OF THE CONVERTER IS BASED ON US DOLLARS, SO THE EXCHANGE RATE HAS AN IMPORTANT INFLUENCES



CALCULATION
IDR 4,7 Billion



REALIZATION
IDR 5,3 Billion

(INCLUDE TAX , ETC)

LESSONS LEARNED

PROCUREMENT PROCES

1

THE COMPLETENESS
OF PROCUREMENT
DOCUMENT

OCTOBER 17th
2018

2

ULP QUEUING
DOCUMENT

OCT 17rd 2018
TO
OCT 28rd 2018

3

REFUTATION
PROCUREMENT
PROCESS

OCT 29th 2018
TO
NOV 19th 2018

4

INSTALLATION

NOV 20th 2018
TO
DES 19th 2018

5

PAYMENT
PROCESS

DES 20th 2018
TO
DES 28th 2018

TRIAL RESULT OF CNG USAGE

THE REVIEW OF CNG USAGE (COMPRESSED NATURAL GAS)

Based on the trial of CNG usage for BRT Trans Semarang on Monday, July 23, 2018 with the license number H-1419-BW and the bus code B05, the trial achieved the following results :

1. The density level (Opacity) of gas emissions

The Emission Trial Result using Diesel Fuel		The Emission Trial Result using 70 % of CNG and 30 % of Diesel Fuel	
Dust Meter	OPN-102	Dust Meter	OPN-102
2018- 7-23	15:22:35	2018- 7-23	15:25:29
k	: 0.88	k	: 0.45
Opacity	: 31.6 %	Opacity	: 17.8 %
RPM	: 0	RPM	: 0
Oil Temp	: 0 °C	Oil Temp	: 0 °C

Conclusion:

Based on the Regulation of the Minister of Environment No. 05 year 2006 concerning the Threshold of Existing Motor Vehicle Exhaust Emissions on August 1st, 2006 is GVW Vehicle category with more than 3.5 tons that the production year is 2010/ more , are for the Maximum Threshold (Opacity) 50%, while when it is using diesel fuel the opacity reach into 31.6%. But, when the trial's using 70% gas and 30% diesel, the exhaust emissions reach 17.85%. After the installation of CNG fuel, there was a reduction in the concentration level of exhaust gas emissions by almost 43.67%

2. Diesel Fuel Consumption and Performance's Trial

Tests for using CNG fuel have been carried out with a distance of + 16.5 Km on the route of SPBU Tambak Aji - Jl Panturan Semarang Kendal - Jl Raya Mangkang - Mangkang Terminal - Jl Raya Mangkang - Jl Jend Urip Sumoharjo - Jl Walisongo - to SPBU Tambak Aji at 15.30 WIB until 17.30 WIB. This trial was conducted to determine the consumption of diesel fuel and the engine performance of BRT Trans Semarang with the license number H-1419-BW that is fitted with a CNG converter tool

The Consumption Results between Diesel fuel and The Mixture of Fuel (Diesel + CNG)

Tested System	Using Diesel Fuel	Using Mixture Fuel (CNG + Diesel)
Test Mileage	± 16,5 KM	± 16,5 KM
Speed	± 60 KM/ per hour	± 60 KM/ per hour
Diesel Consumption	5,5 Liter	1,48 Liter
CNG Consumption		4,02 LsP
Total Price	Rp. 28.325,-	Rp. 20.084,-

- After testing the performance, emissions and fuel consumption, it can be concluded:
- 1. Lighter pull;
- 2. For treatment of diesel filters and oil have much longer lifespan;
- 3. For machine maintenance it is also easier and longer for maintenance;
- 4. Performance and engine power are increasing;

5. The emission level of the exhaust gas is so much better , it is around 50% (based on the emission test results);
6. The level of the environment is safer due to the results of the level of exhaust emissions (Opacity) 17.8% from the maximum threshold 50% based on the Regulation of the Minister of Environment No. 05 in 2006 concerning the Threshold of Existing Motor Vehicle Exhaust Emissions August, 1st, 2006;
7. The cost of fuel consumption has a savings about 29%.

Semarang, July, 24, 2018

Examiner
Exhaust Gas Emission
Transportation Department Semarang

Hendro Catur P.A.Md LLAJ. SE
Pengudi Tingkat III
Reg. 033.074.PT3.01.001

Technician
PT.GAZINDORAYA

Dedy Wikaksono

Operational Manager
BLU UPTD Trans Semarang

MULYADI, SH
Penata (III/c)
NIP. 19810211 201001 1 010

This report is intended to:

Head of Transportation Department ;

Head of BLU UPTD Trans Semarang .

TRIAL RESULT OF CNG USAGE



PEMERINTAH KOTA SEMARANG DINAS PERHUBUNGAN

Jl Tambak Aji Raya No.5 Telp/Fax.(024) 8662389 Semarang 51085
Email : dishubkominfo_smg_2010@yahoo.com Website : www.dishubkominfokotasmg.go.id



Date and Time 23/07/2018 15:22:35

Smoke Meter Model : QROTECH

Smoke Meter Serial Number : S14D07

Smoke Meter Type : OPA - 102

Next Smoke Meter Check : / /

Opacity Test Result

k 0.88

Opacity [%] 31.6

RPM 0

Oil Temperature [°C] 0

No. Kendaraan : H 1419 BW
No. Uji : SM 134424

Pengujii,

HENDRO CATUR P. A.Md LLAJ. SE
Pengujii Tingkat IJI
Reg. 033.074.PT3.01.003

BEFORE USE CNG



PEMERINTAH KOTA SEMARANG DINAS PERHUBUNGAN

Jl Tambak Aji Raya No.5 Telp/Fax.(024) 8662389 Semarang 51085
Email : dishubkominfo_smg_2010@yahoo.com Website : www.dishubkominfokotasmg.go.id



Date and Time 23/07/2018 15:25:29

Smoke Meter Model : QROTECH

Smoke Meter Serial Number : S14D07

Smoke Meter Type : OPA - 102

Next Smoke Meter Check : / /

Opacity Test Result

k 0.45

Opacity [%] 17.8

RPM 0

Oil Temperature [°C] 0

No. Kendaraan : H 1419 BW
No. Uji : SM 134424

Pengujii,

HENDRO CATUR P. A.Md LLAJ. SE
Pengujii Tingkat IJI
Reg. 033.074.PT3.01.003

AFTER USE CNG

TRIAL RESULT OF CNG USAGE

Laporan I : Peraturan Menteri Negara
Lingkungan Hidup
Nomor : 05 Tahun 2006
Tempat : Ambang Batas Bumi Gua Bang
Kendaraan Bermotor Lalu
Tanggal : 1 Agustus 2006

A KENDARAAN BERMOTOR KATEGORI L

Kategori	Tahun Pembuatan	Parameter		Metoda uji
		CO (%)	HC (ppm)	
Sepeda motor 2 Lengkap	< 2010	4.5	12000	xlo
Sepeda motor 4 Lengkap	< 2010	5.5	2400	xlo
Sepeda motor (2 Lengkap dan 4 Lengkap)	≥ 2010	4.5	2000	xlo

B KENDARAAN BERMOTOR KATEGORI M, N DAN O

Kategori	Tahun Pembuatan	Parameter			Metoda uji
		CO (%)	HC (ppm)	Opetitas (% HSU) *	
Berpenggerak motor bahan uras api (benzin)	< 2007	4.5	1200		xlo
Berpenggerak motor bahan panganan kemasin (diesel)	≥ 2007	1.5	200		Percobaan Dekas
- GW ≤ 3,5 ton	< 2010			70	
- GW > 3,5 ton	≥ 2010			40	
- GW > 3,5 ton	< 2010			70	
- GW > 3,5 ton	≥ 2010			50	

Catatan I
Untuk kendaraan bermotor berpenggerak
motor bahan celut api, kategori M,N dan O
- < 2007 : berlaku sampai dengan 31 Desember 2006
- ≥ 2007 : berlakumulaif tanggal 1 Januari 2007

Catatan II
Untuk kendaraan bermotor kategori L
dan kendaraan bermotor berpenggerak motor
bahan panganan kemasin
- < 2010 : berlaku sampai dengan 31 Desember 2009
- ≥ 2010 : berlakumulaif tanggal 1 Januari 2010
* atau ekivalen % hasil

Salinan sesuai dengan aslinya



Menyatakan
Lingkungan Hidup,
tdt
Ir. Radmit Witaelar

CONCLUSION

EMISSION LEVEL USING DIESEL

31.6%

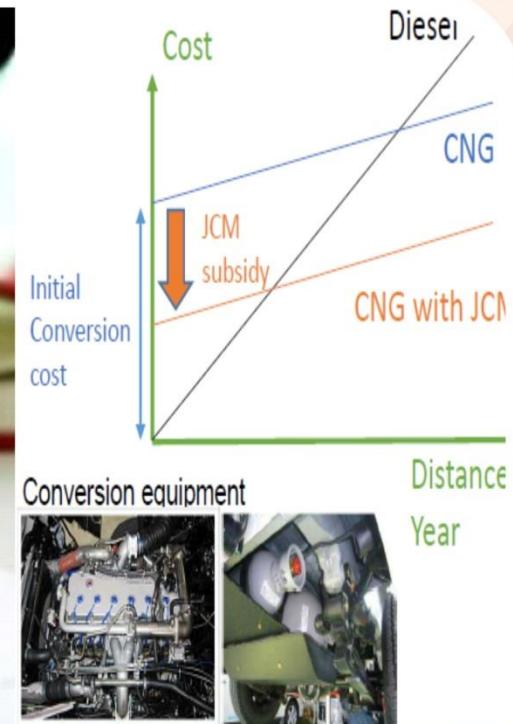
EMISSION LEVEL USING CNG

17.85%

EMISSION DENSITY LEVELREDUCTION

43.67%

TARGET



1 year Expected CO2 Emission Reduction
1,870 tCO2/year

1 YEAR REDUCTION OF EXPECTED CO2 EMISSIONS
1,870 TCO2 / YEAR

Adopted Project for JCM Subsidy 2018

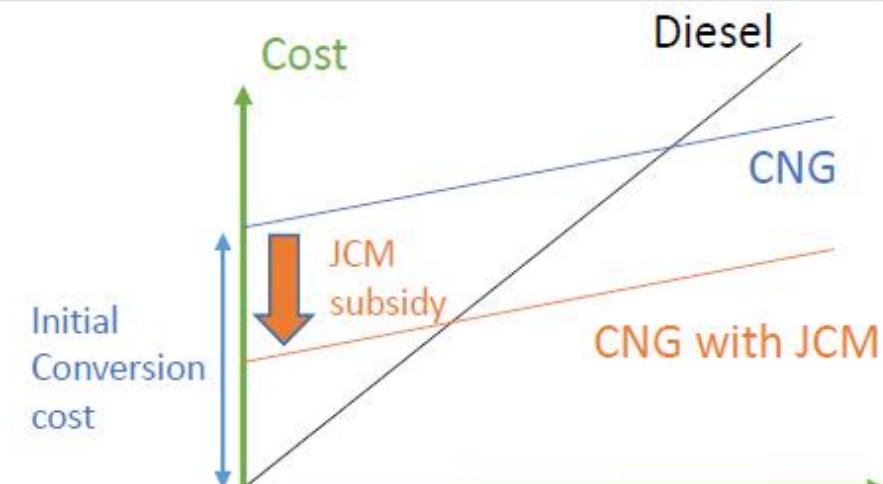
“Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang” (Representative Participant :Hokusan Co., Ltd.)

This is the first project in Indonesia as a public transport project of JCM, and also the first project for public sector.



To reduce GHG emissions, 72 diesel buses owned by Trans Semarang are retrofitted from diesel engine to CNG&diesel hybrid engine.

	Bus	Fuel efficiency	Annual Mileage
Large size	25	2.0km/L Diesel	1,862,960km
Medium size	47	3.5km/L Diesel	3,906,595km



1 year Expected CO2 Emission Reduction
1,870 tCO2/year



BLU UPTD TRANS SEMARANG

A central graphic featuring the words "thank you" in various languages, including English, German, Polish, Russian, Spanish, French, and many others, arranged in a radial pattern around the center word "thank". The text is in different colors and sizes, creating a colorful and diverse visual effect.



Badan Layanan Umum Unit Pelaksana Teknis Dinas Trans Semarang

