Republic of the Philippines
Department of Environment and Natural Resources
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Website: http://www.denr.gov.ph E-mail: web@denr.gov.ph

MEMORANDUM

TO : **The Assistant Secretaries in concurrent capacity as Director**
Biodiversity Management Bureau
Environmental Management Bureau
Forest Management Bureau

The Directors
Ecosystems Research and Development Bureau
Land Management Bureau
Mines and Geosciences Bureau

FROM : **THE UNDERSECRETARY**
Policy, Planning, and International Affairs

SUBJECT : **REQUEST FOR INPUTS IN PH 2050 CALCULATOR PROJECT**

DATE : APR 20 2023

This refers to the email dated 31 March 2023 from the Office of the Secretary regarding the request of the Department of Energy, for data for the Forestry and Other Land Use (FOLU) model of the Philippines 2050 Pathways Calculator.

It may be recalled that the same was also the subject of our Memorandum dated 21 February 2023.

For your information and appropriate action.

ATTY. JONAS R. LEONES

MEMO NO. 2023 - 340

DENR **Undersecretary for Policy, Planning and International Affairs <ouppia@denr.gov.ph>**

OSEC-2023-002173: Request for inputs_PH 2050 Calculator Project

DENR OSEC Referral <osec.referral@denr.gov.ph> Fri, Mar 31, 2023 at 10:00 AM
To: ouart.denr20@gmail.com
Cc: "Undersecretary for Policy, Planning and International Affairs" <ouppia@denr.gov.ph>

Sir/Madam:

Respectfully referred to your office for information and appropriate action, with EDATS No. OSEC-2023-002173.

Thank you.

NOTE: DO NOT REPLY TO THIS EMAIL. For updates, inquiries and other communications, please send to osec@denr.gov.ph.

OFFICE OF THE SECRETARY
4/F DENR Main Building
Visayas Avenue, Diliman
Quezon City

From: **Environmental Cooperation ECCD** <envi.eppb@gmail.com>
Date: Thu, Mar 30, 2023 at 9:25 AM
Subject: Request for inputs_PH 2050 Calculator Project
To: <osec@da.gov.ph>, DA - Climate-Resilient Agriculture Office <amiacreate.da@gmail.com>, Alicia Ilaga <aliciailaga.amia@gmail.com>, Saturnina Halos <ninayhalos@gmail.com>, Maria Jannell Feliz Magnaye <mjfamagnaye.amia@gmail.com>, Office of the Secretary <osec@denr.gov.ph>, Anna Teh <tehanna08@gmail.com>, AAM <aamagalang@denr.gov.ph>, Gigi Merilo <gmerilo@yahoo.com>, Lizity Silva <lizityness@gmail.com>, Rolando O. Abad Jr. <roabadjr@denr.gov.ph>, Climate Change Information and Technical Support Division <ccitsd@denr.gov.ph>, DENR FMB Official <fmb@denr.gov.ph>, FRCD-EFS Environmental Forestry Section <frcd.efs@fmb.denr.gov.ph>, <fppkmd@fmb.denr.gov.ph>, FMB Assistant Director <denrfmb.ad@gmail.com>, <jbarit@fmb.denr.gov.ph>, Philippine Statistics Authority—ENRAD staff <enrad.staff@gmail.com>, Bathan, Ghie <v.bathan@psa.gov.ph>, Faith Lea B. Cabrera <f.cabrera@psa.gov.ph>, Mylene Evangelista <mhyevangelista1031@gmail.com>, ENRAD Staff <enrad.staff@psa.gov.ph>, Vivian R. Ilarina <v.ilarina@psa.gov.ph>, vivian <vr_ilarina1@yahoo.com>, Planning and Project Development Office <ppdo@dotr.gov.ph>, Office of the Assistant Secretary for Planning <oasp@dotr.gov.ph>, Jayrill Condeza <jayrill.condeza@dotr.gov.ph>, EVANGELINE NOVA <evangelinenova@yahoo.com>, Michael Sinocruz <mike_sinocruz@yahoo.com>, Policy Research and Development Division <prdd@climate.gov.ph>, SPD <spd@climate.gov.ph>, Recabar, Sandee Gamulo <recabars@climate.gov.ph>, Aimee Evangelista <evangelistaa@climate.gov.ph>, Richard Palma <palmar.ccc@gmail.com>, Jacinth Paul Apostol <apostoljp.ccc@gmail.com>, Emmanuel Causon <causone.ccc@gmail.com>, Joe Mari Francisco <franciscojm@climate.gov.ph>, Jerome Ilagan <ilaganj@climate.gov.ph>, Arnold Grant Belver <belverag@climate.gov.ph>, Danielle Marie Torralba <torralbadm@climate.gov.ph>
Cc: EPPB OD <eppb.od@doe.gov.ph>, Hershey dela Cruz <hershey_delacruz@yahoo.com>, Michael O. Sinocruz <msinocruz@doe.gov.ph>, william quinto <williamquinto1211@gmail.com>, letty abella <lettyabella1@yahoo.com>, Caroline Quitaleg <caroline715@gmail.com>, Angelou B. Austria <aaustria@doe.gov.ph>, Rowaldo Del Mundo <rddelmundo@up.edu.ph>, Ivan Benedict Nilo Cruz <iccruz1@up.edu.ph>, Bienvenido Jr Malquisto <bmmalquisto@up.edu.ph>, Rexor Amancio <Rexor.Amancio@fcdo.gov.uk>, Joselito Guevarra <Joselito.Guevarra@mottmac.com>

Dear EO 174 colleagues,

Greetings from the Department of Energy!

We thank everyone for actively participating during the PH 2050 Calculator Project presentation. As discussed during the meeting, may we kindly remind everyone to submit your respective inputs, if there is

any, on the attached proposed levers and levels of target for the PH 2050 Pathways Calculator. We will appreciate receiving your feedback on 31 March 2023.

Thank you for your continued support and cooperation.

Best regards,
ECCS

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Environmental Cooperation and Coordination Section
Energy Cooperation and Coordination Division
Energy Policy and Planning Bureau
Department of Energy
Energy Center, Rizal Drive, Bonifacio Global City
Taguig City, Philippines, 1632
(+632) 479-2900 loc. 314 or 265

PH2050Calc - Intial-Proposed LEVERS and LEVELS v5.docx
29K

PH2050 Calculator
Department of Energy

INITIAL/PROPOSED LEVERS AND LEVELS OF TARGET FOR PHILIPPINES 2050 PATHWAYS CALCULATOR

Group	Lever Name	Lever description	Level 1	Level 2	Level 3	Level 4
ENERGY - DEMAND	Appliance Labeling	Philippine Appliance Labeling Program	Level of appliance efficiency penetration is at 2 star of APL program	Level of appliance efficiency penetration is at 3 star of APL program	Level of appliance efficiency penetration is at 4 star of APL program	Level of appliance efficiency penetration is at 5 star of APL program
	Energy Management	Energy Management Polices & Programs such as the Government Energy Management Program (GEMP)	LED and Inverter ACUs at 25% penetration; 25% of government vehicles are EVs, 10% savings from fuel reduction measures and 10% reduction through EEC projects	LED and Inverter ACUs at 50% penetration; 50% of government vehicles are EVs, 15% savings from fuel reduction measures and 15% reduction through EEC projects	LED and Inverter ACUs at 75% penetration; 75% of government vehicles are EVs, 15% savings from fuel reduction measures and 15% reduction through EEC projects	LED and Inverter ACUs at 100% penetration; 100% of government vehicles are EVs, and 25% reduction through EEC projects
	Efficient Motor	Adoption of high-efficiency electric motors in industrial plants and commercial establishments	Motor efficiency improved from 50%-85% (small to large) to 60%-90%	Motor efficiency improved from 50%-85% (small to large) to 65%-92.5%	Motor efficiency improved from 50%-85% (small to large) to 70%-95%	Motor efficiency improved from 50%-85% (small to large) to 75%-97.5%
	Efficient Boiler	Adoption of high-efficiency boilers in industrial plants	Boiler efficiencies improved (Coal 70% to 77%, Oil 65% to 71.5%, Gas 67.5% to 74.5%)	Boiler efficiencies improved (Coal 70% to 84%, Oil 65% to 78%, Gas 67.5% to 81%)	Boiler efficiencies improved (Coal 70% to 91%, Oil 65% to 84.5%, Gas 67.5% to 87.5%)	Boiler efficiencies improved (Coal 70% to 94.5%, Oil 65% to 87.5%, Gas 67.5% to 91.13%)
	Industrial Control	Introduction of efficient industrial processes and controls	Electricity & Fuel consumption are reduced by 5%	Electricity & Fuel consumption are reduced by 10%	Electricity & Fuel consumption are reduced by 20%	Electricity & Fuel consumption are reduced by 30%
	Building Envelope	Building Codes to improve thermal insulation of roof, walls and windows	Electricity consumption of aircons are reduced by 5%	Electricity consumption of aircons are reduced by 10%	Electricity consumption of aircons are reduced by 20%	Electricity consumption of aircons are reduced by 30%
ENERGY - SUPPLY	RE Development	Development of Renewable Energy power plants	RE from existing and committed plants only	30% RE share by 2050	50% RE share by 2050	70% RE share by 2050
	Plant Retirement	Retirement of fossil-based power plant	25% of coal plants in main grids are retired	50% of coal plants in main grids are retired	75% of coal plants in main grids are retired	75% of coal, 25% of oil and 25% of gas plants in main grids are retired
	Nuclear Energy	Development of Nuclear Energy power plants	Addition of 600MW of Small Modular Nuclear plants annually starting 2032	Addition of 1200MW of Small Modular Nuclear plants annually starting 2032	Addition of 600MW of Small Modular Nuclear plants annually starting 2032 plus 1200MW of	Addition of 1200MW of Small Modular Nuclear plants annually starting 2032 plus 1200MW of

Group	Lever Name	Lever description	Level 1	Level 2	Level 3	Level 4
					Large Conventional Nuclear plants annually starting 2035	Large Conventional Nuclear plants annually starting 2035
	Carbon Capture Storage	Carbon Capture Storage Program: Capture fossil emissions	[No proposal]	[No proposal]	[No proposal]	[No proposal]
	Emerging Technology	Emerging Energy Technology Program: Adoption of new emerging technologies (Hydrogen and Amonia fuel)	[No proposal]	[No proposal]	[No proposal]	[No proposal]
	Energy Storage System	Use of energy storage systems such as pumped-hydro storage and battery storage systems	12.57% share of Pumped-Storage and Battery Energy Storage System of new peaking plants	32.58% share of Pumped-Storage and Battery Energy Storage System of new peaking plants	54.24% share of Pumped-Storage and Battery Energy Storage System of new peaking plants	75.96% share of Pumped-Storage and Battery Energy Storage System of new peaking plants
	Biofuels	Biofuels Blending Program	Increase the biofuels blend to 15% for ethanol and 4% for biodiesel	Increase the biofuels blend to 20% for ethanol and 6% for biodiesel	Increase the biofuels blend to 30% for ethanol and 8% for biodiesel	Increase the biofuels blend to 40% for ethanol and 10% for biodiesel
TRANSPORT	Rail Development	Development of more railways as mass-transport system	BBB Rail Projects unconditionally committed in NDC (%PKT share of Railways in 2050 is 3.32% for electric trains and 1.02% for diesel trains)	BBB Rail Projects unconditionally plus conditionally committed in NDC (%PKT share of Railways in 2050 is 6.36% for electric trains and 1.97% for diesel trains)	Railways will be develop to maintain %PKT share of railways from the initial level of BBB projects at 9.68%	Railways will be develop to double the %PKT share of railways from the initial level of BBB projects at 9.68% to 19.36 % in 2050
	Bus Rapid Transit	Introduction of bus rapid transport as mass-transport system	BBB BRT Projects unconditionally committed in NDC (%PKT share of BRT in 2050 is 0.6%)	BBB BRT Projects unconditionally plus conditionally committed in NDC (%PKT share of BRT in 2050 is 4.9%)	BRTs will be develop to maintain %PKT share of railways from the initial level of BBB projects at 7.49%	BRTs will be develop to double the %PKT share of BRT from the initial level of BBB projects at 7.49% to 14.98% in 2050
	Bus Expansion	Public Utility transport shift to mass transport through expansion of buses	BUS Service will be expanded to increase its PKT share in 2050 from 19.39% to 25%	BUS Service will be expanded to increase its PKT share in 2050 from 19.39% to 30%	BUS Service will be expanded to increase its PKT share in 2050 from 19.39% to 35%	BUS Service will be expanded to increase its PKT share in 2050 from 19.39% to 40%
	Green Bikeways	Introduction of bikeways in roads to encourage the use of bicycles instead of fuel-	Use of Bike lines will minimally increase the %PKT share of Bikes in	Use of Bike lines will minimally increase the %PKT share of Bikes in	Use of Bike lines will minimally increase the %PKT share of Bikes in	Use of Bike lines will minimally increase the %PKT share of Bikes in

Group	Lever Name	Lever description	Level 1	Level 2	Level 3	Level 4
		based transport	2050 from 0.76% to 1%	2050 from 0.76% to 2%	2050 from 0.76% to 4%	2050 from 0.76% to 8%
	Green Walkways	Introduction of walkways to encourage people to walk instead of use traditional transport	Greenwalkways will reduce total PKT by 1%	Greenwalkways will reduce total PKT by 2%	Greenwalkways will reduce total PKT by 4%	Greenwalkways will reduce total PKT by 8%
	Waterways	Introduction of waterways to decongest roadways	[No Transport-Water model yet]	[No Transport-Water model yet]	[No Transport-Water model yet]	[No Transport-Water model yet]
	Electric Vehicle	Shift to electric vehicles from petroleum-based transport	EVs penetration by 2050 is 5%	EVs penetration by 2050 is 10%	EVs penetration by 2050 is 25%	EVs penetration by 2050 is 50%
IPPU	Cement Production	Reduction of demand for cement	Demand = 100% of baseline	Demand = 95% of baseline	Demand = 90% of baseline	Demand = 85% of baseline
	Cement Type	Shift to cement with lower clinker fraction	30% Portland, 65% Blended (1), 5% Blended (2)	30% Blended (1), 70% Blended (2)	30% Blended (2), 70% Blended (3)	30% Blended (3), 70% Novel
	RACS Population	Reduction in RACS unit population	95% of baseline	90% of baseline	85% of baseline	80% of baseline
	RACS Refrigerant	Shift to lower-GWP refrigerants	depends on RACS unit	depends on RACS unit	depends on RACS unit	depends on RACS unit
	RACS O&M	Improvement in operating and maintenance emissions (leakages)	100% of baseline	95% of baseline	90% of baseline	85% of baseline
	RACS Disposal Recovery	Improvement in recovery efficiency at disposal	5% recovery	10% recovery	15% recovery	20% recovery
AGRI	Rice Plantation Area	Reduction in rice cultivation area	area = 97.5% of baseline	area = 95% of baseline	area = 92.5% of baseline	area = 90% of baseline
	Rice Wetting/Drying	Alternate Wetting and Drying	continuously flooded area = 67.9% of total	continuously flooded area = 51.3% of total	continuously flooded area = 34.7% of total	continuously flooded area = 18.1% of total
	Rice Cultivation Period	Reduction in cultivation period	112 days	111 days	110 days	109 days
	Rice Organic Amendments	Change in application of organic amendments	[No proposal]	[No proposal]	[No proposal]	[No proposal]
	Managed Soils	Reduction of use of synthetic fertilizers	Reduction of use of synthetic fertilizers 20%	Reduction of use of synthetic fertilizers 40%	Reduction of use of synthetic fertilizers 60%	Reduction of use of synthetic fertilizers 80%
	Cattle	Reduction of cattle	Reduction of expected	Reduction of expected	Reduction of expected	Reduction of expected

Group	Lever Name	Lever description	Level 1	Level 2	Level 3	Level 4
	Population	production	annual cattle production by 12.5%	annual cattle production by 25%	annual cattle production by 37.5%	annual cattle production by 50%
	Biodigesters (Livestock)	Shift of manure management to biodigesters	Shift of manure management to biodigesters at NDC BAU level	Shift of manure management to biodigesters at NDC Mitigation level	Shift of manure management to biodigesters at 1.5 x NDC Mitigation level	Shift of manure management to biodigesters at 2 x NDC Mitigation level
FOLU	Reforestation and Afforestation	Increase carbon sink by reforestation and afforestation	Increase forest cover by 10%	Increase forest cover by 20%	Increase forest cover by 30%	Increase forest cover by 40%
	Forest Protection	Maintaining and protecting forested areas	Decrease in roundwood, fuelwood removals, and forest disturbance by 10%	Decrease in roundwood, fuelwood removals, and forest disturbance by 20%	Decrease in roundwood, fuelwood removals, and forest disturbance by 30%	Decrease in roundwood, fuelwood removals, and forest disturbance by 40%
WASTE	Solid Waste Generation	Reduction in the amount of solid waste generated	Reduction in waste generated and improved waste destination	90% generated waste, -10% to SWDS	85% generated waste, -20% to SWDS	75% generated waste, -25% to SWDS
	Solid Waste Disposal Sites	Shift to solid waste disposal sites with lower GHG emissions	Increased allocation to lower-GHG emission SWDS and increased methane recovery	30% managed, 5% methane recovery	30% managed, 10% methane recovery	30% managed, 15% methane recovery
	Solid Waste Biological Treatment	Shift to better biological treatment types and increased methane recovery	Increased allocation to anaerobic digestion and increased methane recovery	20% anaerobic, 20% methane recovery	40% anaerobic, 40% methane recovery	60% anaerobic, 60% methane recovery
	NSSMP Coverage and Implementation	National Sewerage and Septage Management Program implementation	Increased collection and aerobic treatment of domestic wastes in NSSMP areas by 20%	Increased collection and aerobic treatment of domestic wastes in NSSMP areas by 40%	Increased collection and aerobic treatment of domestic wastes in NSSMP areas by 60%	Increased collection and aerobic treatment of domestic wastes in NSSMP areas by 80%
	Manila Bay Area (MBA) Mandamus Compliance	Manila Bay Area (MBA) Mandamus Compliance	Increased collection and aerobic treatment of domestic wastes in MBA areas by 20%	Increased collection and aerobic treatment of domestic wastes in MBA areas by 40%	Increased collection and aerobic treatment of domestic wastes in MBA areas by 60%	Increased collection and aerobic treatment of domestic wastes in MBA areas by 80%
	Industrial Wastewater Reduction	Reduction of Industrial Wastewater Generated	Reduction of Industrial Wastewater Generated by 10%	Reduction of Industrial Wastewater Output by 20%	Reduction of Industrial Wastewater Output by 30%	Reduction of Industrial Wastewater Output by 40%
	Industrial Wastewater Treatment	Shift to Well-Managed Aerobic Treatment Plants	Shift to Well-Managed Aerobic Treatment Plants by 5%	Shift to Well-Managed Aerobic Treatment Plants by 10%	Shift to Well-Managed Aerobic Treatment Plants by 15%	Shift to Well-Managed Aerobic Treatment Plants by 20%

Group	Lever Name	Lever description	Level 1	Level 2	Level 3	Level 4
	and Discharge					

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MEMORANDUM

TO : **The Assistant Secretary**
Policy, Planning and Foreign Assisted and Special Projects
and Director, Biodiversity Management Bureau
In concurrent capacity

FROM : **The Undersecretary**
Policy, Planning and International Affairs

SUBJECT : **REQUEST FOR DATA FOR THE FORESTRY AND OTHER LAND USE (FOLU) MODEL OF THE PHILIPPINE 2050 PATHWAYS CALCULATOR**

DATE : FEB 21 2023

This refers to the electronic mail dated 09 February 2023 from Ms. Caroline A. Quitaleg, Senior Science Research Specialist, Energy Policy and Planning Bureau, Department of Energy (DOE) transmitting an advance copy of the letter from Director Michael O. Sinocruz, Energy Policy and Planning Bureau, Department of Energy requesting for data from the Biodiversity Management Bureau (BMB) for the Forestry and Other Land Use (FOLU) model of the Philippines 2050 Pathways Calculator which is being developed by the DOE along with a team from the University of the Philippines (UP).

In this regard, we are referring the matter to your office for your appropriate action, subject to existing laws, rules and regulations. Please directly coordinate with Director Sinocruz regarding his request.

ATTY. JONAS R. LEONES