Regional and Local Best Practice

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WESM is the Regional Best Practice



- The Wholesale Electricity Spot Market (WESM) is the venue for trading electricity as a commodity in the Philippines. Its objective is to establish a competitive, efficient, transparent and reliable market for electricity where:
 - There is a level playing field for the trading of electricity;
 - Third parties are granted access to the power system;
 - Prices are governed by commercial and market forces; and
 - Efficiency is encouraged.
- WESM data in last 3 months is published free in *iemop.ph*.

Operating since 2006 in Luzon, and 2010 in Visayas



Core Issues identified by participants

 Need for an upgraded energy transmission distribution infrastructure and its required capital requirements

NCCP

- Delays in the expansion of transmission facilities
- DUs' apprehension on the impact of (intermittent) RE technologies



NGCP Permitting Process for DOE review

Request and acquisition of data and information – 2 weeks

- ► There is a long queue
- Conduct of technical assessment 2 weeks
- Conduct of system impact study (SIS) 9 weeks
- Conduct of Facilities Study (FS) 6 weeks
- Application for service agreements 3 weeks
 - There is also a queue
- Issuance of Certificate of Approval to Connect 3 weeks

Best case scenario – 25 weeks or 175 days



Solar & Wind are variable, not intermittent

✤ On-Grid

- Based on WESM data, solar and wind do not have many unplanned outages, thus they are not intermittent.
- Solar and Wind have variable generation profiles that fall within WESM standards for predictability.

		Actual Performance						
	Region	MAPE (18% standard)			PERC95 (30% standard)			
		2019	2020	2021 YTD	2019	2020	2021 YTD	
Solar	Luzon	5.42%	3.67%	3.94%	15.34%	14.98%	16.81%	
Wind		6.30%	6.18%	5.84%	17.43%	18.29%	17.80%	
Solar	Visayas	5.87%	3.48%	3.89%	17.99%	15.40%	17.93%	
Wind		9.87%	8.52%	7.70%	28.15%	25.17%	21.86%	



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- ✤ Off-Grid
 - Integration of variable renewables can be challenging for installations with diesel gensets with old control systems
 - Otherwise, solar and diesel gensets can complement each other where the diesel generation can be reduced as the solar generation kicks in.



Policies

- Lack of political will in the implementation of RE policies
- Harmonization of national and local energy codes
- Lack of technical knowledge resulting to lack of participation in RE initiatives



Luzon coal power plants >300 MW capacity















Coal Power Plant	Outage percent	Outage days	Average P/MW-hour	Median P/MW-hour
1ANDA_G01	6.3%	22.80	8,197.19	4,730.21
1APEC_G01	9.2%	33.44	8,239.77	5,153.76
1GNPD_U01	37.4%	136.41	9,227.01	4,971.26
1GNPD_U02	88.9%	324.24	7,461.38	4,132.58
1MARVEL_G01	53.7%	196.06	7,540.52	3,933.05
1MARVEL_G02	15.3%	55.65	12,319.59	5,812.47
1MSINLO_G01	5.5%	20.06	9,373.39	4,677.97
1MSINLO_G02	8.8%	32.04	4,284.37	2,947.94
1MSINLO_G03	14.4%	52.50	10,812.56	6,643.61
1SMC_G01	10.5%	38.27	6,531.21	3,443.60
1SMC_G02	6.7%	24.41	6,317.92	4,265.11
1SMC_G03	11.3%	41.08	5,802.99	3,365.22
1SMC_G04	6.4%	23.50	8,773.21	5,792.47

Luzon Coal Power Plants: Outages & WESM Prices, Pesos per MW-hour

Luzon Coal Power Plants: Outages & WESM Prices

Coal Power Plant	Outage percent	Outage days	Average P/MW-hour	Median P/MW-hour
1SUAL_G01	17.2%	62.59	7 <mark>,260.82</mark>	4,064.97
1SUAL_G02	15.6%	56.94	11,726.62	7,100.13
3CALACA_G01	6.5%	23.70	5,977.13	4,482.94
3CALACA_G02	83.5%	304.78	7,879.30	4,897.88
3PAGBIL_G01	8.1%	29.52	9,978.28	5,127.55
3PAGBIL_G02	17.1%	62.27	5,867.97	3,250.51
3PAGBIL_G03	9.5%	34.48	12,418.23	7,529.40
3QPPL_G01	16.4%	59.96	8,195.57	4,879.44
3SBPL_G01	11.3%	41.17	10,159.69	5,427.79
3SLPGC_G01	33.0%	120.33	7,188.54	3,379.72
3SLPGC_G02	22.6%	82.34	9,210.10	5,492.25
3SLTEC_G01	29.0 <mark>%</mark>	105.77	6, <mark>652.66</mark>	4,035.08
3SLTEC_G02	28.0%	102.31	9, <mark>634.5</mark> 2	5,520.38
Averages	22.0%	80.3	8 <mark>,3</mark> 47	4,810





Comparative Blended Generation Rates of Major Distribution Utilities, Pesos per kilowatt-hour

Development Process for DOE review

- Challenges in permits and legal compliances
- Restrictions on foreign ownership for certain RE technologies
- Lack of institutions to integrate RE, Energy Efficiency, and Just Energy Transition in LGUs
- Difficulty of securing available land in off-grid areas due to land use policy
 - ▶ ???
 - "Agrivoltaics"







View from Mt. Luho, Boracay Island @2011

STREET, STREET