



**ENGR. JOSHUA P. FERNANDEZ, MPA, CSS**

Power Systems Analysis Engineer

Technical Consultant for the Electric Power Industry

## **2024 Company Profile**

“Para Tulungan Kayo”

# NiggaJosh Electrical Supplies and Services

- Proprietor: Joshua P. Fernandez
  - Education
    - BSEE, UP-Diliman, 2006
    - MPA, PUP-Manila OU, 2012
  - Professional experience
    - Fluor Daniel, 2007 to 2008
    - DOE, 2008 to 2012
    - KEPCO KPS, 2014
    - ERC, 2014 to 2018
    - **NIGGAJOSH**, 2018 to present
- Services
  - Competitive Selection Process (CSP)
  - Comprehensive Power Distribution Training (CPD)
  - Distribution Impact Studies (DIS)
  - Arc-flash Hazard Analysis (ArcFlash)
  - Geographic Information System (GIS)
  - Capital Expenditures (CAPEX)
  - Retail Competition & Open Access and Renewable Energy (RCOA-RE)



# CSP

## Competitive Selection Process document package compliant with ERC's 2023 CSP Guidelines

- Detailed forecasting and contracting strategy
- Best practices to protect customer interests
- One-month BAC capacity-building
- Assistance during pre-bid conference and bid opening as needed
- Continuing support until PSA signing
- Optional: avail of CPD trainings for FREE
- ***Walang ilalabas na pera – hati tayo sa benta ng bid documents pagkapirma ng PSA***

## Documents

- Invitation to Bid
- Terms of Reference
- Power Supply Agreement Template
- Computation of Pass-on Fuel Fees
- Plant Performance Metrics
- Instructions to Bidders
- Information Memorandum

# CPD

## Comprehensive Power Distribution Training for EC Engineers

- With complete training videos, workbooks, and references for 30 modules
- Any number of participants from a single EC
- Comfortable 10-day pace
- 200k for online and 300k for in-person trainings
- FREE for opting CSP customers
- Visit [www.CPD.com.ph](http://www.CPD.com.ph) for more details
- ***Siguraduhing handa ang engineers mo!***

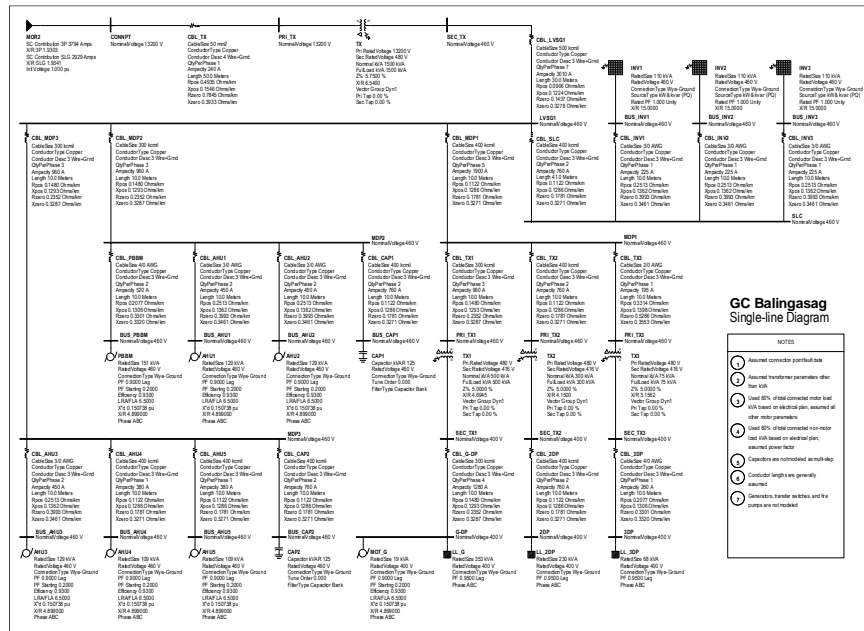
### Course Outline

- Philippine Grid Code and Distribution Code
- Distribution Services and Open Access Rules (new)
- Philippine Electrical Code Part 2 (new)
- Per-unit Calculations
- Matrices
- Symmetrical Components (new)
- Overhead Line Characteristics
- Application of Transformers
- Application of Capacitors
- Short-circuit Calculations
- Load Flow Calculations
- Modeling of Circuit Components
- Development of Load Flow and Short-circuit Calculation Templates
- Interpreting Results of Power System Calculations
- Load Flow and Short-circuit Study Cases
- Large Motor Starting
- Distribution System Loss (new)
- Utility-scale Solar PV and Net-metering
- Harmonics
- Predictive Reliability
- Arc-flash Hazard Calculations (new)
- Overcurrent Protective Devices
- Protective Device Coordination
- Lightning and Overvoltage Protection
- Load Forecasting
- Distribution Feeder Planning
- Substation Planning
- Subtransmission Line Planning
- Rural Electrification and Other CAPEX Planning
- Economic Evaluation

# DIS

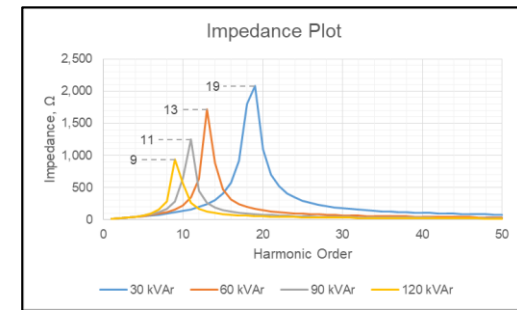
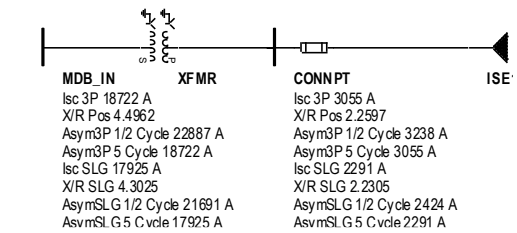
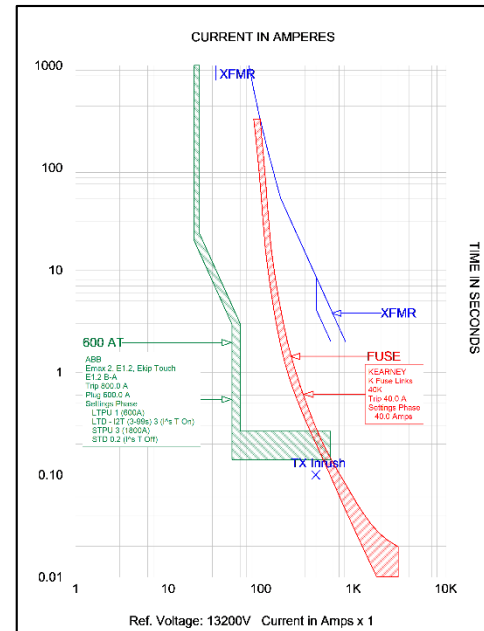
## Distribution Impact Studies as required by PDC for the connection of embedded generators

- With continuing support until DU acceptance
- 50k per MW and 100k per inspection as needed
- 2 weeks lang ang kailangan pagkabitay ng single-line diagram!**



## Scope

- Load flow calculations
- Short-circuit calculations
- Protective device coordination studies
- Harmonic and power quality studies
- Transient stability studies




# ArcFlash

## IEEE 1584-2018 Arc-flash Calculations

- Comply with PEC 2017 1.3.2.1.F.6
- Prevent the needless loss of human lives
- 200k lang para walang masabugan!**

## Scope

- PPE class per bus
- Arc-flash warning label per bus



### WARNING

#### Arc Flash and Shock Risk

**Appropriate PPE Required**

**884 mm** Arc Flash Boundary  
**3.26 cal/cm<sup>2</sup>** Incident Energy at **457 mm**

**PPE**  
**2300 VAC** Arc-rated shirt & pants or arc-rated coverall or arc-rated arc flash suit  
**1** Shock Risk when cover is removed  
**1500 mm** Glove Class  
**700 mm** Limited Approach  
 Restricted Approach

**Location:**
**TX2\_SEC**

**SKM Systems Analysis, Inc.**  
 1 Pearl St., Redondo Beach, CA 90277  
 (310) 698-4700

Job#:	232874	Prepared on:	01/03/22	By:	Engineer
-------	--------	--------------	----------	-----	----------

Warning: Changes in equipment settings or system configuration will invalidate the calculated values and PPE requirements

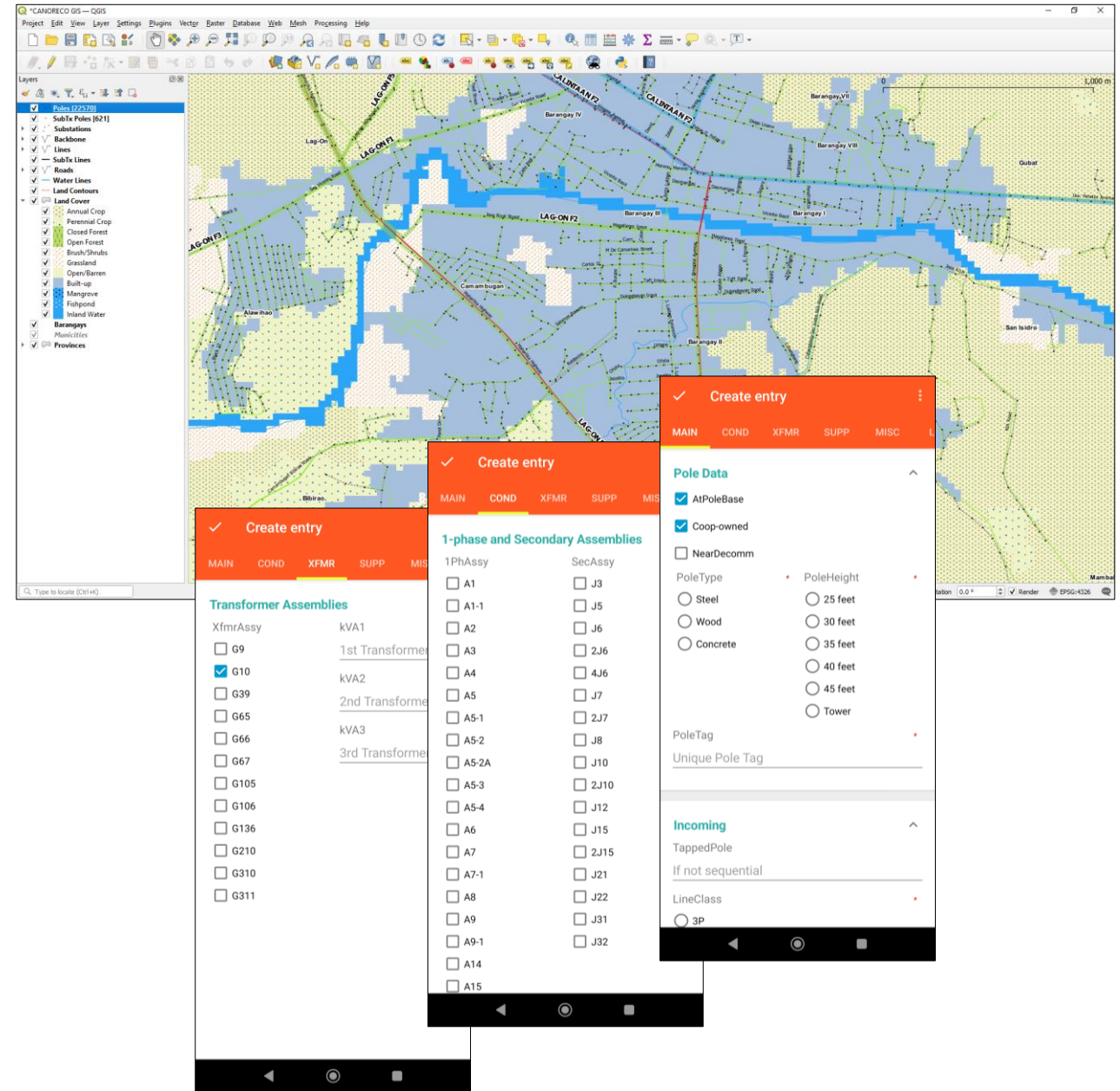
Arc Flash Evaluation - Base Project - IEEE 1584 2018																				
<input type="radio"/> Detail <input checked="" type="radio"/> Summary <input type="radio"/> Scenarios... <input type="radio"/> Custom Label... <input type="radio"/> Work Permit... <input type="radio"/> Safety Checklist... <input type="radio"/> Capacitor Asse... <input type="radio"/> Re-Run Study <input type="radio"/> Options... <input type="radio"/> PPE Table... <input type="radio"/> Equip Default... <input type="radio"/> All <input type="radio"/> Go To/Query																				
	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Electrode Config	Box Width (mm)	Box Height (mm)	Box Depth (mm)	Gap (mm)	Arc Flash Boundary (mm)	Working Distance (mm)	Incident Energy (cal/cm <sup>2</sup> )	PPE Level / Notes (*N)	Label #
1	CONNPT	FUSE	13.20	2.19	1.83	2.19	1.83	0.3521	0.0000	AIR	VOA				152	676	457	2.19	(*N3)	# 0001
2	LM5	PD-0005	2.30	2.24	1.95	2.24	1.95	0.0167	0.0833	PNL	VCB	660	660	660	104	345	457	0.77		# 0002
3	LM6	PD-0006	2.30	2.33	2.05	2.33	2.05	0.0167	0.0833	PNL	VCBB	660	660	660	104	413	457	1.00	(*N3)	# 0003
4	LM7	PD-0007	2.30	2.33	2.03	2.33	2.03	0.0167	0.0833	PNL	VCBB	660	660	660	104	518	457	1.49		# 0004
5	LM8	PD-0008	4.16	1.87	1.62	1.87	1.62	0.9531	0.0833	PNL	VCB	660	660	660	104	1374	457	6.74	(*N3)	# 0005
6	LVSG	CB_LVSG	0.40	2.72	1.72	2.72	1.72	0.505	0.0000	SWG	VCB	508	508	508	32	624	610	1.24		# 0006
7	M1	PD-0001	0.40	1.33	0.95	1.33	0.95	0.01	0.0000	PNL	VCBB	305	356	254	25	46	457	0.02		# 0007
8	M2	PD-0002	0.40	1.58	1.01	1.58	1.01	0.01	0.0000	PNL	VCBB	305	356	254	25	90	457	0.04		# 0008
9	M3	PD-0003	0.40	1.07	0.66	1.07	0.66	0.085	0.0000	PNL	VCB	305	356	254	25	103	457	0.11		# 0009
10	M4	PD-0004	0.40	1.58	1.12	1.58	1.12	0.085	0.0000	PNL	VCBB	305	356	254	25	169	457	0.20		# 0010
11	MCC1	CB_MCC1	0.40	2.24	1.26	2.24	1.26	0.145	0.0000	MCC	VCB	305	356	254	25	222	457	0.38	(*N3)	# 0011
12	MCC2	CB_MCC2	0.40	2.24	1.59	2.24	1.59	0.265	0.0000	MCC	VCBB	305	356	254	25	394	457	0.92		# 0012
13	MCC3	CB_MCC3	2.30	2.41	2.11	2.41	2.11	0.0167	0.0833	MCC	VCBB	660	660	660	104	530	914	0.47		# 0013
14	MVSG1	FUSE	13.20	2.00	1.89	2.00	1.89	0.3284	0.0000	SWG	VCBB	762	1143	762	152	885	914	1.14	(*N3)	# 0014
15	TX1_SEC	CB_TX1PRI	0.40	3.29	1.52	3.29	1.52	0.6925	0.0833	AIR	VOA				32	515	457	1.45	(*N3)	# 0015
16	TX2_SEC	MVCB	2.30	2.47	1.98	2.47	1.98	0.8215	0.0833	AIR	VOA				104	884	457	3.26	(*N3)	# 0016
17	TX3_PRI	CB_TX3PRI	13.20	1.84	1.54	1.84	1.54	0.0167	0.0833	AIR	VOA				152	266	457	0.52	(*N3)	# 0017
18	TX3_SEC	CB_TX3PRI	4.16	1.89	1.55	1.89	1.55	1.031	0.0833	AIR	HOA				104	1593	457	9.27	(*N3)	# 0018



# GIS

## Geographic Information System and pole mapping training

- Covers pole data gathering through smartphone, database management in QGIS, map production, and dissemination to line workers
- With continuing support
- **100k lang para sa 2 weeks na hands-on training!**



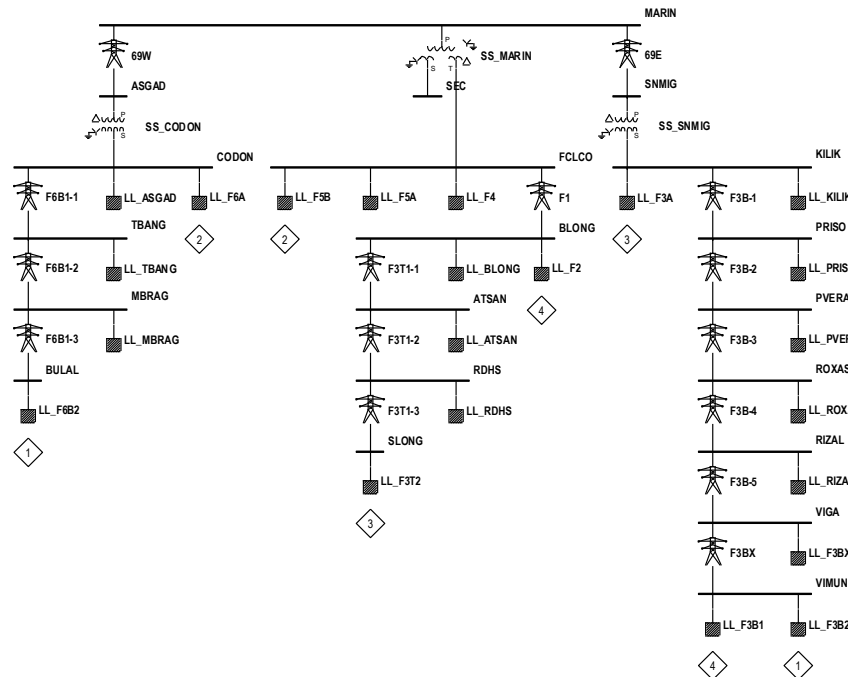
# CAPEX

## Formulation of Capital Expenditure plans for Electric Cooperatives in ERC-compliant format

- Excludes financing plan
- With continuing support until ERC approval
- **500k lang, may CAPEX plan ka na sa loob ng 2 months!**

## Scope

- Distribution system assessment
- Load flow calculations
- Short-circuit calculations
- Protective device coordination studies
- Economic analysis
- Project narratives and justifications





# RCOA-RE

## Complete databases of Retail Competition and Open Access and Renewable Energy issuances

- With summaries and a 10-hour workshop for any number of personnel
- With continuing support
- 200k lang para hindi mapag-iwanan sa RCOA at RE!**

# Summary



## CSP

Bakit? Para di malamangan sa PSA  
Magkano? Wala (hati tayo sa benta ng bid docs)



## CPD

Bakit? Ang sandata ng koop engineers  
Magkano? 200k online, 300k in-person



## DIS

Bakit? Mabilis, kumpleto, at de-kalidad  
Magkano? 50k per MW, 100k per inspection



## ArcFlash

Bakit? Para hindi masabugan  
Magkano? 200k



## GIS

Buong network, kasya sa selpon  
Magkano? 100k



## CAPEX

Bakit? Dahil wala kang panahon  
Magkano? 500k



## RCOA-RE

Bakit? Para di mapag-iwanan  
Magkano? 200k