U.S. DEPARTMENT OF STATE
BUREAU OF OVERSEAS BUILDINGS OPERATIONS

Utility Data for Data-Driven Decisions

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April 26, 2023

01
OBO OVERVIEW

02
OBO ENERGY DATA

03
DATA EVALUATION PROCESS

04
Q&A

Overseas Buildings Operations

Mission

To provide safe, secure, functional, and resilient facilities that represent the U.S. Government to the host nation and support the Department's achievement of U.S. foreign policy objectives abroad.

Vision

These facilities represent American values and the best in American architecture, design, engineering, technology, sustainability, art, culture, and construction execution.

U.S. Embassy New Delhi, India
Architect: Weiss/Manfredi Architects / Contractor: BL Harbert International

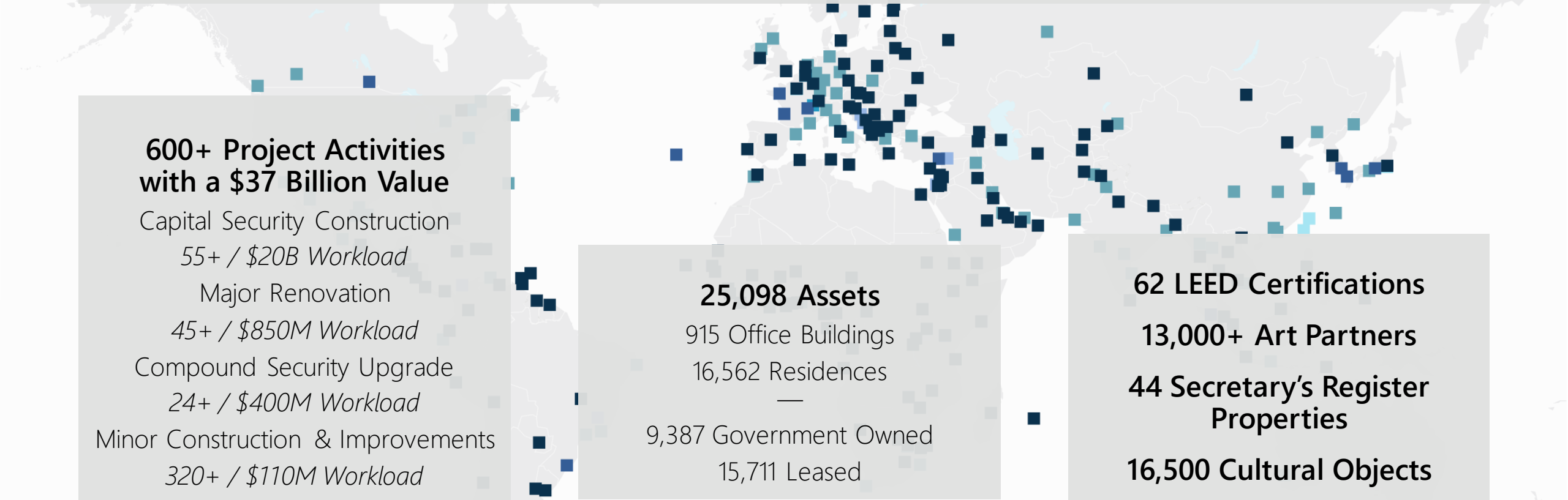
OBO By the Numbers

287
Overseas Locations

$75.2B
Portfolio Replacement Value

$2.6B
Deferred Maintenance Backlog

90,000+
Chief of Mission Personnel Supported



600+ Project Activities with a $37 Billion Value

Capital Security Construction
55+ / $20B Workload
Major Renovation
45+ / $850M Workload
Compound Security Upgrade
24+ / $400M Workload
Minor Construction & Improvements
320+ / $110M Workload

25,098 Assets

915 Office Buildings
16,562 Residences

—

9,387 Government Owned
15,711 Leased

62 LEED Certifications

13,000+ Art Partners

44 Secretary's Register Properties

16,500 Cultural Objects

OBO Utility Bill Challenges

- Foreign languages
- Non-Gregorian calendars
- Pre-paid tokens
- Bills sent to each location worldwide for payment
- Vast number of unique bill structures
- Currency conversion
- Handwritten bills
- New units of measure
- Value-Added Tax (VAT)
- Comma vs period
- International weather stations
- Interval data connectivity

Business Case for Comprehensive Solution

OBO Functional Bureau Strategy

Data Management and Analytics: OBO will create a data management platform to drive strategic decision-making. OBO will utilize technology to enhance its capabilities across all phases of an asset's life-cycle.

Federal Performance and Reporting

42 USC 8253 / 42 USC 8258(a)

Transition To Electronic Records

OMB/NARA M-19-21

A successful energy program will:

- Identify highest use and cost
- Optimize costs
- Analyze opportunities by region
- Monitor completed projects

OBO Energy Data Collection History

2008 - 2019
MANUAL DATA COLLECTION

2019
FEDRAMP

CURRENCY

28 PILOT POSTS

2020
SHAREPOINT FORMS

69 PHASE 2

2021
66 PHASE 3
51 PHASE 4

E.O. 14057

2022
31 PHASE 5

2022 - PRESENT
LIVE BILL PROCESSING

244 POSTS

2008-2019 | 2019 | 2020 | 2021 | 2022 | 2022-Present

EnergyCAP System Statistics - April 2023

244 Posts Enrolled

5,591
Utility Bill Capture Enrollments

71,833
Bills Captured Through OCR

705
Vendors

1,376
Rate schedules

423
Interval Meters

263
International Weather Stations

130
Foreign Currencies

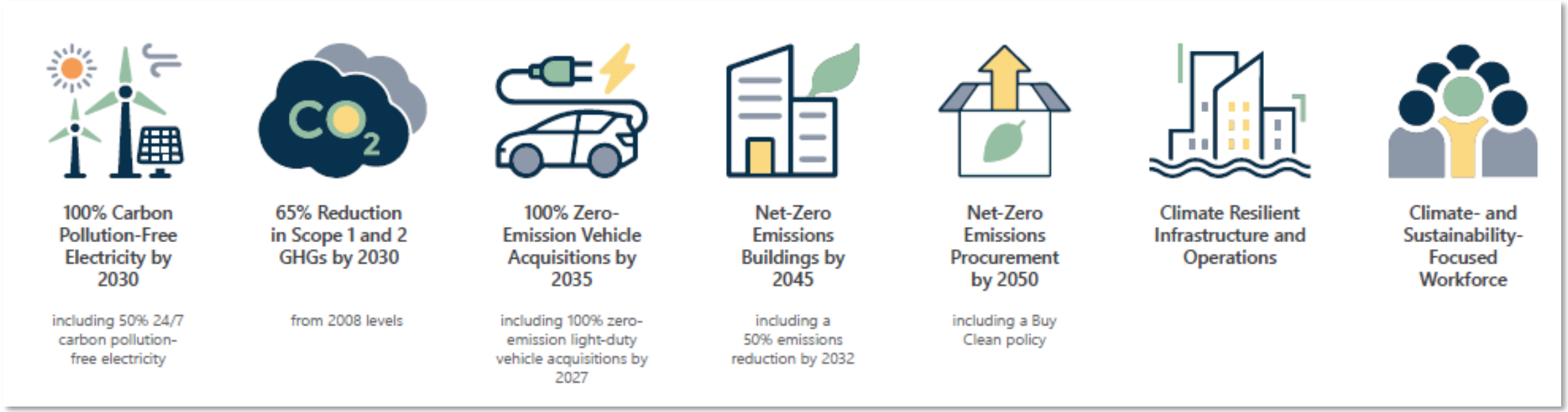
44
Foreign Languages

Evolving Energy Policy

Executive Order 14057: December 8, 2021

Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability

- E.O. 14057 Implementing Instructions (sustainability.gov)



Federal Energy Management Program (FEMP) Reporting

Select the appropriate filters below:

Date
10/1/2021 9/30/2022

Electricity Usage Tab 1.2

Post	FEMP Naming Convention	Use	Use - Unit
Abidjan	Côte d'Ivoire	6,806,621	kWh
Abu Dhabi	United Arab Emirates	2,337,338	kWh
Abuja	Nigeria	6,602,742	kWh
Accra	Ghana	6,945,419	kWh
Addis Ababa	Ethiopia	5,134,600	kWh
Total		**569,203,445**	

Electricity Usage Tab 1.3

Post	FEMP Naming Convention	Use	Use - Unit
Bogota	Colombia	400	kWh
Mexico City	Mexico	62	kWh
Total		**462**	

Electricity Cost Tab 1.6

Custom Field Value	Commodity	Cost
Excluded	Electric	$88
Goal	Electric	$78,045,856
Total		**$78,045,945**

GOAL FEMP GS & GE Tab 3.2

Commodity	Use	Use - Unit	Cost
Oil #2	1,158	Gal	$5,668
Propane	2,884	Gal	$5,960
Kerosene	5,395	Gal	$18,002
Natural Gas	3,753,904	THERM	$4,142,705
Diesel Fuel	6,610,577	Gal	$27,225,955
Total	**10,373,919**		**$31,398,290**

EXEMPT FEMP GS & GE Tab 3.2

Commodity	Use	Use - Unit	Cost
Natural Gas	7	THERM	$12
Total	**7**		**$12**

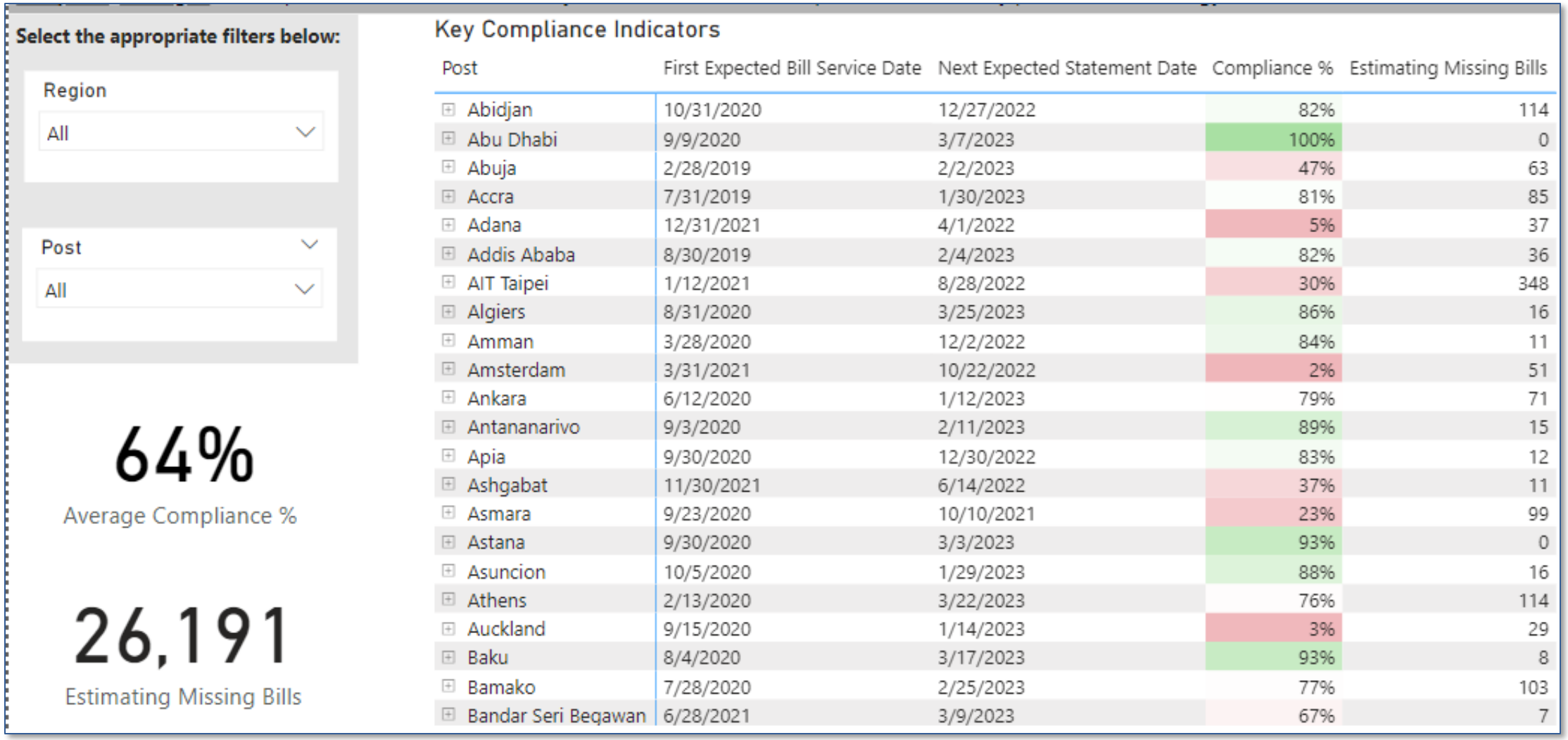
Tab 3.10 Steam and Hot Water

Goal vs Excluded	Commodity	Use	Use - Unit	Cost
Goal	Hot Water	119	BBtu	$1,696,105
Goal	Steam	1	BBtu	$18,411
Total		**120**		**$1,714,516**

Tab 3.11 Chilled Water

Goal vs Excluded	Commodity	Use	Use - Unit	Cost
Goal	Chilled Water	2	BBtu	$73,031
Total		**2**		**$73,031**

Completion of Data Set



Post	First Expected Bill Service Date	Next Expected Statement Date	Compliance %	Estimating Missing Bills
Abidjan	10/31/2020	12/27/2022	82%	114
Abu Dhabi	9/9/2020	3/7/2023	100%	0
Abuja	2/28/2019	2/2/2023	47%	63
Accra	7/31/2019	1/30/2023	81%	85
Adana	12/31/2021	4/1/2022	5%	37
Addis Ababa	8/30/2019	2/4/2023	82%	36
AIT Taipei	1/12/2021	8/28/2022	30%	348
Algiers	8/31/2020	3/25/2023	86%	16
Amman	3/28/2020	12/2/2022	84%	11
Amsterdam	3/31/2021	10/22/2022	2%	51
Ankara	6/12/2020	1/12/2023	79%	71
Antananarivo	9/3/2020	2/11/2023	89%	15
Apia	9/30/2020	12/30/2022	83%	12
Ashgabat	11/30/2021	6/14/2022	37%	11
Asmara	9/23/2020	10/10/2021	23%	99
Astana	9/30/2020	3/3/2023	93%	0
Asuncion	10/5/2020	1/29/2023	88%	16
Athens	2/13/2020	3/22/2023	76%	114
Auckland	9/15/2020	1/14/2023	3%	29
Baku	8/4/2020	3/17/2023	93%	8
Bamako	7/28/2020	2/25/2023	77%	103
Bandar Seri Begawan	6/28/2021	3/9/2023	67%	7

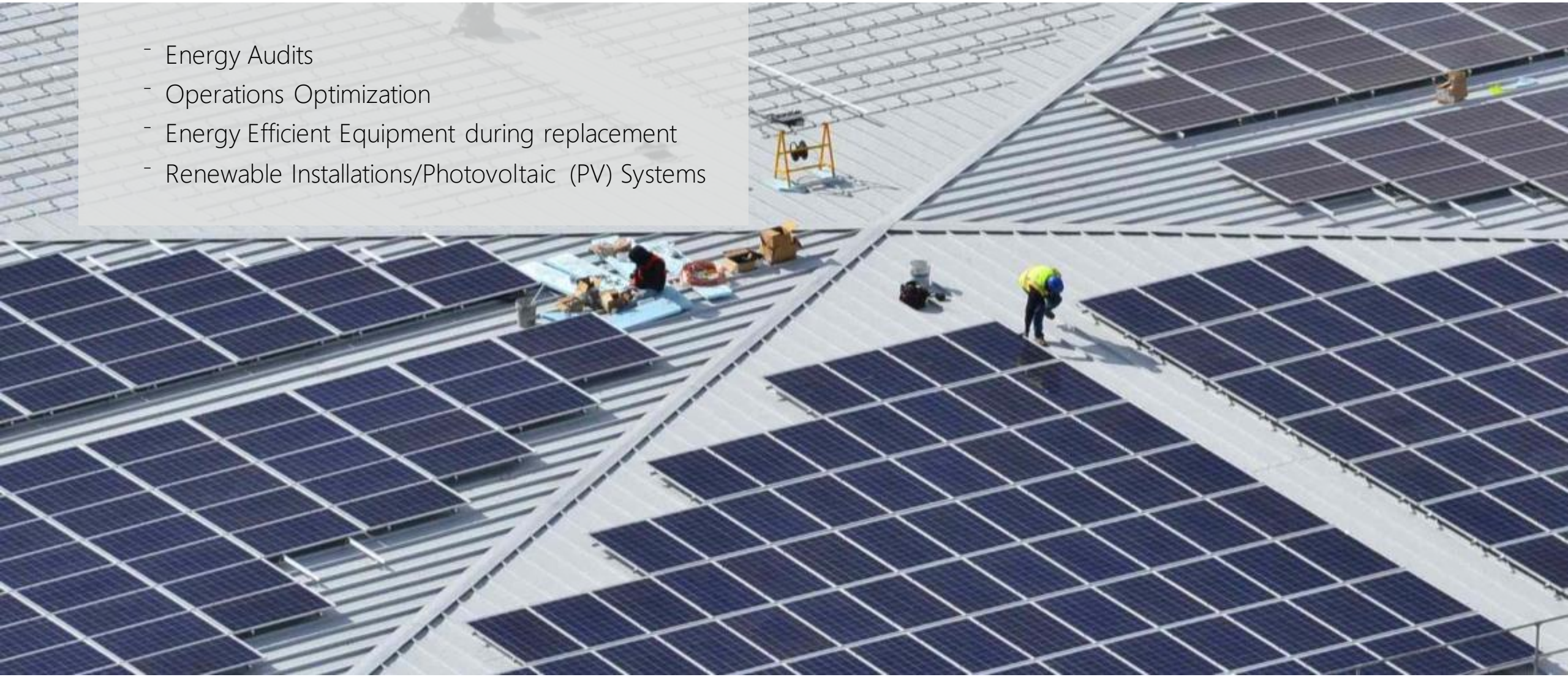
Immediate Benefits – $1.3M Annual Cost Avoidance Implemented

	Utility	Issue	Annual Cost Avoidance	Status
Jakarta	Natural Gas	Minimum Billed Use	$37,000	Complete
Maputo	Electricity	Initial contract negotiation	$36,000	Complete
Mumbai	Electricity	Minimum Billed Demand & Increasing Demand Unit Rates	$55,000	Complete
Belgrade	Electricity	Minimum Billed Demand (Four Accounts)	$26,000	Complete
Djibouti	Electricity	Minimum Billed Demand	$23,000	Complete
Antananarivo	Electricity	Minimum Billed Demand (Two Accounts)	$215,000	Complete
Algiers	Electricity	Minimum Billed Demand (Two Accounts)	$4,800	Complete
London	Electricity	Minimum Billed Demand	$100,000	Complete
Niamey	Water	Below ground water leak	$63,000	Complete
Karachi	Electricity	Single rate tariff changed to TOU	$219,000	Complete
Jakarta	Electricity	Minimum Billed Use	$155,000	Complete
Yaoundé	Electricity	Minimum Billed Demand	$30,000	Complete
N'Djamena	Electricity	Minimum Billed Demand	$305,000	Complete

50+ additional locations identified to date for review of potential cost optimization opportunities

OBO Energy Projects

- Energy Audits
- Operations Optimization
- Energy Efficient Equipment during replacement
- Renewable Installations/Photovoltaic (PV) Systems

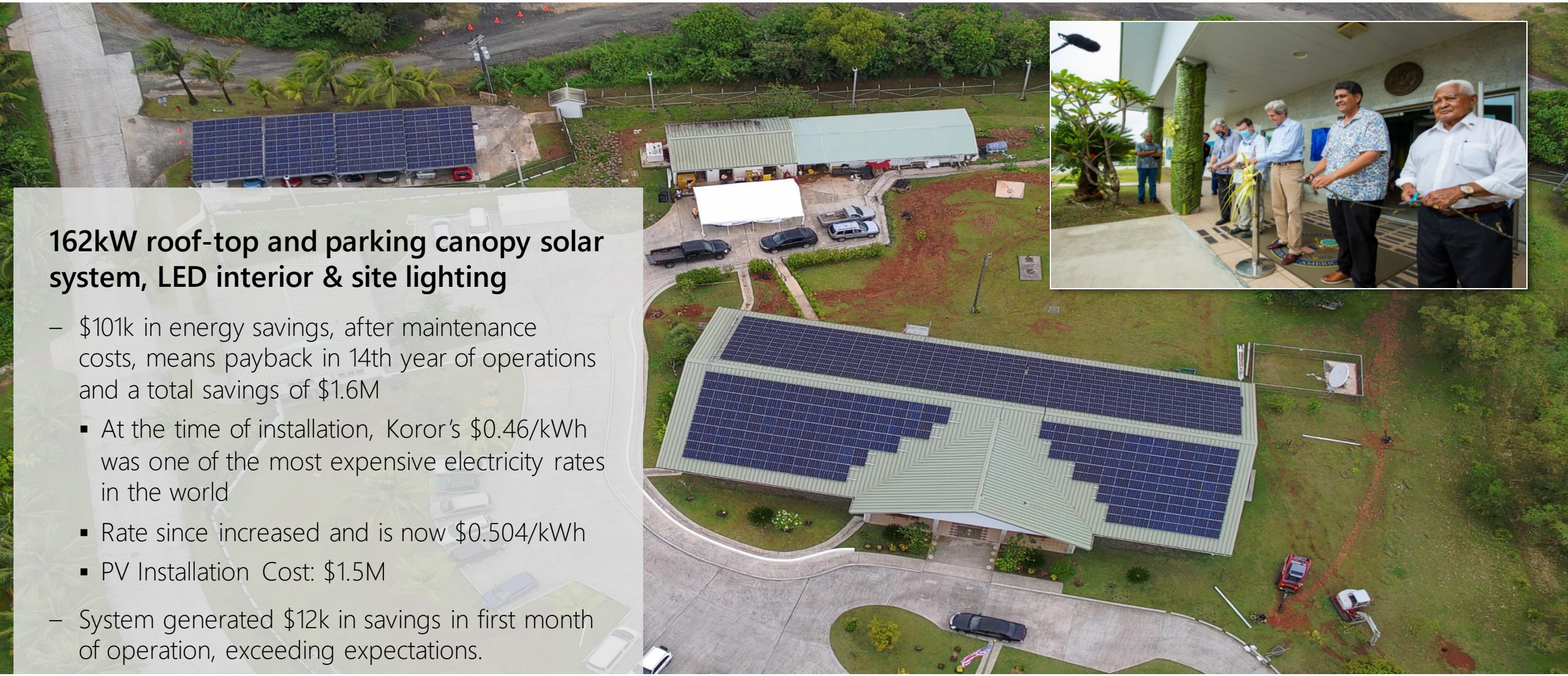


Renewable System Installations

Map Legend:

- 3 Installed Wind at 88 kW
- 54 Installed Solar at 10.6 MW
- 37 Planned Solar at 13.7 MW

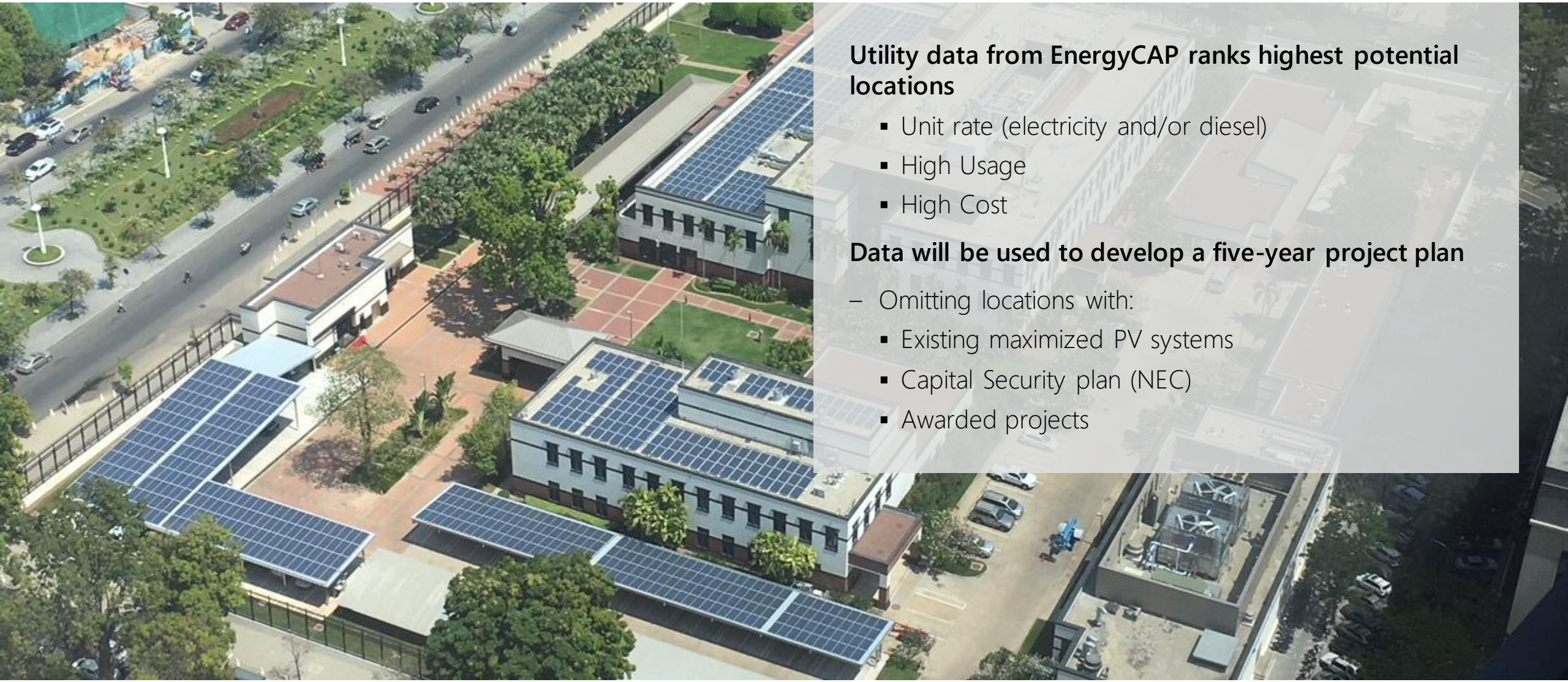
Embassy Koror: Department's First Net-Zero Energy Project



162kW roof-top and parking canopy solar system, LED interior & site lighting

- $101k in energy savings, after maintenance costs, means payback in 14th year of operations and a total savings of $1.6M
  - At the time of installation, Koror's $0.46/kWh was one of the most expensive electricity rates in the world
  - Rate since increased and is now $0.504/kWh
  - PV Installation Cost: $1.5M
- System generated $12k in savings in first month of operation, exceeding expectations.

Data-Driven Project Criteria



Utility data from EnergyCAP ranks highest potential locations

- Unit rate (electricity and/or diesel)
- High Usage
- High Cost

Data will be used to develop a five-year project plan

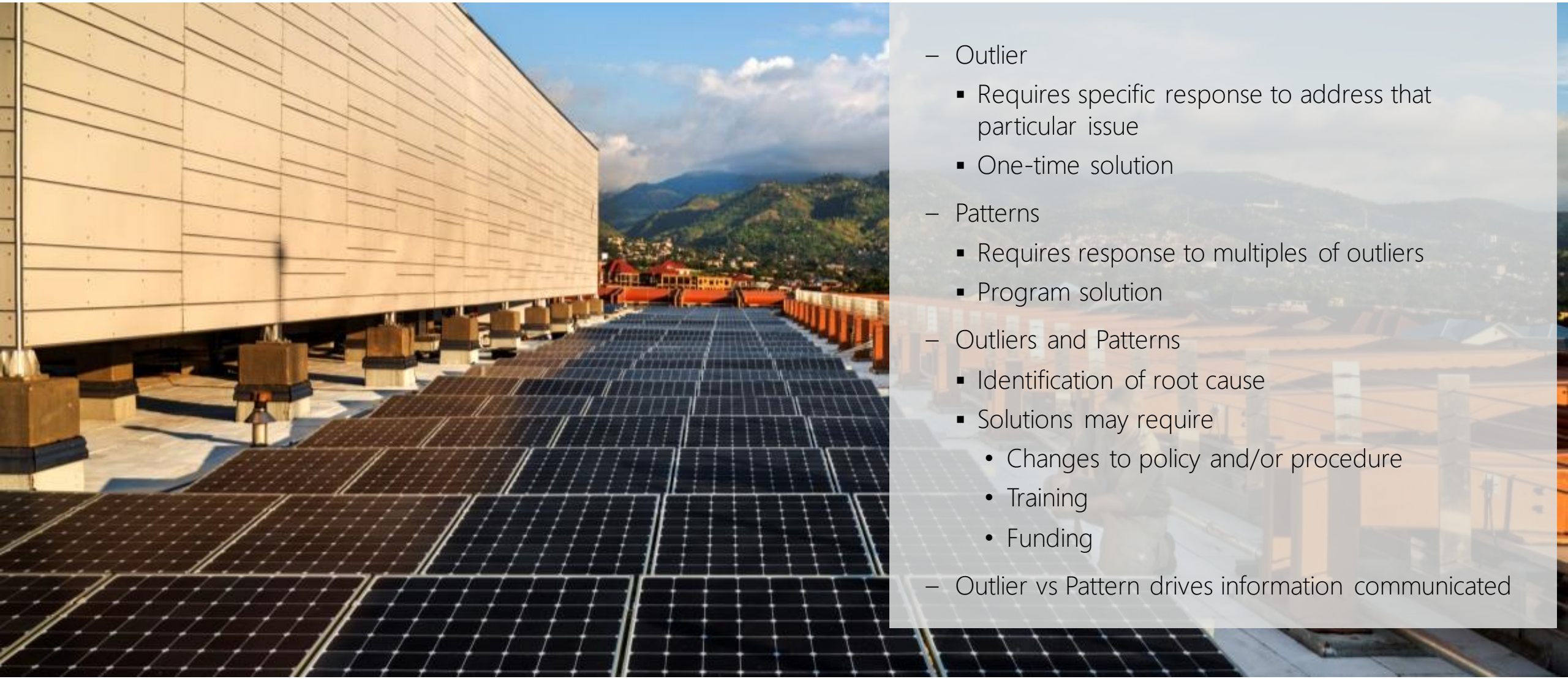
– Omitting locations with:

- Existing maximized PV systems
- Capital Security plan (NEC)
- Awarded projects

Future Data-Driven Decisions

- Utility contract negotiations
- Construction turnover – BAS/HVAC punch list
- Warranty closeout – operating as designed
- Use compliance as criteria for funding requests
- Designs Lessons Learned
- End of Life equipment – review for system changes
- BAS replacement prioritization

Outliers vs Patterns

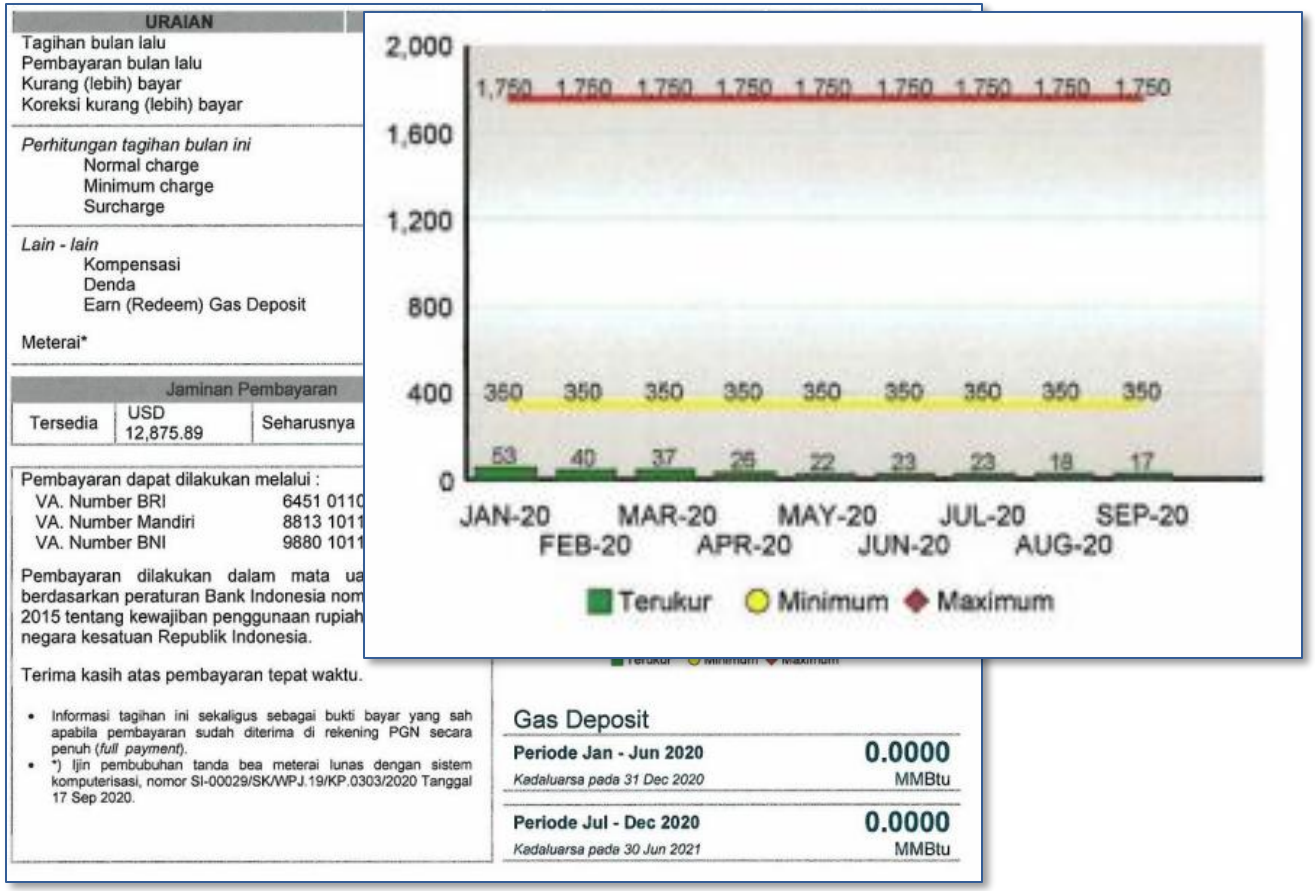


- Outlier
  - Requires specific response to address that particular issue
  - One-time solution
- Patterns
  - Requires response to multiples of outliers
  - Program solution
- Outliers and Patterns
  - Identification of root cause
  - Solutions may require
    - Changes to policy and/or procedure
    - Training
    - Funding
- Outlier vs Pattern drives information communicated

Data Structure, Quality & Comparisons

- Structure
  - Naming conventions
  - Consistent observation types
  - Hierarchy
  - Groups
  - Custom fields
- Quality
  - Complete
  - Errors resolved
- Comparisons
  - Red Delicious to Granny Smith?
  - Adjust columns viewed
  - App Visualizations
  - RDBI

Enrollment



URAIAN
Tagihan bulan lalu
Pembayaran bulan lalu
Kurang (lebih) bayar
Koreksi kurang (lebih) bayar
Perhitungan tagihan bulan ini
Normal charge
Minimum charge
Surcharge
Lain - lain
Kompensasi
Denda
Earn (Redeem) Gas Deposit
Meterai*

Jaminan Pembayaran		
Tersedia	USD 12,875.89	Seharusnya

Pembayaran dapat dilakukan melalui :
VA. Number BRI 6451 0110
VA. Number Mandiri 8813 1011
VA. Number BNI 9880 1011

Pembayaran dilakukan dalam mata ua
berdasarkan peraturan Bank Indonesia nom
2015 tentang kewajiban penggunaan rupiah
negara kesatuan Republik Indonesia.

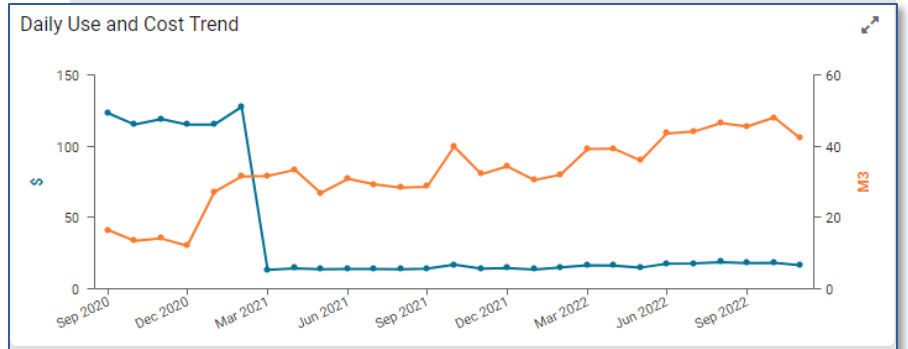
Terima kasih atas pembayaran tepat waktu.

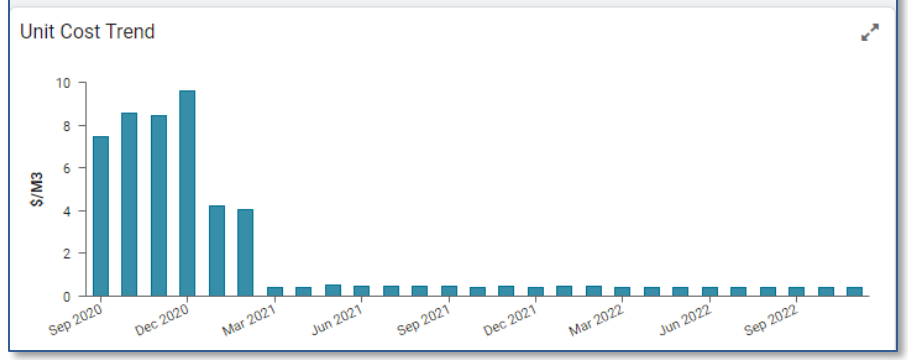
- Informasi tagihan ini sekaligus sebagai bukti bayar yang sah apabila pembayaran sudah diterima di rekening PGN secara penuh (*full payment*).
- *) Ijin pembubuhan tanda bea meterai lunas dengan sistem komputerisasi, nomor SI-00029/SK/WPJ.19/KP.0303/2020 Tanggal 17 Sep 2020.

Gas Deposit

Periode Jan - Jun 2020	**0.0000**
Kadaluarsa pada 31 Dec 2020	MMBtu
Periode Jul - Dec 2020	**0.0000**
Kadaluarsa pada 30 Jun 2021	MMBtu

~$37K annually (88% reduction)





Meter Views

Rincian Tagihan Bulan Berjalan

	LWBP	WBP
Stand Akhir (01-09-2022)	5.941,060	1.120,670
Stand Awal (01-08-2022)	5.831,110	1.099,240
kWh LWBP : 737.420	Tarif LWBP : Rp 1.545,01	
kWh WBP : 128.580	Tarif WBP : Rp 2.252,52	
kVArh : 0	Tarif kVArh : Rp 1.522,88	
Rupiah TTL Terpakai	Rp 1.428.950.296	
Rupiah Kompensasi****	Rp 0	
Rupiah TTL minus Kompensasi	Rp 1.428.950.296	
PPN***** (11%)	Rp 157.184.532	
PPJ****** (2,40 %)	Rp 34.294.807	

Rincian Tagihan Bulan Berjalan

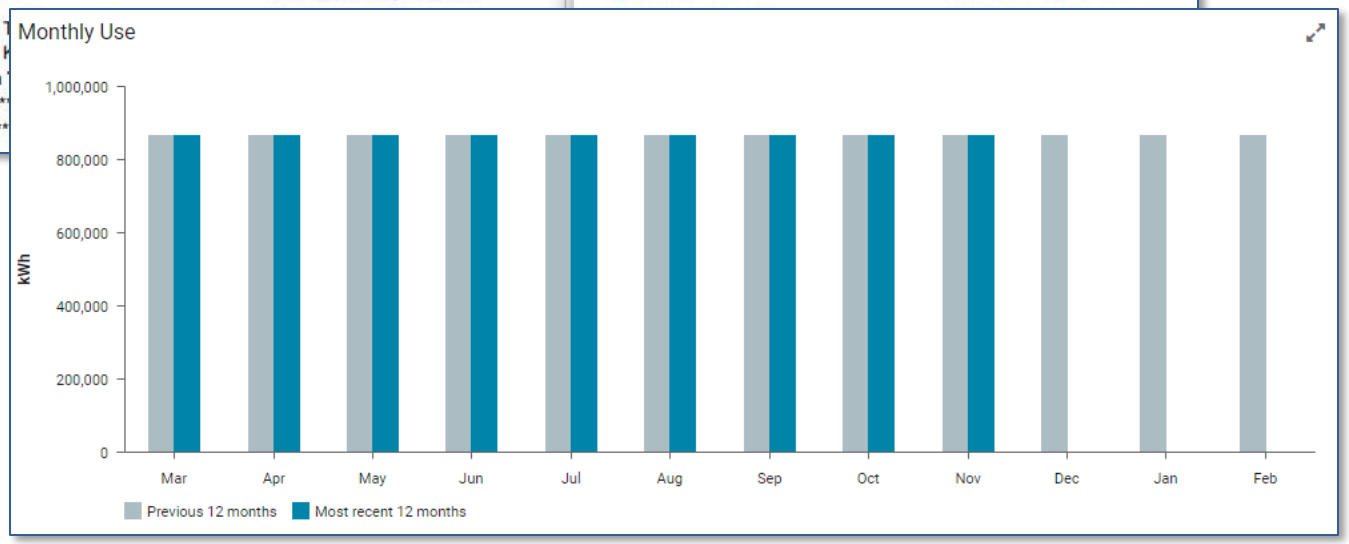
	LWBP	WBP
Stand Akhir (01-11-2022)	6,153.810	1,161.690
Stand Awal (01-10-2022)	6,047.270	1,141.150
kWh LWBP : 742,760	Tarif LWBP : Rp 1,545.01	
kWh WBP : 123,240	Tarif WBP : Rp 2,252.52	
kVArh : 0	Tarif kVArh : Rp 1,522.88	
Rupiah TTL Terpakai	Rp 1,425,172,193	
Rupiah Kompensasi****	Rp 0	
Rupiah TTL minus Kompensasi	Rp 1,425,172,193	
PPN***** (11%)	Rp 156,768,941	
PPJ****** (2.40 %)	Rp 34,204,133	

Rincian Tagihan Bulan Berjalan

	LWBP	WBP
Stand Akhir (01-10-2022)	6,047.270	1,141.150
Stand Awal (01-09-2022)	5,941.060	1,120.670
kWh LWBP : 743,120	Tarif LWBP : Rp 1,545.01	
kWh WBP : 122,880	Tarif WBP : Rp 2,252.52	
kVArh : 0	Tarif kVArh : Rp 1,522.88	

Rincian Tagihan Bulan Berjalan

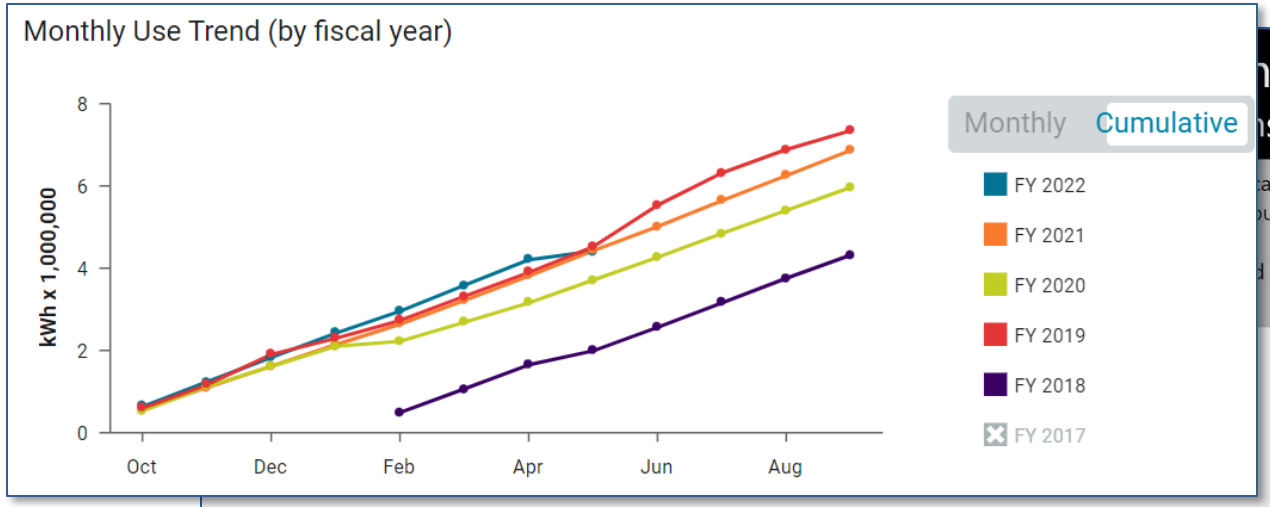
	LWBP	WBP
Stand Akhir (01-12-2022)	6,257.680	1,182.070
Stand Awal (01-11-2022)	6,153.810	1,161.690
kWh LWBP : 743,720	Tarif LWBP : Rp 1,545.01	
kWh WBP : 122,280	Tarif WBP : Rp 2,252.52	
kVArh : 0	Tarif kVArh : Rp 1,522.88	



Billing Period	Unit Cost	Use	Use Un
Jan 2022	$ 0.089	866,000	kWh
Dec 2021	$ 0.089	866,000	kWh
Nov 2021	$ 0.088	866,000	kWh
Oct 2021	$ 0.089	866,000	kWh
Sep 2021	$ 0.089	866,000	kWh
Aug 2021	$ 0.089	866,000	kWh
Jul 2021	$ 0.088	866,000	kWh
Jun 2021	$ 0.087	866,000	kWh
May 2021	$ 0.086	866,000	kWh
Apr 2021	$ 0.088	866,000	kWh
Mar 2021	$ 0.087	866,000	kWh
Feb 2021	$ 0.088	866,000	kWh
Jan 2021	$ 0.090	866,000	kWh
Dec 2020	$ 0.089	866,000	kWh
Nov 2020	$ 0.090	866,000	kWh
Oct 2020	$ 0.087	866,000	kWh
Sep 2020	$ 0.085	866,000	kWh

$155,000 annual cost reduction

Trends & Benchmarks



ndicator Dashboard

sity

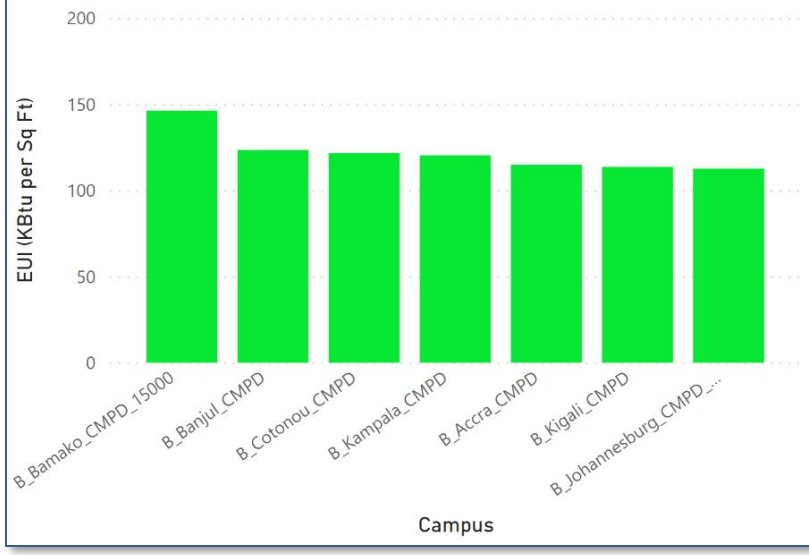
GREENING DIPLOMACY INITIATIVE

an be applied at the same time. The bar chart displays the highest Energy Use
us is selected by clicking on its label in the bar chart. Be sure to start the date filter on

d by month. EnergyCAP is the primary data source and aggregations may slightly

Date
10/1/2021
9/30/2022

Energy Use Intensity (EUI) by Campus (KBtu / Sq ft)

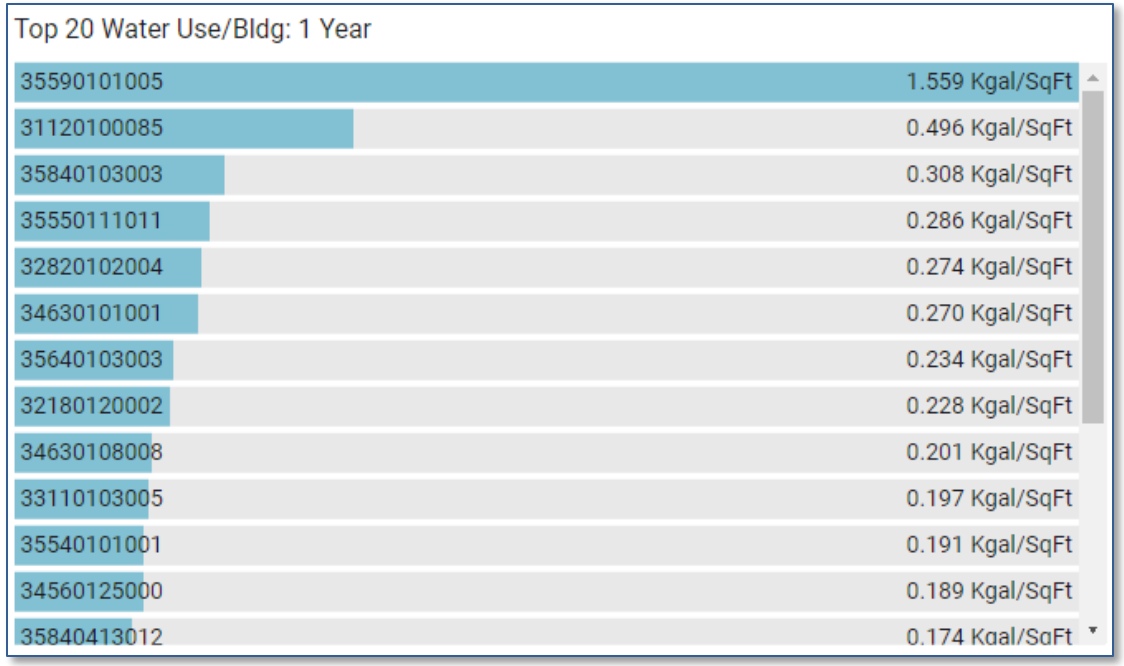


EUI by Meter (Select a Campus to View Data)

Post	Energy Use	Floor Area - Current	EUI (KBtu / Sq ft)	Average Daily Temperature
B_Bamako_CMPD_15000	25,516,693	174,453	146.27	83.67
B_Banjul_CMPD	3,018,188	24,451	123.44	80.15
B_Cotonou_CMPD	10,466,874	86,091	121.58	82.31
B_Kampala_CMPD	9,966,923	82,828	120.33	71.89
B_Accra_CMPD	21,715,472	188,919	114.95	81.94
B_Kigali_CMPD	13,428,504	118,208	113.60	70.92
B_Johannesburg_CMPD_10000	8,488,517	75,376	112.62	62.95
B_Lome_CMPD	8,898,824	101,552	87.63	82.53
B_Yaounde_NEC_CMPD_1000	13,377,325	155,594	85.98	75.36
B_Abidjan_CMPD_15002	19,949,384	237,934	83.84	81.66
B_Addis_Ababa_CMPD	17,519,255	227,048	77.16	62.73
B_Antananarivo_CMPD_6000	11,397,687	153,103	74.44	67.01
B_Dar_es_Salaam_CMPD	10,361,692	143,950	71.98	80.99
B_Praia_CMPD	515,257	7,320	70.39	77.87
B_Mbabane_CMPD_20000	7,824,221	119,857	65.28	63.00
Total	**257,020,403**	**3,444,354**	**74.62**	**74.16**

Bills vs Dashboard

Billing Period	Meter Cost	Unit Cost	Use	Use Un
Jan 2023	$ 6,704.10	$ 0.837	8,005	M3
Dec 2022	$ 6,611.62	$ 0.866	7,635	M3
Nov 2022	$ 4,390.24	$ 0.834	5,263	M3
Oct 2022	$ 2,725.38	$ 0.807	3,376	M3
Sep 2022	$ 2,060.95	$ 0.779	2,644	M3
Aug 2022	$ 530.90	$ 0.785	676	M3
Jul 2022	$ 2,271.97	$ 0.783	2,900	M3
Jun 2022	$ 2,378.09	$ 0.806	2,951	M3
May 2022	$ 3,974.20	$ 0.829	4,795	M3
Apr 2022	$ 3,942.29	$ 0.841	4,688	M3
Mar 2022	$ 4,408.68	$ 0.849	5,194	M3
Feb 2022	$ 29,052.64	$ 0.866	33,539	M3
Jan 2022	$ 10.30	$ 0.000	0	M3
Nov 2021	$ 10.50	$ 0.000	0	M3
Oct 2021	$ 10.50	$ 0.000	0	M3
Sep 2021	$ 10.75	$ 0.000	0	M3
Jul 2021	$ 10.91	$ 0.000	0	M3
Jun 2021	$ 1,483.10	$ 0.939	1,580	M3



$63,000 annual cost of water leak

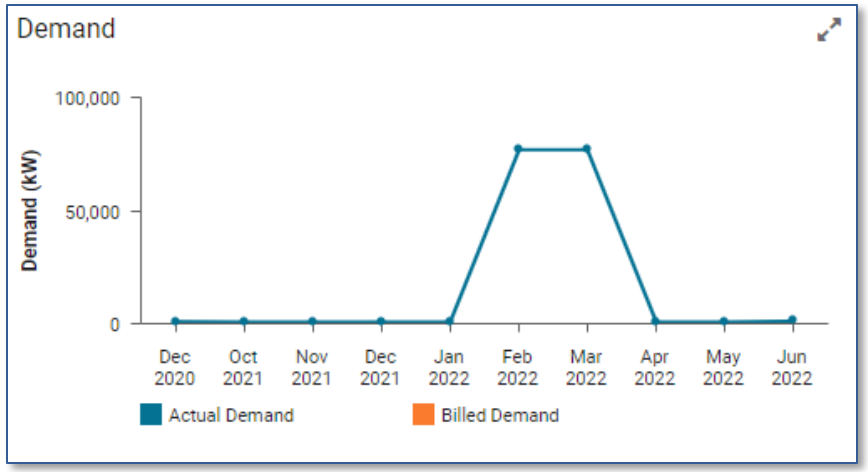
Billing Errors

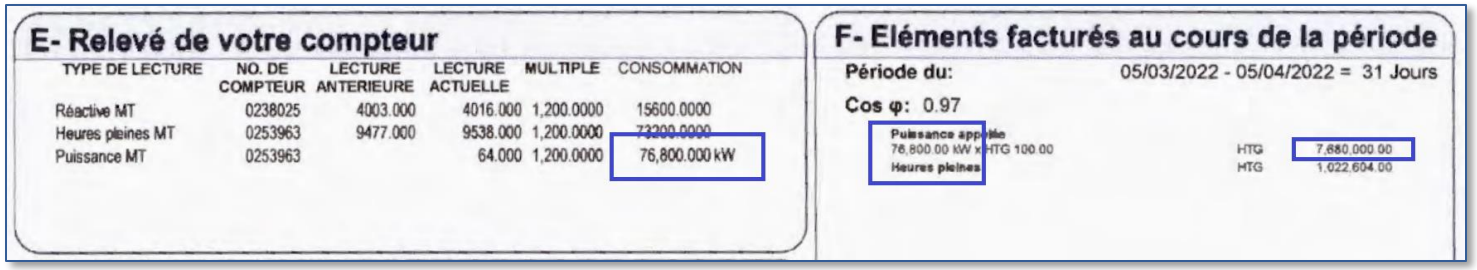
Meter Cost	Unit Cost	Use	Use Ur
$ 7,163.81	$ 1.023	7,000	L
$ 7,163.81	$ 1.023	7,000	L
$ 25,709.41	$ 1.071	24,000	L
$ 23,596.67	$ 1.475	16,000	L
$ 21,886.26	$ 0.912	24,000	L

Quantity	Description	Retail Value (Per Unit)	Retail Value Excl. GST	Sales Tax 17%	Gross Amount Incl. GST
1	2	3	3	4	5
24000	HS CODE-2710.1931 (High Speed Diesel Oil) High Speed Diesel Fuel (HSD)	166.29	3990960.00	0.00	3990960.00
			0.00	0.00	0.00
	Gross Total		3990960.00	0.00	3990960.00

Quantity	Description	Retail Value (Per Unit)	Retail Value Excl. GST	Sales Tax 17%	Gross Amount Incl. GST
1	2	3	3	4	5
16000	HS CODE-2710. (PETROL) PETROL Premier Motor Gasoline Euro 5	303.49	4855840.00	0.00	4855840.00
			0.00	0.00	0.00
	Gross Total		4855840.00	0.00	4855840.00

$9,000 excess charge



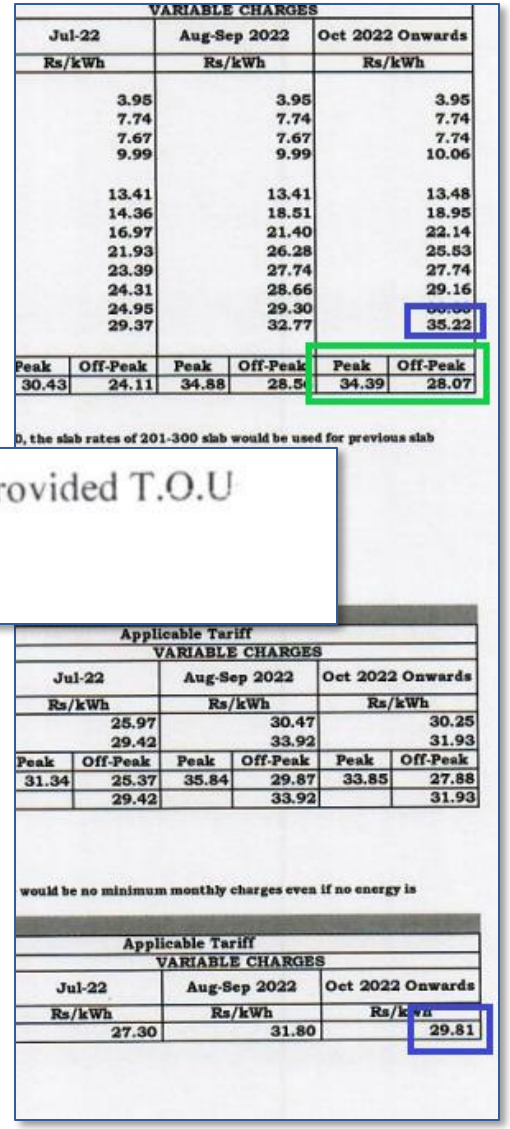


$140,000 excess charges across two bills

Rabbit Hole

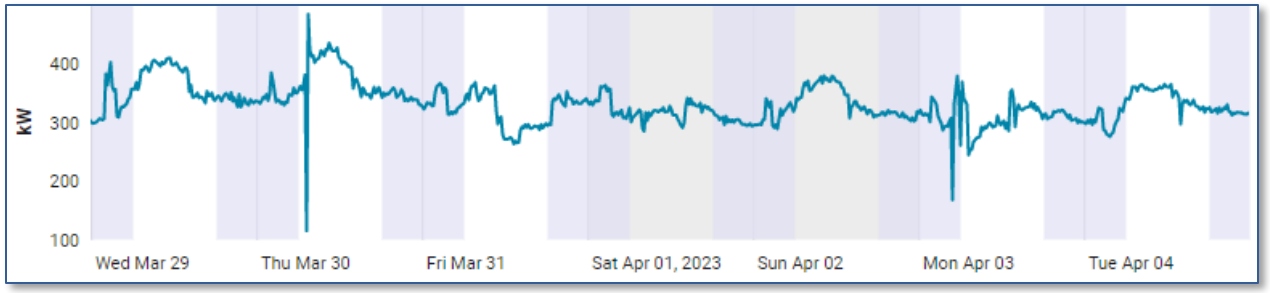
Meter Cost	Unit Cost	Use	Use Un
$ 85,161.21	$ 0.148	577,349	kWh
$ 90,185.53	$ 0.137	657,572	kWh
$ 94,626.29	$ 0.138	684,853	kWh
$ 112,448.25	$ 0.162	693,596	kWh
$ 152,753.43	$ 0.194	785,606	kWh
$ 103,203.37	$ 0.138	749,353	kWh
$ 106,567.92	$ 0.153	69	
$ 109,929.41	$ 0.138	79	
$ 90,493.35	$ 0.142	63	
$ 93,328.28	$ 0.133	699,406	kWh
$ 81,812.41	$ 0.144	568,619	kWh
$ 89,900.74	$ 0.157	573,516	kWh
$ 97,706.12	$ 0.174	562,202	kWh
$ 97,184.99	$ 0.158	615,844	kWh
$ 103,550.12	$ 0.148	700,918	kWh
$ 103,725.55	$ 0.151	685,730	kWh
$ 115,373.70	$ 0.152	756,698	kWh
$ 120,163.22	$ 0.152	789,183	kWh

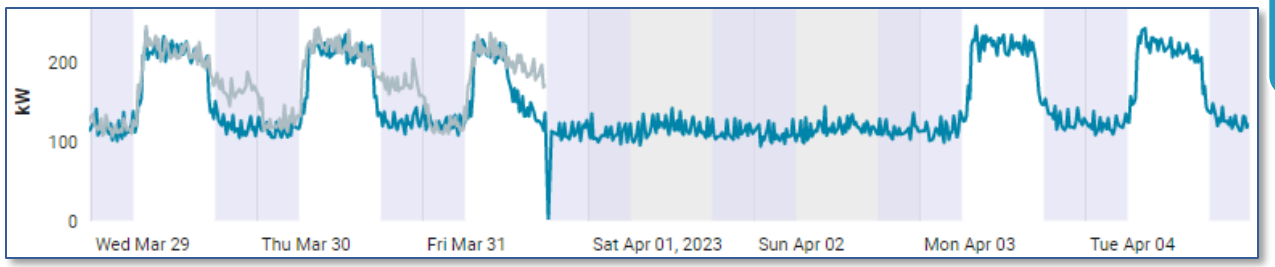
4. All existing consumers having sanctioned load 5 kW and above shall be provided T.O.U metering arrangement and converted to A- 1(b) Tariff by the Company.

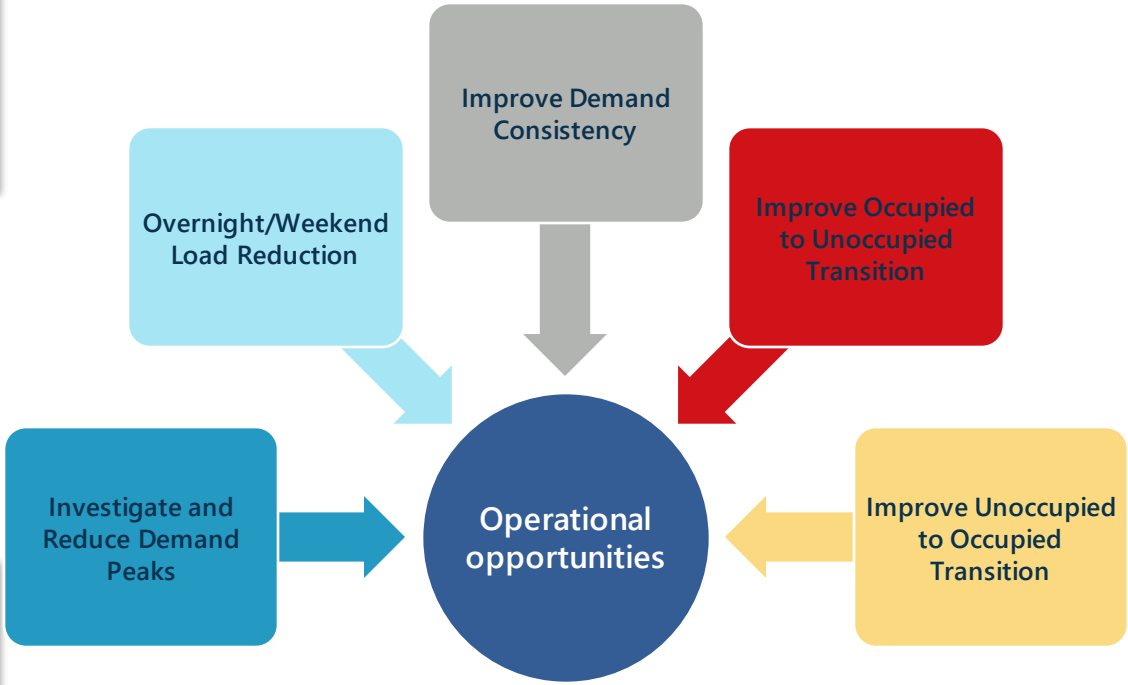


$219,000 annual cost avoidance

Optimal Operation Profile





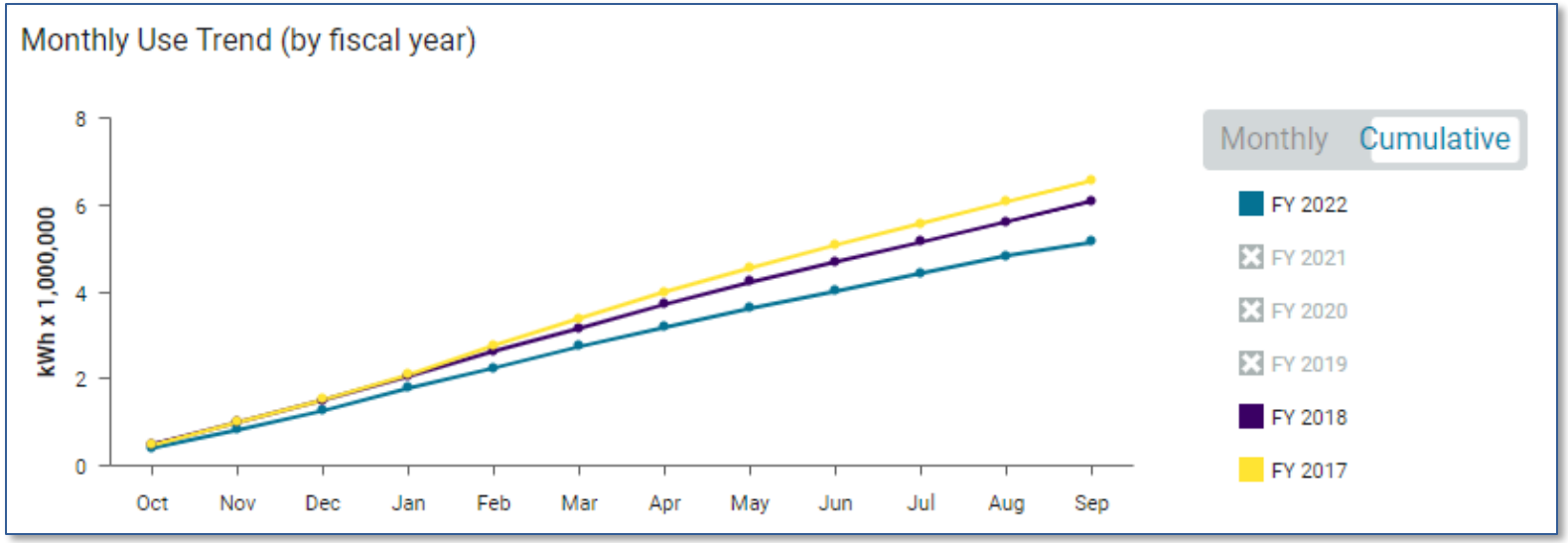


Monitor Progress

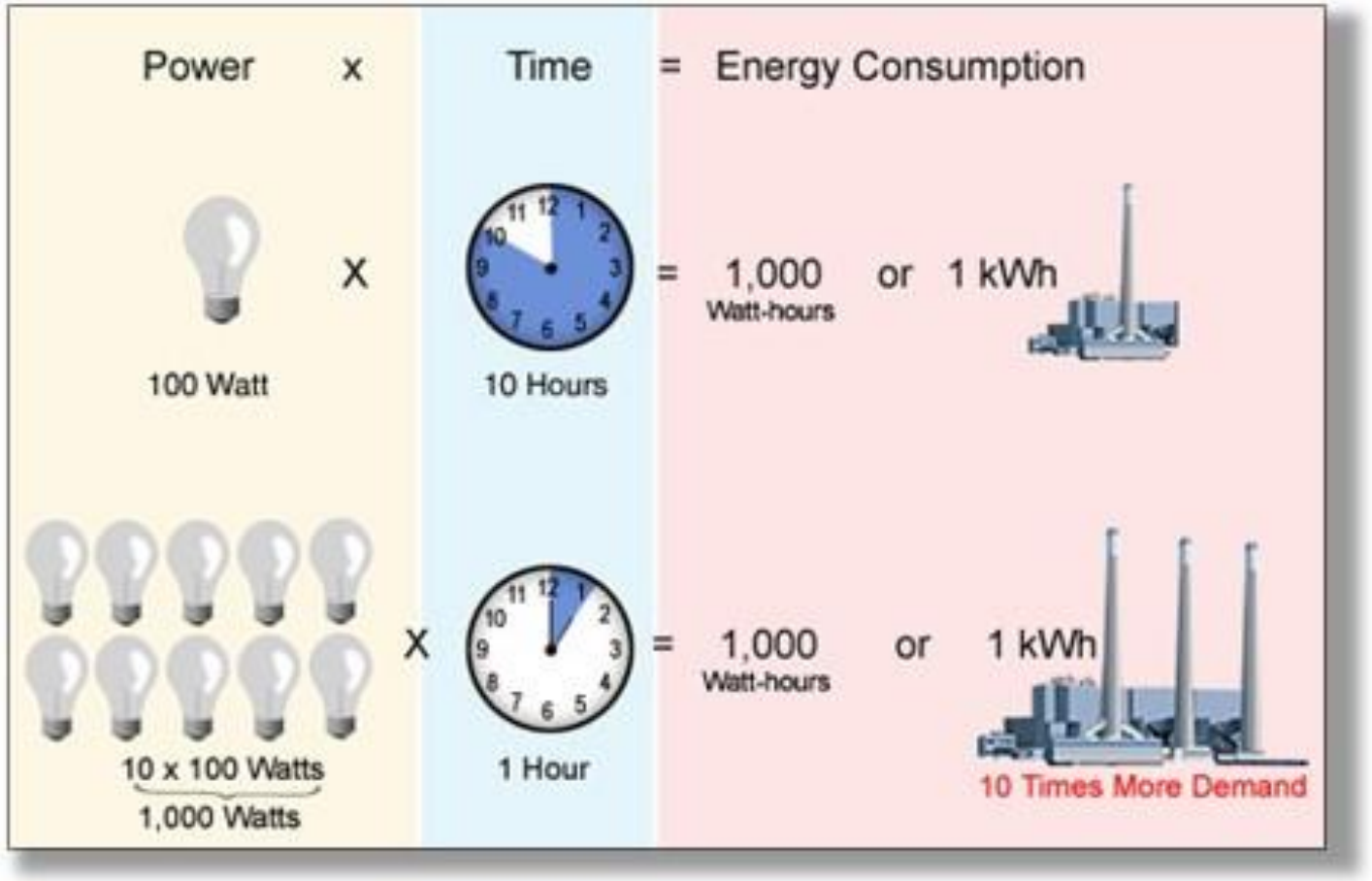
- Chiller replacement: end of 2017
- LED lighting installation: 2019
- AHU TAB
- Replacing failed occupancy sensors
- Ongoing preventative maintenance

FY22

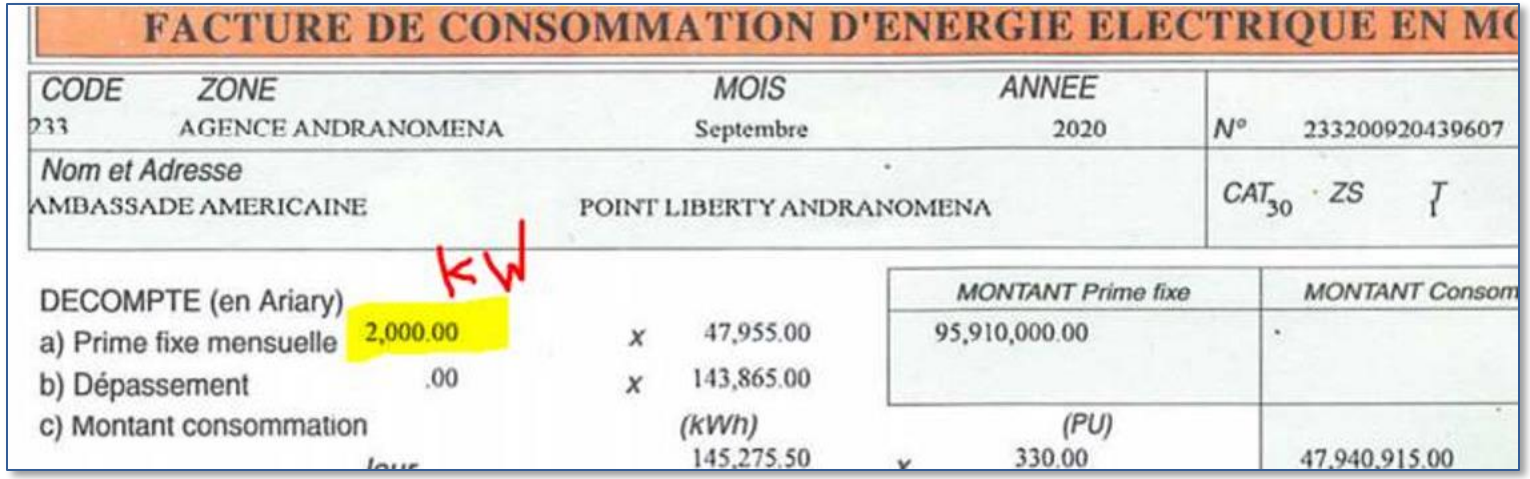
- $103,000 annual cost avoidance
- ~15% use reduction



Demand vs Consumption



Minimum Billed Demand



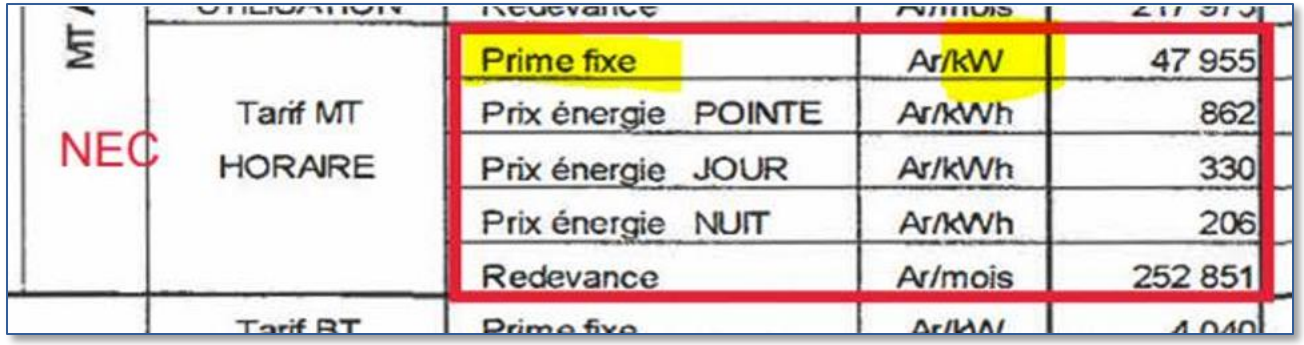
FACTURE DE CONSOMMATION D'ENERGIE ELECTRIQUE EN MC

CODE	ZONE	MOIS	ANNEE	
233	AGENCE ANDRANOMENA	Septembre	2020	N° 233200920439607

Nom et Adresse
AMBASSADE AMERICAINE — POINT LIBERTY ANDRANOMENA — CAT_{30} · ZS T

kW

DECOMPTE (en Ariary)				MONTANT Prime fixe	MONTANT Consom
a) Prime fixe mensuelle	2,000.00	x	47,955.00	95,910,000.00	
b) Dépassement	.00	x	143,865.00		
c) Montant consommation		(kWh)	(PU)		
		145,275.50	x 330.00		47,940,915.00

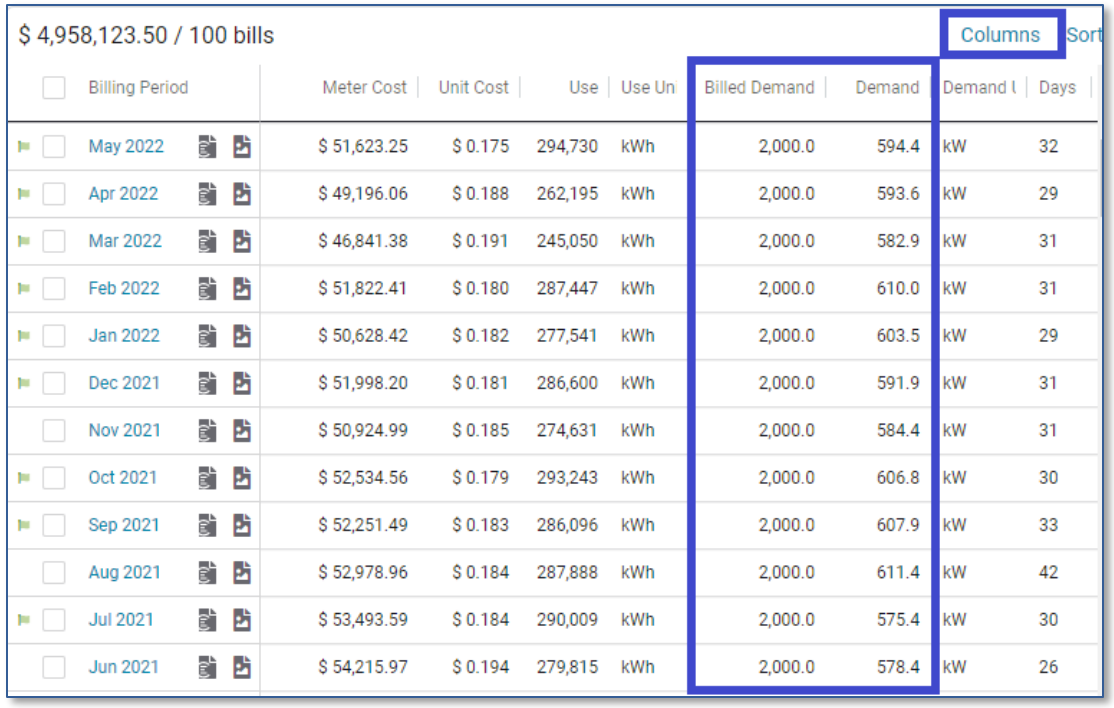


MT		Prime fixe	Ar/kW	47 955
NEC	Tarif MT HORAIRE	Prix énergie POINTE	Ar/kWh	862
		Prix énergie JOUR	Ar/kWh	330
		Prix énergie NUIT	Ar/kWh	206
		Redevance	Ar/mois	252 851

$215,000 annual cost avoidance across two accounts

Create Diagnostics

ADJUST COLUMN VIEW



$ 4,958,123.50 / 100 bills

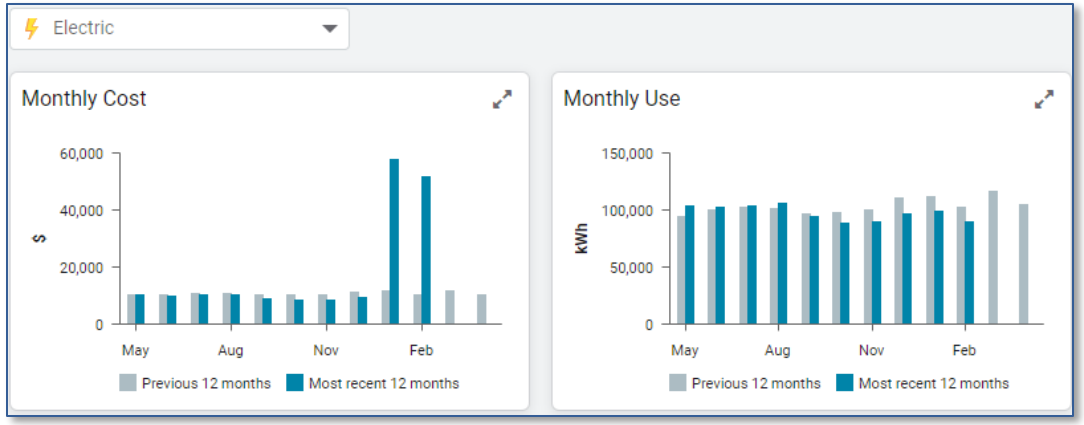
Columns Sort

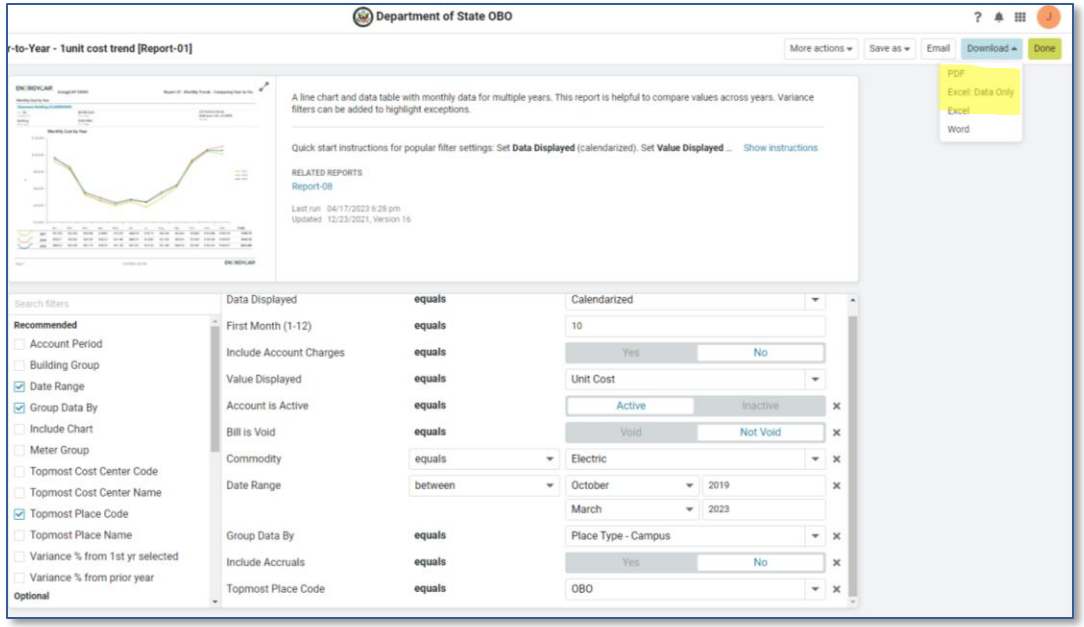
Billing Period	Meter Cost	Unit Cost	Use	Use Un	Billed Demand	Demand	Demand t	Days
May 2022	$ 51,623.25	$ 0.175	294,730	kWh	2,000.0	594.4	kW	32
Apr 2022	$ 49,196.06	$ 0.188	262,195	kWh	2,000.0	593.6	kW	29
Mar 2022	$ 46,841.38	$ 0.191	245,050	kWh	2,000.0	582.9	kW	31
Feb 2022	$ 51,822.41	$ 0.180	287,447	kWh	2,000.0	610.0	kW	31
Jan 2022	$ 50,628.42	$ 0.182	277,541	kWh	2,000.0	603.5	kW	29
Dec 2021	$ 51,998.20	$ 0.181	286,600	kWh	2,000.0	591.9	kW	31
Nov 2021	$ 50,924.99	$ 0.185	274,631	kWh	2,000.0	584.4	kW	31
Oct 2021	$ 52,534.56	$ 0.179	293,243	kWh	2,000.0	606.8	kW	30
Sep 2021	$ 52,251.49	$ 0.183	286,096	kWh	2,000.0	607.9	kW	33
Aug 2021	$ 52,978.96	$ 0.184	287,888	kWh	2,000.0	611.4	kW	42
Jul 2021	$ 53,493.59	$ 0.184	290,009	kWh	2,000.0	575.4	kW	30
Jun 2021	$ 54,215.97	$ 0.194	279,815	kWh	2,000.0	578.4	kW	26

REPORT DESIGNER BI

Meter	Average Actual Demand	Average Billed Demand	% Demand Difference
5534416547-ELE01	388.50	3,000.00	672%
2565025618-ELE01	755.98	5,000.00	561%
2821115018110-ELE01	453.85	2,500.00	451%
7949941000-ELE01	316.80	1,700.00	437%
5195074-ELE01	799.00	3,000.00	275%
231996031_ELE	351.45	1,200.00	241%
8800017437_ELE	209.71	441.00	110%
68-689-ELE01	253.33	500.00	97%
BJH1259-ELE01	152.03	280.00	84%
09 03 07 0200 01_ELE	447.85	700.00	56%
8 721 000 000-ELE01	176.43	274.00	55%
MT41233-ELE01	527.14	800.00	52%
99964-20001-8-01-ELE01	792.15	1,178.00	49%

Excel: Data Only Report Download

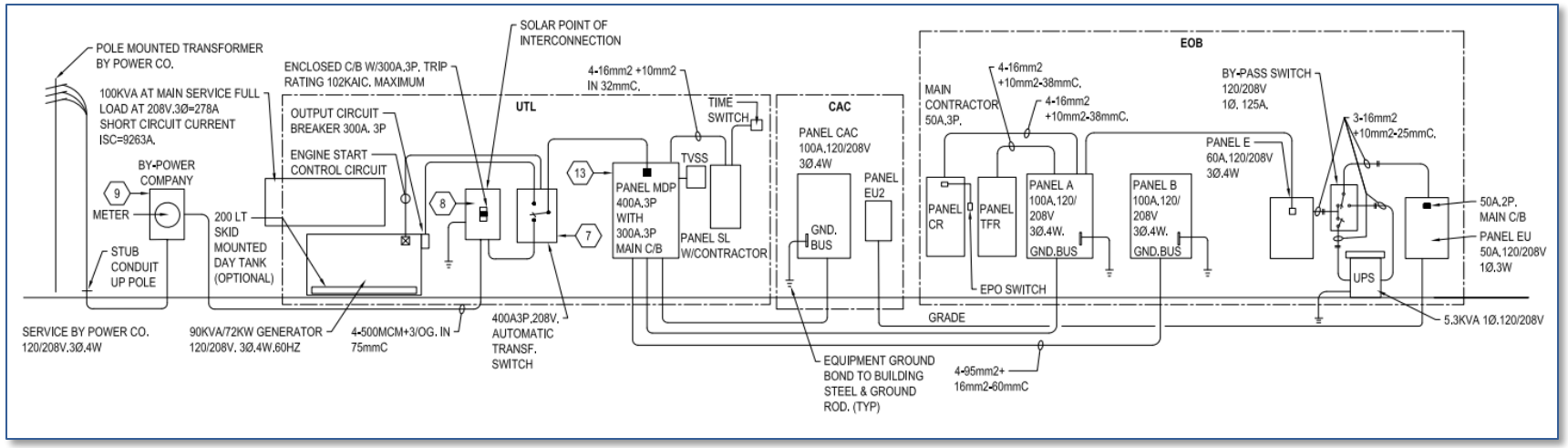




Row Labels	2019-20	2020-21	2021-22	2022-23	% change FY22 to FY23
B_USUN_GENEVA_CMPD [92766703000]	$0.17	$0.18	$0.18	$0.72	297%
B_KRAKOW_CMPD [B_KRAKOW_CMPD]		$0.28	$0.31	$0.67	115%
B_Kolonia_CMPD_10000 [93290110000]			$0.65		
B_Prague_CMPD_1000 [92280101000]		$0.11	$0.10	$0.58	458%
B_Buenos_Aires_CMPD_1000 [91020101000]		$0.11	$0.51	$0.30	
B_Hamilton_CMPD_72007 [92149172007]		$0.43	$0.50	$0.49	
B_Zagreb_CMPD [92270110000]	$0.11	$0.13	$0.13	$0.49	286%
B_CURACAO_CMPD_1000 [91290101000]	$0.38	$0.41	$0.49		
B_Koror_CMPD_8 [93500100008]		$0.32	$0.46	$0.20	
B_Ljubljana_CMPD_1000 [92670101000]	$0.13	$0.13	$0.31	$0.45	
B_Nouakchott_NEC_CMPD_10000 [95570110000]	$0.19	$0.20	$0.43	$0.19	
B_Istanbul_CMPD_1000 [92820201000]			$0.07	$0.40	449%
B_Athens_CMPD [92180115001]		$0.15	$0.33	$0.40	
B_Singapore_CMPD_2000 [93180102000]	$0.10	$0.12	$0.39	$0.29	
B_Amman_CMPD_4000 [94400104000]	$0.38	$0.36	$0.36	$0.36	
B_Astana_CMPD_10000 [92590110000]	$0.07	$0.05	$0.20	$0.38	92%
B_Vilnius_CMPD_3 [92550100003]		$0.11	$0.19	$0.37	100%
B_Nassau_CMPD_4000 [91030104000]	$0.37	$0.25	$0.25		
B_Djibouti_CMPD_10000 [95040110000]		$0.36	$0.26	$0.26	
B_Nicosia_CMPD_9000 [92170109000]	$0.18	$0.22	$0.35	$0.30	
B_Bern_CMPD [92760103000]	$0.19	$0.19	$0.33	$0.35	
B_Rome_CMPD_1000 [92500101000]		$0.27	$0.34	$0.29	
B_Kingston_CMPD_8000 [91270108000]	$0.24	$0.28	$0.33	$0.34	
B_Conakry_CMPD_4000 [95280104000]			$0.33		
B_Bridgetown_CMPD_98510 [91110198510]		$0.29	$0.33		
B_Kigali_CMPD [KIGALI_CMPD]	$0.32	$0.31	$0.30	$0.28	

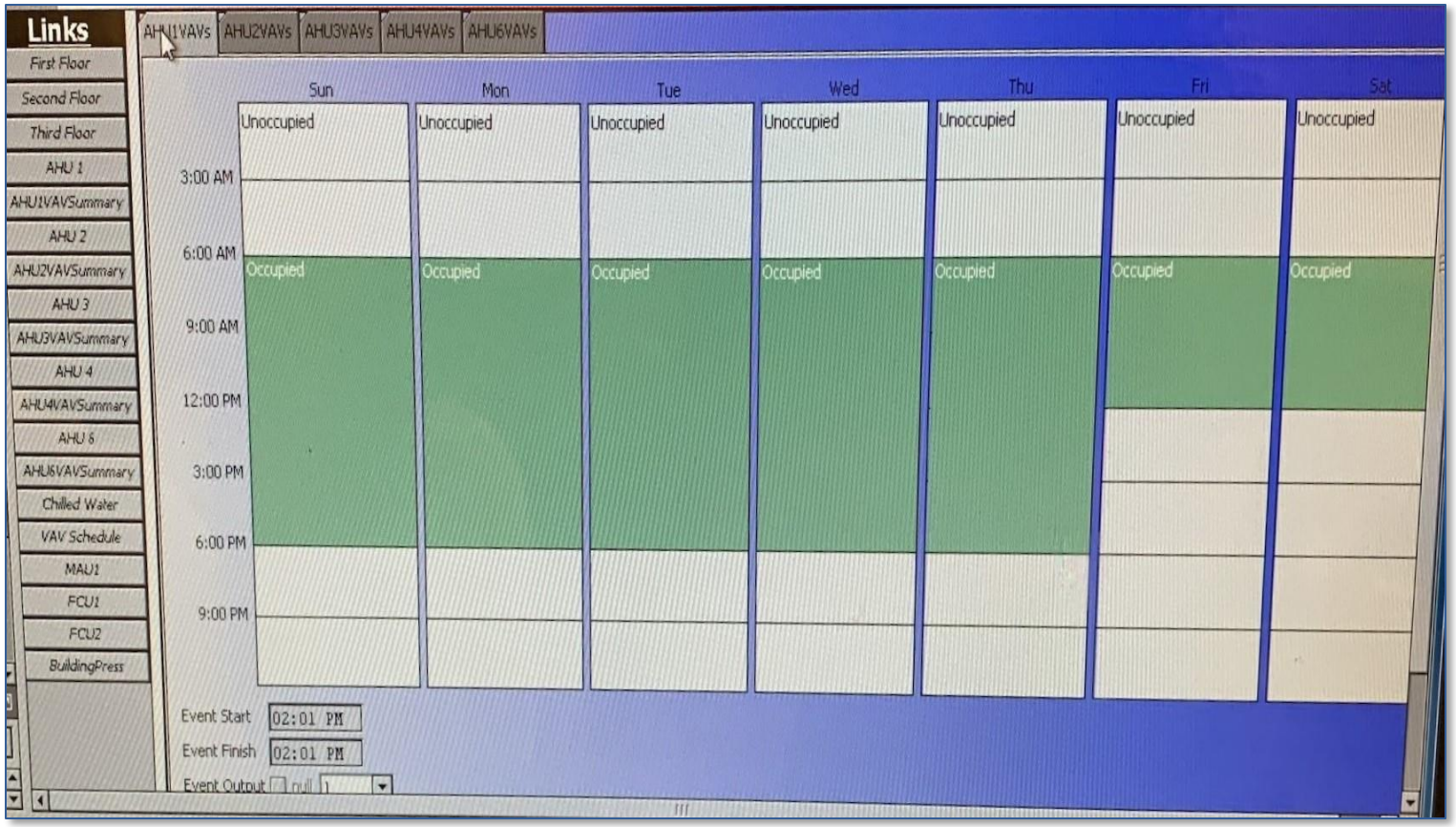
Design

- Lessons Learned
  - Site selection
  - Investigate available utility rates
  - Oversized equipment
  - Redundancies
  - System selection
  - System installation
  - Complexity



Construction/Commissioning

- Negotiate utility contracts
- Utility Meter Installation
- BAS
  - Schedules align with occupancy
  - All equipment connected to schedule
  - Mechanical/BAS deficiencies
- Check utility bills prior to end of warranty



Communicate to Drive Savings

- Collaboration vs Presentation
- Functional Perspective: Facilities, Accounts Payable, HR, Management, etc
- Personalities: Pioneer, Guardian, Driver, Integrator
- Avoid Death by Data
- Visualizations
- Praise and Recognition

Conclusion

- Understand your data
- Make good comparisons
- Follow your instincts
- Opportunity exists everywhere
- Outliers vs Patterns
- Learn from the past, but move forward
- Communication to drive savings